The Institute for Governance and Policy Studies, School of Government at Victoria University of Wellington

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Why Emissions Pricing Can't Do It Alone

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Editorial Note

Under the Public Service Act 2020, departmental chief executives in Aotearoa New Zealand must provide periodic 'long-term insights briefings' to their respective Ministers. The first set of such briefings are due mid-year. In part, they constitute a 'commitment device', helping to ensure that significant long-term policy issues are not overlooked or disregarded because of short-term political imperatives. Put differently, the aim is to counter the 'tragedy of the horizon' (to employ the evocative phrase of Mark Carney, the former Governor of the Bank of England).

Yet, given the current global and local context, the prospects for improving long-term governance and better protecting future-oriented interests are hardly auspicious.

Undoubtedly, COVID-19 has exacerbated political short-termism. Understandably, governments everywhere – whether democratic or otherwise – have been under immense pressure to prioritize urgent health care needs, along with providing temporary income support for displaced workers and hard-hit sectors of the economy. Correspondingly, many of the big long-term challenges facing the international community – whether social, economic, ecological, technological or geopolitical – have struggled to receive the attention they deserve from decision-makers.

To compound matters, COVID-19 will leave a legacy of significantly increased public debt, higher rates of poverty, greater socio-economic inequality, disrupted educational opportunities, and heightened pressures on health care systems. Fiscal stresses, too, will be exacerbated in most countries for many years, if not decades, all the more so as interest rates on public debt begin to rise. Inevitably, this will reduce the public resources available for long-term investments, whether for public infrastructure, environmental protection and conservation, climate change mitigation and adaptation, or research and development.

Prudent long-term governance, both global and local, faces numerous other challenges: the rise of multiple nationalist, populist, and illiberal movements; increasing political polarization, dysfunction, and gridlock; declining societal trust; the mounting economic and social impacts of climate change, pollution, and biodiversity loss; the growth of surveillance capitalism; the distorting echo-chambers of social media; the fraudulent manufacturers of 'alternative facts' and 'fake news'; and deliberate efforts by autocratic regimes to undermine democratic institutions and processes in various parts of the world.

In some countries, the threats to democracy are at least as great from within as without. In the US, leading Republicans continue to propagate the lie that Joe Biden 'stole' the 2020 presidential election from Donald Trump. Equally concerning, Republican dominated legislatures in many states are pursuing concerted efforts to make voting more difficult and ensure that key positions in state electoral processes are controlled by party hacks rather than politically impartial officials. Meanwhile, US public opinion surveys indicate increased support for using violence to achieve political ends. Hence, while the coup attempt on 6 January 2021 thankfully failed, further political violence seems likely.

Against this troubling backdrop, it will be revealing to scrutinize the contents of the forthcoming long-term insights briefings. Under Schedule 6 of the Public Service Act, departmental chief executives are required in their briefings to provide 'information about medium- and long-term trends, risks, and opportunities that affect or may affect New Zealand and New Zealand society', together with 'information and impartial analysis, including policy options for responding' to the identified trends, risks, and opportunities.

While departments 'may set out the strengths and weaknesses of policy options', the Act specifies that no 'preference for a particular policy option' should be indicated. This prohibition is designed to protect effective working relationships between departmental chief executives and ministers by minimizing explicit – and eventually public – conflicts on important policy issues.

Whether such a prohibition is needed is questionable. After all, departments routinely offer policy advice to ministers, some of which challenges their policy preferences, and most of this advice ultimately becomes public under the Official Information Act. Moreover, if departments outline various policy options and undertake a proper analysis of their respective advantages and disadvantages, discerning readers should readily be able to identify a preferred approach.

Be that as it may, once the briefings are published MPs, journalists, researchers, political advisers, and interested citizens will have an opportunity to pose important questions. For instance, have departments tackled the full range of critical long-term policy challenges or, instead, played 'safe' and avoided politically sensitive topics? Have they canvassed a robust selection of policy options or only the least controversial ones? More generally, are the documents bland, cautious, and innocuous or rigorous, candid, and forthright?

The role of parliamentary select committees in reviewing the briefings will also warrant scrutiny. Under Parliament's Standing Orders (as revised in 2020), subject committees will have up to 90 working days to report on any briefings referred to them by the Governance and Administration Committee. Will such reports be perfunctory and uncritical, or will they generate genuine political engagement?

Finally, will the preparation and publication of multiple departmental briefings be worth the effort? For instance, will they affect policy decisions and outcomes? Will they influence departmental advice and ministerial priorities? Will certain issues receive political attention that might otherwise have been ignored?

If not, should the exercise be abandoned or perhaps a different approach adopted (e.g. with a much smaller number of briefings and greater inter-departmental coordination)?

Of course, answering such questions will not be easy. Assessing 'impact', for example, poses difficult methodological issues, not least establishing appropriate counterfactuals. But surely, given the worrisome global context, current citizens and future generations deserve rigorous thinking, honest appraisal, and courageous endeavours – not timidity, half-heartedness, or superficiality.

Jonathan Boston
Editor

David Hall and Robert McLachlan

Why Emissions Pricing Can't Do It Alone

Abstract

This article explores whether emissions pricing is sufficient to achieve the low-emissions transition in Aotearoa New Zealand. It draws on a critical review of the international literature on emissions pricing, policy interactions and political economy to make three broad arguments. First, that emissions pricing alone cannot be expected to induce the necessary levels of behaviour change and technological transition in the urgent time frame required. Second, non-pricing policies can deliver emissions reductions, even within the context of emissions trading under a volume cap. Third, even if emissions pricing could induce sufficient change, there are political economy constraints on reaching the adequate price in a feasible and equitable way. Consequently, we argue that the weight of evidence lies with utilising emissions pricing as part of a policy mix.

Keywords environmental economics, emissions trading, climate policy, climate justice, just transitions

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There is strong agreement among economists that emissions pricing ought to play a central role in climate change policy. In the absence of emissions pricing, the climate impact of our choices as consumers, producers and investors is not reflected in market price signals, and behaviour is incentivised to contribute to damaging climate change (Aldy and Stavins, 2012). Among neoclassical economists in particular, emissions pricing is championed as the most efficient way to mitigate greenhouse gas emissions (Howard and Sylvan, 2015; Climate Leadership Council, 2019). This theoretical judgement is informed by the neoclassical commitment to maximising allocative efficiency and, therefore, favouring price signals over regulations.

As emissions pricing mechanisms are implemented around the world, there is an opportunity to match theory with empirical observation. Emissions pricing mechanisms are now implemented in at least 78 different jurisdictions; in 2021 a price will be paid on 22% of the world's emissions (World Bank, 2020). Perhaps the

Table 1: New Zealand's greenhouse gas emissions in 2016 and 2019, and target emissions in 2030
in million tonnes of co_2 equivalent

		2016	2019	% change	2030	% change
Carbon dioxide (CO_2)	Electricity	3.0	4.2	38%	1.3	-70%
	Food processing	2.7	3.2	20%	1.5	-55%
	All other industry	12.0	12.1	1%	9.4	-22%
	Buildings	1.6	1.8	11%	1.3	-24%
	Transport	15.0	16.2	8%	14.0	-14%
Gross CO_2 total		34.3	37.5	9%	27.5	-27%
Other long-lived gases	Agriculture	8.8	9.0	2%	8.0	-11%
	Forests	-13.8	-7.4	-46%	-11.6	57%
	Waste and fluorinated gases	1.8	2.0	11%	1.6	-20%
Net long-lived gases		31.1	41.1	32%	25.5	-38%
Biogenic methane	Agriculture	30.3	30.6	1%	27.1	-12%
	Waste	3.2	3.1	-5%	2.3	-26%
Gross all gases		78.5	82.2	5%	66.4	- 19%
Net all gases		64.7	74.8	16%	54.8	-27%

Source: McLachlan, 2021. Data for 2016 and 2019 emissions from UNFCCC, using AR4 emissions factors. The 2030 target emissions are extrapolated from the Climate Change Commission's (2021) demonstration pathway. 'Forestry' refers to LULUCF emissions using the Climate Chance Commission's 'NDC (averaging)' methodology.

most rigorous cross-country analysis is by Best, Burke and Jotzo (2020), who estimate that the 43 countries with a carbon price have on average had annual CO_2 emissions growth rates that are about two percentage points lower than those of the 99 countries without a carbon price, all else being equal. A review of the European Union emissions trading scheme, the world's longest running, estimates that emissions in energy and industry were reduced by 3.8% between 2008 and 2016 (Bayer and Aklin, 2020). The modest impact of emissions pricing is corroborated by other reviews and ex post evaluations (Haites et al., 2018; Narassimhan et al., 2018; Tvinnereim and Mehling, 2018; Rafaty, Dolphin and Pretis, 2020). Lilliestam, Patt and Bersalli (2020) and Green (2021) draw more pessimistic conclusions, while others argue that the impact of emissions pricing is constrained by its relative novelty and historically low prices (van den Bergh and Savin, 2021). In sum, the empirical record is incomplete and evolving, but corroborates the efficacy of emissions pricing instruments by demonstrating a modest, positive impact.

Still, even if we accept that emissions pricing is efficacious, is it *sufficient* as a policy response to climate change? Arguments to the affirmative are becoming increasingly adamant in Aotearoa New Zealand (Hartwich, 2021; Prebble, 2021; Hazeldine, 2021). What unifies these opinion pieces is, first, their shared appeals to a supposed economic consensus to justify the sufficiency of emissions pricing and, second, their claim that the Climate Change Commission should be disregarded, if not dismantled, for recommending a policy mix that goes beyond emissions pricing. However, this is inconsistent with domestic and international experience, and betrays a disconnect from the specialist literature on the applied economics of climate change. As we find in this literature review, there is no consensus on the sufficiency of emissions pricing and, if anything, the evidence leans towards the opposite conclusion.

The literature on policy mixes and interactions in environmental economics is substantial (Jaffe, Newell and Stavins, 2005; Stern, 2006; Bennear and Stavins, 2007; Hood, 2011; Rogge and Reichardt, 2016; Kivimaa and Kern, 2016; Waisman, de Coninck and Rogelj, 2019; van den Bergh et al., 2021).[1] Drawing on such insights, many economists who work on climate change – including those who advocate for emissions pricing – conclude that emissions pricing *alone* is inadequate to drive a low-emissions transition. For example, a key textbook on the subject, *The Economics and Politics of Climate Change*, remarks that

> a carbon price would be sufficient to internalize the greenhouse externality in a world without any imperfections. *But, in our imperfect world, a carbon price alone is inadequate*, given the urgency of reducing emissions, the inertia in decision-making, and the other market imperfections, including those relating to low-carbon R&D. So *a carbon price is a necessary, but not a sufficient, component* [of global climate policy]. (Hepburn and Stern, 2009, p.4, emphasis added)

More recently, an expert workshop in the United States concluded that 'carbon pricing cannot stand alone. Politically feasible carbon pricing policies are not sufficient to drive emissions reductions or innovation at the scale and pace necessary' (Jenkins, Stokes and Wagner, 2020).

Some argue that emissions pricing is at best a marginal factor in behaviour change, at worst a distraction (Patt and Lilliestam, 2018; Rosenbloom et al., 2020). But even those who defend emissions pricing will often accept that emissions pricing should be part of a diverse policy portfolio. For example, Kirchner, Schmidt and Wehrle (2019) defend

> what we believe has been the consensus for many years now, namely that the deep decarbonization of our economies essentially requires a comprehensive and disruptive policy package that includes carbon pricing among other measures, such as technology-specific support schemes.

There are climate economists who endorse a more purist approach to emissions pricing (Nordhaus, 2013; Parry, 2019), but this is far from being a professional consensus.

In short, even if the *efficacy* of emissions pricing is granted, it does not follow that emissions pricing is *sufficient* to meet New Zealand's domestic targets and international commitments, let alone to make a fair contribution to global emissions reductions consistent with thresholds such as 1.5°C or 2°C (see Table

1 for how steep those reductions need to be). As Tvinnereim and Mehling (2018) conclude:

> Empirical studies show that carbon pricing can successfully incentivise incremental emissions reductions. But meeting temperature targets within defined timelines as agreed under the Paris Agreement requires more than incremental improvements: it requires achieving net zero emissions within a few decades.

Table 2. Barriers to the low-emissions transition.

Barrier	Description
1. Imperfect or asymmetric information	Inability to make informed decisions due to lack of accurate and intelligible knowledge about costs and emissions.
2. Uncertainty about future emissions prices	Inability to make informed decisions due to uncertainty about future prices, often as a result of regulatory variation.
3. Split incentives	Instances where the person who pays for an action is not the one who benefits from that action, and therefore lacks the incentive to act. For example, a building owner lacks the incentive to invest in energy efficiency gains that tenants will benefit from.
4. Bounded rationality and myopia	Inability to make informed decisions due to mental heuristics and cognitive biases that distort judgments of economically rational outcomes.
5. Barriers to accessing capital	Inability to access finance to meet the up-front capital costs of emissions reductions.
6. Infrastructure lock-in	Unresponsiveness of systems to changing incentives due to the long life and long lead-in time of fixed infrastructure.
7. Network externalities	Instances where the benefits to an individual from using a product depend on how many others are also using the product. For example, availability of charging infrastructure for EVs may depend upon a critical mass of EV users.
8. Policy coordination or regulatory failure	Inefficiencies and conflicts that result from suboptimal interactions between policies.
9. Co-benefits or other externalities	Public and private value of policies in addition to abatement value, thus favouring a multi-solving policy that addresses overlapping policy challenges. For example, native forest can contribute biodiversity value and landscape resilience in addition to carbon sequestration.
10. Innovation and learning spillovers	The co-benefits of innovation and learning where knowledge from one technology 'spills over' to support further innovation for other technologies.

Can the ETS alone drive the low-emissions transition?

The primary pricing instrument in Aotearoa New Zealand is the New Zealand emissions trading scheme (NZ ETS). Yet, as Leining, Kerr and Bruce-Brand (2020) conclude, 'the NZ ETS has not significantly reduced domestic emissions to date'. The reasons for this inefficacy are well canvassed: in particular, the absence of an effective cap on unit volume, unlimited exposure to units of low integrity through international linking, and various transitional measures, such as one-for-two surrender obligations and a fixed-price option, that diluted the price signal. These limitations were partly unintentional design flaws, partly intentional adjustments to 'moderate' the economic impacts of the NZ ETS after the global financial crisis (Hall, 2021).

Of course, this does not mean that the NZ ETS is not capable of driving technological and behavioural change in the future. Successive governments have introduced changes to ETS settings to improve its efficacy, including the cessation of international linking, introduction of a flexible cap on emissions, the phasing out of various transitional measures, and the institutional commitment of the Climate Change Response (Zero Carbon) Amendment Act 2019. Consequently, the price of New Zealand emission units (NZUs) has risen substantially since its nadir in 2013 at NZ$1.45 per tonne to over $60 per tonne. The New Zealand government has also updated its price control settings to mandate an upward trajectory: the price corridor will increase to $30–70 in 2022, and to about $40–110 in 2026 (Ministry for the Environment, 2021c). The upward bounds of these settings would see the NZ ETS trending just below current EU ETS prices, which were 62 euros (NZD$105) per tonne in September 2021.

Consequently, it is reasonable to expect that the NZ ETS will drive greater emissions reductions than it historically has. Its price signal is stronger than ever before. Also, the ETS now has a descending cap on unit volume to be set with regard to emissions budgets. But will associated emissions reductions be substantial enough and certain enough to render other sorts of policy unnecessary?

The Climate Change Commission expects not and recommends instead a 'comprehensive policy package' (Climate Change Commission, 2021, ch.11). Echoing the foundational analysis of 'planetary economics' by Grubb, Hourcade and Neuhoff (2014), emissions pricing is one of three policy pillars, alongside policies to overcome non-price barriers, and to enable innovation and system transformation. The commission argues: 'International research and experience clearly show that the most effective approach … is emissions pricing that works in conjunction with companion policies that help to provide a wider range of low-emissions options' (Climate Change Commission, 2021, p.213). It further identifies 'a range of structural, political and behavioural barriers that prevent people and businesses from making the most of cost-effective opportunities to reduce emissions' (ibid., p,215), which are summarised in Table 2.

This acknowledgement of barriers is not inconsistent with neoclassical economics. Some economists (Bennear and Stavins, 2007; Jenkins, 2014; Stern and Stiglitz, 2021) arrive at this conclusion via the theory of the second best. On this view, emissions pricing might be the 'first-best' response to what Stern (2006) famously described as 'the greatest and widest-ranging market failure ever seen'. However,

Table 3. Type-purpose instrument typology (with instrument examples)

	PRIMARY PURPOSE		
PRIMARY TYPE	Technology push	Demand pull	Systemic
Economic instruments	RD&D* grants and loans, tax incentives, state equity assistance	Subsidies, feed-in tariffs, trading systems, taxes, levies, deposit-refund-systems, public procurement, export credit guarantees	Tax and subsidy reforms, infrastructure provision, cooperative RD&D* grants
Regulation	Patent law, intellectual property rights	Technology/performance standards, prohibition of products/practices, application constraints, planned obsolescence	Market design, grid access guarantee, priority feed-in, environmental/tort liability law
Information	Professional training and qualification, entrepreneurship training, scientific workshops	Training on new technologies, rating and labelling programs, public information campaigns, disclosure and reporting requirements	Education system, thematic meetings, public debates, cooperative RD&D* programs, clusters

Source: Rogge & Reichardt (2016). * RD&D = Research, development and demonstration.

we live in a 'second-best' world which is characterised by multiple constraints on achieving the optimal conditions. The failure to integrate these constraints into integrated assessment models is cause for growing consternation within the climate-modelling community (Fisher-Vanden and Weyant, 2020; Peng et al., 2021). Meanwhile, economic models that incorporate real-world constraints are more attuned to the insufficiency of emissions pricing than is conventional macroeconomic modelling that relies upon first-best assumptions (Stenning, Bui and Pavelka, 2020).

Consequently, there is a role for second-best responses that address market and policy failures, as well as limitations on institutional capacity, prohibitive transaction costs and challenges of political economy. Table 2, adapted from Rogge and Reichardt (2016), identifies a diverse array of economic, regulatory and informational instruments with distinct policy purposes, either to encourage technological innovation and uptake (technology push), to influence consumption (demand pull), or to recalibrate the wider enabling environment (systemic). Note that, on this typology, supply-side measures, such as moratoriums on oil and gas extraction, or the proposed Fossil Fuel Non-proliferation Treaty (Newell and Simms, 2020), fall under the demand pull type.

As Bennear and Stavins (2007) put it, 'Different instruments are appropriate for different types of problems in different circumstances. The challenge is to determine the conditions under which each instrument, or set of instruments, is the appropriate choice.' Interactions among overlapping instruments 'can be detrimental or beneficial' (Fankhauser, Hepburn and Park, 2011), which poses the challenge for policymakers to avoid the former and pursue synergistic policy combinations. We cannot here do justice to the factors that ought to determine choice; suffice to say that economic efficiency is only one of many, which might also include effectiveness, political feasibility, ease of implementation, policy harmonisation, equity or distributional impacts, competitiveness and social acceptability (van den Bergh et al., 2021; Peñasco, Anadón and Verdolini, 2021).

The case of transport: changing systems

To flesh out the argument so far, road transport is an illuminating example. Road transport contributes nearly 43% of New Zealand's energy-related CO_2 emissions, rising by 8% in the three years to 2019 (from 13.6 to 14.7 megatonnes) and projected to rise further (Ministry for the Environment, 2021a). Aotearoa has the highest rate of car ownership in the OECD and the fifth-highest per capita rates of CO_2 emissions from road transport among the 43 OECD countries (OECD, 2017). Light vehicle emissions are 2.65 tonnes CO_2 per person in Aotearoa, compared to 1.3 tonnes in the EU (Buysse and Miller, 2021). Recent modelling by the Ministry of Transport found that, to align with the Climate Change Commission's demonstration pathway of a 41% reduction in transport emissions below 2019 by 2035, there would need to be a 39% reduction in light vehicle distance travelled, a 27% increase in electric vehicle uptake, and increased use of public transport, biofuels and electrification of heavy vehicle like trucks and buses (Ministry of Transport, 2021).

In theory, emissions pricing should incentivise change in transport behaviour. The logic is straightforward: by internalising the costs of climate change into transport decisions, behaviour should shift away from high-emissions transport options towards low-emissions alternatives. Internationally, however, even relatively aggressive pricing has had minor effects on transport emissions. Consider Sweden's carbon tax, the highest in the world and one of the oldest, introduced in 1991 at SEK250 and rising to SEK1,200 (NZ$196) today. Andersson (2019) finds that, in its first 15 years, the carbon tax reduced transport emissions by 6.3%. The scale of impact is disappointing.

Economic modelling of emissions pricing in Aotearoa New Zealand reinforces the point. Hasan (2020) estimates that, to reduce road transport emissions by 44% by 2030, a carbon price of $235/t$CO_2$ is required. An even weaker result comes from recent modelling by the Ministry of Business, Innovation and Employment (2021) which compares a high price pathway that rises from $84/t in 2025 to $250/t in 2050 with a counterfactual reference scenario that assumes a constant $35/t in real terms. The high price pathway only realises a 12–18% reduction in transport sector emissions by 2050, rather than the 84% reduction that is required.

Why such unresponsiveness to high prices? Road transport is an illustrative example of carbon lock-in – that is, 'the interlocking technological, institutional and social forces that can create policy inertia towards the mitigation of global climate change' (Unruh, 2000). Like other developed nations, New Zealand has a car-dependent transport system produced by

the over-provision of car infrastructure, inadequate provision of public transport, the facilitation of urban sprawl, mass production in the automotive industry, and the emergence of 'car cultures' which shape human desires and preferences (Mattioli et al., 2020).

It follows that decarbonisation of the transport sector requires substantive socio-technological change. But emissions pricing alone is unlikely to induce such change. Recent reviews (Tvinnereim and Mehling, 2018; Green, 2021; Lilliestam, Patt and Bersalli, 2021) find that, although emissions pricing can induce incremental, short-term operational effects in the energy and transport sectors, such as fuel-switching and energy efficiency, there is thin empirical evidence of technological change, especially as evidenced by zero-carbon investment and innovation. Other analysts argue that the effects are small but not insignificant, and a contingent function of historically low prices (van den Bergh and Savin, 2021). Even so, these analysts concur that deep decarbonisation requires a policy mix.

Consequently, transport researchers are already applying such insights to the design of an integrated policy mix (Axsen, Plötz and Wolinetz, 2020) to address barriers to change. Tellingly, transport is the only sector for which the Climate Change Commission (2021, p.218) proposes fixes for all ten types of market barrier (see Table 2), with a combination of vehicle emissions efficiency standards (to address barriers 1–4 and 10), cost reductions for EVs (2, 4–6), phase-out dates (2, 4), investment in charging infrastructure (6), greater transport alternatives through public and active transport and integrated urban design (6, 8–9), support for low-carbon fuels and mode shifting for heavy transport and freight (6, 10), and adoption of government targets, strategies and shadow pricing (8). Deploying a broad suite of measures to induce technological change is consistent with the transport sector's relative unresponsiveness to emissions pricing.

There are other rationales for going beyond emissions pricing. A virtue of emissions pricing is that, under ideal conditions, it motivates the least-cost emissions reductions. This is the logic of marginal abatement cost (MAC) curves, which are designed to organise abatement options from the most to the least cost-efficient, with the implication that decision makers should start with the former and work progressively towards the latter (e.g., Ministry for the Environment, 2020). As a strategy for decarbonisation, however, MAC curves have numerous weaknesses, one of which is the implication that action ought to be delayed in critical sectors until emissions pricing reaches a certain threshold, only after which expensive sectoral abatement becomes economic. This recommends an abrupt transition that will be needlessly costly, because complex logistical tasks (such as importing EVs and installing charging infrastructure) will be attempted only once the price threshold is reached. This is unrealistic and inefficient: 'In sectors that are particularly expensive and difficult to decarbonise, like transportation, it is therefore preferable to start early to make the transformation as progressive and smooth as possible, minimising long-term costs' (Vogt-Schlib, Meunier and Hallegatte, 2018).

To be clear, this is not a matter of abandoning the efficiency criterion. It is a matter of replacing a static conception of efficiency which is biased towards the present with a dynamic conception of efficiency that stretches across multiple decades. Only on this longer view does the strategic challenge of societal decarbonisation come fully into view. As Patt and Lilliestam (2018) put it, 'Carbon taxes stimulate a search for low-hanging fruit. That ceases to matter when we know we must eventually pick all of the apples on the tree.'

Moreover, if the challenge is technological and structural change, then there is a substantial empirical and theoretical literature on socio-technical transitions which treats the complex problems of lock-in and technological incumbency as central to its analysis (Geels et al., 2017; Loorbach, Frantzeskaki and Avelino, 2017). This literature also has a strong empirical basis by deriving insights from how technological transitions have actually occurred in history (Cantner et al., 2016). On this view, socio-technical transitions are non-linear processes of change that result from interactions between the growth of niche innovations, the weakening of incumbent systems, and increased pressures from the wider social, economic and cultural landscape. Potentially, these processes can be accelerated by the strategic activation of tipping points, where self-reinforcing feedback loops create cascades of technological diffusion, such as rapid EV uptake in Norway and the displacement of coal by renewable energy in the United Kingdom (Lenton, 2020; Sharpe and Lenton, 2021; Farmer et al., 2021). Consequently, transition-oriented approaches place a strong emphasis on proactive strategies to induce change through anticipatory and mission-oriented governance (Tõnurist and Hanson, 2020; Mazzucato, 2021). This places a strong emphasis on the role of research and development and innovation policy, but ultimately involves pragmatic support for whatever changes will destabilise incumbent systems and support the dispersal of alternatives (Geels and Schot, 2007). Emissions pricing is critical as a

> Emissions pricing is critical as a system-wide lever … particularly to weaken the market advantage of high-emissions systems and assist the cost-competitiveness of low-emissions alternatives.

system-wide lever (van den Bergh and Botzen, 2020), particularly to weaken the market advantage of high-emissions systems and assist the cost-competitiveness of low-emissions alternatives. But on a systems view, pricing might be the complementary policy, while non-pricing policies such as technological support and regulation are the main act.

Can the ETS alone ensure that the transition is just?

Further reasons for policy mixes relate to the constraints of political economy (Jenkins, 2014; Mildenberger, Lachapelle and Harrison, 2020). Individuals and organisations, rather than respond to a price mechanism by mitigating emissions, may instead attempt to suppress or avoid emissions pricing by exercising political influence. This may occur through political lobbying and petitioning, political party donations, submissions to policy consultations, tactical voting, even protest and civil disobedience. Consequently, emissions pricing produces its own political headwinds which result in its moderation, selective exemptions or even (in the case of Australia's carbon pricing scheme) its own undoing (ibid., ch.6).

On the flipside, emissions pricing might also lack broad-based constituencies of support. Indeed, Meckling and Allan (2017) show that it is precisely complementary policies that help to build actual support for pricing instruments. Green innovation and industrial policy reduce the burden of emission pricing by helping low-emissions technologies to 'travel up the learning curve and down the cost curve' and create new interest groups that see a competitive advantage from emissions pricing.

There is a significant literature on resistance to climate action by companies and individuals who self-interestedly seek to avoid the costs of internalising externalities (Supran and Oreskes, 2017). As a timely example, Exxon Mobil was recently exposed for publicly endorsing emissions pricing in the US on precisely the grounds that it is politically unfeasible and therefore a costless signal for the company (Carter, 2021). It is easy to imagine a parallel argument in Aotearoa New Zealand; that is, to endorse a sole reliance on the ETS, knowing that elected officials could never tolerate the political consequences of raising prices to a level sufficient to meet emissions budgets and New Zealand's NDC (nationally determined contribution).

But emissions pricing faces resistance not only for self-interested reasons, but also for reasons of justice. Equity is an essential aspect of a just transition (Hall, 2019; White and Leining, 2021). Insofar as emissions pricing creates inequitable burdens, it therefore results in unjust transitions that lack political legitimacy and so are likely to be constrained by the negative feedbacks of political economy. The yellow jacket protests in France (*les gilets jaunes*) is a striking example, but not the only one (Green, 2021).

One issue is the different sectoral effects of a single price. Recent experience suggests that, in contrast to the transport sector, land use change is highly responsive to emissions pricing. Ministry for the Environment modelling suggested that the area of farmland economic to convert to forest as a function of marginal abatement cost is 4.7 million hectares at $50/t. At over $100/t, forestry conversions are economic across almost the entire 7.1 million hectares available for planting, which effectively displaces the entire sheep and beef sector, as well as dairy land. Although the speed of actual forestry conversions would be inhibited by various logistical bottlenecks (such as availability of land, labour and nursery supplies), investment behaviour is already starting to reflect these incentives. However, a reliance on large-scale, ETS-driven afforestation is highly questionable from the perspective of climate adaptation, given the strong incentives for exotic monocultures (Anderegg et al., 2020;

Puncturing the waterbed

One argument against overlapping policies within the context of the NZ ETS is that, even if additional policies succeed in reducing emissions, this merely frees up units for other emitters to use. This is the so-called 'waterbed effect', an analogy with the fixed volume of water in a waterbed, which, if squeezed in one place, bulges out elsewhere. Subsequently, it is argued that 'the ETS entirely neutralises other emissions policies' (Burgess, 2021).

However, under current conditions, where there is strong demand for units to bank in private accounts, it is far from certain that units freed up by abatement will be used by others in the short-term (Sandbag, 2016). Emitters are motivated by many factors beyond emissions pricing, and unit holders are motivated to sell at a higher future price. Consequently, many units will likely join the stockpile, already at 138 million units.

But does this not simply mean that the waterbed effect will occur across time, as stockpiled units trickle back into secondary markets in future? Not necessarily, because this can be managed by harmonising emissions budgets, ETS unit supply settings and emissions reduction plan measures as an integrated package. Policy design can 'puncture the waterbed' (Perino, 2018) so that, over the long run, abating one tonne of emissions results in an emission reduction of less than one tonne and more than zero.

In short, the waterbed effect is not an inevitability, it is a policy choice.[2]

Messier et al., 2021). There is also a lost opportunity to achieve more integrated outcomes that weave carbon into the landscape and maximise co-benefits such as biodiversity gains and disaster risk reduction (Hall, 2018). Finally, carbon-only forests lack social licence among rural communities (Collins and McFetridge, 2021), not least because regional economic activity is limited and long-term liabilities are potentially significant (Rau, 2021). Consequently, large-scale afforestation poses challenges for regional equity (Frame, 2019) because rural economies are disproportionately exposed to the risks, whereas urban economies accrue many benefits by selling and purchasing offsets to deter decarbonisation in transport, energy and industry (McLaren, 2020).

Another equity issue is the regressive effect of emissions pricing on low-income households, who spend a higher proportion of their discretionary income on consumables. The regressiveness of this inflationary pressure is not inevitable (Sager, 2019), but it is more likely in developed countries with high economic inequality (Andersson and Giles, 2020), such as Aotearoa New Zealand. Indeed, a 2019 Treasury analysis found that the impact of emissions pricing on lowest income quintile households was twice that on the highest income quintile households. This is because emissions-intensive goods constitute a higher proportion of household spending for low-income households, and because '[w]ith fewer resources, lower income households will have lower ability to change behaviour or invest to reduce their exposure to emissions prices' (Ministry for the Environment, 2019, p.66). Māori are disproportionately exposed to this regressive impact, which demonstrates how the Crown can fail to uphold its partnership obligations to Māori by neglecting how climate change policy can reinforce and amplify historical and demographic inequities (Bargh, 2019).

A fix for inequity?

Distributional issues can be managed and ameliorated by integrated policymaking, such as labour market policies, public education and training, social assistance programmes, regional economic development, wider tax settings, and targeted financial and technical support with technology change.

It can also be managed through instrument design, in particular the targeted use of revenue raised by emissions pricing. Notably, the government recently announced that it will hypothecate revenue from the auctioning of NZUs towards the low-emissions transition. Over 2021–25, auctioning 89.6 million units with an estimated average price of $35/t would generate $3.1 billion in revenue (Ministry for the Environment, 2021b), but at the current price of $65/t that implies a total revenue of $5.8 billion. International survey evidence shows that people are more amenable to emissions pricing if the revenue is recycled (Baranzini and Carattini, 2017) – either diverted into climate mitigation and adaptation projects, or redistributed as a payment to households, often known as a climate dividend (Klenert et al., 2018). Evenly split among New Zealand's population, this latter option would create an annual dividend of about $125–233 per person (assuming a price range of $35–65/t).

If the only thing at stake were inequity, a climate dividend might provide a substantive solution. Yet empirical research on these redistributive mechanisms is rather less conclusive. Indeed, analysis of existing climate dividends in Canada and Switzerland reveals that public support for dividends is ambivalent, with people's attitudes shaped more by political orientation than the dividend itself (Mildenberger, Lachapelle and Harrison, 2020).

First, there is a strong cognitive element. A recent survey of French households tested a climate dividend proposal, yet found only 10% in favour and 70% in opposition, because most households wrongly believed that this progressive scheme would not benefit them (Douenne and Fabre, forthcoming). Of course, mere disapproval should not be decisive against implementing a policy, especially when disapproval rests on false beliefs. However, if the primary purpose of the carbon dividend is to enhance the political legitimacy of emissions pricing, then it is not obvious that a carbon dividend alone will succeed (at least not without a complementary communications strategy to overcome the barrier of bounded rationality). Moreover, if enhancing legitimacy is the objective, then it is notable that using revenue for climate-aligned investments is generally preferred over climate dividends by survey respondents overseas (Baranzini and Carattini, 2017; Douenne and Fabre, 2020).

> In short, the NZ ETS is symptomatic of 'the poverty of theory' that dominates contemporary policymaking, which treats 'policy instruments as widgets', as tools to be applied to definite problems with predictable effects.

Second, if the purpose of the exercise is decarbonisation, then why not reduce the systemic barriers to the low-emissions transition, rather than merely moderate the maldistribution of emissions pricing? If the problem is a car-dependent transport system, then individual annual dividends of $125–233 cannot help that much. These could contribute to the price of an e-bike or EV, or bus and train fares, but cannot overcome the lock-in factors that favour private vehicles, such as urban sprawl, car-centric infrastructure, inadequate public transport, and so on. What might instead

make the difference is public investment in public infrastructure, such as cycleways or public transport options, in order to induce a socio-technical transition. This is the approach taken in the EU, Quebec and California, which redirect ETS auctioning revenue to sectors such as transport, renewable energy, energy efficiency, research and development and adaptation (Santikarn et al., 2019). Without substantial investment, without the expansion of choice that a multi-modal transport system allows, households will remain exposed to the emissions price, and so transport-related costs will increase as a proportion of household spending. In Aotearoa New Zealand, transport already accounts for a significant proportion (16%) of household spending, just behind food (17%) and housing (26%) (Statistics New Zealand, 2019).

> transport, and where rent or the price of housing closer to work are not within the reach of many on a modest budget, [so] the sacrifices must involve other areas of life, such as food, clothing, or the ability to go on holiday. (Devellennes, 2021, p.84)

For low-income households, inelasticity entails regrettable trade-offs in household spending; meanwhile, high-income households might also be inelastic to price because they can afford to bear the additional carbon costs. As long as private vehicles remain a necessity, increased emissions pricing can intensify economic inequalities without overcoming the causes of price inelasticity.

Emissions pricing is clearly insufficient as a sole response to climate change mitigation, particularly at this current juncture where deep, drastic reductions in greenhouse gas emissions are required.

The issue of price elasticity is critical here. Price elasticity is a measure of a market's response to price changes. If a market is elastic with respect to emissions pricing, then people are responsive to the higher costs of emissions-intensive goods and services – for example, by switching to low-emissions alternatives or reducing consumption. However, elasticity in transport is a function not only of emissions pricing, but also of other price factors, availability of alternative transport options, demographic factors, land use and urban form, and demand management strategies (for review, see Litman, 2021). It is telling that the *gilets jaunes* protests first manifested in peri-urban and rural France,

> where there is no practical alternative to the personal car as a mode of

A lack of recognition

The example of *les gilets jaunes* speaks to one final issue: the shortcomings of the governance regimes that often uphold emissions pricing. Resistance to France's fuel tax was not only a protest against the economic injustice of emissions pricing, but also, 'for many, a desperate plea to be seen and be heard, to be recognized as human beings with legitimate interests and needs' (ibid.). In other words, the injustice of the fuel tax related not only to equity, but also inclusivity; not only the politics of redistribution, but also the politics of recognition – that is, the human need to have one's experience acknowledged, validated and treated with equal respect.

The NZ ETS was not designed or implemented with such matters in mind (Driver, Parsons and Fisher, 2018). Furthermore, the NZ ETS's complexity confounds not only the public and their political representatives, but even the journalists who might simplify and explain its mechanics (Mitchell, 2020). This is not an instrument that easily permits a sense of understanding or participation among citizens.

Again, this is not a sufficient reason to dispense with the NZ ETS, but it is reason to be clear-eyed about its political frailties. If prices rise and contribute noticeably to living costs or other unjust impacts, the NZ ETS cannot assume strong loyalty and buy-in from the public, even among those who support climate action. Although it is designed to preserve free choice as a market instrument, its imposition of a price may still be perceived as a form of domination by those it most affects. This speaks to its practical value of creating an incentive – that is, an extrinsic motivation – to change the behaviour of economic agents who otherwise lack the interest to act on climate change. However, there is an associated risk of thereby crowding out people's intrinsic motives to act (Rode, Gómez-Baggethun and Krause, 2015), such as the common human desire to enhance prosperity for one's children and for future generations.

In short, the NZ ETS is symptomatic of 'the poverty of theory' that dominates contemporary policymaking, which treats 'policy instruments as widgets', as tools to be applied to definite problems with predictable effects. Actually these instruments are 'made and remade in specific contexts … mutate as they travel … [and] are never divorced from politics' (Boyd, 2021, p.472). Refocusing our attention on the politics of climate change – not merely as a source of inconvenience, hindrance and irrationality, but also creativity, local intelligence and sovereign power – might help us to meet the scale, complexity and urgency of the climate challenge.

Conclusion

Emissions pricing is clearly insufficient as a sole response to climate change mitigation, particularly *at this current juncture where deep*, drastic reductions in greenhouse gas emissions are required. The NZ ETS can play an important role in encouraging efficiencies and operational change by creating a price, and also exercises a limit on cumulative emissions by managing

volume. But deep decarbonisation and technological change will require transition-oriented policies that are committed to transforming systems in ways that ensure just outcomes and secure broad, enduring public support.

In Donella Meadows' classic analysis of leverage points – that is, 'places in the system where a small change could lead to a large shift in behaviour' (Meadows, 2008, p.145) – she acknowledges the power of pricing externalities, of '[s]trengthening and clarifying market signals, such as full-cost accounting' (ibid., p.154). Critically, though, there are other leverage points she regards as more important, as more capable of inducing systems change. She talks about reinforcing feedback loops which induce growth and collapse, information flows that help a system to understand itself, rules and the power to impose them, and the capacity of complex systems to self-organise and adapt. Above all, however, she talks of goals and paradigms. Reset the purpose or function of systems, or transcend the mindset out of which the system arose, and transformative change is possible.

It is perhaps no coincidence that an absolutist stance on emissions pricing – despite all the evidence in favour of policy mixes – has intensified at the same time that the paradigm of neoclassical economics is losing its pre-eminence in environmental economics and policy (Galbraith, 2020). As discourse analysis (Meckling and Allan, 2020) shows, in the early to mid-2000s the prevalence of neoclassical economics gave way to greater policy diversity, especially through the mainstreaming of post-Keynesian and neo-Schumpeterian accounts of the green economy. After the global financial crisis, these latter paradigms retained their influence while market-based policy lost ground. This paradigm shift underpins the reframing of the climate challenge from 'a zero-sum to a win–win logic' (ibid.), which treats climate action as an economic opportunity for green innovation and industrial policy rather than merely a cost. The demotion of emissions pricing from the status of panacea to just one element in the policy mix is a sub-theme in this larger story. And this paradigm shift is potentially the leverage point that will make the greatest difference.

1 Further references are available in a longer version of this article, available at planetaryecology.org.
2 See further discussion of the waterbed effect in the longer version of this article at planetaryecology.org.

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Catherine Iorns

Climate Adaptation Law Reform

a lot of argument still to come

Abstract

New Zealand's existing law and policy is not adequate to provide for appropriate adaptation to the effects of climate change. The government has adopted recommendations to replace the current Resource Management Act with a new suite of resource management laws, including for climate adaptation. The recommendations include bold measures to ensure that people and property are not subject to climate hazards in the future, and for funding mechanisms to enable the required changes. Much policy is still to be developed but the potential exists for better adaptation planning and decisions, with more certainty and lower litigation risks. This article summarises the proposed reforms and comments on how well they provide what is needed for better climate adaptation laws.

Keywords sea level rise, New Zealand, policy challenges, Resource Management Act, Randerson panel, law reform

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Sea level rise due to climate change will substantially increase damage from flooding, storm surges and landslips (Parliamentary Commissioner for the Environment, 2015). Some coastal locations have already become uninhabitable, due to either sudden-onset disasters or a series of smaller events that accumulate to large losses, with coastal residents forced to relocate (James, Iorns and Gerard, 2020). We will need to prevent future development in hazardous areas, and reconsider the continuation of existing coastal development.

Unfortunately, it is not easy to achieve the necessary climate adaptation under existing laws and policies. Various researchers have identified that New Zealand's existing law and policy are not adequate to provide for appropriate adaptation to the effects of climate change. For example, Boston and Lawrence (2017, 2018) argued for a national mechanism to fund the costs of climate adaptation nationally and share them, both intra-generationally and intergenerationally. The Climate Change Adaptation Technical Working Group (2018) recognised the need for proactive planning, and improvements in leadership, funding, capability and capacity building, and information to support decision making. The New

Zealand Productivity Commission report on local government funding stated that a national legal framework for climate change adaptation was urgently required and stressed the need for central government funding for adaptation measures (Productivity Commission, 2019). Under the umbrella of New Zealand's National Science Challenges, more detailed research has been conducted into the operation and evaluation of laws relating to EQC insurance (James, Iorns and Watts, 2019), adaptation decision making and options under the Resource Management Act (Iorns and Watts, 2019), managed retreat and other ways of dealing with existing uses (Grace, France-Hudson and Kilvington, 2019; Tombs and France-Hudson, 2018), and the overall equity of the sharing of risks (Ellis, 2019; Tombs et al., 2021). All of the recommendations focus on the need for better decision-making rules, standards and processes for adaptation to climate hazards in Aotearoa.

In 2019 the government commissioned an independent review of the Resource Management Act (RMA) by a Resource Management Review Panel, chaired by Tony Randerson, QC (frequently referred to as the Randerson panel). The panel's terms of reference included a climate focus: increasing New Zealand's resilience to manage climate change risks, enabling decision making that can better reflect the needs and interests of the wider community, including those of future generations, and ensuring that the RMA aligns with the government's other work and institutions responding to climate change.

In June 2020 the panel produced an extensive, 531-page report which recommended comprehensive law reform, involving replacement of the current Resource Management Act with three separate pieces of legislation:

- a Natural and Built Environments Act, addressing the development and protection of our natural environment, with more effective protection of natural environmental limits and more mandatory national goals, guidelines, standards and rules;
- a Strategic Planning Act, to address uses of land and the coastal marine area across the country in a planned and more managed way; and
- a Managed Retreat and Climate Change Adaptation Act, in order to provide for the complexities of climate adaptation, including particularised legal rules and a long-term funding mechanism.

One unfortunate feature of the lack of national direction is the fear of 'additional litigation' challenging any council that tries to formulate plans and policies ...

In February 2021 the government announced that it would proceed with reform of the RMA in line with the panel's recommendations. The drafting process has included the release of an exposure draft of part of the Natural and Built Environments Bill, to enable a parliamentary select committee to consider some key provisions early in the process (New Zealand Government, 2021). The Environment Committee reported in early November 2021, largely approving of these provisions (Environment Committee, 2021). It is intended that the Natural and Built Environments Bill and the Strategic Planning Bill will be introduced to Parliament in 2022, and the proposed Managed Retreat and Climate Change Adaptation Bill in 2023. While the timing differs, policy for all three will be developed closely so that 'linkages between the proposed pieces of legislation are maintained' (Minister for Climate Change, 2020).

This article summarises the climate adaptation reform proposals, and comments on how well they appear to meet the law reform needs identified.

Resource Management Review Panel report

The Resource Management Review Panel report identifies at a broad level all of the significant issues that have caused insufficient adoption of appropriate climate adaptation measures. It notes the low priority of consideration of the effects of climate change in part 2 of the RMA, as well as a lack of a proper framework within the RMA for considering future risks. The effects-based approach of the RMA does not lend itself towards a proactive risk management approach (Resource Management Review Panel, 2020, p.171).

To solve these issues, the panel's report proposes a comprehensive reform package with underlying principles that are different from those of the current legislative regime, plus significant reforms that are explicitly designed to better enable adaptation to the effects of climate change. Significantly, the proposals include some radical alterations to the protection of existing property rights and related measures to enable managed retreat from hazard risks. However, despite the report's overall size, breadth and depth in some areas, only one chapter of 26 pages is devoted to 'Climate change and natural hazards', and this chapter addresses both mitigation and adaptation options. While it looks like all needed reforms will be addressed, success is not guaranteed: significant matters of principle have not yet been decided, let alone the eventual rules drafted.

National guidance

'A lack of national direction and guidance from central government' was said to be the primary failing of the current laws on climate adaptation. This lack of direction includes development at a national level of 'science, data and information needed, as well as best-practice planning approaches' (ibid., p.172). Without such guidance, local decision makers have had difficulty adopting climate adaptation measures, and thereby have not been reducing the risks of future natural hazards. One unfortunate feature of the lack of national direction is the fear of 'additional litigation' challenging any council that tries to formulate plans and policies: without clear standards there is more room for argument over the most appropriate and even legally correct option (ibid., p.196; see also Iorns and Watts, 2019).

The primary element of national guidance proposed is an extensive set of

principles within the Natural and Built Environments Act to help guide and interpret decision-making powers and standards under the Act. The most significant for our purposes is the explicit outcome statement in what is now clause 8 of the exposure draft:

> Environmental Outcomes:
> To assist in achieving the purpose of the Act, the national planning framework and all plans must promote the following environmental outcomes:
> …
> (p) in relation to natural hazards and climate change,–
> (i) the significant risks of both are reduced; and
> (ii) the resilience of the environment to natural hazards and the effects of climate change is improved.

Focusing on outcomes could be a key advantage over the current RMA balancing. Promoting an outcome is not simply taking a matter into account or even paying it 'particular regard' (RMA, s7); it instead suggests that these outcomes be achieved. This leaves less discretion to decision makers to balance out reducing coastal hazard risks with economic coastal development and its associated income, for example. This produces more certainty for councils and less room for challenge by those unhappy with provision for such outcomes.

To implement this directive, the panel proposed a section requiring the Minister to provide national direction to 'identify and prescribe: … methods and requirements to respond to natural hazards and climate change' (Resource Management Review Panel, 2020, p.486). The exposure draft provides that the 'national planning framework must set out provisions directing the outcomes described in' clause 8(p) (13(1), emphasis added). The panel suggests the following matters for such national direction:

- adaptation and natural hazard risk assessment methods and priorities for risk reduction
- specific risk information and mapping to be relied on (for example, projected sea-level rise)
- preference for nature-based solutions for climate change adaptation …
- approaches to facilitating the adaptation of indigenous species
- best practices for accommodating uncertainty, for example dynamic adaptive policy pathways planning …
- other technical specifications. (ibid., p.181)

It is essential that adaptation options be identified for species and other aspects of nature that will be at risk from the effects of climate change; their habitat needs must be prioritised as environmental bottom lines, before human needs are attended to …

I suggest that such mandatory direction is exactly what is needed to fill some current gaps in direction to local authorities. It will remove the current difficulty with having only optional national policy statements under the RMA: the proposed outcomes must be promoted and the national direction on how to implement them must be provided; they are not optional. This on its own will assist the adoption of adaptation measures by reducing arguments over the balancing of different priorities and thereby likely reducing litigation options. Additional, more detailed guidance on climate adaptation will still be necessary in the separate Managed Retreat and Climate Change Adaptation Act. For example, while the need to take a precautionary approach is recognised in the Natural and Built Environments Act (see the panel's proposed section 9(2)(g) and the exposure draft clause 18(g)), this currently refers to the need to protect only the natural environment, rather than a more proactive approach to risk management to protect the built environment in the face of climate change. I therefore suggest that principles specifically tailored to climate adaptation will need to be devised for that legislation.

I applaud the inclusion of 'approaches to facilitating the adaptation of indigenous species' in the list of matters for national direction. A focus on non-human species has been lacking from the national debate on adaptation to climate change. It is essential that adaptation options be identified for species and other aspects of nature that will be at risk from the effects of climate change; their habitat needs must be prioritised as environmental bottom lines, before human needs are attended to, as they have less flexibility in where they live, forage and breed.

One matter not specified by the panel but that other research identifies as being needed is more guidance on specific adaptation mechanisms (Iorns and Watts, 2019). The panel's stated preference for nature-based solutions addresses one aspect of choosing adaptation mechanisms. However, there are additional, specific mechanisms that could usefully be the subject of national guidance.

For example, specific guidance on how to best represent future risk information – such as on a land information memorandum (LIM) – would be a valuable topic. Doing this in the wrong way has already resulted in one council having its sea level rise science information ruled unacceptable and taken off LIMs in Kapiti.[1] Perhaps such guidance on specific options is expected to be included under 'other technical specifications', but it would be helpful to have it made clear that it would be so included, such as by adding 'specific adaptation mechanism options' to the above list.

For another example, to better handle retreat from future hazards, local

authorities need firm directives about the content of consents, including that the content of consents needs to be flexible so as to allow for conditions to relocate buildings when coastal hazard trigger points are reached (Iorns and Watts, 2019). While such flexible consent conditions were not specifically mentioned by the panel, enabling future retreat and changed options were explicitly provided for. For example, the recommended 'dynamic adaptive pathways policy planning' is based on different future scenarios and actions that could change depending on reaching pre-defined trigger points. Adopting this as best practice would (arguably) necessarily entail the adoption of mechanisms that enable such changes in choices, such as flexible consent conditions and other types of flexible instruments to apply to existing developments.

Even where detail is not provided – such as on the operation of activity status classifications – such hurdles are able to be overcome with attention to definition and the way they will function in plan making and other local authority decision making. Thus, the various different panel recommendations made – for both the adaptation-specific provisions in the Managed Retreat and Climate Change Adaptation Act and the more general directions in the Natural and Built Environments Act and Strategic Planning Act – make it look as though such matters *could* be resolved; it is just not clear yet that they will be.

One aspect of national guidance that is singled out for additional elaboration is that of appropriate planning processes. Adopting the right process for community decision making is essential in this area in order to achieve buy-in and adoption of the necessary time frames for achieving appropriate adaptation outcomes. The panel approves of the Ministry for the Environment guidance on the use of the dynamic adaptive policy pathways planning process (Resource Management Review Panel, 2020, p.182). This process provides a way for a community to identify the best adaptation options for the future, given different scenarios and trigger points for the emergence and eventuation of coastal hazards. The panel's recommendation better provides for building adaptive management into the plan-making process and embedding such pathways in plans, thereby better enabling flexibility and responsiveness when predicted hazards do arise.

> The [Resource Management Review] panel recognises that one of the key criticisms of council plan making under the RMA is that it is 'prone to litigation'.

Another key matter requiring new national guidelines is the '[l]ack of clarity in regard to roles and responsibilities' between regional councils and territorial authorities, in relation to both powers and costs (ibid., p.172). This has not been clear under the RMA and has already caused difficulties in relation to managed retreat: for example, whether or not regional authorities can enable retreat by amending land use rules. It is helpful that the reform also proposes to make such responsibilities explicit in the Local Government Act; this assists with integration of climate adaptation with infrastructure, transport and long-term plans (ibid., p.183).

The second intended piece of legislation – the Strategic Planning Act – proposes to 'provide a framework for mandatory regional spatial planning for both land and the coastal marine area' (key recommendation 2, ibid., p.155). Such '[r]egional spatial strategies should set long-term objectives for urban growth and land use change, responding to climate change, and identifying areas inappropriate to develop' (key recommendation 3, p.155). Spatial planning strategies will explicitly address adaptation (p.28) through identifying within each region 'areas that may be affected by climate change or other natural hazards, and measures that might be necessary to address such issues' (p.143). The panel suggests that regional spatial plans will also 'improve the alignment between the Natural and Built Environments Act and the CCRA [Climate Change Response Act 2002], including through consideration of national adaptation plans in regional spatial strategies and regional combined plans' (p.29).

The significance of this kind of planning is that it will hopefully reduce post hoc, emergency-style decision making in response to coastal hazards and encourage early, proactive adaptation decision making. Especially with the integrated responsibilities – such as in respect of infrastructure, transport, long-term plans, and the national adaptation planning under the Climate Change Response Act – competing priorities can all be discussed with the benefit of more time than where a risk eventuates and requires immediate action. Proactive planning also produces a wider array of future adaptation options, through not closing off options due to inappropriate development approvals.

The final recommendation from the panel in respect of national guidance for climate adaptation is the provision of a 'centralised pool of expertise to assist local government with policy development for climate change adaptation, including the ability to apply experience, broker partnerships, and supply templates, information and other common resources' (p.190). Some of this assistance will come through the national direction mentioned above on environmental management and land use regulation; however, the rest will be matters for implementation assistance outside of that. This recommendation addresses comments that have been made by local and regional governments consistently over the last few years (James, Gerard and Iorns, 2019; James, Iorns and Gerard, 2020). It is possible that this central pool of expertise could provide guidance on specific adaptation mechanism options, and thereby obviate the need for it to be

included in the list of mandatory matters for national direction.

Litigation

Litigation is a recurring concern of local authorities in respect of all RMA processes (Iorns and Watts, 2019; James, Gerard and Iorns, 2019; James, Iorns and Gerard, 2020). The panel recognises that one of the key criticisms of council plan making under the RMA is that it is 'prone to litigation'. Uncertainties about the science and the hazard risks, and about the best planning approaches to them, have led to litigation and fears of it; this has paralysed adaptation planning and other measures (Resource Management Review Panel, 2020, pp.226, 172). As the panel illustrates elsewhere in its report, some aspects of the current law

> are highly subjective matters which have led to considerable uncertainty and litigation. They are also commonly relied on by submitters as an argument for protecting the status quo. Our suggested way forward is to remove these references … and to require [clearer ones] to be specified in mandatory national direction. (p.74)

The panel accordingly makes recommendations designed to clarify the rules around adaptation processes and results (on p.152, for example), to establish consistency and thereby reduce contention and litigation opportunities. (The panel does not, however, discuss whether there should or should not be any liability shield, such as has been raised by several New Zealand councils (James, Gerard and Iorns, 2019, p.29).)

I agree that the use of national direction and guidance as proposed will significantly reduce the litigation risk over what government is allowed to do. Admittedly, the actions that will be needed to adapt to climate change will likely produce fierce opposition, given what is at stake: the loss of homes, land, financial values, community assets and amenities. However, it is still possible to adopt rules that reduce the use of litigation as an opposition tool. It must be remembered that councils have barely begun to adopt adaptation measures, and that nearly every measure that has been adopted to date has been challenged in court. Therefore, if adaptation planning and measures were adopted under the current system, councils would face a paralysing number of lawsuits. Not only would this be extremely expensive; it would also significantly delay the adoption of the adaptation measures in question and – as with mitigation – cause greater pain through the need for faster adaptation in the future as climate hazard risks increased.

The key difficulty that local authorities have in planning for retreat from future climate hazards is overcoming the status quo bias caused by strong protections in the RMA for existing uses ...

I therefore suggest that the biggest benefit of clarifying what measures can be chosen, through what process and by whom, is the prevention of litigation of such issues in the future. There will still likely be a greater number of challenges than there are today, because of the lack of actions taken by councils today. But the reforms will prevent or reduce the extent of the litigation that would have occurred in the absence of the proposed reforms. The benefit of addressing such significant issues in legislation is that the policy and rules are worked out in the political sphere in advance, rather than in an ad hoc, slow manner by courts.

For this to work, the various principles and rules have to be drafted properly. There is always a drafting choice between certainty and flexibility. When we are dealing with matters as important and expensive as people's homes and businesses, there will be legal challenges; lawyers on behalf of their clients will identify any uncertainty or terms with potential 'wiggle room' and try to push interpretations favourable to their clients. The need to discourage 'NIMBY'-type litigation suggests that certainty needs to outweigh flexibility. However, the uncertainty of how future hazard risks will eventuate suggests the need to be flexible in the choice of appropriate adaptation measures. The drafting of these new laws will have to navigate both these pressures, knowing that any misstep could result in maladaptation through litigation. While I suggest that there should be a lower litigation risk under the proposed legislation than there would be for adaptation continued under the current laws, there is still a lot riding on how these RMA reforms are drafted.

Existing uses and managed retreat

The key difficulty that local authorities have in planning for retreat from future climate hazards is overcoming the status quo bias caused by strong protections in the RMA for existing uses (Iorns and Watts, 2019). In a bold move, the panel recommends removing them.

The panel suggests that central government should have the power through national direction 'to modify or extinguish existing use protections and consented activities … This will enable central government to address these issues when a centrally driven solution is thought necessary' (Resource Management Review Panel, 2020, p.186). The panel also suggests that both regional and territorial authorities should have increased powers to review and modify consents and conditions, and that territorial authorities should be able to 'modify or extinguish established land uses' for purposes of adapting to natural hazard risks (pp.186, 163). Key means for achieving this are the removal of existing use protection under section 10 of the RMA, removing some grounds for challenging plan provisions,

and changing the existing rules for compensation.

While these powers are essential in order to address existing uses for effective climate adaptation, they go against strongly held views about personal property rights in Aotearoa. This would be a major change from the current system, and is likely to produce considerable objection from those affected. Indeed, they are likely to be the most highly contested areas of the reforms.

Because the removal of existing uses is so complex and requires addressing so many different issues, the panel proposes the separate statute for them: the Managed Retreat and Climate Change Adaptation Act. This is proposed to include:

- a fund to support climate change adaptation and reducing risks from natural hazards, including principles for cost-minimisation and burden sharing, and cost-sharing arrangements
- power under the proposed Natural and Built Environments Act to modify existing land uses and consented activities
- power to acquire land, with potential compensation determined through specified principles rather than market-valuation
- power to use taxes, subsidies or other economic instruments to incentivise changes in land and resource use
- engagement with affected communities
- engagement with Māori to address cultural ties to land
- impacts on insurance arrangements for land owners and local authorities
- obligations on local authorities to provide infrastructure
- liability issues for local authorities
- the potential role of the Environment Court for aspects of the proposals. (pp.189–90)

Funding for change

Changing people's expectations around established uses of private property will be difficult, especially if it is in order to avoid future risks that might seem distant. There will be conflict with priorities for nature, such as the need to accommodate other species' climate adaptation. And there will be significant stress and conflict due to home and other property losses and business disruptions. Key to dealing with existing uses (including housing, business and infrastructure) will be funding arrangements to enable the changes. There will also need to be rules and means for dealing with the inevitable conflicts, whether they are over the adaptation measures themselves or over the compensation levels for the measures chosen. Yet devising a scheme for compensation for property losses will in itself be controversial and politically difficult (Tombs and France-Hudson, 2018).

> The use of mandatory regional spatial plans, within an overall coordinated national framework, will enable planning to occur in ways that have been prevented to date.

It is thus perhaps not surprising that, of all the matters to be addressed in the new Managed Retreat and Climate Change Adaptation Act, the panel provides the most guidance in relation to funding and compensation. The panel identifies that a lack of funding is contributing to 'policy inertia and uncertainty': 'the scale of response required and the ability to fund some decisions are likely to be beyond the means of local authorities', 'particularly in coastal areas' (pp.174, 175, 188). The panel thus recommends that '[c]entral government will need to assist' (p.175) and provides some guidelines for that.

The first step is establishment of a national funding mechanism; this is partly for funding adaptation measures more generally, but particularly to provide for retreat – i.e. compensation for removal of existing uses and their replacement elsewhere. The panel also recommends the development of economic instruments such as targeted rates, partly to incentivise landowner behaviour change.

After funding, guidelines and rules then need to be established for its distribution for managed retreat. For example, the panel recommends that current market valuation approaches (such as under the Public Works Act) not be used for compensation, and that instead the principles in Boston and Lawrence (2018) on managed retreat funding be adopted. This is because the valuation of a property may bear no resemblance to the cost of adaptation, and could contribute to 'moral hazard' if it remains high, or contribute nothing to adaptation costs if the property has lost its value. The Boston and Lawrence principles in particular aim to equitably share the financial burdens of adaptation.

However, apart from some brief statements of principle, the content of the proposed Act is left undeveloped. As the minister for climate change has noted:

> the [panel's] recommendations for discrete adaptation legislation are one of the least developed areas within the Report. Significant policy work is required, using the Report's recommendations as a starting point, to determine the scope and develop the detail of the proposals. (Minister for Climate Change, 2020)

Unfortunately, part of the detail still needed is about fundamental principle, not just how well the chosen words and provisions achieve the reform goals identified. While I agree that the recommendations address current problems in relation to compensation and threats of legal action, these new measures will in themselves be highly controversial and politically contested, and their implementation likely legally contested. Comparisons will be made with other compensation schemes, whether in relation to housing (e.g., the Christchurch Red

Zone) or other property (e.g., culling due to mycoplasma bovis). There is thus a lot more detailed attention needed before the Managed Retreat and Climate Change Adaptation Act is even drafted. It might be that release of an exposure draft of some of the fundamental principles will be even more necessary here than it was for the Natural and Built Environments Bill, if only to socialise the policies.

Māori interests

Another key issue identified by the panel is in relation to the protection of Māori interests. The panel notes how important it is to 'consider the ability of Māori to determine how taonga and whenua are managed in response to climate change' (p.173). Such issues of process and substantive protection have been the subject of detailed consideration by other researchers (see, for example, Iorns, 2019).

The panel did not discuss solutions as part of the Managed Retreat and Climate Change Adaptation Act. However, its proposals for the protection of Māori interests in relation to the wider environmental law reform (pp.85–116) will provide significantly better protection than the current legal framework does.

Conclusion

The proposed Natural and Built Environments Act provides 'a much-needed reset of the planning framework for climate change adaptation and natural hazard risks. In particular, the shift to an outcomes-based approach better lends itself to planning for risk' (Resource Management Review Panel, 2020, p.181). But it is not just the outcomes approach that so sharply contrasts with the RMA regime. The use of mandatory regional spatial plans, within an overall coordinated national framework, will enable planning to occur in ways that have been prevented to date. The spatial planning will enable identification of appropriate areas for different activities, and where current activities might need to change in order to reduce climate change hazard risks.

Overall, the recommended mandatory national planning and outcomes, coupled with guidance and other assistance for implementation, mean that there will be much greater consistency throughout the country than can be achieved under the current system. Further, there will be much clearer signalling to ratepayers and prospective developers of what is to be expected. With greater clarity there will be more certainty in the rules to be applied, and thus less room for legal challenge.

Seven particular problems were identified with the existing system for climate adaptation:

- a lack of national direction and guidance from central government;
- the need for more certainty, as uncertainties about the science, the hazard risks and best planning approaches to them have led to litigation and paralysing fears of it;
- a lack of clarity of roles and responsibilities between regional councils and territorial authorities;
- the difficulty in adopting measures to retreat from foreseeable risks due to the current protection for existing uses under the RMA;
- the need to better protect Māori interests;
- poor integration across the resource management system, both legislation and institutions; and
- not enough funding for local authorities to adopt the adaptation measures needed that they are responsible for.

The Resource Management Reform Panel has proposed attention to all of these aspects, even if not all have yet been addressed in the detail that will be necessary. The current proposals thus all appear to provide some necessary elements of the solution, even if not yet sufficient. Even if much is still to be developed, the national standards and direction, in conjunction with the wider reforms, will enable better risk identification and community choices of future adaptation pathways. The proposals suggest that appropriate adaptation decisions will be much more likely to be made than they are under the existing system.

Unfortunately, some of the reforms needed will be extremely controversial. Changes to existing use protections will be challenged at all possible levels. Providing adequate funding is crucial and will be central to the success of any retreat from – i.e. removal of – existing uses. Moreover, even if the political battle is won in Parliament and the provisions are passed, how they are drafted and implemented will determine their success on the ground and in the face of potential legal challenges.

In early 2019 James, Gerard and Irons identified in our survey of local councils that:

> If the key issues of community engagement, funding, specialist resourcing, climate adaptation decision-making for Māori land, cost apportionment and managed retreat are addressed at a national level, local authorities would be much better placed to manage the effects of sea-level rise at a local level. (James, Gerard and Iorns, 2019, p.5)

While this quote starts with a very big 'if', the Randerson panel's report has indeed recommended that all of these matters be addressed at a national level. The process will entail a lot of argument about the content; but, if it can be pulled off, then government at all levels in Aotearoa will be in a much better place to adapt to climate hazards peacefully and equitably.

1 *Weir v Kapiti Coast District Council* [2013] NZHC 3522.

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Ken Warren

A New Model of Collaboration

Abstract

Government agencies must collaborate at the front line to succeed in addressing complex problems (e.g., assisting individuals and families with multiple needs). Previous attempts to improve front-line collaboration have had limited success. A different approach, using the insights of comparative institutional economics and public governance literature, would focus on the principles that underpin successful public sector collaboration. A specialist hierarchical system (i.e. the current system) places different expectations, performance characteristics, information needs and accountabilities on public servants than a collaborative, network-based system does. This article outlines five design principles to guide the development of a new collective[1] model as a separate but connected system in the New Zealand public sector. The proposed model would help draw citizens, iwi, NGOs and others into more collaborative and constructive relationships with the government to pursue the resolution of the most complex and important challenges our country faces.

Keywords accountability, complex problems, collaboration, collective operating model, institutional design, public sector management

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Collaboration has long been considered a challenge for New Zealand's system of public management. The relatively fragmented and devolved nature of the New Zealand public sector has been noted in each of the major reviews of the current system. For instance, in 1996, in *Public Management: the New Zealand mode*l, Boston et al. described the task of effectively coordinating the multitude of formally autonomous yet functionally interdependent organisations that constitute the public sector as a 'continuing dilemma'. The same theme surfaced in the Logan report at the start of the Bolger government, in the 'Review of the Centre' at the start of the Clark government, and in the 'Better Public Services' review at the start of the Key government. It has re-emerged in the current 'spirit of public service' and 'public finance modernisation' reform efforts.

In recent years both the New Zealand Productivity Commission, drawing on collective impact literature, and the Welfare Expert Advisory Group, posing a challenge to move to 'whakamana tāngata' – restoring dignity to people so they can participate meaningfully with their families and

communities – have emphasised a more collaborative approach for improving the wellbeing of citizens with complex needs. The experience of Whānau Ora, as reported by the Whānau Ora Review Panel, shows that such a collaborative approach results in positive changes and creates the conditions for those changes to be sustainable.

Taken together, these recent reports make the case for reform to use collaborative methods to achieve better outcomes for people with complex needs who have difficulties accessing public services. Also, however, the reports highlight that getting such collaborative approaches working successfully in the public sector is hard. But why is this the case? Why is it so difficult to make the public service management system more collaborative at the front line? In my working paper *Designing a New Collective Operating and Funding Model in the New Zealand Public Sector* (Warren, 2021), on which this article is based, I tackle this question directly, and propose a response for front-line collaboration, designed on five design principles.

The nature of the problem

The problem of collaboration is not resolved by centralisation and consolidation. Any bureaucracy necessarily has a hierarchical structure and therefore consists of many silos. These can be made with thinner walls and leaders can try and make them less parochial, but the silos cannot be eliminated.

Governments require senior bureaucrats whose influence is derived from their knowledge and experience. That expertise and merit legitimises the use of the state's power to improve the lives of citizens. However, the expert's narrow focus itself prevents well-understood anticipation of the broader impact of the change they bring about. Expertise is needed, but structuring organisations to build depth of expertise militates against the development of breadth. Instead of creating a single integrated perspective on a problem, government experts have perspectives on different parts of a problem, and their organisations have parallel responsibilities for fragments of complex issues. This necessarily creates diffusion within the government and frequently contradictory actions. When it comes to complex issues, the government becomes entangled, battling itself and private sector entities for funding and turf.

Organisational solutions of a structural nature commonly attempt to include both centralisation and fragmentation. Centralisation, however, does not break down the walls – for example, between policy and operations entities; it merely changes the position of the wall to one between head office and the front line. Fragmentation – the creation of collaborative task forces and collaboration units – while leaving the hierarchy unchanged renders these constrained in their impact.

These internationally recognised difficulties with collaboration in hierarchies are shared by the New Zealand government. New Zealand does, however, have some natural advantages in comparison with most. As Allen Schick has commented:

> Formal policy coordination is reinforced by networks that make for more cohesion and cross fertilisation than is found in most countries. New Zealand's small size and Wellington's village atmosphere foster the rapid diffusion of information and ideas. News travels fast, and managers have a lively interest in what is happening elsewhere in government. New Zealand is not a country in which public managers work in isolation. Interdepartmental work is valued; chief executives and senior managers do not shirk this responsibility, nor do they regard it as unproductive or unrelated to their own departmental interests. In addition to the various task forces and working groups on which many serve, the chief executives meet regularly to discuss current issues. (Schick, 1996)

From this practitioner's perspective, that is as true today as it was when it was written in 1996. Public servants do try to work with each other. Nevertheless, the innate nature of bureaucracies makes collaboration challenging, particularly when seeking to improve the lives of people with complex needs who have difficulties accessing public services.

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Defining the problem as one of organisational structure, resolvable by organisation restructuring, or as one of behavioural recalcitrance, resolvable by exhortations to collaborate better, have had limited success, both in New Zealand over the last 30 years, and overseas, where there are larger bureaucratic structures to compare.

An institutional (or rules of the game) problem and solution

A wealth of research and academic thinking from various disciplines proposes different and new insights into the problem of collaboration.

The institutional economics literature, for instance, highlights that:

- Institutions, or the rules of the game, matter (e.g., North, 1991; Gorringe, 2001). The operating and funding rules of the public sector management system represent such an institution, enabling and enforcing the current operating and funding models.
- There are benefits from distinguishing between markets, bureaucracies and

Table 1: Comparing different models

	Market transactions	Hierarchical specialisation	Outcome-based collaboration
Expectations	Contract terms	Public value	Shared goals
Operating model	Value-add through provider/funder surplus	Value-add through specialist skill	Value-add through collaboration
Information needs	Low information asymmetry, open markets	Fast feedback loops from system	Fast feedback loops from citizens
Accountability for	Performance conditions in contracts	The efficiency, equity and sustainability of the provision of services	Commitment to shared goals and the ability to achieve them
Accountability to	Funder	Hierarchy	Citizens
Accountability direction	Between funder and provider	Up through the hierarchy	Horizontal between collaboration participants
Accountability against	Non-performance	Hierarchical misalignment	Free-riders and hold-outs
Trade-offs favour	Compliance with contract terms	Equity and efficiency	Effectiveness
Funding	Contract consideration	Relationships, services	Collectives

clans (or networks). Markets are most efficient where prices can mediate transactions (i.e., performance clarity is high) and the need for goal congruence is low. Hierarchy is most efficient where managerial authority mediates transactions within a bureaucracy and goal alignment is moderate. Finally, networks/clans are most efficient where performance clarity is low but the need for goal congruence is high. Trust, shared values and a shared sense of mutual dependence mediate transactions (Ouchi, 1980).

- In addition to governments and markets, common-pool resource institutions can effectively manage challenging problems such as the commons. Doing so requires adherence to design principles, including a clear definition of the collective, adaptation to local conditions, participatory decision making, effective monitoring, graduated sanctions, conflict resolution mechanisms, effective communication, trust and reciprocity (Ostrom, 1990).

Turning to the public management and public governance literature, the following points deserve emphasis:

- institutional accountability: there are limits to principal–agent theory, as a string of findings in accountability research identifies a recurring theme of drifting principals (not holding agents accountable) rather than drifting agents (not being accountable to principals) (Schillemans and Busuioc, 2015);
- craftmanship: getting public sector agencies to work together is a distinguishable craft (Bardach, 1998);
- governance design: just as markets and hierarchies can be deliberately designed and deployed as a governance mechanism, cross-sector collaboration (including networks) can also be deliberately designed (Bryson, Crosby and Stone, 2015);
- collaborative governance: this has emerged as a new form of governance to supplement managerial modes of policy making and implementation. Collaborative governance brings public and private stakeholders together in collective forums to engage in consensus-oriented decision making. Factors critical to the success of such collaborations include face-to-face dialogue, trust building, and the development of commitment and shared understanding. Virtuous cycles tend to develop when collaborative forums focus on 'small wins' that deepen trust, commitment and shared understanding (e.g., Ansell and Gash, 2008);
- collaborative advantage: achieving collaborative advantage requires grappling with aims, purpose, membership, trust, power, identity and leadership. Because joint working between organisations is inherently difficult and time consuming, it should not be undertaken unless there is the potential for real collaborative advantage (Huxham and Vangen, 2013);
- complexity: in complex situations not all outcomes can be identified, let alone their probabilities, and there are different views about the nature of problems, their causes and solutions. Pragmatic responses to the radical uncertainty generated include allowing for uncertainty, contingency, co-evolution of problems and solutions drawing on multiple perspectives (Eppel and Karacaoglu, 2017);
- network management: there are limitations on and challenges to the capacity of governments to control self-organising networks, but also strategies to manage in the face of those limitations (Kickert, Klijn and Koppenjan, 1997);
- conductive agencies: there is value in the 'conductive' agencies that engage in dismantling state agency boundaries by connecting with a variety of organisations and interests to enhance performance (Agranov, 2012).

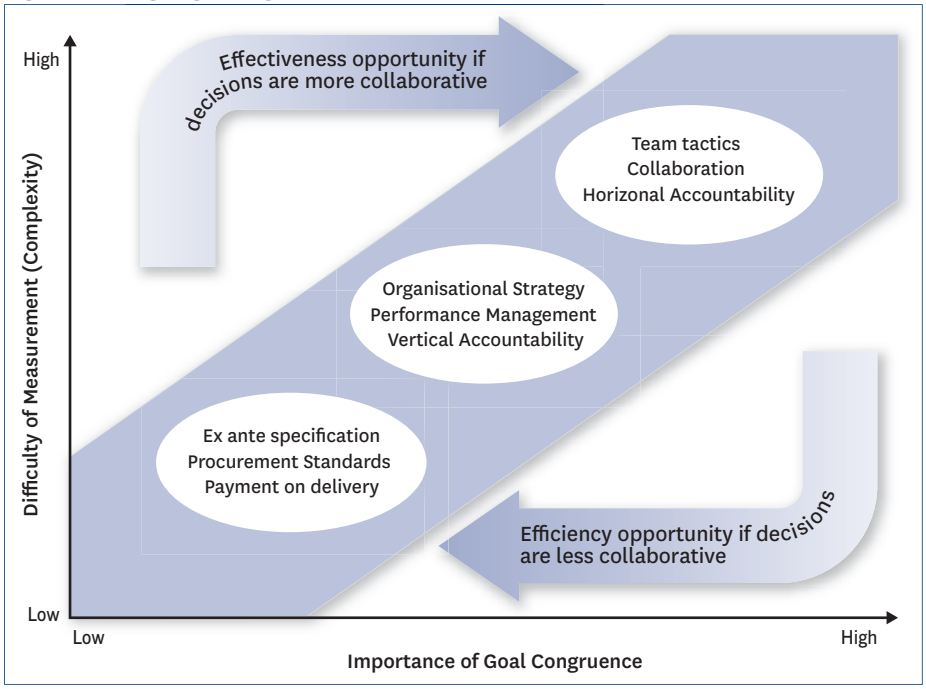
The literature differentiates markets, hierarchies and networks. They each represent different models of operation, as Table 1 illustrates. A public service that does not adequately allow for these differences will be suboptimal. More importantly, each model has its place, and each is important for the overall functioning of the public service.

Market transactions should be used for services that can easily be specified and measured, and where there are open, active and orderly markets. The merit-based politically neutral public service is best suited

to developing the deep experience, expertise and institutional knowledge to provide high-quality free and frank advice to ministers, and reliable services to the public. But if we are to successfully tackle the most complex problems of society, for which ready answers are not available, then the system also needs to actively enable outcome-based collaboration in networks. The choice is no longer just between buy or make. It is between buy, make and enable. The problem of collaboration is often one of trying to apply make-or-buy models when these are not appropriate.

In my working paper I suggest that each of these models needs to be legitimised, with each recognised as a separate 'centre of gravity' in our public management system. We should not design our system around one model; rather, we should design our system to favour the most appropriate model given the circumstances. There is a golden path (see Figure 1) and there are opportunities to be grasped by moving back to that path where we have strayed. Consequently, leaving aside the contract or funder–purchaser model, which operates well where the measurement of performance is straightforward, a dual system is needed to enable and legitimise both specialist hierarchical and collective models to flourish in the public sector.

Figure 1: Designing the right model to fit the circumstances



Design principles for a collective model

To achieve this, five design principles for implementing such a change are proposed.

1. The public sector management system should develop a separate (dual) centre of gravity for the collective model, rather than seek to extend current models.
2. Collective models should be targeted at complex variegated problems where interventions need to be adaptable at a local level, and outcomes are emergent rather than predictable and controllable.
3. Collective operating models should:
   a. support the flexibility of thought and action required to deal with novel or unanticipated opportunities and problems;
   b. motivate participants with challenging and achievable goals; and
   c. work to develop understanding and trust across agency–professional roles and boundaries.
4. The responsibility of the public sector hierarchy should not be to steer collective entities, but to create the environment in which the smart practices necessary for self-governing collective operating models can flourish.
5. The mana of the collective should be used both as a basis for providing funding for collective entities and as a basis for accountability for the results of that funding.

Principle 1: dual centre of gravity

The case for a dual centre of gravity for the collective model has largely been made above. Collective models have their place, and they are different. I use the term 'centre of gravity' because, while I recognise that there is a spectrum between the two models, they both need to be legitimised. Trying only to extend a specialist model to a collective model will have limited success. On the one hand, important internal controls to get alignment in the hierarchy are downgraded. On the other hand, the poor fit between the specialist model's accountability mechanisms and the collective frustrates everyone. The hierarchy is compromised; the legitimacy of the collective model is questioned. The struggles Whānau Ora has encountered attest to this.

The argument for a separate, legitimised centre of gravity in the system is not that specialist models cannot collaborate, nor that collective models cannot employ specialisms. Rather, the critical point is that because our current specialist/hierarchical model's assumption is that value is primarily added through specialisation, when trade-offs must be made those trade-offs must favour hierarchical specialisation, even when inappropriate.

To make the theory real, consider the case of a government department that is tasked with convening a community-led strategy, while at the same time implementing a ministerially led strategy. This is not unheard of. Essentially, the same staff are being asked to sell a minister/chief executive strategy to communities, and community strategies to their minister/chief executive, and there are bound to be differences, if not significant conflicts, between the two. There are few better ways to get that department spinning its wheels and losing traction. In the end, however, in our current system the trade-offs will favour the hierarchy. Used appropriately, in complex situations, a separate centre of gravity will legitimise trade-offs favouring the community. A dual centre of gravity allows the development of environments more conducive to both specialist/hierarchical activity and collaborative activity. Importantly, it brings any conflict between the two out into the open for debate.

Principle 2: collective models targeted at the complex

However, that example also illustrates the disruptive nature of collective activity. To ensure that disruption occurs where it is needed, and not where it is not, the second principle is that collective models should be targeted at complex variegated problems where interventions need to be adaptable at a local level, and outcomes are emergent rather than predictable and controllable.

This is what the literature says, and it makes practical sense as well. Collaboration means people proposing to one another that they do things differently and better – and of course disagreeing profoundly about what 'better' means and whether the other person's better might actually be worse. Such debates are appropriate for complex variegated problems, but should be constrained when success is more easily measurable. The second principle avoids the harm of too much collaboration slowing down needed government activity.

Principle 3: promote key success factors of collectives

The third principle should be relatively uncontroversial. It is derived from evidence about what makes collaborative activity a success. Collective activity tackling complex problems needs flexibility of thought and rapid actions to deal with novel or unanticipated opportunities and problems. It also needs motivated participants who come from diverse professional roles but have the understanding and trust to operate inclusively. A caveat here, however, is that this principle is about the responsibility of the collective, not the responsibility of the government. The government must recognise that collectives of this nature are fuelled by their shared purpose and goals and not by government funding. This principle is more a warning to the bureaucracy not to demotivate than a proposal to motivate.

Principle 4: self-governing, not centrally governed collectives

The fourth principle is that the responsibility of the public sector hierarchy should not be to steer collective entities, but rather to create the environment in which the smart practices necessary for self-governing collective operating models can flourish. This principle may be more challenging to some. Derived primarily from public governance literature, it comes from the insight that self-governing collectives cannot be steered from the outside.

More importantly, it requires a reconceptualisation of how governments successfully tackle complex problems. Under this principle, the old view that the government can 'steer' complex transformations in a coherent and co-ordinated way as the central governing authority in society changes to a more realistic view of government as a critical actor among many influencing complex policy processes.

The old paradigm was of the government-led transformation, whereby evidence-informed policy making led to a consensus view on a complex policy design and a technical and non-political implementation programme. Under this paradigm, failure would be due to incorrect assumptions about the impact of interventions on outcomes, or lack of control, so the solutions offered would be to rationalise policies, clarify policy goals and centralise control to achieve success.

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For complex problems, and in developing complex, variegated and dynamic solutions, that model is unrealistic because ministers cannot access the necessary information. That is not just because of their limited bandwidth, but also because of great environmental, economic and social uncertainties. The centralisation model ignores the importance of non-steerable values and interests of implementing bodies and target groups, including Māori, and the uncertainties about how these will change in the future.

Under a more up-to-date and realistic paradigm, complex policy delivery is about co-operation between different interdependent parties with different, conflicting rationalities, interests and strategies. Complex policy delivery is not the simple implementation of ex ante formulations, but an interactive process in which individuals and groups exchange information about problems, preferences and means, and trade off goals and resources. In short, complex policy delivery is not directed, it is negotiated.

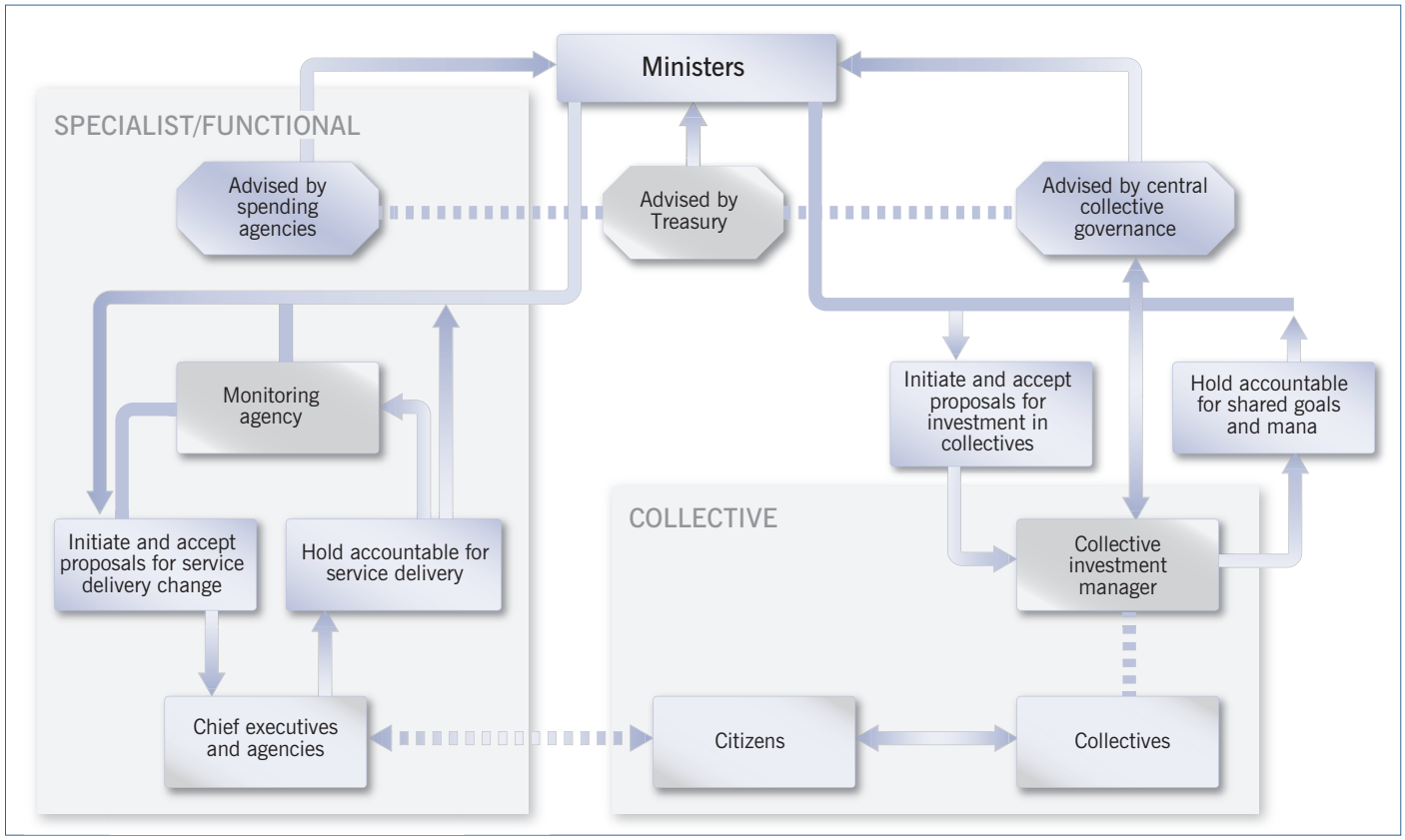
The government has a critical role. It has resources at its disposal not available to other parties – notably a monopoly on the use of force, economic power, and an ability to marshal deep expertise. It must deploy these resources to create the environment in which the smart practices necessary for self-governing collective operating models can flourish. Importantly, however, governments may have less leeway than others – checks and balances, and concern about legitimacy derived from political backing. Faced with a choice between legitimacy and effectiveness, governments are likely to choose legitimacy.

In this new conceptualisation, success is measured differently. It is measured on assessments as to whether networks achieve win–win situations, whether individuals, groups and resources are motivated as necessary, whether transaction costs are limited, and the level of commitments to networks that are procured.

Principle 5: a new accountability

That leads to the fifth and final principle. If we want success measured that way, then our measurement, decision-making

Figure 2: A dual public sector model



and accountability processes for collective activity need to be designed to support that. I am proposing that the mana of the collective could be used both as a basis for providing funding for collective entities, and as a basis for accountability for the results of that funding. I recognise that mana is a deep and multi-layered concept, about which I have very limited knowledge; however, it seems to offer great prospects for a beneficial paradigm shift for how the government interacts with collectives. The proposal would need development with and by mana whenua.

This is a direct attempt to tackle the funding and accountability problem that has bedevilled efforts at collaboration to date. We live in a democracy; elected officials garner support for their policies, and it is their right to spend the public's money in accordance with the mandate they have earned. We cannot allow unelected collectives untrammelled power to spend public money as they wish – and so often the refrain is currently heard: 'You can't do that under the Public Finance Act!'

My proposal respects that constitutional position. Ministers would remain responsible for the portfolio of collective investments, but they would justify that portfolio not on the basis of outputs or outcomes, but rather on the basis of their officials' assessment, that they endorse, that the portfolio of collective investments have the necessary respect or mana to achieve positive outcomes.

There needs to be an alternative to output-based accountability where we cannot specify the desired outputs or services to be funded. There needs to be an alternative to outcome-based accountability where we cannot be confident of the attribution of funding to outcomes, and when the outcomes emerge over the long term. My new option is accountability for mana, where ministers can express confidence that the mana of the collective groups being supported means they are more likely to engender positive outcomes and wellbeing in complex areas than relying on the mainstream public service.

This is possible because it is measurable. A regular scored assessment could be made of:

- the quality of the shared vision;
- the quality of engagement with the government in negotiating priorities in the light of local knowledge;
- the capacity of the collective, including its 'convening power';
- the leadership of the collective, and its skills for working with other people;
- the legitimacy of the collective as a leader in the community, with the 'right' participants collaborating to make it work;
- the commitment of participants in the collective to invest time in collaborative efforts for success;
- the levels of trust participants in the collective have in one another;
- the adaptability of the collective to changing conditions;
- the pace of development of the collective.

Decision making, funding and accountability based on these attributes recognises their importance. As they are relevant, and as the institutional framework behind the dual model pivots towards recognising their importance, so the mana of collectives in our communities is nourished.

Key roles and responsibilities for public sector collaboratives

I suggest that doing this successfully requires the articulation of two new

roles: namely, the government's collective investment manager and the collective's treasurer. The relationship between them represents the nexus where the hierarchical/specialist world of the government and the horizontal collaborative world of the community collective connect. This nexus is illustrated in Figure 2.

The collective investment management role is not easy. It includes advice on which entities to build relationships with, assessment of collective impact vehicles, promulgation of learnings for experience, and nursing the evolution of the supply of collectives that are aligned with government objectives. It is part hedge fund manager, part social entrepreneur, part confidant and part public servant. Therefore, an entity that brings those diverse skills together is required, rather than relying on superheroes.

The collective investment management function must not seek to micromanage the collective. In a real and different sense, the collective investment manager is just as accountable to the collective for the measured attributes listed above as the collective is accountable to it.

Because complex issues traverse the current functional sectors (e.g., health, education, justice, environment), that entity needs to be a new cross-functional entity in the public sector. Only then can it develop cross-agency proposals, to partner and manage relationships in a way not possible by specialist ministries, whose incentives are to develop proposals within their own domains and sectors.

The relationship between the collective investment manager and the treasurer is different from that of funder–provider. The collective investment manager's task is to create and sustain the collective processes, measurement reporting systems and community leadership that enable cross-sector coalitions to arise and thrive. These proposals legitimise such activity in a way that simply cannot happen today. Practically, this enabling activity could be just as much through providing backbone services, or research access to the integrated data infrastructure, for example, as providing collectives with more direct access to the government's budget process.

The treasurer's role in the collective is also important. The treasurer of the collective would work with the government's collective investment manager. However, as a member of the collective, the treasurer is primarily accountable to other members of the collective for ensuring the provision of funding and probity. The treasurer is not held accountable for the collective impact entity's inputs, outputs or outcomes, which is the responsibility of the collective to manage. The treasurer is responsible for meeting the information demands of the collective investment manager about the mana of the collective, so that the investor's role can be performed.

Conclusion

Governments must collaborate at the front line to succeed in complex situations. Attempts to improve front-line collaboration by changing organisation structures or by exhorting public servants to collaborate have had limited success in satisfactorily achieving this collaboration.

Academic research and practical experience both point to a different problem definition causing this lack of collaboration than organisational structure or behavioural recalcitrance. They both differentiate between specialist hierarchical models that assume that public value is added by application of a specialist process, and collaborative network models that assume that public value is added by collaboration. These two types of models have substantially different expectations, performance characteristics, information needs and accountabilities. Both models are legitimate, and both must be designed into the public sector system to thrive in situations when that is appropriate.

This article has proposed design principles that could be used to develop a collective model as a separate but connected system in the New Zealand public sector. Designing a new collective model along these lines could be transformative for New Zealand. A new legitimised model, more welcoming of complexity and disruption, used where needed, has the potential to draw citizens, iwi, NGOs and others into more collaborative and constructive relationships with the government. It provides new opportunities to pursue the resolution of the most complex and important challenges our country faces.

1 While some literature distinguishes between collective impact and collaboration, this article is concerned with the more important, and more useful, distinction between specialisation and collaboration. The term collective model is intended to include collective impact models, but also includes other models where public value is primarily added through collaborative activity.

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Graham Scott

Commentary on Ken Warren's 'A new model of collaboration' and related IGPS working paper

Ken Warren's central concern is the relative weakness of hierarchical arrangements for service delivery through state agencies when addressing poor outcomes for people with complex needs, for which standardised solutions are a poor fit. He says the case is made that these require the collaboration of multiple parties to implement tailored responses to needs, and refers to the evidence from the New Zealand Productivity Commission's report on social policy, the Welfare Expert Advisory Group and the review of Whānau Ora. For readers familiar with the Productivity Commission report the focus of interest is on the people in 'Quadrant D' (Productivity Commission, 2015, p.53). These people have multiple continuing and complex needs combined with low capacity to navigate and coordinate the services they need, either because of their circumstances or because of institutional characteristics of the services that make it hard for them to access them.

Referring to the numerous initiatives over almost 30 years to improve the co-ordination of public service agencies, Ken identifies the limits of these endeavours as a top-down exercise that tries – and commonly fails – to meld disparate services' lines into an integrated whole in response to many and varied needs. He avoids the conventional bromides and exhortations about collaboration. With respect to public finance, 25 years of easing restrictions on how public funds are spent with the intention to promote collaborations hasn't and won't satisfy these needs – especially those of vulnerable groups with multiple chronic conditions – because, as he says, silos 'are an inherent part of hierarchical operating models. They can be made with thinner walls and leaders can try to make them less parochial but they cannot be eliminated' (Warren, 2021, p.11). Solutions to complex social issues require more flexibility in how services are melded together across the boundaries between public services, and also between public services and non-government providers, than the standard modes of service delivery can generally provide. The balance of accountabilities should be more towards downward and horizontal modes within vehicles for collective impact that flexibly incorporate the people and resources needed to get better results.

Building on a concept Ken developed in the report of the Social Investment Working Group (which I chaired and in which Ken participated) (Social Investment Working Group, 2016), he proposes to legislate for a separate funding channel for collective impact responses to the kinds of issues that the conventional modes of public services can struggle with. Complex problems need solutions that are very uncertain ex ante and require collaboration among multiple parties, including the recipients. His working paper notes: 'Collective models should be targeted at complex variegated problems where interventions need to be adaptable at a local level, and outcomes are emergent rather than predictable and controllable' (Warren, 2021, p.iii). But also heed Ken's advice that public sector efficiency demands that such activity be limited when input–output–outcome relationships are well understood by the hierarchy.

Ken proposes a central investment manager to fund and oversee collective impact vehicles, promulgate learnings from experience, and husband the evolution of collectives that are aligned with government objectives. In my view a lot more work is needed to think through the details of how this central investment manager function would work, and the provisions that would be needed to make it a success and avoid reversion to unproductive micromanagement. Its relationships with the line ministries, its decision criteria, its dynamic evolution and the political forces around

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it all would need attention. It might have some characteristics of venture capital, but would be very different in many respects.

Each collective has a treasurer who releases money within the collective on the basis of performance against plan and can block funding otherwise. Because outcomes in the relevant domains are emergent, the criteria for funding emphasise trust and confidence by stakeholders and track record by the collectives, which Ken refers to as mana in a limited meaning of that broad concept.

As outlined in the IGPS working paper, the collectives bring collaborators together to:

- define the problem and create a shared vision to tackle it;
- make coordinated interventions with the targeted population;
- establish a shared measurement basis to track progress and allow for continuous improvement; and
- foster and coordinate collective efforts to maximise desired impact and build trust and relationships among all participants.

Ken's work is government centric, which is appropriate to his position and interests. Many collective impact vehicles will have little or no government oversight. His system is driven top-down, although largely blocking the centre from micromanaging the collectives. He says clearly that these relationships will not be contracts for services in the usual sense. Much will depend on whether the investment manager can avoid the degeneration into micromanagement of the providers that the Productivity Commission identified as a big problem in relation to NGOs funded through ministries.

I see severe problems of information asymmetry as one cause of the degeneration into micromanagement by ministries. The centre commonly does not know ex ante what will work with complex issues, so holding providers to account for performance is compromised – especially where the result sought is not the province of one ministry alone. This problem is magnified in the presence of complex adaptive systems, which is where the priority problems emerge. These generally cannot be driven to specified outcomes by any one player in the system – even the government. These issues, together with the instinctive centralism of state agencies, justify Ken's proposal for a dual system and a separate funding track for collective impact responses to this class of issues.

> Building on a concept Ken developed in the report of the Social Investment Working Group ... he proposes to legislate for a separate funding channel for collective impact responses to the kinds of issues that the conventional modes of public services can struggle with.

Ken's work is grounded in relevant local and international literature, both conceptual and practical. His method points to the need for greater depth in advice about the structure and function of government service delivery modalities than is commonly in evidence today. He provides a fruitful basis for further conceptualisation, institutional design and improved practices of policy making and resource allocation in areas where this challenging approach is warranted against the business-as-usual counterfactual. Further work is needed to develop and evaluate his proposals to the point where they could go live. More development is needed particularly on the investment manager function and how to stop the new funding channel reverting to the existing one over time.

Also, it would be productive to pursue the lines of analysis and advice he presents on a wider canvas. For example, the current health reforms could have benefited from much deeper consideration of the causes of poor integration of services and how to get better outcomes. The reforms default to a highly centralised design to address fragmentation, while also resting on an intention to create health locality networks to implement the core objective of the reforms, to reorientate the whole system to a focus on population health. These will necessarily be decentralised. Very little has emerged about the design and operation of these, nor on learning from the locations where this focus is already in evidence.

Ken's proposal might lead to better bridging across 'investment for wellbeing' (social investment), the Living Standards Framework and the Treasury's CBAx system for cost–benefit analysis, which have developed somewhat piecemeal. Well-functioning collectives could also facilitate 'wrap-around' modalities of service delivery that emphasise engaging with, and building on the strengths of, individuals and families. While further work is needed on Ken's proposal, it provides a sound basis for this and makes a solid contribution to the relevant literature.

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Geoff Bertram

Shrinking the state 2.0: commentary on Ken Warren's 'A new model of collaboration' and related IGPS working paper

This commentary is a response to two papers by Ken Warren: his article in this issue of *Policy Quarterly* (Warren, 2022) and the longer, more detailed IGPS working paper on which it is based (Warren, 2021).

Stripped of the distracting clutter of business school jargon, both papers read to me as a rearguard action in defence of the rapidly unravelling public sector 'reforms' that were promoted and driven through in the late 1980s, starting with the New Zealand Treasury's 1987 briefing document *Government Management*, and embodied in the State Sector Act 1988.

The neo-liberal project has always had 'shrinking the state' as a central goal, and Warren's two papers represent another step down that path. He recommends adding two new elements to the post-1987 public sector restructuring (which I characterise as 'shrinking the state 1.0'). First, an entire realm of 'collective activity' is to be formally set up, in which greater agency and autonomy is granted to non-government providers of public services, overseen by a new cohort of 'collective investment managers' located within the central state apparatus but somehow freed of its constraints. Second, ministers are to be removed even further from control of and accountability for publicly funded provision of goods and services, on the basis of the unexamined claim that they 'cannot access the necessary information' to understand 'complex, variegated and dynamic solutions' – an understanding which, by some mysterious alchemy, is to be achieved instead by the new 'collective investment managers', and by removing ministerial responsibility for 'outputs or outcomes' of policy, with ministerial accountability reduced to certification (on the basis of officials' advice) that the 'collective investments have the necessary respect or mana to achieve positive outcomes' (Warren, 2022, p.27).

No fully articulated basis for Warren's vision of doubling down on the existing 'funder–provider split' is to be found in either of the two papers reviewed here. His Table 1 just sets up a false dichotomy between the central state apparatus (characterised as involving 'hierarchical specialisation' and lacking 'commitment to shared goals and the ability to achieve them', 'accountability to citizens', 'effectiveness', 'value-add through collaboration' or 'fast feedback loops from citizens') and a sphere of non-governmental 'outcome-based collaboration' that allegedly possesses all those virtues. Warren then seeks to upgrade and empower the 'collective' while leaving the central state stuck in Table 1 with bureaucracy, hierarchy, silos, and the unenviable task of balancing 'equity and efficiency'.

Any notion of a public sector free of silos is dismissed out of hand at the outset: 'bureaucracy necessarily has a hierarchical structure and therefore consists of many silos' (ibid., p.23). (Looking back to *Government Management*, it is noticeable that among the many criticisms offered in 1987 of the old New Zealand public sector, silos actually did not figure.) And there is no suggestion of reconsidering the radically disruptive make-or-buy thinking that drove the outsourcing extremism of the 1990s; on the contrary, 'the choice is no longer just between buy or make. It is between buy, make and enable' (ibid., p.25).

To put Warren's papers into perspective, it is worth recalling the key elements in the original public sector reforms post-1987. First, privatisation and corporatisation

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removed whole swathes of the public estate from delivery of non-commercial services to the populace. Second, elimination of key agencies, such as the DSIR, the Forest Service and the Ministry of Works and Development, removed the option of the government 'making' rather than 'buying' key services. Linked to both of those, but most radical and fundamental, was the 'funder–provider split', which delegated the actual delivery of various policy outcomes to non-governmental providers operating under contract to the central agencies of government, while reducing ministries to mere policy shops. The state sector's role was accordingly transformed from exercising actual ownership of particular policy areas and accountability for delivery of tangible results, to merely providing policy advice and signing contracts under which outside providers of services were funded. Warren speaks of the difficulty of 'break[ing] down the walls … between policy and operations entities' (ibid., p.23), but at no point explains how those walls came to be constructed. He simply takes as given the post-1987 public sector architecture.

Policy design and delivery is inherently a complex and difficult process, which tends to benefit from being in the hands of dedicated teams with experience, professional skills, and direct connection with the ordinary citizens who are supposed to be the ultimate beneficiaries of policy. In *Government Management*, and in the implementation of the reforms, the reform architects put forward deceptively simple-looking solutions for those complex problems, based on a narrow misreading of the then-popular school of 'public choice' economics in the United States (see Bertram, 2021, pp.36–8). The importance of professional skills and institutional knowledge was downgraded, on the basis of the public choice claim that the holders of these attributes were driven by personal self-aggrandisement rather than vocational motivations and should therefore be excluded from access to the policy making process to prevent them from 'capturing' it. Once relegated to the outer circle of 'providers' and funded under arm's-length contracts, the thinking went, they could be safely left to go about their business while the inner circle of officials could provide disinterested policy advice aligned with the goals of the government of the day. (In Warren's rather confusing language the inner circle turn up as 'specialists' and the outer circle of actual professional specialists as 'the collective'.)

Since the late 1980s the reporting process has been reduced to an accountancy-focused recording of dollar amounts, accompanied by information-free corporate spin about key performance indicators.

The consequence of separating funding and provision

Three consequences of that structural separation of policymaking 'funders' from professionally qualified 'providers' now haunt the corridors of power in this country. The first was the loss of professional knowledge and ability in the now-insulated policy departments of state, which these days are run and dominated by managers rather than specialists (see, e.g., Gill, 2021; Gregory, 2003). Scientists are scarce in the Ministry for the Environment, engineers in the Ministry of Business, Innovation and Employment, qualified medical practitioners in the Ministry of Health, social work specialists in the top echelons of Oranga Tamariki – the list could go on. Stripped of deep professional knowledge and crippled by constant churning of senior management on short-term contracts, the policy departments have in turn lost the capability to provide the fully informed advice and deep wisdom on which elected politicians ought to be able to rely in determining policy. Filling the knowledge gap by increasing resort to outside consultants merely doubles down on the original mistake of separating departments from delivery.

The second consequence was a collapse of genuine accountability and its replacement by bean-counting and managerialist slogans and jargon. To go back and read the annual reports of New Zealand government departments prior to 1984 is to enter a world of informative narrative, working through the events and decisions of the preceding year, evaluating outcomes in the qualitative terms that were meaningful to ordinary citizens while illuminating the financial and statistical records at the end of the reports. Since the late 1980s the reporting process has been reduced to an accountancy-focused recording of dollar amounts, accompanied by information-free corporate spin about key performance indicators. In turn that means that citizens and MPs seeking to hold ministers to account have far less to go on than the shareholders of most publicly listed companies, who have in their hands annual reports that typically begin with substantial and informative narrative sections.

The third consequence was the destruction of much of the team-building approach of the old public service. A century of experience and pragmatic experimentation had, by the 1980s, developed a set of public service departments with genuine roots in on-the-ground reality, and with clear ownership of particular areas of policy concern. Treasury's characterisation of several of these long-established teams as self-aggrandising empires that would best be eliminated led to the loss of a huge mass of human and social capital built up over the preceding century. Without the Ministry of Works, major infrastructure projects have become case studies in contractual incompleteness, opportunism and waste. Without the DSIR, science has languished under the dead hand of private corporate influence and so-called 'contestable' funding. Without the integrated New Zealand Forest Service the conservation estate has been progressively starved of funding, while the unrestricted

log export trade has sucked life out of domestic wood-processing industries.[1] In education, health and social services the new ethos and corporate structures have hollowed out rather than strengthened the quality of decision making and service delivery. Inescapably the police and the military continue to operate on the team model; it was no surprise to see the latter called in last year to bring some order and efficiency into the operation (not the design) of the MIQ exercise.

Warren's proposals

What, then, does Ken Warren propose? His central concern appears to be that the creativity of non-governmental providers of various services that are ultimately funded by taxpayers is being negated by the bureaucratic practice of the central policy agencies with which they are obliged to contract, while those central agencies operate as self-centred 'silos' that fail to collaborate effectively with one another. Warren's proposed solution is to appoint 'collective investment managers' within the central government system who can cut through the red tape and direct funding to where it can be best utilised, providing 'assurance that a return-on-investment test is made of each proposal' (Warren, 2021, p.28). The qualities an 'investment manager' will have to possess look rather like Plato's ideal of the philosopher king – full knowledge of the policy area, ability to spot and reward talented provision, ability to accurately identify failing agencies and the power to cut them off summarily from their funding. In short, the ideal-type 'investment manager' in Warren's account looks suspiciously close to Treasury's self-portrayal back in 1987 as somehow better informed and wiser than any professional, vocationally driven provider actually engaged in service delivery.

Missing from Warren's analysis is any proper account of how cross-departmental coordination used to be achieved prior to 1987, apart from one brief reference to 'inter-departmental task forces' (ibid., 2021, p.11) in a paragraph that simply slumps into scepticism about overcoming silos. In the old system, officials' committees did convene to overcome the limited scope of individual departments' reach, and those committees often functioned quite effectively because the senior public servants attending the meetings were long-serving and experienced professionals – not today's generic managers – with genuine knowledge of their department's mission and with the authority to enter into multi-agency arrangements.

Missing from Warren's analysis is any proper account of how cross-departmental coordination used to be achieved prior to 1987...

At the same time, Warren's portrayal of the resource allocation process is revealing in the language it uses. Professional providers of medical, mental health, social work, engineering, scientific and educational services to the public are not treated as pursuers of their chosen vocations in life; in Warren they are 'social entrepreneurs' clamouring for funding at the central policy agencies' pay-out windows (ibid., pp.26, 32, 34). Yet at the same time as they are placed in the position of competing for the favour and funding of the investment manager, they are supposed to cultivate simultaneously the process of 'collaboration ... at the front line' (2021, p.1; 2022, Table 1).[2] The relationships of a professional service provider with the individuals and groups they serve among the wider citizenry are a 'critical resource' – an asset on which the social entrepreneur seeks a return as a competitive supplier within a 'social entrepreneurs' supply curve' in a 'market' where the demand side is to be occupied by philanthropists and by the government (Warren, 2021, pp.14, 32–3), which dispenses public funding to those considered to possess 'mana' (a term from te reo Māori appropriated here to mean, apparently, some sort of peer-group recognition) (ibid., 2021 pp.iii, 2, 22-4; 2022 p.25).

The immoveable core of Warren's position is the funder–provider split. His entire proposal boils down to tweaking the arm's-length relationship between those at the centre who have money from the Budget to dispense (the investment managers), and the vocational 'social entrepreneurs' to whom the task of service delivery is to be outsourced, along with the accountability for results from which the central agencies of the state will have abdicated.

It is important to be clear that what Warren means by the 'collective' is far removed from the self-sustaining locally based entities modelled by Ostrom (1990), on whose authority he relies. Ostrom's collectives are organised like the 'clubs' of Buchanan (1965) to restrict outsiders' access to shared resources while regulating insiders' access; this is completely different from non-governmental ventures formed to secure public funding for social outreach activities.

Notably, Warren treats accountability as a horizontal task to be conducted within his 'collective', leading to the attribution of 'mana', while the investment manager floats high above with job security while dispensing the fate of those below (Warren, 2021, pp.iii-iv, 23; 2022, Table 1). (Readers familiar with Swift's (1726, part III) account of the flying island of Laputa in *Gulliver's Travels* will know that this is not a new phenomenon.)

Here we find, I would argue, the essential contradiction in Warren's case. If the philosopher-king-manager ideal were attainable within the actually existing New Zealand public service, it ought already to have emerged, which it palpably has not. Warren argues (not uncontroversially) that 'a hierarchical public sector cannot realistically identify the best paths to improved outcomes' because 'there are different views about the nature of the problems, their cause and solutions. Pragmatic responses are required' (Warren, 2021, p.ii). How handing over the job to an individual manager within the state system would somehow break this impasse is unclear. Though there are no doubt many individuals both within and outside the existing public sector workforce who would fancy themselves in the new role, it is not obvious how to identify and appoint them.

Supposing the hypothesised all-knowing, all-seeing, wise investment managers exist and will be correctly selected in the recruitment process (conducted by whom exactly – who guards the guardians?), why should they have to operate through the complex and error-prone mechanism of arm's-length contracting, rather than simply building collaborative in-house teams to deliver the goods and services? The problem Warren identifies – the proven inability of the existing central agency bureaucracy, trapped in its post-1987 funder–provider-split cage, to enter into complete, optimal contracts with outside providers – does not go away by appointing another bureaucrat subject to the same structural constraints.

Nor does his strongly drawn contrast between 'specialist' and 'collective' operating models (2021, pp.13–15) necessarily point to maintaining a funder–provider split for the collective. The set of alleged contrasts in Warren's Table 1, besides containing several tendentious propositions, says nothing about this issue. Nor does the strange scatter plot (2021, Fig. 1 p.17; 2022, Fig. 2 p.25), showing an apparently positive relationship between 'importance of goal congruence' and 'difficulty of measurement', indicate that team tactics need be pursued through a separation of funder/'principal' from provider/'agent'.[3] Nor does the extensive section (2021, pp.18–22) on how good professional and managerial practice should look in a 'collective' team-building setting resolve the issue; on the contrary, it throws a spanner in the works by concluding that 'the responsibility of the public sector hierarchy is not to steer collective entities, but to create the environment in which the smart practices necessary for self-governing collaboration can flourish' (2021, p.22; 2022, p.25) – a proposition that seems diametrically opposed to the role of the proposed 'investment manager' in dictating who survives and who exits ('disinvesting well' is one of the manager's roles (Warren, 2021, p.28)). Basically, unless the investment manager is embedded within 'the collective', then that collective remains subject to the top-down dictation which supposedly was the initial problem definition. But if the manager is embedded, then 'the collective' must be inside, not outside, the public sector itself, to maintain lines of accountability for securing and justifying fiscal outlays.

Public officials are in an especially weak position when using commercial contracts to purchase services in the open market

These contradictions become all too obvious in Warren's discussion of 'critical success factors' in his working paper (2021, section 3.8, pp.22–5). Here we find 'financial incentives to collaborators' being 'manipulated' by the funder (p.22); 'creative destruction' of 'poor collaborators' (p.23); insistence that 'principal–agent … accountability between the public sector investor and the collective should encourage … horizontal accountabilities' (ibid., p.23); the requirement that at all times the 'collective' agent must adhere to a 'vision' that is 'in alignment with Government objectives expressed in the collective investment strategy' (p.24), even though 'funding and accountability should not be a contract for services' (p.23). While it may not be a 'contract' in Warren's proposal, his 'strategy' certainly seems intended to be enforced like one – except that accountability of the 'investment managers' at the top is even more diffuse and intangible than under the current imperfect contracting regime.

The real problem, it seems to me, is not the failings of officials within the existing 'principal' funding agencies, nor their use of contracts rather than 'strategies', and it is not solved by replacing the existing 'principals' with a new set of individuals operating within the same, ultimately top-down, system of arm's-length principal–agent interaction. The problem is inherent in the contracting-out model and the funder–provider split, and the toxic tensions between 'principals' and 'agents' that flow from that model.

It is therefore extraordinary that Warren chooses Whānau Ora as his key example of the supposed difficulty of 'trying … to extend a specialist model to a collective model' (Warren, 2022, p.25). Whānau Ora was crippled from the outset by being starved of funds by the central 'provider' agencies (basically Treasury) and constrained by the requirement that all of that limited funding has to pass through the contracting-out interface to external providers. Simply establishing Warren's 'separate legitimised centre of gravity in the system' (op cit.) does not overcome the problem.

It is a pity that Warren has not delved more deeply into the economic literature around these issues. There are two sets of classic economic papers that could have provided him with a different starting point. One is Oliver Hart's work on contractual incompleteness (Hart, 2017; Hart and Moore, 1999; Hart, Shliefer and Vishny, 1997). The other is Ronald Coase's work on the theory of the firm and the make-or-buy decision (Coase, 1937).

Coase analysed the best balance for a firm between 'buying' its inputs from outside providers and 'making' those inputs itself. The New Zealand government before 1987 was built mostly around a 'make' model, with vertical integration from the policymaking minister down to the front-office/coalface staff. It benefited from the virtues of vertical integration and occasionally suffered from the disadvantage of failing to spot opportunities to 'buy' on terms that might have been advantageous to the public interest. The 'reformed' post-1987 regime for public services has been an extremist resort to the 'buy' decision, throwing overboard in the process all the advantages of vertical integration that Coase identified and eliminating much of government's capacity to 'make'.

One of the key potential problems associated with 'buying' rather than 'making' has always lain in the difficulty of writing purchase contracts that are complete and enforceable in a world where opportunism and uncertainty lie around every corner. Public officials are in an especially weak position when using

commercial contracts to purchase services in the open market, for reasons described in detail by Hart in his work. The problems of incompleteness and post-contractual opportunism (think Transmission Gully) led Hart to emphasise the potentially great value for the government of holding 'residual control rights' to do the job itself. Warren does indeed mention this phrase (Warren, 2021, p.35, though without citing Hart), but he nowhere reflects on its essential meaning, that government should always have at its disposal the genuine possibility of doing its own delivery – precisely the essential institutional asset which the late-1980s reforms stripped away.

Where, then, does this leave us? There is clear dissatisfaction at ministerial level with the failings of the existing model, and a process of re-centralisation of governmental functions in housing, health, education, social services and other areas is getting underway. But this is happening ad hoc, without a well-developed overarching blueprint for the new structure that is to come. That Warren's proposals come from within the New Zealand Treasury seems to me a cause for concern rather than celebration. His basic thrust of moving ministers and the state further away from connection with the general public, rather than improving the quality of information and advice reaching ministers while opening a more responsive and creative interface between government and the general public, seems a retrograde rather than progressive step. Treasury has 'form' in this area, and a proper self-evaluation of, and accountability for, the mistakes of 1987–90 has yet to make it to the public arena. Warren's claim that his self-described 'direct attempt to tackle the funding and accountability problem that has bedevilled efforts at collaboration to date' (Warren, 2022, p.27) – by devolving funding decisions into the hands of 'investment managers' – is 'respectful' of the constitutional position of ministers rings hollow. *Caveat emptor.*

1 In passing I should note that back in the 1970s and early 1980s I was an active critic of two of those teams – the Forest Service (over native forests) and the Ministry of Works (over Think Big and development planning). But that criticism was intended to nudge them to change their decisions and resource allocation, never get them abolished.
2 Exactly what the boundaries of Warren's 'collective' are supposed to be is unclear. At times he seems to mean the individual 'social entrepreneur' and his/her particular organisation, operating parallel to and in competition with others. At other times 'the collective' seems to be shorthand for the entire body of non-governmental providers.
3 In passing it should be noted that characterisation of the central public service bureaucracy as a 'principal' rather than an 'agent' seems to turn the usual constitutional conventions on their head.

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Ken Warren

A rejoinder

I would like to thank Graham Scott for his comments and acknowledge his role in starting me on this journey as I sought to apply comparative institutional economics to the challenging problem of collaboration.

Geoff Bertram is critical of the provider–funder model, as indeed I am if contracting models are applied when performance cannot be measured and when contractual expectations cannot be specified. That is a recipe for bad outcomes and dissatisfaction. I too prefer bureaucratic delivery where deep knowledge and experience are needed to guide performance, for the same reasons that Ronald Coase expounded in 'The nature of the firm'.

However, unlike Bertram I believe government delivery brings its own problems. Bureaucracies, in New Zealand and internationally, have not proved up to the task of resolving wicked problems. To do that, we need to empower localised, agile, responsive networks.

Reading his comments, it would appear that Bertram wants the state to have nothing to do with NGOs and collectives seeking to address complex issues. In his view, such public policy issues should be left in the hands of specialists who can provide 'fully informed advice and deep wisdom on which elected politicians ought to be able to rely in determining policy'. Ironically, that is precisely the role I occupy in government. I am a specialist with over 40 years' experience with public sector accounting and accountability. That warrants rights in providing advice to governments and delivering financial reports, but it does not mean the government should be limited to hearing from me on such matters. In Bertram's narrative, people like me do not exist; in my narrative, people like me cannot solve all the world's complex problems.

... it would appear that Bertram wants the state to have nothing to do with NGOs and collectives seeking to address complex issues.

The post-1987 reforms replaced public sector administration with public sector management. Bertram is clearly not a fan of management theories. Unfortunately for him, the facts keep on getting in the way of his story.

- Health, justice, education and social services are today delivered by government entities – the funder–provider split he so abhors is notable for its absence rather than its presence.
- It would be a surprise to the Ministry for the Environment, MBIE, the Ministry of Health and Oranga Tamariki to learn that they have been 'stripped of deep professional knowledge'. That is both unfair to them, and ignores the mobility of the modern career policy professional (including between private and public sectors) as they gather experience.
- The objectives of the post-1987 public sector reforms were to manage rather than shrink the state. The Lange–Douglas government was seeking levers so they could put their strategies into action, as they themselves have often stated. Readers of the Treasury's 1987 *Government Management* briefing will see that it spoke to that need. And the reforms delivered to the extent that ministers were clearer about the services they were getting from the state sector, and their cost.
- Privatisation and corporatisation removed commercial, rather than non-commercial, services from the government.
- *Government Management* argued that the practical and tacit knowledge of delivery agencies should be in the mix of policy views and proposals. It argued against exclusive advice. It is a quite different thing to say delivery agencies shouldn't have a monopoly, than to say that they should be excluded.
- Pre-1984, some government departments produced no annual reports at all, let alone reports that provide audited service performance information as they do currently.

Most importantly, Bertram ignores the problems of the pre-1987 public sector that led to the reforms: inefficient monopoly suppliers, such as the Ministry of Works and Development, that could not contain their costs; turf protection that served neither ministers nor citizens, nor the departments themselves; and mixed and contradictory objectives, rendering accountability impossible.

Bertram continues to believe the choice is only between governments (wise professional public servants) and markets (contracted providers) and is concerned that there is too much of the latter. I can agree that there are often problems with contracting, but the solution to Hart's incomplete contracting issue is not only 'residual control rights', but also a recognition of the power of networks. That was Ostrom's profound lesson.

Despite the commentators' different perspectives, there is a shared concern about my proposal of a collective investment manager, on Scott's part because of the temptation to micromanage, and on Bertram's because of a supposed requirement for them to be 'all-knowing, all-seeing, wise' but 'subject to the same structural constraints' as at present. I acknowledge that the role is challenging. I am also conscious of a significant risk that an enthusiastic central collective investment function could call for the community to come together to collaborate and make a bid from a new collective fund. If the new funder goes through the usual procurement process and becomes nervous about transparency and probity issues, the result would be a divided community and a complex contract. It is precisely such a commissioning model that needs to be avoided, and that can be avoided if there is a dual system within government that proactively seeks out and supports those entities that have shown they can make a difference, and which uses a different accountability model.

Recognising that, I have placed great importance on earned respect, or mana, as the basis for forming relationships and for accountability. I have proposed an organisation rather than an individual, so that diverse skills can be brought together; I have proposed that the entity be at the centre so that it can be seen as independent from delivery entities. There will be mistakes, so I would propose it be held accountable for its portfolio, rather than getting every engagement right.

Heroic public servants are currently trying to operate collaboratively with Māori bodies and NGOs in the way I envisage, acting in a small way as collective investment managers by themselves. They are operating at some risk in the current system. The controls and accountabilities that make bureaucracies effective are precisely the controls that stifle such efforts. Hopefully, if my proposal is pursued, we can make it easier for them to succeed, easier for NGOs seeking to make a difference, and easier for New Zealand to address its wicked problems.

Shaun C. Hendy

Integrating Science into Policy

experiences during the pandemic

Abstract

The Covid-19 pandemic has posed enormous challenges to governments worldwide, but New Zealand's government in particular has been praised for a science-based approach to decision making. In this article I review the way in which several scientific work streams were integrated into decision making and consider the advantages that this offered New Zealand's response. As one of the scientists who was closely involved with this, I offer a personal perspective on how this came about and some observations for future crises.

Keywords science advice, policy, modelling, genome sequencing, Covid-19

The Covid-19 pandemic has posed enormous policy and operational challenges to governments worldwide. Most governments have drawn on scientific advice in navigating these challenges, but New Zealand's government, in particular, has been praised for 'following the science' (Geoghegan, Moreland et al., 2021). Indeed, the effective use of scientific advice by the New Zealand government has been credited with producing one of the most effective national pandemic responses (Manning, 2021), resulting in a lower healthcare burden (Alyssa and Hervé, 2021) and superior economic performance (IMF, 2021) than almost all other advanced economies. This is perhaps surprising, given that the 193-page pandemic plan (Ministry of Health, 2017) that was in place in March 2020 devotes only a single sentence to science advice.

In this article, I discuss several of the instances in which New Zealand's science community supported decision making in the Covid-19 response. These efforts included research scientists working at universities, Crown research institutes and private organisations, but also involved scientists employed in, or seconded into, policy or operational roles within the Ministry of Health and other agencies. Here I will focus on several examples where advice from research scientists was integrated into significant decision papers put to the New Zealand Cabinet.

This article is necessarily informed by my personal perspective as one of a team that provided advice based on mathematical modelling to the government (Hendy et al., 2021). While I was involved closely in some parts of the response, there will be gaps and omissions in my understanding of what took place in such a complex policy

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environment. This article is not intended to be an exhaustive account of the ways in which science was involved; rather, I have chosen to focus on aspects where I had first-hand experience.

The plan

New Zealand's influenza pandemic plan, first published in 2010 in the aftermath of the 2009 H1N1 influenza pandemic, was last updated by the Ministry of Health in 2017 (Ministry of Health, 2017). The plan outlines what would now be described as a 'flatten the curve' or mitigation strategy, albeit with stage-gates: e.g., 'keep it out', 'stamp it out' and 'manage it'. Influenza typically has an incubation period of one–three days (sometimes less than a day) and a generation time[1] of between two and four days, so it was thought that interventions such as contact tracing and lockdowns would be unlikely to allow an outbreak to be eliminated (Huang et al., 2021). This suggested a mitigation strategy, which would slow growth in cases so as to avoid overwhelming healthcare capacity.

Nonetheless, the plan acknowledged that there would be a need for rapid decision-making and implementation at early stages, in an environment with a great deal of uncertainty. This was the case early in 2020 as details began to emerge about the SARS-CoV-2 virus. As remains the case today, much of the early science that emerged was shared informally using preprint servers and social media. For instance, a link to the first complete genome sequence of the virus was released to Twitter on 11 January, just 12 days after it had been identified (Holmes, 2020). Estimates of the severity would remain contested for some time, although it was clear from media reports that healthcare systems had been under stress in China (Verity et al., 2020).

This kind of uncertainty is not surprising at the early stages of a pandemic, but the science that was starting to emerge suggested that SARS-CoV-2 was a very different pathogen than envisaged in the New Zealand influenza pandemic plan. In particular, SARS-CoV-2 seemed to have a higher reproductive number,[2] which had implications for the size of the final outbreak. It was also not going to be a rerun of the 2003 SARS-CoV-1 outbreak, as a significant fraction of transmission seemed to be occurring before the onset of any symptoms, making it difficult to screen individuals without the use of much slower, laboratory-processed diagnostic testing. The need to test the pandemic plan against this emerging science was very clear.

Early scientific advice

The New Zealand influenza pandemic plan designates Environmental Science and Research (ESR), a Crown research institute, as the lead agency for scientific advice. However, while ESR has substantial capability in infectious disease surveillance, it does not have the mandate to fund, coordinate or direct a broader national research effort. Moreover, recent decades have seen significant underinvestment in infectious disease research in New Zealand. Indeed, in the selection of the National Science Challenges in 2013, Peter Gluckman's panel explicitly ruled out investment in infectious disease research (Gluckman, 2013). Several attempts to establish a centre of research excellence with an infectious disease focus had also failed.

Nonetheless, during Gluckman's tenure as the prime minister's chief science advisor, he had established a network of government science advisors (Jeffares et al., 2019). His successor, Juliet Gerrard, had continued this network, and strengthened it, by appointing several Māori researchers. The Ministry of Health's chief science advisor, Ian Town, along with Gerrard, would play an important role in coordinating science advice from across the research sector. The Ministry of Health also established several technical advisory groups, which covered a range of expertise, and seconded a number of public health researchers to its staff early on in the response.

An early challenge for these groups was to consider the fit of the 'flatten the curve' strategy described in the influenza pandemic plan for Covid-19. Although influenza has a lower reproduction number than Covid-19, its shorter generation time[3] means that cases can still grow rapidly. The lower reproduction number means that an influenza virus will typically have a lower population immunity threshold.[4] Thus, the plan envisioned a rapidly growing but nonetheless solitary wave of infection that would eventually extinguish itself. Covid-19 would be more challenging: the higher reproduction number suggested a population immunity threshold of 60–70%. This early data suggested that Covid-19 was going to generate a much taller curve to be flattened.

In February the Ministry of Health commissioned the University of Otago's School of Public Health to model the outcome of a mitigation strategy for Covid-19.

In February the Ministry of Health commissioned the University of Otago's School of Public Health to model the outcome of a mitigation strategy for Covid-19. To do this the Otago group worked with collaborators in Germany, who had developed a deterministic mathematical model for just this purpose (Wilson et al., 2020). The results suggested that New Zealand's healthcare system was unlikely to cope under such a strategy, and this has been reported to have had a significant impact on decision makers. In mid-March our team at Te Pūnaha Matatini[5] provided similar modelling via Juliet Gerrard's office, examining the extent to which the outbreak could be broken into waves with rolling interventions (James, Hendy et al., 2020). Despite the sobering picture that was emerging, the longer generation time of SARS-CoV-2 suggested that interventions such as contact tracing might be more effective against it than would be expected against influenza.

These early modelling efforts were influential in the country's pivot towards an elimination strategy, as was the fact that several East Asian countries, such as Singapore and Taiwan, were also signalling this approach. Furthermore, China's response was also demonstrating that elimination might be possible (World Health Organization, 2020). It remained to be seen whether a Western government such as New Zealand's could gain public consent for the sort of stringent measures that were being reported as effective in China. Nonetheless, from mid-March much of the available science advice was in strong support of elimination (Baker et al., 2020).

If sequencing of the virus genome were to provide a close link to a known case in MIQ, then our estimates would be revised down and Auckland may have returned quickly to alert level 1.

The elimination strategy

New Zealand's decision to adopt an elimination approach in late March meant that it would need to develop and use scientific tools in a different way from other parts of the world, where mitigation held sway. Forecasting caseloads for operational planning would become relatively less important, while providing real-time advice on the timing and stringency of interventions would become much more important. For instance, a successful elimination approach will reduce case numbers to the point where chance events become important, requiring the use of stochastic mathematical methods that are different from those used early on to model mitigation (Hendy et al., 2021). The combination of this modelling approach with whole genome sequencing of SARS-CoV-2 would later become pivotal in government decision making.

In late March, a Covid-19 modelling work stream was formally established with the aim of providing modelling to support operational decision making for managing a large outbreak (ibid.). At that stage a very significant outbreak was still considered possible, pending the effectiveness of the alert level system. By mid-April the modelling work stream was divided into two parts. The first focused on providing daily (and later weekly) operational advice, while the second would investigate the outcomes that might result from future policy decisions. For policy purposes, scenarios for modelling were developed via an iterative process of close engagement and feedback between the modelling team, departmental science advisors and officials. This process was later formalised via a modelling steering committee chaired by officials. In the event, the stringent alert level 4 controls introduced in late March proved very effective, with domestic transmission of the virus likely being eliminated at the start of May (James et al., 2021).

Genome sequencing of the virus did not become fully integrated into the response until later in the year. Initially there were logistical challenges in obtaining samples and making them available to researchers. By July 2020 the virus from around half of the confirmed cases in New Zealand had been sequenced by a team of ESR scientists (Geoghegan et al., 2020). The results were of clear value for research purposes, demonstrating, for instance, that the shift to alert level 4 in late March had sharply arrested the growth of a cluster of cases associated with a wedding celebration in Bluff. However, sequencing was not yet contributing directly to decision making to the extent that would be needed to justify the dedicated collection and same-day delivery of samples to ESR's laboratories.

On 29 July 2020, the modelling steering committee hosted a workshop attended by officials, modellers and epidemiologists at the Treasury in Wellington to review progress on the response to date and to plan future work. One of the key resolutions at the meeting was to start developing models for a scenario where the virus was reintroduced into the country via a returnee in managed isolation and quarantine (MIQ). There had been several scares in previous months, so it seemed inevitable that at some stage a larger outbreak would be seeded in the community, requiring a rapid response. A brief from the Department of the Prime Minister and Cabinet formally commissioning further modelling work on incursion scenarios was received by the modelling team on 10 August.

The August 2020 outbreak

On the evening of 11 August we received a follow-up message from the department saying that this request had 'become more urgent'. We were told that an individual in South Auckland with no known connection to the border had just tested positive and our task was to estimate how many other cases might be in the community, information that would be needed for Cabinet's decision on an alert level change later that night. We had already developed the modelling tool envisioned in July, even though the formal commissioning had arrived just a day earlier. If close contact with an international returnee or border worker could not be identified, we estimated that there would be between 10 and 40 other cases, indicating that a large established outbreak was probably under way. We sent a report with this information by 7.36pm, ahead of the Cabinet decision to move Auckland to alert level 3 for three days, which was announced at 9.30pm.

Our modelling was based on the assumption that there had been at least two steps in the chain of transmission between a (possibly undetected) case that had arrived from overseas and the diagnosed case in South Auckland. This was a reasonable assumption, as initial contact tracing interviews had failed to establish

any link. If sequencing of the virus genome were to provide a close link to a known case in MIQ, then our estimates would be revised down and Auckland may have returned quickly to alert level 1. However, by 13 August no connection had been found.[6] It would eventually be established that there were upwards of 60 cases in the community on 11 August. This grew to a cluster of 179 cases before the outbreak was once again eliminated after 19 days. During this period the ESR team generated SARS-CoV-2 genomes in real time for 78% of the cases, sometimes identifying connections that were not apparent through contact tracing (Geoghegan, Douglas et al., 2021).

On 12 November, when a young woman in central Auckland tested positive for Covid-19, this approach paid dividends. Once again there were no known links to the border, but the government decided to delay its decision on an alert level shift until genome sequencing results were returned the next morning. Again, this proved to be a good decision, as the next day the sequencing linked her case to a Defence Force worker who had recently been infected at a central Auckland MIQ facility. In this case we estimated that there were likely to be fewer than a dozen other cases, a cluster that could probably be handled by testing and tracing. Auckland was spared a three-day alert level shift, avoiding shut-down costs estimated at around $130 million to the Auckland economy (Treasury, 2020).

This last example may suggest that explicit cost–benefit frameworks could have been used more generally in decision making, as some have argued (Heatley, 2021). However, there are considerable technical challenges in constructing appropriate counterfactuals for such analyses. In the November 2020 example, the counterfactual is straightforward, as the science advice was that the decision would not have an impact on health outcomes. However, a cost–benefit analysis by the New Zealand Productivity Commission of the decision to extend alert level 4 rather than move to alert level 3 in late April 2020 used counterfactuals based on a simple deterministic model of disease spread (ibid.). Using a more sophisticated stochastic model and ex post information about the effectiveness of alert level 3, our team subsequently came to significantly different conclusions from those of the commission (James, Binny at al., 2020). It is not clear that the cost–benefit frameworks proposed to date would have added significant value to the complex value judgements that were needed during the pandemic.

The August 2021 outbreak

Towards the end of 2020 it started to become apparent that highly effective vaccines would be available to New Zealand in the following year. This outlook darkened during the first quarter of 2021, as the more transmissible Alpha variant of the virus became prevalent globally, only to be followed by an even more transmissible Delta variant. To achieve population immunity against Delta, models suggested that in excess of 95% of the total population would need to be vaccinated (Steyn, Planck et al., 2021; Nguyen et al., 2021), far higher than was thought possible. New Zealand's exit from its elimination approach was going to be complicated and politically fraught. What followed was a period of very close collaboration between ministers, ministries and the science community, including the modelling teams, to plan a reopening at the completion of the vaccination programme but with a suite of moderate and sustainable public health measures left in place.

This planning was interrupted on 17 August 2021, when an Auckland man with no known connection to the border tested positive for Covid-19. Genome sequencing would quickly confirm it was the highly transmissible Delta variant, linked to the outbreak that New South Wales was struggling to control. At the time of detection there were several hundred people infected, so it was already a much more significant outbreak than that eliminated in August 2020. Our models suggested that even alert level 4 might struggle to contain the Delta variant, but it did appear effective in extinguishing several branches of the outbreak, and may even have come close to eliminating them all (Steyn, Hendy et al., 2021). Unfortunately, the virus spread into a marginalised and under-vaccinated South Auckland community dependent on emergency housing, where it could not be eliminated.

> It remains to be seen whether the [Covid Protection] framework will be effective in managing Delta through winter 2022, although the growing dominance overseas of the Omicron variant, which seems to exhibit immune escape, means that another shift in strategy will likely be needed.

When our team briefed ministers about the implications of Delta for New Zealand's reopening strategy in May 2021, we emphasised that there was no 'magic' vaccination coverage threshold above which life could return to normal (Steyn, Planck and Hendy, 2021). Instead, we noted that any reopening plan was going to require a sequence of value judgements that balanced a range of consequences. This plan could be informed by science, but science was no longer going to provide a set of clear directions that de-risked decisions for policymakers in the way it had since March 2020. These political risks were made more acute by the failure to eliminate the August 2021 outbreak, particularly as this became entrenched in

Māori communities, which are at more severe risk from Covid-19 and had not been sufficiently prioritised in the vaccination roll-out (Steyn, Binny et al., 2021; Waitangi Tribunal, 2021).

At the time of writing, New Zealand is in its first few weeks under the Covid Protection Framework, a system that relies heavily on the use of vaccine passes that allow access to hospitality and other close contact services. The framework drew considerable criticism from the scientific community when it was released, particularly regarding its potential impacts for Māori (Gerrard and Town, 2021). It remains to be seen whether the framework will be effective in managing Delta through winter 2022, although the growing dominance overseas of the Omicron variant, which seems to exhibit immune escape, means that another shift in strategy will likely be needed.

Discussion

New Zealand's pandemic response has been judged a success on many metrics, including by economic, social and health measures (Philippe and Marques, 2021). While New Zealand's isolation was also an advantage, this needed to be supported by good decision making; other isolated territories experienced considerably worse outcomes where not following an elimination strategy (Heinzlef and Serre, 2021). Indeed, the integration of science into New Zealand's decision-making processes during the Covid-19 pandemic has been judged a critical part of that success (Manning, 2021).

Nonetheless, it is curious that this integration took place in the absence of any coordinating infectious disease research centre or institute, as might have occurred in an overseas jurisdiction. Instead, the government science advisory network filled this role, taking advantage of other, less formal networks of researchers around the country. These research networks, such as those supported by Te Pūnaha Matatini, played key institutional roles in the pandemic response.

The technical advisory groups established by the Ministry of Health were also important, although researchers appointed to these sometimes reported finding the decision-making processes in which they were embedded rather opaque. This can also be the case for officials, but they are trained to work in such environments. In contrast, without effective feedback from the decision-making process, expert but inexperienced advisors may struggle to deliver or adapt to meet the needs of decision makers. The experience of the technical advisory groups is to be contrasted with that of the modelling teams, which were closely engaged with officials in the Department of the Prime Minister and Cabinet. They were able to develop a clear understanding of needs, sometimes anticipating these before formal commissioning.

An urgent hearing of the Waitangi Tribunal during the week of 6 December 2021 highlighted the lack of Māori input into key aspects of the Covid-19 response, especially the design of the vaccination roll-out in the second half of that year (Waitangi Tribunal, 2021). Mātauranga Māori played a key role in Te Pūnaha Matatini establishing its modelling programme in early March 2020, with an advisory board member sharing his iwi's devastating experiences in the 1918 influenza pandemic. This was ahead of any formal commissioning by central government and led to several pieces of work that focused on the impacts for Māori. This suggests that funding could have been allocated directly to Māori organisations to enable commissioning of work, although mechanisms would be needed to ensure that any outputs were taken into account in decision making.

Finally, considerable effort was made to communicate results publicly via mainstream media and social media. This sometimes came with 'no surprises'-type constraints, so that ministers were briefed ahead of the release of outputs. Officials occasionally requested that scientific reports be released at short notice where they had been of consequence for important decisions. This was generally managed well, despite the challenges present in such a rapidly moving crisis, but it did rely on considerable previous experience and expertise in science communication among the teams involved.

1 The generation time is the mean interval between a primary infection and subsequent secondary infections.
2 The number of secondary cases generated by an infected individual was estimated to be around 2.5–3.5 for Covid-19, around twice that of influenza (Wilson et al., 2020).
3 The generation time for influenza is typically two–four days compared to five–six days for Covid-19.
4 For influenza the population immunity threshold would be around 30–40% of the population.
5 Te Pūnaha Matatini is a centre of research excellence funded by the Tertiary Education Commission. It supports a network of more than 100 researchers employed across 12 different research organisations.
6 At this stage not all cases in MIQ were routinely being sequenced.

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Integrated Prevention and Control of Seasonal Respiratory Infections in Aotearoa New Zealand

next steps for transformative change

Abstract

Public health measures that successfully eliminated the spread of Covid-19 in Aotearoa New Zealand during 2020 also profoundly reduced the normally high seasonal burden of non-Covid infectious diseases. One outcome of this extraordinary year was that life expectancy in New Zealand actually increased during 2020, the first year of this global pandemic. We should not accept or allow a return to previous levels of illness and death during the winter months.

Transformative change will require an integrated approach to infectious disease policy that builds on the knowledge and infrastructure developed during the first two years of the pandemic response. An effective strategy will include generic elements – notably, science-informed strategic leadership, a Tiriti and equity focus, and an upgraded alert level system. We will also need a specific plan for infectious respiratory diseases, including measures to improve indoor air quality, a national mask strategy, and an enhanced system to deliver vaccinations against seasonal respiratory infections.

Such an approach can have immediate and long-term benefits, protecting New Zealanders from endemic, epidemic and pandemic infections.

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We face a potentially difficult winter in 2022, with multiple infectious disease threats. There is an urgent need for integrated policy and action to prevent and control both Covid-19 and more familiar winter season respiratory infections. In the future, 2020 should be seen as the watershed year that triggered a transformative improvement in New Zealand's poor track record of infectious disease incidence and inequities.

Keywords Covid-19, pandemic, seasonal, influenza, public health, Aotearoa New Zealand

From March to May 2020, Aotearoa New Zealand's pandemic response was one of the most stringent in the world. Adoption of the elimination strategy successfully ended the initial Covid-19 outbreak (Baker, Wilson and Anglemyer, 2020; Jefferies et al., 2020), but the control measures also caused hardship in communities and populations that were already marginalised (Choi et al., 2021). An unexpected benefit of the strategy was that many other infectious diseases largely disappeared, and life expectancy increased (Islam et al., 2021).

For decades New Zealand has experienced high rates of infectious diseases and their consequences (e.g., rheumatic fever, meningococcal disease, skin infections, bronchiectasis in children) compared with other OECD countries. The distribution of infectious diseases by ethnicity, age and health status or disability has also been highly unequal (Baker et al., 2012; Khieu et al., 2017; Wilson et al., 2012; Oliver et al., 2018). Health inequities have a structural basis and in New Zealand they are strongly patterned by the intergenerational impacts of poverty and colonisation. These structural conditions are able to get 'under the skin' and increase infectious disease risk through multiple pathways, including household crowding, exposure to tobacco smoke, presence of underlying health conditions (comorbidities), and unequal access to healthcare, including immunisations.

The Covid-19 pandemic has once again demonstrated that when structural inequalities are embedded in society they make infectious diseases difficult to prevent and control. For example, the New Zealand government's decision to transition away from Covid-19 elimination during the Delta outbreak in Auckland in 2021 was strongly influenced by a judgement that the outbreak could not be contained because the virus was spreading in communities that were highly marginalised – for example, people in transitional housing and those with alcohol and drug dependencies (Baker et al., 2021).

New Zealand's vulnerability to infectious disease outbreaks is a concern not only because of the impacts of known pathogens, but also because it indicates a lack of resilience to future epidemics or pandemics that may be more severe than the current one (Boyd, Wilson and Nelson, 2020). On the other hand, New Zealand's effective response to the Covid-19 pandemic and the substantial co-benefits the response delivered for other infectious diseases demonstrate how much can be achieved when government policy is centred on protecting population health (Baker, Wilson and Blakely, 2020).

Before the pandemic, outbreaks of seasonal infectious diseases imposed a costly burden on populations around the world, including in New Zealand (Khieu et al., 2017; Oliver et al., 2018; Paules and Subbarao, 2017; Prasad et al., 2020). We now know how preventable much of that burden is likely to be.

In this article we consider the potential for transformative change as a key legacy of the pandemic. We outline the next steps for applying the knowledge and infrastructure gained from this 'forced experiment' to address the high burden and inequities caused by pandemic, epidemic and endemic respiratory infectious diseases in Aotearoa New Zealand. We propose that the most immediate priority is to develop an action plan to optimise prevention and control of seasonal respiratory infections, beginning in winter 2022.

Learning from the Covid-19 pandemic

New Zealand's initial pandemic response: effects and co-benefits

At the time that Covid-19 case numbers first began to rise, New Zealand's infrastructure was not adequate for control of widespread community transmission. This capacity problem led to the decision to implement strict border controls and a nationwide lockdown (alert level 4). The public health measures instituted under New Zealand's alert level system not only eliminated Covid-19 transmission (Baker, Wilson and Anglemyer, 2020; Jefferies et al., 2020), but also effectively eliminated or heavily suppressed influenza and other respiratory illnesses, as found across multiple respiratory disease tracking methods. Compared with the years 2015–19, there was a marked reduction in viruses detected in the 2020 post-lockdown period, including a 99.9% reduction in influenza virus and a 98.0% reduction in RSV (respiratory syncytial virus) (Huang et al., 2021). This suppression of infection meant that the annual winter mortality peak was also greatly reduced.

In New Zealand, influenza is typically implicated in around 500 excess winter deaths each year (Khieu et al., 2017; Telfar Barnard et al., 2020). This excess usually ranges from 11% to 21% above non-winter rates, and represents around 4.7% of total mortality. In temperate and cool temperate climates, excess winter mortality seldom falls below 10% (Healy, 2003). In 2020 the winter mortality excess reduced to 225 deaths (~2% excess above non-winter mortality), compared with the average of the 2011–19 period of 1,537 deaths (15%). This marked reduction in morbidity and mortality, across multiple infectious diseases, was also evident in many other jurisdictions (Oh et al., 2021; Ullrich et al., 2021; Zhang, 2021; Australian Bureau of Statistics, 2021).

Implications of these findings

These substantial reductions in respiratory illnesses and deaths were achieved using public health and social measures, also known as non-pharmaceutical measures

Table 1: Mechanisms of prevention and control of infectious diseases

(Examples in this Table have a strong focus on respiratory transmission because this is the route for Covid-19 infection; it is also the route of most highly transmissible infections spread by human-to-human contact.)

Mechanism	Prevention and control intervention	Policy considerations
Transmissibility Decreasing the risk of transmission when people are in contact	Vaccination, ventilation, filtration, face masks, personal protective equipment (PPE) in high-risk settings, physical distancing, hand hygiene	• The key advantage of these measures is that they support a high level of normality in daily life, keeping people relatively safe while allowing them to mix with others and stay connected to what they value • These measures vary in the degree to which cost or effort is required by the public or by structural entities such as government or businesses • Hand hygiene has probably contributed very little to Covid-19 control but may have had a significant impact on other infections; hand hygiene should therefore continue to be promoted, but should not replace respiratory controls such as masks and ventilation
Contact rate Decreasing the risk of susceptible people mixing with infectious people	Vaccination, case isolation and contact quarantine (including staying at home when unwell with any infection), home working, school closures, restricting mass gatherings, border controls, stay-at-home orders (lockdowns)	• These measures are highly effective at controlling outbreaks but they can also be very disruptive because they keep people apart, causing social as well as physical isolation
Duration of infectivity Reducing the infectious period	Vaccination, antimicrobial treatment, immunomodulatory treatment	• These measures are extremely important for some infections, particularly those that have a chronic course (e.g., HIV, HCV), but they also have some limitations: in an emerging pandemic there may not be disease-specific prevention or treatment for some time; also, treatment measures are less desirable than prevention measures, and they generally require access to testing and healthcare.

(Müller, Razum and Jahn, 2021). Unlike vaccines, these measures are not specific to any one infection, hence their wide-ranging effects. We need to consider how to achieve similar reductions in morbidity and mortality every winter from now on.

The Covid-19 pandemic should also change our thinking around control of influenza. Aotearoa New Zealand's pandemic plan (which remains the same as pre-Covid) (Ministry of Health, 2017) was founded on an assumption that influenza could not be stopped, although it could potentially be delayed with the use of border management strategies, and the pandemic peak flattened with mitigation measures. However, the initial national alert level 4 lockdown in 2020 eliminated transmission of a nationwide Covid outbreak with a basic reproduction number (R0) much higher (around 2–3) than influenza (R0 of 1.2–1.8 in eight southern hemisphere countries for the 2009 H1N1 pandemic influenza) (Opatowski et al., 2011). We can be reasonably confident of eliminating influenza transmission with similar control measures in future, should we need to (i.e., in the event of a severe influenza winter season or pandemic). However, the hardship caused by lockdowns and other movement restrictions indicates a need to develop better ways of preventing community transmission of infections during the winter months.

The current policy gap

Aotearoa New Zealand's alert level system was a highly effective policy, enabling decision makers to coordinate control measures and escalate or de-escalate them in response to the level of risk. While the system had several flaws, it was an effective tool for communication and pandemic control, particularly in the early phases of the pandemic response.

In early December 2021, the alert level system was replaced by the Covid-19 Protection Framework, also known as the traffic light system (New Zealand Government, 2021). Despite being presented as a 'protection framework', the scope of this tool is largely restricted to providing a vaccine mandate for indoor social environments (including hospitality venues, gyms, and personal grooming services such as hairdressers). This system also incentivises the population to be vaccinated. It offers very little non-vaccine (public health and social measures-based) protection, and because of its strong focus on Covid-19 vaccination status it has little potential to protect the public from other infectious disease threats. Because of its highly specific focus on Covid-19 vaccine mandates for public settings, this policy is in many ways the opposite of the integrated approach that is needed.

We need a national strategy for prevention and control of respiratory infectious diseases that can address existing disease burden and inequities and prepare the country for future threats. Without urgent action, the winter of 2022 may be a difficult one; once border restrictions are loosened, we may face multiple infectious disease threats, including new Covid-19 variants, and waning immunity from Covid vaccines occurring simultaneously with the return of other infectious diseases (such as influenza and meningococcal disease). We could also see a new pandemic emerging at any time.

We have previously proposed a series of upgrades to the alert level system that would enhance its ongoing value for infectious diseases prevention and control (Kvalsvig, Wilson et al., 2021). Introduction of a next-generation alert level system would provide the policy basis for an integrated approach and would itself have

an integrating function. This option is discussed further in a later section.

In the next sections we describe the intervention logic of infectious diseases control measures, and outline the implications for new approaches that build on lessons learned and novel infrastructure developed during the pandemic.

Intervention logic: how infectious disease control measures work

Many different control measures are used to prevent or contain infectious disease outbreaks, but ultimately all of them rely on just three mechanisms of action. These three mechanisms can be applied in combination to reduce the reproduction number of an outbreak to below 1 (Kvalsvig and Baker, 2021). As a result of this shared intervention logic there are many synergies in infectious diseases control, such that most control measures can prevent transmission of a variety of pathogens. This synergy is the explanation for the unprecedented decrease in non-Covid infections experienced in New Zealand over the past two years, and is the basis for the integrated approach proposed in this article. The three main mechanisms are summarised in Table 1.

The legacy value of pandemic infrastructure: integrating the prevention and control of Covid-19 and other infectious disease threats

New Zealand's Covid-19 pandemic response has been supported by the development of a wide variety of infection control infrastructure, including managed isolation and quarantine (MIQ) facilities for border control; genome sequencing and waste water testing to inform outbreak control; QR code scanning to support quarantine of contacts; vastly increased capacity of the contact tracing system; and large-scale vaccination infrastructure, aimed at immunising the entire eligible population in a short time frame. This infrastructure presents an opportunity to address other infectious disease threats in synergy with ongoing Covid-19 control.

As demonstrated by the pandemic response, measures that work by decreasing transmission during contact (e.g., optimising indoor air quality) are generally far less disruptive to everyday life than measures that work by decreasing contact (e.g., school closures). The policy aim should be to prioritise transmission prevention measures that work unobtrusively in the background to protect population health while enabling normal activities to continue. By applying vaccine-based immunity in combination with innovative surveillance and outbreak control options, effective population-based infection control can be experienced quite differently 'on the ground' with minimal use of movement restrictions and lockdowns.

As demonstrated by the pandemic response, measures that work by decreasing transmission during contact … are generally far less disruptive to everyday life than measures that work by decreasing contact …

Another policy design consideration is about who is expected to bear the cost or effort of implementing the various measures. This difference is not necessarily a characteristic of the control measures themselves, but reflects how they are implemented.

For example, mask wearing can be implemented in an individualised way that requires members of the public to buy and wear masks, to ensure they always have a mask with them, and to manage any associated difficulties, such as communication barriers for people who need to see faces to access communication. Alternatively, mask wearing can be promoted as a public good, with masks freely available in public settings where they are required, and a government-level action plan for communication support to ensure that masks do not further disable those who use them. A systemic approach to support for mask wearing is essential to ensure that outbreak control measures do not widen existing inequities (Rimar et al., 2021).

Aotearoa New Zealand needs a dedicated public health agency that has the ability to coordinate threat responses across government departments and other relevant agencies, with the aim of preventing infectious diseases and reducing inequalities at the core of its role. The Pae Ora (Healthy Futures) Bill is currently before Parliament. It proposes a public health agency, potentially located within the Ministry of Health. Such an agency may be well placed to develop an effective and wide-ranging pandemic plan that is dynamic and therefore not fixed on one particular infectious pathogen, thus avoiding a reactionary approach as evidenced with the Covid-19 response in New Zealand (Kvalsvig and Baker, 2021). By contrast, Taiwan is a leading example of pandemic preparedness, as, following the SARS pandemic in 2003, a dedicated Centers of Disease Control was established which was able to lead the later Covid-19 response in 2020 onwards with immediate effect (Summers et al., 2020). This capacity meant that there was border screening implemented almost immediately, extensive resources were available for both digital and manual approaches to contact tracing, and existing protocols for isolation of both cases and suspected cases were able to be enacted relatively quickly. In non-pandemic times, this agency would address endemic infections and build and maintain the infectious diseases workforce and expertise.

Next steps for an integrated approach to winter infectious diseases

Here we propose ways of minimising the impact of winter infectious diseases. Some of these are generic measures that improve capacity to respond to all infectious diseases. Others are specific to those infectious diseases with respiratory transmission. Some of these measures follow from our recent descriptions of how to respond to Covid-19, which include science-informed strategic leadership;

a Tiriti (Treaty of Waitangi) and equity focus (Baker et al., 2021); use of the precautionary principle (Kvalsvig, Russell et al., 2021); and the need to create legacy benefits for our healthcare and public health systems (Kvalsvig, Wilson et al., 2021).

Elements focused on all infectious diseases

Science-informed strategic leadership

Infectious diseases with an exceptionally high impact, such as Covid-19 and rheumatic fever, may require disease-specific action to mitigate their effects. But this approach is inefficient and there are too many infectious diseases of public health significance to address each of them separately. Instead, an integrated approach is needed.

Before the pandemic there was high annual morbidity and mortality from infections caused by influenza, enteroviruses, rhinoviruses, respiratory syncytial virus (RSV) and others, including bacterial pneumonias and less common but potentially life-threatening infections such as pneumococcal and meningococcal septicaemia. The increase in seasonal respiratory infectious diseases seen each winter caused preventable illness and deaths, and placed a significant burden on the healthcare system, causing reduced capacity to address non-infectious disease presentations. Even mild respiratory outbreaks can result in reduced productivity due to time off work and school, and cause social disruption to individuals and whānau. We can expect these infections to return during 2022, perhaps with unpredictable epidemiology that differs from patterns seen in previous years.

The first step in applying the principles and practice of Covid-19 control to other infections is to establish as closely as possible the true effect of the lockdown on non-Covid-19 infections. This step requires methodological care to account for changes in reporting and diagnosis of infectious diseases arising from health services disruption. Research should also consider how to adapt Covid pandemic measures for other situations. For example, border controls are unlikely to be used for seasonal outbreaks, but further research and modelling can establish the value of using lockdowns in an influenza pandemic in a similar way to Covid-19.

We need to strengthen New Zealand's pandemic strategy with a next-generation alert level system ... that is not focused on a single infection, although it should reflect the importance of Covid-19 as a public health threat.

Infectious diseases have a high impact via acute or long-term health effects, mortality, health service burden, or time lost from work and education due to illness or caregiver responsibilities. It is important that policy evaluation takes both direct and indirect impacts into account – for example, estimating the full public health impact of vaccine programmes, not just the healthcare costs of acute infection.

A Tiriti and equity focus

Given the importance of infectious diseases prevention to Māori, it is vital that policy around winter infectious diseases upholds te Tiriti in all aspects. This means ensuring that Māori have a leading role in prioritisation, design and implementation. Likewise, Pasifika populations experience high and inequitable impacts from these infections and Pasifika leadership is needed to ensure equitable processes and outcomes. Māori-led responses have been highly effective during the Covid-19 pandemic and there is considerable depth of Māori expertise across a wide range of policy areas relevant to outbreak control (McLeod et al., 2020; Pihama and Lipsham, 2020; McMeeking, Leahy and Savage, 2020).

Poverty and racism are powerful drivers of the infectious disease burden in Aotearoa. Addressing these 'upstream' factors is far more efficient than most other prevention and treatment approaches because their impact is seen in such a wide range of outcomes. Examples of this type of support that have been highlighted by the Covid-19 pandemic include the need for healthy homes, schools and workplaces, food security and sovereignty, and equitable and culturally safe access to vaccination and other types of healthcare (Choi et al., 2021) When communities are connected to these resources they are far more likely to be resilient to infectious disease threats.

An upgraded alert level system

We need to strengthen New Zealand's pandemic strategy with a next-generation alert level system (Kvalsvig, Wilson et al., 2021) that is not focused on a single infection, although it should reflect the importance of Covid infection as a public health threat. Instead this system should be flexible enough to provide protection against a range of pathogens, including currently unknown emerging infectious diseases. It should be designed as legacy infrastructure, incorporating measures that will have a lasting impact on population health, such as optimising air quality. As previously mentioned, disruptive measures such as lockdowns that reduce contact between people should be reserved for situations where the threat to population health is high. At all other times, measures that allow contact while preventing transmission should be built into everyday life as enduring protection against endemic, epidemic and pandemic infections.

Elements focused on respiratory infectious diseases

A specific respiratory infectious disease control plan

Many control measures have the potential to provide effective protection against a range of seasonal respiratory infections: for example, masks and indoor ventilation; high influenza vaccination uptake; and a culture of staying at home when unwell

that is supported by paid sick leave so that all workers can stay at home when they or their whānau might be infectious. But a coherent policy for winter infections will need to include systematic organisation at structural levels to ensure that prioritisation, policy design and implementation are effective and equitable.

Designing policy for transformative change requires innovative and ambitious policy goals. In future we will know that this approach has been successful if there is epidemiological evidence that 2020 was a watershed year, when the longstanding trend of rising infectious diseases incidence and inequities was finally and permanently reversed.

Policy implementation needs to be similarly ambitious and to avoid business-as-usual approaches. Innovative policy should include the following measures.

Measures to improve indoor air quality

It is now clear that airborne transmission (inhalation of aerosolised particles) is the major route of infection with Covid-19 (Greenhalgh et al., 2021) and this evidence is generating reassessment of the potential to prevent many other infectious diseases by improving ventilation of indoor spaces. Importantly, this protection provides highly effective protection from infections where no vaccine is available, or when population immunity is suboptimal – for example, if Covid-19 variants demonstrate vaccine escape.

Worldwide and in Aotearoa there are increasing calls for a profound change in indoor air quality as an enduring action to improve public health (Kvalsvig, Bennett et al., 2021). This change would be similar to the massive effort to build waste water infrastructure in London during the 19th century that achieved a significant and permanent reduction in the risk of outbreaks of enteric diseases such as cholera.

An Aotearoa New Zealand face mask strategy

Mask wearing is a highly effective prevention measure for respiratory infections (including Covid-19) (Howard et al., 2021). Policy support from governments combined with cultural acceptance of face masks led to a high uptake of mask wearing in Asian jurisdictions from very early in the pandemic (Summers et al., 2020; Cowling et al., 2020), followed by adoption of mass masking in regions across the world that did not have a previous history of using masks for respiratory infections. New Zealand has been something of an outlier in this respect, providing delayed and often equivocal recommendations about mask wearing in public. New Zealand has not benefited as much as it could from mask wearing as protection against Covid-19 and a range of respiratory pathogens.

> Population health and wellbeing gains from an active approach to harm minimisation extend beyond avoiding acute illness and mortality to include prevention of a range of post-infectious consequences, support for health services, and reduction of indirect effects such as time lost from education and work.

A face mask strategy is now needed to establish and normalise mask wearing during the winter months and at other times when community transmission risk is high. Policy settings for effective population mask use include development and dissemination of clear guidelines, direct provision of masks to ensure equitable access, communication support as mentioned above, and evidence-informed quality standards for masks used in public to complement existing standards for medical masking (Rimar et al., 2021; Kvalsvig, Wilson et al., 2020). Mask mandates have a high impact on population uptake and can act as a 'behavioural anchor' to support adherence to other public health and social measures (Karaivanos et al., 2021). As with vaccine uptake, there is evidence that people are more likely to wear a mask when provided with information about how this behaviour protects others, compared with information about protecting themselves (Bokemper, 2021).

Vaccination for enhanced protection from winter respiratory infections

Vaccines are available for two major respiratory pathogens, influenza and Covid-19; vaccines for a third major infection, RSV, are currently in development. In future, New Zealanders could be offered a combined vaccine against a range of winter respiratory infections. Because respiratory infection risk is highest in the youngest and oldest age bands, a whānau-centred approach to vaccination has much to offer. For example, routine vaccination of children against influenza in the United Kingdom has proven to be a highly effective public health strategy because children readily acquire and transmit this infection, including to older members of the family or household (Paules and Subbarao, 2017; Kassianos et al., 2020). This approach needs urgent consideration in Aotearoa New Zealand, given the high and inequitable burden of influenza in this country.

Conclusions

Until recently, policymakers and the public have appeared to accept the heavy winter burden of infectious diseases and the structural mechanisms of health inequities as being too difficult and impractical to address. New Zealand's pandemic experience has also shown that control measures to reduce transmission of Covid-19 infection have been effective against a range of infectious diseases that impose a high mortality, morbidity

and equity burden on population health. The forced experiment of the pandemic response in New Zealand indicates a need to change our thinking about the preventability of much of this burden.

Population health and wellbeing gains from an active approach to harm minimisation extend beyond avoiding acute illness and mortality to include prevention of a range of post-infectious consequences, support for health services, and reduction of indirect effects such as time lost from education and work. This approach would have a substantial and positive impact on health inequities, with particular benefit for Māori and Pasifika populations.

Although a full lockdown is a high-impact outbreak control strategy that should be reserved for severe public health threats, our proposed approach is to integrate other elements of the Covid-19 response into everyday life to prevent transmission while enabling everyday life to continue. For example, a concerted effort to optimise indoor air quality could have a transformative effect on population health and wellbeing similar to the effect of provision of clean water in European cities during the 19th century.

Aotearoa needs an integrated approach to outbreak control that can protect the population from multiple infectious diseases. This need is now urgent because of the challenges presented by the changing infectious disease landscape we are likely to see during winter 2022. This integrated approach and the long-term benefits it will deliver for our populations should be a long-term legacy of the Covid-19 pandemic.

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Mihiata Pirini and Anna High

Dignity and Mana in Aotearoa New Zealand Legislation

Abstract

The term 'dignity' is used in a variety of legislative contexts in Aotearoa New Zealand, to express different ideas and perform different functions. It is also sometimes deployed alongside the Māori concept of mana, suggesting a degree of legal association between these two discrete concepts. In this article we review the use of dignity in New Zealand case law and legislation, and critique the association being drawn between mana and dignity in our legal system. We also raise the possibility of a richer, locally legitimate conception of dignity to develop in Aotearoan law, one that draws on values and ideals from tikanga Māori – including but not limited to mana.

Keywords dignity, mana, bijuralism, bilingualism, tikanga Māori, statutory interpretation, legal theory, legal values

The term 'dignity' is deployed in a variety of legislative contexts in Aotearoa New Zealand, including 30 New Zealand Acts and 11 legislative instruments currently in force. This suggests that those responsible for designing the content of our legislation are using the concept of dignity to express certain ideas or perform certain functions. It is notable, however, that none of the legislation in question contains a definition of 'dignity', and, as discussed in this article, scholarly commentary provides competing conceptions of dignity. How, then, are statutory decision makers to approach references to dignity in a legislative regime? In addition, two Acts (the Substance Addiction (Compulsory Assessment and Treatment) Act 2017 and the Oranga Tamariki Act 1989) refer to dignity alongside the Māori concept of mana. As we discuss in this article, mana and dignity are not conceptual equivalents; how are decision makers to understand and interpret the apparent 'associations' (Roughan, 2009) being drawn between them in these statutes?

In this article we raise these questions for consideration. We suggest that statutory decision makers need to be alive to the debates that surround the concept of dignity, and its association with mana, and need to give some thought to the significance of legislative references to dignity in the context of their work. For that purpose we discuss some of the theoretical debates around dignity and our findings on how the concept has been discussed by the judiciary to date. Our aim is not to provide the answers to how dignity (including where associated with mana) ought to be interpreted or applied in every statutory regime, but to point out some conceptions of dignity, and theoretical debates around it, that may help decision makers grappling with 'dignity' references in legislation.

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The article is in three parts. The first part focuses on dignity, providing a brief introduction to the general concept of dignity, and two competing and more specific conceptions of dignity in particular. We suggest that each of these specific conceptions of dignity is evident in our legislation, and describe some aspects of dignity that have been considered in case law. The second part of the article deals with the concept of mana, and associations drawn to date, in both legislation and case law, between mana and dignity. We critique the appropriateness of those associations. The third part of the article raises the possibility of a richer, locally legitimate conception of dignity in Aotearoan law, one that draws on values and ideals from tikanga Māori – including but not limited to mana.

Dignity

The concept of 'dignity' within the liberal Western tradition

Though competing conceptions of dignity exist, it is possible to identify a 'core idea' of dignity within the liberal Western tradition. In this tradition, dignity speaks to the inherent worth of all individuals, and to the requirement that this worth be respected, both by other individuals and by the state (Resnik and Suk, 2003; McCrudden, 2008). There is an important equality dimension to this core idea of dignity, in that, as used in modern legal texts, this worth is understood as inhering equally in all persons – it is universal, not contingent on traits, circumstances or status. In this sense, the modern, Western legal understanding is that dignity exists in all humans. It does not depend on rank, hierarchy or office. Dignity in this form is a foundational human rights value, and is recognised in international legal instruments such as the United Nations Declaration of Human Rights and the International Covenant on Civil and Political Rights.

Beyond this 'core idea', debate arises around particular conceptions of dignity. For example, an autonomy-focused account of dignity, often associated with the German philosopher Immanuel Kant, posits that dignity requires treating people as autonomous beings – as ends and not as means to an end (McCrudden, 2008).

In [the liberal Western] tradition, dignity speaks to the inherent worth of all individuals, and to the requirement that this worth be respected, both by other individuals and by the state ...

Broadly, this can be described as the idea of 'dignity as autonomy'. This can be contrasted with a 'dignitarian' account of dignity, where dignity is used to ground obligations rather than rights (Hennette-Vauchez, 2011). The dignitarian account of dignity can be exemplified by the infamous French dwarf-throwing case, in which a municipal ban on consensual 'dwarf tossing' was upheld on the basis that it violated human dignity.[1] Other instances of dignitarian jurisprudence – where dignity is essentially used to trump, rather than ground, autonomy interests – arise in relation to prostitution, abortion, the right to refuse life-saving treatment, and sadomasochistic sexual behaviour. In such cases, argues Hennette-Vauchez, dignity is used to 'protect humanity as a *matter of rank*' (ibid., p.38).

The functions of dignity in Aotearoa New Zealand legislation

As noted in the introduction, the term 'dignity' appears in 30 New Zealand Acts (excluding those where the term appears only in an appended international treaty) and 11 legislative instruments currently in force. Meanwhile, the term 'indignity' appears in three Acts. Our analysis of how dignity is deployed in each legislative regime suggests that both accounts of dignity referred to earlier are recognised in our legislation – a conception of dignity that emphasises personal autonomy, and a conception of dignity that emphasises our obligations to humanity.

For example, in several regimes, dignity establishes a right to be treated in a certain way and seeks to protect the individual against unnecessary intrusions, especially by the state. Section 23(5) of the New Zealand Bill of Rights Act 1990 provides that persons deprived of liberty by the state have the right to be treated with respect for their inherent dignity. In a similar vein are four Acts that allow damages to be imposed on certain entities for treating others in a way that has caused them 'loss of dignity', as determined by a specialist tribunal: the Privacy Act 2020, Human Rights Act 1993, Health and Disability Commissioner Act 1994 and Employment Relations Act 2000. And the Misuse of Drugs Act 1975 (s13ED(2), inserted in 2005) provides that rub-down or strip searches must be conducted in a way that affords the person being searched 'the greatest degree of privacy and dignity consistent with the purpose of the search'. In these legislative contexts, dignity functions as a limiting or controlling factor on state conduct, in a way that seems to emphasise the individual autonomy dimension of dignity.

We suggest that a different account of dignity is present in those Acts where dignity is used to set down a kind of broad policy objective, intended to guide how decisions are made or services are delivered. For example, section 16(1)(d) of the Public Service Act 2020 provides that one of the 'public service values' is 'to treat all people with dignity and compassion and act with humility'. Such policy-oriented statements amount to 'large-scale legislative "messages" by government', setting out aspirations that actors or decision makers under particular legislative schemes ought to try and achieve (Hammond, 1982, pp.326, 331). Here, rather than the dignity of any single individual being at issue, the legislation seeks to recognise and reinforce the obligations that we owe to each other as members of humanity, reflecting a dignitarian account of dignity.

In sum, we ought not to assume that legislative references to 'dignity' are all referring to the same conception of dignity. Rather, we can expect to see different conceptions of it across our legal system. As such, decision makers who are tasked with interpreting or applying the concept in any particular legislative regime may need to consider what conception is at play within the relevant statutory regime. In this, they may be assisted by judicial discussions of dignity to date, which we turn to now.

Dignity: a subjective experience of harm?

As noted above, four interconnected Acts allow damages for 'loss of dignity'. Until very recently, the tribunal with jurisdiction over three of these four regimes (the Human Rights Review Tribunal) had not addressed what dignity meant, or what it meant to lose it; typically the tribunal would simply make a determination that there had been a loss of dignity and provide compensation, without opining on the concept itself. But the case of *Marshall v IDEA Services Ltd* [2020] NZHRRT 9 provided the impetus for the Human Rights Review Tribunal to engage substantively with the meaning of dignity across these cognate jurisdictions.

The case concerned the sub-standard care of a profoundly disabled boy (the claimant). It was determined as a matter of fact in the case that the claimant was not capable of subjectively experiencing humiliation or emotional injury. The tribunal therefore had to determine whether a 'loss of dignity' in the terms of the statute is contingent on the person in question subjectively experiencing an impact on their dignity. Prior to *Marshall*, the tribunal had generally followed the Canadian decision of *Law v Canada* [1999] 1 SCR 497, in which dignity was described in subjective terms, relating to feelings of self-respect and self-worth. In *Marshall* the tribunal evolved its approach towards dignity, taking it to mean, in the statutory context, a normative principle of the equal and inherent worth of all people, 'and not as a feeling or reaction' (at [99]). This allowed for recognition of harm in the absence of a subjective experience of emotional harm, in a way that vindicated Marshall as an equal bearer of dignity, despite his profound disability.

Unlike comparable jurisdictions such as Canada, Aotearoa has not afforded dignity the status of a foundational constitutional value.

Post-*Marshall*, therefore, the conception of dignity that prevails within the jurisdiction of the Human Rights Review Tribunal does not depend on the subjective experience of the person whose dignity is affected. It remains to be seen whether a similar approach will be taken in other jurisdictions: for example, a claim based on the breach of the right guaranteed by section 23(5) of the New Zealand Bill of Rights Act for detained persons to be treated with respect for 'the inherent dignity of the person'.

Marshall is also interesting in terms of what it reveals about whether, conceptually, dignity can be 'lost'. The tribunal in *Marshall* grounded its analysis of dignity in international human rights law and emphasised dignity's inherent, inalienable nature (at [79] and [86]). Because dignity is inherent and inalienable, it follows that it is not actually degraded or 'lost' by objectifying or disrespectful behaviour. Rather, it is the harmful and wrongful messaging and appearance of dignity's degradation which the 'loss of dignity' formulation seeks to remedy. It may be, therefore, that statutory formulations referring to 'loss of dignity' are inapt, and that it would be more appropriate to refer, for example, to an 'affront to dignity'.

Remedying impacts on dignity

The conundrum of how to remedy impacts on dignity has been considered by the courts in the context of section 23(5) of the New Zealand Bill of Rights Act. Section 23 of the New Zealand Bill of Rights Act sets out the various rights of persons 'arrested or detained', and section 23(5) provides that 'everyone deprived of liberty shall be treated with humanity and with respect for the *inherent dignity of the person*' (emphasis added).

The question of remedy for the state's failure to respect a detainee's inherent dignity was considered by Justice Hammond in *Attorney-General v Udompun* [2005] 3 NZLR 204. This was a Court of Appeal decision addressing the treatment of a Thai national on being denied entry to New Zealand. Hammond centred his interpretation of section 23(5) of the Bill of Rights Act on an understanding of human dignity as fundamental, universal and inalienable; this led to his characterisation of section 23(5) as 'not a "liability" rule [but] an "inalienability" rule':

> full and proper recognition must be accorded to the 'public' dimensions of the breach of rights … [and the fact that] the inherent dignity of human beings is a 'merit' good. It is not a tradeable private right. To the extent that compensation is awarded, that compensation should therefore, in principle, be of a 'superliability' character. (*Udompun*, at [214])

In the case of *Udompun*, this centring of dignity as inalienable and therefore of a 'superliability' character would have led Justice Hammond to allow for a higher amount in damages than was awarded by the majority.

Dignity as an overarching interpretative principle?

Unlike comparable jurisdictions such as Canada, Aotearoa has not afforded dignity the status of a foundational constitutional value. Justice Hammond in *Udompun*, discussed above, seems to suggest that it should be so recognised: he expressly cites international jurisprudence on 'the centrality of dignity, and the importance of squarely

recognising and adequately addressing that interest' (*Udompun*, at [203]). As well as Hammond's approach, two further judicial decisions suggest that dignity has the capacity to serve as an overarching interpretive principle in our law.

The first is Justice Thomas's decision in *Brooker v Police* [2007] NZSC 30, [2007] 3 NZLR 9, in which he seemed to advocate for dignity as an overarching value that has an impact on the weighing of competing rights and interests in law. *Brooker* involved a member of the public staging a protest outside the home of a policewoman; the court was tasked with balancing conflicting free speech and privacy interests. The majority interpreted the relevant provision of the Summary Offences Act in light of the right to freedom of expression (New Zealand Bill of Rights Act, s14), finding that in the circumstances Brooker's conduct was not 'disorderly behaviour'. In his dissent, Thomas adopted a dignity-centred focus reminiscent of Hammond in *Udompun* (although, unlike *Udompun*, *Brooker* did not involve interpretation of an express statutory reference to dignity). Noting that the case was essentially a balancing exercise, Thomas framed not only freedom of expression but also privacy (which is not referred to in the New Zealand Bill of Rights Act) as a 'fundamental value'; as such, the case was characterised as involving 'two fundamental values compet[ing] for ascendancy' (at [164]). Thomas then invoked dignity as a sort of touchstone or lens for evaluating these competing rights, positing that dignity is 'the key value underlying the rights affirmed in the Bill of Rights' (at [180]). By vesting privacy with the normative authority of dignity in this way, Thomas reached the conclusion that the officer's residential privacy should prevail against Brooker's freedom of expression.

The second decision is *Takamore v Clarke* [2012] NZSC 116, [2013] 2 NZLR 733, in which Chief Justice Elias similarly touched on dignity as relevant to judicial balancing, albeit without taking the analysis as far as Thomas. In *Takamore*, the court was faced with competing claims to determine the burial place of James Takamore. Elias noted at the outset that the case engaged 'the human rights to dignity, privacy and family' (at [1]); she later reasoned that one aspect of human dignity is cultural identification (at [12]), citing with approval an Australian authority that discussed respect for human dignity as requiring consideration for the 'cultural, spiritual and religious beliefs, practices and traditions of the deceased' (at [77]).

... the Oranga Tamariki Act goes on to expressly tie mana tamaiti to the foundational tikanga value of whanaungatanga, which understands kinship as grounding certain 'responsibilities based on obligations to whakapapa'

It would go too far to suggest that these three decisions in *Udompun*, *Brooker* and *Takamore* illustrate an emerging consensus. But they do point to a potential future direction for New Zealand dignity jurisprudence – the adoption of dignity as a foundational interpretative value. A comparative analysis of offshore dignity jurisprudence illustrates that dignity is commonly used as a foundational value or constitutional norm across domestic jurisdictions, even in jurisdictions where dignity is not expressly referred to in a constitutional text (McCrudden, 2008). The approaches of Justices Hammond, Thomas and Elias suggest that New Zealand's lack of a single, entrenched constitutional text would not necessarily preclude adoption of a similar approach here.

Dignity and mana

As noted in the introduction, there are two instances in New Zealand legislation where an association is drawn between dignity and mana. The first is the Substance Addiction (Compulsory Assessment and Treatment) Act 2017, which aims to enable compulsory treatment that may 'protect and enhance [the recipient's] mana and dignity and restore their capacity to make informed decisions about further treatment and substance use' (s3(d)). We might assume that, since the statute uses both words, it recognises some conceptual difference between them, although what that might be is not made clear. The linking of mana and dignity with making 'informed decisions' suggests a dignitarian ideal of exercising one's autonomy in a positive, self-respecting way, although this point has not yet been discussed in case law.

Second, the Oranga Tamariki Act 1989 was amended in 2019 to affirm mana tamaiti (tamariki) as a guiding principle for decision makers under the Act. Mana tamaiti is defined as:

> the intrinsic value and inherent dignity derived from a child's or young person's whakapapa (genealogy) and their belonging to a whānau, hapū, iwi, or family group, in accordance with tikanga Māori or its equivalent in the culture of the child or young person. (s2)

This conception of dignity is inherently relational, deriving from one's interconnectedness with others and requiring acknowledgement of those connections. This seems to resonate with the dignitarian understanding, canvassed above, of the collective dignity of humanity as imposing obligations and limits on individual exercises of autonomy. Indeed, the Oranga Tamariki Act goes on to expressly tie mana tamaiti to the foundational tikanga value of whanaungatanga, which understands kinship as grounding certain 'responsibilities based on obligations to whakapapa' (s2).

We found 40 judicial decisions of interest where dignity and mana are discussed in relation to one another, all

from the level of the Court of Appeal or below. However, these associations have tended to simply place the two concepts alongside each other, without defining their content or being explicit about any conceptual overlaps or differences between them. For example, mana and dignity have been associated in the criminal sentencing context in the Court of Appeal case of *Zhang v R* [2019] NZCA 507, [2019] 3 NZLR 648. There, the Court of Appeal held (at [159]):

> ingrained, systemic poverty resulting from loss of land, language, culture, rangatiratanga, mana and dignity are matters that may be regarded in a proper case to have impaired choice and diminished moral culpability.

In employment law, we found several cases referring to the need to deal with disciplinary matters in a way that respects 'mana and dignity', drawing from the wording used in a particular collective employment agreement; however, we found no cases that explored or defined those concepts.

We suggest there is a quality of deliberateness in the way 'mana' and 'dignity' have been placed alongside one another in many of the examples given above. They are not necessarily being treated as conceptual equivalents, but they are perceived to have some kind of relationship or connection. Is this appropriate? A comprehensive study of mana was beyond the scope of the project, so we cannot provide a complete answer to that question. However, our review of some of the literature on mana suggests that it may have some critical differences from dignity, and there is at least a risk that these differences are being obscured, or overlooked, in many of the examples above.

Experts have explained mana in a way that aligns less closely with the core idea of dignity, and more closely with ideas of leadership or authority. Indeed, Williams defines mana as 'the source of rights and obligations of leadership' (Williams, 2013, p.3). As has been noted by Buck (1950), a leader could acquire additional mana through certain acts; similarly, skills of oratory or acts of daring or generosity. Hence, mana in this sense may be contrasted with the 'core idea' of dignity as something that is inherent, inalienable and vested equally in all people. This difference is reinforced when we consider Metge's suggestion that mana is not necessarily 'an inseparable, inborn part' of the human being (Metge, 1986).

> If we were to see a uniquely Aotearoan conception of dignity, one that reflects the 'spirit' of the law in these lands, we suggest that it would draw not only on the Western liberal heritage of the concept of dignity, but also on values derived from tikanga Māori.

Notably, mana accrues to the individual but is dependent for its existence on the collective. For example, a leader does not decide or determine, independently of the group, how much mana they hold; rather, this is determined by the person in question as well as the people in their community (Williams, 2013). As such, the concept of mana is heavily influenced by connections between the individual and the collective. These connections are foundational to tikanga Māori and are expressed through the concept of whanaungatanga (broadly, kinship). The prior, inherent connectedness of people is not an assumption necessarily shared by a Kantian, autonomy-focused conception of dignity. But as a whanaungatanga-based, responsibility-grounding value, there are apparent parallels between mana and a 'dignitarian' conception of dignity, with its understanding of connected, situated persons as members of the 'rank of humanity' and carrying obligations flowing from membership of that rank.

In sum, mana may be a more contingent and socially dependent concept than the core idea of dignity that is expressed in our law to date. Legislative provisions and judgments referring to 'dignity and mana' suggest that the two concepts are being put into 'legal association' with one another, to draw on the language used by Roughan (2009). But the substance or value of that association, if any, has not been explored. The lack of analysis might lead us to understand that the 'mana and dignity' formulation is just a 'nod' towards Māori culture, through the use of an assumed approximation of the legal concept of dignity. We do not draw a conclusion on that, but we do argue that such questions need to be asked when Māori words or concepts are used in legislation or common law. These are the kinds of questions that have been asked, for example, in respect of the Resource Management Act 1991 and its equivalence of 'kaitiakitanga' with 'guardianship' (Kawharu, 2000).

In the next section we return to the concept of 'dignity' within our law. We consider the prospect of a rich, distinctively Aotearoan concept of dignity, comprised of values and ideals from tikanga Māori, including but not limited to mana.

Distinctively Aotearoan conception(s) of dignity in statute

Dignity is a rich concept, of which many conceptions may exist. With this in mind, in this third part of the article, we put forward for consideration the potential emergence of a distinctively Aotearoan conception, or conceptions, of dignity. Whitman has argued, in comparing the social foundations of 'human dignity' in Europe and the United States, that legal ideas such as dignity

> never seem legitimate on the strength of their own coherence or beauty. They seem legitimate only if they speak to the beliefs and anxieties of a given culture. The right way to characterise this phenomenon is to invoke, without embarrassment, Montesquieu, saying that the *spirit* of the law differs [from place to place]. And it differs because social traditions differ. (Whitman, 2006, p.123)

If we were to see a uniquely Aotearoan conception of dignity, one that reflects the 'spirit' of the law in these lands, we suggest that it would draw not only on the Western liberal heritage of the concept of dignity, but also on values derived from tikanga Māori. Further, we suggest it would draw not only on mana – which, as we have seen, is the particular tikanga value that our case law and legislation has drawn on most often in a dignity context – but on a number of interrelated concepts and foundational values from tikanga Māori.

Hirini Moko Mead explains how tikanga Māori conceptualises the importance and sanctity of the person – in other words, how tikanga Māori expresses an idea that approximates certain Western conceptions of dignity. To do this, tikanga Māori calls on a number of interrelated concepts. Mead writes that:

> several spiritual attributes are fundamental to the spiritual, psychological, and social well-being of the individual. These attributes include personal tapu [sacredness], mana, mauri [life force], wairua [spirit] and hau [vital essence]. They all relate to the importance of life, and to the relation of ira tangata [the human element] to the cosmos and to the world of the Gods … It is this particular *bundle of attributes* that defines the *importance and sanctity of the person.* (Mead, 2003, pp.65–6, emphasis added)

Thus, to support the emergence of distinctively Aotearoan conceptions of dignity, legislators would need to look more widely than a single tikanga value of 'mana'. They would need to consider the interrelated concepts and values that create the rules and the system of tikanga Māori, and that underpin the inherent importance and sanctity of the person. This would also require legislators to grapple with the weight of the value of whanaungatanga – meaning kinship or connection – within tikanga Māori, and the extent to which whanaungatanga may stand in tension with Western liberal ideals of autonomy.

> … it is worth emphasising the need for care where the word 'dignity' is placed alongside mana in the statutory scheme, or indeed wherever Māori and English terms are placed side by side.

It remains to be seen whether this is a realistic project. Our legal system remains fundamentally weighted towards Anglo-New Zealand law. Turvey has observed that previous attempts to incorporate te reo Māori terms into legislation may be seen as 'government accommodating Māori values in its own decision-making process in order to defuse growing challenges to its right to exclusive sovereignty' (Turvey, 2009, p.540). We would be right to express a degree of scepticism over the capacity of our legal system to enact and interpret a concept of dignity that effectively knits together Western values and tikanga values.

Nonetheless, as has been pointed out by Supreme Court judge Joe Williams, arguably our legal system is already experiencing these kinds of evolutions. According to Williams, we are in a period in which recognition of custom or tikanga Māori within the law is 'intended to be permanent and, admittedly within the broad confines of the status quo, transformative' (Williams, 2013, p.12). Thus, Williams says, in some parts of the legal system we can identify a 'third law':

> This third law is predicated on perpetuating the first law, and in so perpetuating, it has come to change both the nature and culture of the second law. And it is at least arguable therefore that the resulting hybrid ought to be seen as a thing distinct from its parents with its own new logic. (ibid.)

We see the capacity, therefore, for a uniquely Aotearoan, socially legitimate legal conception of dignity, one that speaks to the diversity of social traditions in this place. An endogenous, inward-looking understanding of dignity would be informed not only by Western thought and the value of autonomy, but equally by relevant, interrelated tikanga values. We note that the richness of this concept will depend on the capacity of our judges and legislators to look to, and draw on, Māori values and concepts in an appropriate way. These skills will be especially critical if we see dignity emerging as a foundational interpretive value, in the manner discussed earlier with reference to *Udompun*, *Brooker,* and *Takamore*.

As an illustration of a possible move in this direction, we refer to the concepts of dignity and mana tamaiti within section 2 of the Oranga Tamariki Act 1989, mentioned earlier. Under that Act, mana tamaiti is a guiding principle for decision makers, and is defined as 'the intrinsic value and inherent dignity derived from a child's or young person's whakapapa (genealogy) and their belonging to a whānau, hapū, iwi, or family group', whether in accordance with tikanga Māori or another cultural equivalent. Thus, we see dignity being associated with mana in a way that connects it with the centrality of whānau in Māori life. Williams describes whānau as 'the essential glue that holds Māori culture together' (ibid., p.23). This approach, we argue, suggests an attempt to move towards

a more balanced integration of dignity and Māori values. For example, an understanding of a child's dignity as not just relating to their autonomous capabilities, but also as contingent on legal recognition of their situated status, their whakapapa, their *belonging*, might have radical implications for decision making about all New Zealand children.

Conclusion

With this article, we emphasise the need for statutory decision makers to reflect on difference conceptions of 'dignity', and have set out some discussion that may assist decision makers in those reflections. In particular, it is worth emphasising the need for care where the word 'dignity' is placed alongside mana in the statutory scheme, or indeed wherever Māori and English terms are placed side by side. Each are rich and contestable concepts in their own right. The lack of jurisprudential analysis of what the concepts mean in relation to each other, when used together in this way, underscores the need for a careful approach by decision makers. Lastly, a further, future challenge for decision makers may emerge, in the form of a new, distinctively Aotearoan conception of dignity, one that draws on interrelated tikanga Māori values. We wait to see the capacity of the actors in our legal system to design and interpret such a conception skilfully, and with appropriate acknowledgement of our rich legal heritage in Aotearoa New Zealand.

1 (*Wackenheim v France*, Comm. No. 854/1999; France, 26 February 2002, UN Doc CCPR/C/75/D/854/1999)

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Damien Rogers and Shaun Mawdsley

Restoring Public Trust and Confidence in New Zealand's Intelligence and Security Agencies

is a parliamentary commissioner for security the missing key?

Abstract

New Zealand's two intelligence and security agencies play crucial roles in preserving our democracy and protecting the public from various harms associated with political violence. Scandals involving intelligence professionals likely diminish public trust and confidence in these agencies, which appears to be very low among some marginalised communities and minority groups. While official secrecy is required for sound strategic and operational reasons, it hampers meaningful articulation of the value proposition underpinning these agencies and their work. Reassuring the public is vital for the intelligence and security agencies, given their highly intrusive powers. Rather than more reviews of, increased transparency by, or stronger accountability over the New Zealand Security Intelligence Service and the Government Communications Security Bureau, we suggest that a parliamentary commissioner for security is needed to help foster a level of public awareness and build the understanding required for trust and confidence to be restored in these agencies.

Keywords counterterrorism, intelligence and security, parliamentary oversight, royal commission of inquiry, intelligence sector reform

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In the aftermath of the terrorist attack on two Christchurch mosques on 15 March 2019, during which Brenton Harrison Tarrant killed 51 Muslims and attempted to murder a further 40 as they were gathering for Friday prayer, New Zealand parliamentarians, public servants and members of the public began to scrutinise New Zealand's security arrangements, including the roles played by intelligence. This scrutiny has occurred in a context where scandals involving intelligence professionals have likely diminished public trust and confidence in their agencies. Of course, restoring the public's trust and confidence in their work is not the only challenge facing New Zealand's intelligence and security agencies today, but it is one that has taken on increased urgency following the Christchurch terrorist attack. To date, most of the efforts to address this important question of public trust and confidence involve reviews of, and inquiries into, certain aspects of the agencies' conduct, calls for increased levels of transparency by those agencies, and recommendations for stronger public accountability measures over intelligence activities. These laudable efforts tend to support a broader aim of improving the effectiveness and efficiency of agency performance.

Ko tō Tātou Kāinga Tēnei, the report delivered by the royal commission of inquiry into the terrorist attack on the Christchurch masjidain, paints a disturbing picture of New Zealand's current approach to counterterrorism, raising concerns about New Zealand's approach to national security more broadly. It suggests change is needed to the way in which intelligence is collected and used for counterterrorism purposes: specifically, it recommends a new organisation, new strategy, and a new annual 'threat-scape' report, as well as a new group to advise the government, a new programme to fund independent New Zealand-specific research, and an annual hui involving central and local government, communities and civil society, the private sector and researchers. The latter recommendations are important – and radical – because they seek to bring the public's insight and voice into the national security system. Missing from these recommendations, however, is an authoritative, independent and expert perspective that not only assesses New Zealand's national security system and its whole-of-government approach, but can also raise public awareness about security and intelligence matters, and build the capacity of the public to engage in informed debate and careful deliberation on those important matters. If the New Zealand government is going to restore the public's trust and confidence in its intelligence and security agencies, then it needs to foster a society of informed citizens who are socially aware and politically literate. Since the government has accepted all of the royal commission's recommendations, the present moment could not be more propitious for bold new thinking.

Given the serious threats posed by malevolent individuals and groups ... New Zealand needs intelligence and security agencies that ensure the integrity of our democratic institutions.

In what follows we suggest that a parliamentary commissioner for security is the missing key needed to foster an informed citizenry because he or she could provide reliable and independent information, analysis and advice on New Zealand's security challenges to local councils, businesses, tangata whenua, community groups and associations, universities and other public agencies. This would help raise the level of public awareness and build the widespread understanding needed for trust and confidence in these agencies to be restored. The commissioner would not only provide the public with information on New Zealand intelligence and security matters and help build New Zealanders' ability to understand that information, but would also create congenial spaces where the public can debate these issues and then deliberate on those debates in a manner consistent with our democratic traditions. While the work of such a commissioner would benefit the New Zealand public, parliamentarians and public servants would benefit too. As an officer of Parliament, this commissioner could investigate any matter where New Zealand's security may be adversely affected and could assess New Zealand's national security system, including its intelligence and security agencies. This would help the government better prepare New Zealand for routine, as well as surprise and novel, security challenges.

New Zealand's intelligence and security agencies

Given the serious threats posed by malevolent individuals and groups – such as espionage, sabotage and subversion, including those conveyed through advanced, sophisticated and persistent cyber-attacks – New Zealand needs intelligence and security agencies that ensure the integrity of our democratic institutions. We also need agencies that protect New Zealanders from the harms associated with various forms of political violence, including, but not only, transnational terrorism and violent extremism.

New Zealand has two such agencies designated as intelligence and security agencies under section 7 of the Intelligence and Security Act 2017. Founded in 1956 as the New Zealand Security Service, the New Zealand Security Intelligence Service (NZSIS) operated for 13 years under an order-in-council (Domestic and External Security Secretariat, 2000). Parliament passed the New Zealand Security Intelligence Service Act in 1969, altering the organisation's name and giving it a legislative base. The NZSIS specialises in human intelligence and delivers protective services, most notably recommendations on the fitness of individual public servants to hold the security clearances required to access, store or use classified information.

The Government Communications Security Bureau (GCSB) was formally established in 1977 as a civilian agency

within the Defence establishment, though the government had conducted signals intelligence operations during the Second World War (Ball, Lord and Thatcher, 2011). In addition to providing signals intelligence, the GCSB also delivers information assurance in the form of advice and support to protect the government's communications and information systems, as well as cybersecurity services. The GCSB became an entity separate from the Defence establishment in 1982 and, in 2003, Parliament passed the Government Communications Security Bureau Act.

The relationship between the NZSIS and the GCSB has matured in recent years. Whereas in the early 2000s the agencies seldom referred publicly to one another, by the mid-2000s both were announcing new joint enterprises, such as the Combined Threat Assessment Group and the Counter-Proliferation Joint Service. In the early 2010s the agencies heralded the development of a joint New Zealand intelligence community statement of intent and four-year budget plan, the establishment of a new business unit called Intelligence Community Shared Services, their intent to foster a culture of cooperation and shared purpose, and a One Workforce strategy designed to enable lateral transfers between the NZSIS and the GCSB. The NZSIS's relocation to Pipitea House, near Parliament, alongside the GCSB sought 'to achieve deepened collaboration and an efficiency dividend for NZSIS and GCSB through operations and combined support functions' (New Zealand Security Intelligence Service, 2013, pp.6–7). In 2011 the NZSIS reported that it continued to work closely with the GCSB to counter cyber-related threats, and by 2015 both agencies acknowledged that they worked together on national security operations, including on counterterrorism.

Both agencies have grown in terms of funding and staffing. In 2000/01 NZSIS's expenditure was $11.5m, whereas for the year ending in June 2020 it was $91m; over the same period, the GCSB's expenditure grew from $20m to $134m. Staffing numbers increased from 115 in 2000 to 367 in 2020 for the NZSIS and from 280 to 488 over the same period for the GCSB.[1] In 2017 New Zealand parliamentarians granted both agencies an array of greater information-gathering and surveillance powers, helped formalise their working relationships with businesses operating within the financial and telecommunications sectors, and provided stronger secrecy provisions for their work.

> ... the NZSIS and the GCSB operate under legislative frameworks that authorise, but also place limits on, their intelligence activities.

The value of this growth, however, should be assessed against the need to better prepare New Zealand for routine and surprise and novel security challenges. The recent growth of the NZSIS and the GCSB ought to raise some eyebrows because New Zealand intelligence professionals tend to follow a very broad definition of national security. According to officials at the Department of the Prime Minister and Cabinet, national security is

> the condition which permits the citizens of a state to go about their daily business confidently free from fear and able to make the most of opportunities to advance their way of life. It encompasses the preparedness, protection and preservation of people, and of property and information, both tangible and intangible. (Department of the Prime Minister and Cabinet, 2016, p.7; see also Department of the Prime Minister and Cabinet, 2011, p.3)

This definition was approved by a Cabinet decision in 2011. The definition is problematic because it renders opaque the distinction between external and domestic security threats, which creates an environment where the New Zealand population might be treated not only as an object worthy of the government's protection, but also as a source of, or conduit for, serious danger.[2]

In its search for security the New Zealand government has applied an extremely broad-ranging 'all hazards, all risks' approach to its national security system which covers 'state and armed conflict, transnational organised crime, cyber security incidents, natural hazards, biosecurity events and pandemics' (Department of the Prime Minister and Cabinet, 2016, p.7). The Intelligence and Security Act 2017 omits a definition of national security, even though the key objectives of New Zealand's intelligence and security agencies are:

(a) the protection of New Zealand's national security; and
(b) the international relations and well-being of New Zealand; and
(c) the economic well-being of New Zealand. (s9)

Without defining any of these key terms, this Act presents national security as something distinct from New Zealand's economic well-being. It weakens the once strong connection between intelligence gathering and national security because it provides the NZSIS and the GCSB with an expansive operating environment, limited only by the elasticity of these vaguely worded objectives (Rogers, 2018).

Since the turn of the millennium, senior officials at the Department of the Prime Minister and Cabinet have, to varying extents, asserted their leadership over the NZSIS and the GCSB, hosting the National Assessments Bureau (formerly the External Assessment Bureau) and chairing the Officials Committee on Domestic and External Security Coordination. They have established themselves as *primus inter pares* within the broader national security sector, not least because their proximity to executive power enables them to seize responsibility for coordinating the whole-of-government responses to a dizzyingly broad array of security hazards and risks. More recently, the department has undergone organisational change and now has a National Security Group comprising directorates dealing with the national security system, national security policy and the national security workforce.

As mentioned above, the NZSIS and the GCSB operate under legislative frameworks

that authorise, but also place limits on, their intelligence activities. The New Zealand Security Intelligence Service Act 1969 (amended in 1977, 1996, twice in 1999, and again in 2003, 2011 and 2014) and the Government Communications Security Bureau Act 2003 (amended in 2013) were repealed by the Intelligence and Security Act 2017 (which also repealed the Inspector-General of Intelligence and Security Act 1996 and the Intelligence and Security Committee Act 1996). Other relevant legislation includes the Terrorism Suppression Act 2002, the Search and Surveillance Act 2012, the Telecommunications (Interception Capability and Security) Act 2013, and the Terrorism Suppression (Control Orders) Act 2019. The intelligence activities of the two agencies are monitored by the inspector-general of intelligence and security and agency performance is scrutinised by Parliament's Intelligence and Security Committee.

Low public awareness, trust and confidence

Scandals are likely to diminish the public's trust and confidence in New Zealand's intelligence and security agencies. Like their overseas counterparts, New Zealand's agencies are no strangers to controversy. Given the official secrecy that necessarily surrounds intelligence-gathering activities, it is unsurprising that most New Zealanders do not fully understand the work undertaken by the NZSIS and the GCSB. Surveys indicate that fewer than 10% of New Zealanders can name either of the agencies (Curia Market Research, 2014, 2016). When these agencies appear in the media's spotlight, it is often due to some operational failure, such as when a protective dome was deflated by protestors at the GCSB's Waihopai station (Stuff, 2009), or an NZSIS officer was caught breaking into somebody's home (Manning, 1999), rather than to celebrate some success. Widely reported at the time, the unlawful entry by an NZSIS officer into a private dwelling where a New Zealander had a right to privacy caused concern among the public.

William Sutch, a senior public servant, was suspected of being a spy for Soviet intelligence in the mid-1970s, but was acquitted of charges laid under the Official Secrets Act 1951 (Hunt, 2007). It was subsequently confirmed by the chief ombudsman, Guy Powles, that the NZSIS had exceeded its lawful powers in its investigation of Sutch, and had not corrected the prime minister's public statements on the matter even though it knew these comments to be incorrect and misleading (Powles, 1976). Powles did, however, refute several allegations that were circulating in public that were damaging to the NZSIS's credibility reputation. More recently, investigative journalist Nicky Hager has made important contributions to the public's understanding of intelligence and security matters by highlighting particularly controversial aspects in his work (Hager, 1996, 2011, 2014; Hager and Stephenson, 2017).

> Surveys of public opinion suggest that most New Zealanders do not feel safer after the significant growth of New Zealand's intelligence and security agencies ...

Perhaps the most high-profile scandal concerns the GCSB's unlawful surveillance of Kim Dotcom. The bureau had monitored Dotcom, a German-Finnish entrepreneur, to assist the New Zealand Police with the execution of a search warrant on 22 January 2012. Dotcom and his associates were arrested that day for alleged violations of US copyright law in accordance with a Mutual Legal Assistance Treaty between New Zealand and the United States (see Cullen and Reddy, 2016, p.14, note 4). The New Zealand public become aware on 9 August 2012 that the GCSB had conducted surveillance, which was unlawful because Dotcom had been granted permanent resident status in New Zealand, when Detective Inspector Grant Wormald admitted, under questioning at the High Court in Auckland, that the GCSB had assisted the raid he led on Dotcom's home (Winkelmann, 2013). The Dotcom affair was sufficiently scandalous for the GCSB to commission a review of its compliance systems and processes, and for the reviewer, Rebecca Kitteridge, to write that the report was released, in part, to restore public trust and confidence in the GCSB following the revelation of unlawful surveillance (Kitteridge, 2013). Kitteridge's review made the public aware that the GCSB had conducted surveillance of a further 55 cases involving 88 individuals to support law enforcement agencies, and that this surveillance may also have been unlawful because it appeared to directly contravene New Zealand law at the time, as section 14 of the Government Communications Security Bureau Act 2003 stated that: 'the Director, any employee of the Bureau, and any person acting on behalf of the Bureau must not authorise or do anything for the purpose of intercepting the private communications of a person who is a New Zealand citizen or a permanent resident of New Zealand'.

More damaging, perhaps, was the unauthorised disclosure of classified material from the US National Security Agency by Edward Snowden in 2013. This disclosure revealed the invasive nature and global scope of National Security Agency surveillance operations. Unlike high-profile cases of espionage involving an insider procuring secret information for a foreign government, Snowden's disclosure was made to the media to better inform US citizens. The vast quantity of documents and the exposure they received worldwide means that Snowden's disclosure must surely rank among the most serious leaks of all time. It raised uncomfortable questions here about the GCSB's surveillance of New Zealand's Pacific Island neighbours, as well as 'mass surveillance' of New Zealanders. Snowden's revelations, and the use of these leaks by political parties, were so important that the 2014 general election was dubbed by political analysts as 'moments of truth' (Johansson and Levine, 2015).

If these scandals diminish public trust and confidence in the NZSIS and the GCSB, then allegations of war crimes committed by the New Zealand Defence Force in Afghanistan do little to alleviate those fears

and suspicions. The close working relationship between the intelligence and security agencies and the New Zealand Special Air Service (NZSAS) featured in the inquiry into Operation Burnham, which, led by Supreme Court judge Terence Arnold and former prime minister Geoffrey Palmer, examined serious allegations that members of the NZSAS intentionally killed civilians in Afghanistan. The inquiry did not result in any charges being laid, but the potential involvement of the intelligence and security agencies in committing alleged war crimes was sufficient grounds for the inspector-general of intelligence and security to take an interest and open an investigation.

Surveys of public opinion suggest that most New Zealanders do not feel safer after the significant growth of New Zealand's intelligence and security agencies, which followed the terrorist attacks on New York and Washington on 11 September 2001 and two decades of the so-called 'war on terror'. This sense of insecurity is acutely experienced by minority groups and marginalised communities, which was powerfully demonstrated by comments made at He Whenua Taurikura, the recent hui on countering terrorism and violent extremism held last year in Christchurch. These fears, and the frustration of not having these fears acknowledged by intelligence and security professionals, are plain to see in the report prepared by the royal commission as well (see below).

While the veil of official secrecy is a strategic and operational necessity for the NZSIS and the GCSB to conduct intelligence and security work, it hampers those agencies when they seek to demonstrate their value proposition to the New Zealand public. Cheryl Gwyn, the former inspector-general of intelligence and security, questioned the need for so much of the material held by the agencies to be classified, but we have yet to see a greater degree of agency transparency in response (Office of the Inspector-General of Intelligence and Security, 2018).

Restoring public trust and confidence

Maintaining public trust and confidence is important for any public service organisation, but it is crucial for intelligence and security agencies that exercise what Brendan Horsley, the current inspector-general, describes as 'intrusive and far-reaching powers' (Office of the Inspector-General of Intelligence and Security, 2021, p.2). Parliamentarians and public servants have made serious attempts to restore this trust and confidence in the NZSIS and the GCSB.

... the minister responsible for the NZSIS and the GCSB is now held accountable for the proper and efficient performance of agency functions by the House of Representatives through the Intelligence and Security Committee.

Parliamentarians introduced a statutory requirement for periodic reviews of New Zealand's intelligence and security agencies. The government appointed Michael Cullen and Patsy Reddy in 2015 to review the legislative framework of the NZSIS and the GCSB. In the immediate aftermath of the terrorist attack in Christchurch on 15 March 2019, Prime Minister Jacinda Ardern announced that the government would establish a royal commission of inquiry. The royal commission was chaired by William Young and Jacqui Caine was appointed as member. The reports that conclude these two reviews are substantive documents: written for public consumption, they make far-reaching recommendations, such as enacting a single piece of legislation to govern the operation of New Zealand's intelligence and security agencies (Cullen and Reddy, 2016), and establishing a new national intelligence and security agency responsible for strategic intelligence and security leadership functions (Young and Caine, 2020).

Senior public servants have also commissioned their own reviews on various aspects of the work performed by the two intelligence and security agencies. Consultants hired (or seconded) include Simon Murdoch, Michael Wintringham, Rebecca Kitteridge, Peter Bushnell, Garry Wilson, Sandi Beatie, Geoff Dangerfield, Doug Martin and Simon Mount. Their resumes are impressive and most include experience as senior public servants. Even though their reports focus on enhancing the effectiveness and efficiency of the agencies' performance as a means of demonstrating greater public value from the government's ongoing investment in these agencies, most of the reviewers point to the public release of their reports as an important act of transparency.

The governance arrangements over the agencies has evolved appreciably too. In 2014 Prime Minister John Key created a new ministerial portfolio for national security and intelligence, and shifted the ministerial responsibility for the two intelligence and security agencies elsewhere within Cabinet. Whereas under the previous arrangement the prime minister was, in effect, holding him or herself to account, the minister responsible for the NZSIS and the GCSB is now held accountable for the proper and efficient performance of agency functions by the House of Representatives through the Intelligence and Security Committee.

Parliamentarians introduced a new check on agency operations in the form of an authorisation regime using two types of intelligence warrants under the Intelligence and Security Act 2017. This standardised the procedure for both agencies. Type 1 intelligence warrants must be sought by the agencies when their focus is a New Zealand citizen or permanent resident and are issued jointly by the minister responsible for the NZSIS and/or the GCSB and a commissioner of intelligence warrants. Type 2 intelligence warrants relate to everyone else and are issued only by the authorising minister(s), but can involve the minister of foreign affairs in certain situations. This new authorisation regime seeks to introduce a special measure through Type 1 warrants

that protects the privacy rights of New Zealanders, leaving foreigners fair game for intelligence collectors. Both types of warrants can be issued for the purposes of New Zealand's national security, international relations and well-being, and economic well-being.

Not only has the scope of powers granted to the inspector-general of intelligence and security been recalibrated to match the intelligence and security agencies' new, wider statutory functions; the previous prohibition on inquiring into any matter that is operationally sensitive, including matters relating to intelligence collection, methods and sources, has also been removed under the 2017 Act. The Office of the Inspector-General of Intelligence and Security (IGIS) can now inquire into the lawfulness as well as the propriety of the agencies' activities, and review any activities undertaken by those agencies when they use their powers in response to an imminent threat to life. The IGIS now possesses investigative powers like those enjoyed by a royal commission, such as the power to compel persons to answer questions, produce documents or give sworn evidence. Put simply, the IGIS is now much more productive than it was previously and has produced an impressive array of high-quality reports.[3] Between 1996 and 2014 it produced eight public reports, whereas during Cheryl Gwyn's term (2014–17) the office produced 11 substantive reports. Matters examined in these reports included the NZSIS's disclosure of information concerning its briefings to the leader of the opposition, the GCSB's intelligence activities in the South Pacific, the engagement between the NZSIS and the GCSB with the US Central Intelligence Agency's detention and interrogation programme, and the NZSIS and the GCSB's role in Afghanistan. In addition to inquiring into the lawfulness of these agencies' activities, these reports also set a standard of propriety (see especially Office of the Inspector-General of Intelligence and Security, 2019).

The office's powers are not unlimited, however. The IGIS cannot, for example, declare warrants invalid where serious deficiencies are identified in those authorisations. Furthermore, its powers are easily undermined when the intelligence and security agencies refuse to cooperate, which occurred during 2015, 2016 and 2017 when Gwyn undertook a review of the NZSIS's access and use of information held on a system managed by the New Zealand Customs Service, but found the NZSIS 'reluctant to engage with [her] office on the substantive issues' (Office of the Inspector-General of Intelligence and Security, 2017, p.16). Even though the IGIS produces more high-quality reports on a broader range of issues than ever before, this does not mean that the IGIS alone can help restore public trust and confidence in the agencies, especially if the public is unaware of those reports, is unable to understand the reports' content and importance, and has no place to discuss and deliberate on those reports.

> The royal commission's recommendations ... called for a much greater level of public involvement in intelligence and security matters.

The annual reports produced by the NZSIS and the GCSB articulate their respective organisational visions and frame their organisational activities, outputs and the outcomes they are seeking. Within these key public accountability documents, the directors-general point to an array of public-facing activities, such as public speeches, news media interviews, and talks given to various groups and communities of interest, as evidence of their increased transparency. The directors-general also make opening statements to the Intelligence and Security Committee before that committee closes its doors to the public.[4]

A fresh approach to security

Commissioning reviews and inquiries, strengthening governance arrangements, and offering greater transparency of agency activity are positive steps towards restoring public trust and confidence in the NZSIS and the GCSB, but this approach has obvious limits. We believe those limits have now been reached. What is now needed is a fresh approach that is based on building a level of public awareness and understanding of New Zealand's intelligence and security activities. With New Zealand's security arrangements on the cusp of change, the time seems ripe for bold thinking.

The royal commission of inquiry into the terrorist attack on the Christchurch mosques made 44 recommendations, 18 of which focused on improving New Zealand's counterterrorism effort. This included, *inter alia*: establishing a new intelligence and security agency responsible for strategic intelligence and security leadership functions (recommendation 2); developing and implementing a public-facing strategy that addresses extremism and preventing, detecting and responding to current and emerging threats of violent extremism and terrorism (recommendation 4); strengthening the role of the Parliamentary Intelligence and Security Committee (recommendation 6); and publishing the national security and intelligence priorities during every election cycle and a threat-scape report each year (recommendation 17). While recommendation 2 removes an important intelligence leadership role from the Department of the Prime Minister and Cabinet and allocates that responsibility to a new agency, the status quo whole-of-government arrangements are largely retained. The current arrangement, which is based in large part on a separation between human intelligence and signals intelligence, would be supplemented with a new agency leading New Zealand's counterterrorism efforts.

The royal commission's recommendations also called for a much greater level of public involvement in intelligence and security matters. This includes establishing an advisory group comprising representatives from communities, civil society, local government and the private sector to advise the government on counterterrorism (recommendation 7). It also includes establishing a programme to fund independent New Zealand-specific research

on the causes of, and measures to prevent, violent extremism and terrorism (recommendation 14), creating opportunities to improve understanding of extremism, violent extremism and terrorism in New Zealand (recommendation 15), and hosting an annual hui involving central and local government, communities and civil society, the private sector and researchers (recommendation 16). These recommendations are quite radical because they seek to bring the public's insight and voice into the national security system.

The government has accepted all of the royal commission's recommendations 'in principle' and their implementation creates an opportunity to rethink New Zealand's approach to national security. A parliamentary commissioner for security, we believe, would complement the royal commission's recommendations by taking an independent, systemic view of the national security system. As an officer of Parliament and therefore independent of the executive, the commissioner would be supported by a relatively small team of experienced and qualified researchers, analysts and advisors. The commissioner's functions would be to review security issues against the system of agencies and processes established by the government to manage security, including its intelligence-gathering activities, and regularly report the findings to Parliament. Put simply, the commissioner could investigate any matter where, in his or her opinion, New Zealand's security may be, or has been, adversely affected, and could assess the capability, performance and effectiveness of New Zealand's national security system, its intelligence and security agencies, and the wider intelligence and security communities.

This review-and-advise function, which focuses on the national security system, is not currently performed by any existing agency; and, if it was, the function would lack the necessary independence to be considered credible. The scope of this function must include the Office of the Inspector-General of Intelligence and Security, which, as mentioned, ensures that the intelligence and security agencies act lawfully and with propriety. As its te reo Māori name, Te Pourewa Mātaki – the watchtower within the pā – acknowledges, the IGIS is very much part of the national security system which includes the two agencies it monitors (Office of the Inspector-General of Intelligence and Security, 2021, p.2). The function must also include the new intelligence and security agency focused on New Zealand counterterrorism efforts recommended by the royal commission.

If the New Zealand government is going to restore the public's trust and confidence in the NZSIS and the GCSB, then it needs to foster a society of informed citizens who are socially aware and politically literate.

Taking an independent and system-wide perspective, this function would help the government better prepare New Zealand for routine, as well as surprise and novel, security challenges. The work of such a commissioner would benefit the House of Representatives in assisting parliamentarians, as well as the researchers, analysts and advisors who support and advise them, to further develop their own ability to think independently on intelligence and security matters. The commissioner's work would benefit the public service, too, by better enabling public servants to reflect on the possible weaknesses and limitations of their current approach to security.

Perhaps most importantly, however, a parliamentary commissioner for security would complement the royal commission's recommendations by building public awareness of New Zealand's various security challenges and developing the public's capacity to better understand and engage in informed debate on those important matters.[5] This is especially important because, as mentioned earlier, public surveys indicate that the New Zealand public is not well informed about security and intelligence matters. The commissioner could provide local councils, businesses, tangata whenua, community groups and associations, universities and other public agencies with reliable and independent information, analysis and advice on how national security is conceptualised, how security issues are assessed, and how security challenges are dealt with. The New Zealand public would benefit from a parliamentary commissioner for security who creates congenial spaces where they can debate these issues and then deliberate on those debates in a manner consistent with our democratic traditions. If the New Zealand government is going to restore the public's trust and confidence in the NZSIS and the GCSB, then it needs to foster a society of informed citizens who are socially aware and politically literate.

While a parliamentary commissioner for security might be the missing key needed to foster an informed citizenry, and the present moment could not be more propitious for such a bold but much-needed initiative, there are some potential limitations that are worth mentioning. First, insufficient resourcing would hamper the commissioner's effectiveness; if it is to build the public's capability to understand complex intelligence and security matters, its outreach budget will need to be significant. Second, any commissioner will be heavily dependent on information provided by the intelligence and security agencies. If the commissioner's reports were overly critical of the agencies, there is a risk that those agencies would withhold information (though the commissioner's power to inquire could compel that information if necessary).[6] Third, and perhaps most importantly, the commissioner's credibility would be at stake if a person was appointed to the role who was not a bona fide expert in intelligence and security matters, with university qualifications, responsible for a body of respected work on these matters, and who has this expertise recognised as such by other experts in the field. This

expertise is crucial, as the commissioner would be in the business of producing independent security knowledge on behalf of, and for, the public. It would speak truth to bureaucratic and executive power. Without such expertise, the commissioner would likely reflect and entrench the status quo arrangements when he or she ought to be challenging the logic of conventional thinking on behalf of the New Zealand public, moving the national security discussion beyond its problem-solving approach to thinking through more deeply the structural issues sustaining these arrangements. The commissioner would be vulnerable, too, to institutional capture by the wider bureaucracy, which could fatally undermine the value of the initiative.

1 Budget and staffing figures for 2000/01 are taken from Domestic and External Security Secretariat, 2000. All other expenditure and staffing figures are taken from the annual reports submitted to the House of Representatives, available at https://www.gcsb.govt.nz/publications/annual-reports/ and https://www.nzsis.govt.nz/resources/annual-reports/.

2 This blurring is most evident in the intensified concern about home-grown terrorism. Referring to the threat of violence by extremist groups, such as Islamic State, Al Qaeda and Al Shabaab, the NZSIS 'remain concerned about individuals in New Zealand who subscribe to these groups' extremists views' (see Kitteridge, 2020).

3 See https://www.igis.govt.nz/publications/investigation-reports/.

4 The text of these statements is available at https://www.nzsis.govt.nz/news/ and at https://www.gcsb.govt.nz/news/.

5 Compare to the objective and functions of the parliamentary commissioner for the environment found in section 16 of the Environment Act 1986.

6 We are grateful to the reviewer who alerted us to this potential weakness.

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Building Act Reform for Building Users

Abstract

The Building Act 1991 established the New Zealand government's role in ensuring the safety, health, independence and well-being of building users. To this end, the 1991 Act and subsequent iterations recognise that people with disabilities need buildings that meet disability design standards. However, these standards are not required for the design of private dwellings. This article uncovers the historical practices that made such exclusion acceptable, and challenges policymakers to rethink the relationship between government, private dwellings and the health and wealth of the nation. The purpose is to highlight flaws in the framing of the review of the current Building Act, identify critical questions that need to be addressed by policy analysts, and call for a full review of the Act's failure to achieve its stated purposes.

Keywords Building Act, private dwellings, disability design, population health, safety, wealth, shower, institutions, law reform

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In April 2019, New Zealand's Ministry of Business, Innovation and Employment published discussion papers regarding reform of the Building Act 2004 (Ministry of Business, Innovation and Employment, 2019). The Building Act 2004 has the following purposes:

> (a) to provide for the regulation of building work, the establishment of a licensing regime for building practitioners, and the setting of performance standards for buildings to ensure that –
> (i) people who use buildings can do so safely and without endangering their health; and
> (ii) buildings have attributes that contribute appropriately to the health, physical independence, and well-being of the people who use them; and
> (iii) people who use a building can escape from the building if it is on fire; and

(iv) buildings are designed, constructed, and able to be used in ways that promote sustainable development:

(b) to promote the accountability of owners, designers, builders, and building consent authorities who have responsibilities for ensuring that building work complies with the building code. (s3a)

The focus of the April 2019 discussion papers was on building products and processes rather than design, thereby minimising the effect that the review could have on the contribution buildings make to the health (and thus the wealth) of people who use buildings.

In this article we argue that the narrow and ahistorical scope of the review particularly disadvantaged people with disabilities and effectively quashed consideration of accessibility issues in the nation's housing stock. To that end, we offer a historically situated examination of the Building Act, with a particular focus on building users and the politics that have sustained the practice of separating people with disabilities from the rest of the population throughout the 1900s. By uncovering the history of excluding people with disabilities as building users, we challenge the assumptions that maintain their exclusion and identify questions that should have been asked, and were not, to inform the review. The discussion is part of a larger research project which explores governing practices in relation to government-funded housing modifications.

Politics and the use of buildings

The New Zealand government established the right to govern building performance for the people who use them in the Building Act 1991. That right is the culmination of incremental change as the government extended its involvement in building regulation in the interests of population safety, health, independence and well-being since the late 1800s. A key driver for state involvement has been to improve the productivity of the nation's citizens, and, equally, address the problem of the upkeep of 'non-productive' (and thus 'dependent') citizens.

> The idea that the unproductive, or potentially unproductive, present a calculable cost to the population creates a public interest in identifying and limiting the burden of such individuals on the nation.

Towards the end of the 20th century New Zealand policymakers and citizens put forward radical ways of thinking about the relationship between people and buildings to address that problem. While some of these ideas led to revolutionary ways of governing, others became marginalised as a result of ignorance and prejudice towards a subset of the population.

The task of governing the state might be popularly thought of as the activities that occur within parliamentary buildings. However, it is the governing activities that influence the taken-for-granted practices of ordinary citizens that more directly create the health and wealth of the nation. Building legislation is a particularly important influence because, unlike the rapid change that can occur in the population's thoughts and activities, built structures and manufactured objects make historically accepted practices more durable and resistant to change. The study of governing at this material level reveals the complex relationship between the state and privately owned buildings and shows how the interests of the health and wealth of the nation are connected to the business of building legislation, establishing permission for the state to have a stake in the private capital of its citizens.

A commonplace example of governmental control of privately owned buildings is the design and materials used in the construction of showers. Showering may be thought of as one of our most private self-care activities. However, the beliefs that make present-day showering practices acceptable and that make showers available to building users have connections that stretch out across nations and through time. The practice and use of showering emerged in the 18th century as a sudden, sustained fall of cold water onto the heads of patients diagnosed with mania (Cox, Hocking and Payne, 2019). By the late 1800s the shower had been transformed into a means of washing people's skin to reduce the spread of disease. Bathing facilities are now a requirement within dwellings and showers have now become an accepted feature of the New Zealand bathroom. However, the Building Act 1991 connected wheelchair-accessible showers to some buildings and not others, meaning that building users do not have equal access to a typical New Zealand shower box. The discussion that follows traces the contested relationship the government has with the private lives of citizens (particularly those who may be 'dependent') as they have materialised in policies and practices through the 1900s. Our aim is to reveal the harmful implications of current legislation for some members of the population (particularly those with disabilities), demonstrating the need for a complete review of the Building Act.

The problem of the dependent citizen

In the early 1900s a relationship between the good of the nation and those deemed 'dependent' citizens was established by viewing the minds and bodies of the population as possessing a collective labour potential:

> Every unit of sound physical and mental health in the community is a public asset, and it is plainly in the public interest that no step should be

> neglected which, if taken, may have a value in checking any tendency that may exist towards the depreciation of the physical capital of the country. (Otago Daily Times, 1906, p.8)

The health of each citizen was thus connected to the economic well-being of the nation. Those lacking in human capital were calculated as a deficit against the interests of the population: 'the number of dependents which can be maintained by any community necessarily rests upon that proportion of the population which is not dependent – the producers' (Barton, 1919, p.5). The idea that the unproductive, or potentially unproductive, present a calculable cost to the population creates a public interest in identifying and limiting the burden of such individuals on the nation.

The problem of the dependent person was not a new phenomenon. Since the birth of New Zealand's colonial government, strategies were employed to manage the problem they presented. Legislation initially placed liability on the family (the Destitute Persons Relief Ordinance 1846) and on those who facilitated their immigration to New Zealand (the Imbecile Passengers Act 1873). Despite these measures, within a relatively short time municipal councils were tasked with maintaining the destitute and sick (the Municipal Council Ordinance 1860) and subsequently resolved to tax their working population to fund institutions that would house orphans, the sick and the insane (the Sick and Destitute Ordinance 1868). In the later part of the 19th century a review of New Zealand's hospitals found that 'they are made the home of aged, infirm, and chronic cases, corresponding very closely to the permanent pauper inhabitants of an English union workhouse' (Inspector of Hospitals, 1883, p.ii).[1]

In the early 1900s, two schools of scientific thought emerged on resolving the urgent need that the proposed imbalance of dependents presented. These schools of thought were made material through practices and architecture, including the production of new forms of showers. One school of thought, eugenics, was a medico-scientific approach that would eliminate dependents by removing them from the population's breeding stock (via isolation, sterilisation and, in some instances, death). Another was the scientific engineering of tasks and materials to transform the 'dependents' into 'producers'. These sciences opened the possibility of calculating the relative costs and benefits for determining where and how (and indeed if) certain members of the population should live.

Solution for the dependent 1 – useless eaters and concentrated dwelling

Eugenics emerged as a solution to the problems of population health and wealth that involved identifying and segregating subsets of the population. While most commonly remembered for its race-based policies, the focus of eugenics was equally on people with 'defects', including those we might today consider 'people with disabilities'.[2] In the interests of the nation and overseen by medical professionals, people with disabilities were identified and institutionalised. While one might wish to distance modern-day government of building users from such history, we demonstrate that the prejudices and practices of eugenics remained in circulation at the time of the Building Act's emergence. Further, we point to the harmful practices of identifying and separating subsets of the population that eugenics advocates and which the current Building Act sustains.

A central tenet of the eugenics discourse is that inheritance of defective genes creates a proportion of the population which consumes more resources than they contribute (the 'useless eaters'). It argues that modern government practices increase this proportion of the population by permitting technology to artificially keep alive those who nature would have allowed to die. Securing the health of the nation involves identifying the so-called 'defective' proportion of the population and preventing them from passing on their genes. Citizens' rights to anonymity, to control over one's body, to determine where and even if one should live are removed in the interests of population health. In the early 1900s the New Zealand government supported the eugenics practice of identification of defectives (e.g. Otago Daily Times, 1906; New Zealand Tablet, 1913; Otago Daily Times, 1917) and advocated for state control over where and how they lived.[3] Institutions in which to permanently house defectives were approved by health boards (Bush Advocate, 1910; Evening Post, 1911), educators (Free Lance, 1914; Auckland Star, 1917) and business networks (New Zealand Herald, 1924). This was followed by some advocating for the natural death of defective infants (Press, 1917), approval of sterilisation (Evening Star, 1923; Otaki Mail, 1932) and entertaining the idea of euthanasia (Otago Daily Times, 1935).[4] There was also mention of 'lethal chambers' for 'imbecile children' (Spencer, 2017).

> While New Zealand may have largely rejected eugenics, however, it is important to identify eugenics practices that remained acceptable at the time the Building Act 1991 was passed ...

Despite a level of acceptance of the eugenics discourse in New Zealand, newspaper articles during World War Two, such as 'Peace talk – Nazi brutality: mass murder of mental defectives' (Evening Star, 1941), indicate a repugnance of the practice of state-sanctioned murder. While New

Zealand may have largely rejected eugenics, however, it is important to identify eugenics practices that remained acceptable at the time the Building Act 1991 was passed, and to recognise the danger presented by these accepted practices:[5]

- A eugenics discourse promotes the identification and concentration of people with disabilities in separate dwellings ('institutions') as being in the interests of the health and wealth of the nation, and in the best interests of the people with disabilities themselves.
- Identifying and co-locating a subset of the population who are seen to detract from the health and wealth of the nation puts their privacy, autonomy and right to live in the hands of others.

We return to these practices later in our discussion.

Solution for the dependent 2 – rehabilitation and disability design

Alongside the eugenics school of thought, a form of human engineering was developing in the early 1900s with the aim of increasing production. The mechanisation of work saw productive roles appear for people previously deemed incapable of being in paid employment. The possibility emerged of people with disabilities being rehabilitated, thus gaining both human and material capital (health and wealth) and becoming socially and economically mobile. Spaces developed for specialised training highlighted the discriminatory nature of architecture in its creation of dependence and generated the birth of disability design. New Zealand's Building Act (from 1991 to today) recognises the idea of disability design, referring to design standards for people with disabilities. However, such design is limited to spaces where they might work, shop or otherwise take part in civic life and excludes private dwellings.

In the United States principles of 'scientific management', which aimed to automate bodily movements to measurably enhance productive performance, were employed. A person could be deemed productive if able to perform even one such movement: 'The work of every workman is fully planned out … complete written instruction, describing in detail the task … specifies not only what is to be done but how it is to be done and the exact time allowed for doing it' (Taylor, 1911, p.39). Factories, in which workers' eyes, ears and limbs could be employed to operate machinery, were the sites of several studies which advocated for the work potential of impaired bodies (Dietz, 1933; Ford, 1922). Thus, constructed as a body with some productive parts, the previously 'crippled dependent' could be trained via 'rehabilitation' to become a paid worker, with the capacity to compete for work alongside the 'able-bodied' man (Disabled Servicemen's League, cited in Waikato Independent, 1945, p.2). Although originally construed as 'scientific management', the shift into the realm of disability saw 'training' become 'rehabilitation' and become transformed into a health service. Other nations (including New Zealand) followed suit and called for all disabled members of the population to be identified and systematically placed into facilities which would enable this transformative promise (Auckland Star, 1940, p.11).

> The country was also about to see the Accident Compensation Act 1972 and its 1973 (No. 2) amendment revolutionise the relationship between the state and the activities of citizens in their private dwellings, leading to the possibility of resolving the problem of architecture depreciating the country's human capital.

These facilities were not intended to be permanent accommodation, but rather a temporary space in which to collect people with disabilities together in order to facilitate transformation (Giles, 1944, p.1). The wheelchair-access shower was born in the US polio rehabilitation facility Warm Springs, where the grounds and buildings were engineered to permit wheeled mobility and a sense of freedom for the residents (Toombs, 1931, p.1; Polio Chronicle, 1934; Donnelly, 1935, para 5). What emerged from this facility was not simply transformed bodies, but rather a radical way of thinking about the role of building design in the creation of disability (Donnelly, 1935, para 32).[6] A new form of 'people with disabilities', seeking the freedoms to work and shop, but dependent on a particular set of architectural conditions and mechanical aids, became possible (Rusk et al., 1953, p.11). In the United States such citizens successfully breached the confines of the rehabilitation facility to transform the University of Illinois into a space modified for students with disabilities to be able to study, compete in sports and live (e.g. Blankenship, 1949). This same group were involved in developing the American standard that would then inform New Zealand's first Code of Practice for Design for Access by Handicapped Persons, NZS4121:1971 (American Standards Association, 1961; Standards Association of New Zealand, 1971).[7] The Disabled Persons Community Welfare Act 1975 brought the New Zealand standard into legislation to improve access to streets and premises open to the public.

It is at this point that the contentious relationship between the state and private building ownership in modern government comes to light. Rehabilitation claims to produce citizens who, with the help of disability design, have freedom of social and economic mobility. Therefore, they

may compete with others to develop their human and material capital. This capital becomes a feature of both the person's and the nation's economy, and facilitates participation in the activities of government. While there is acceptance of state involvement in protecting the population from dangers, it must also ensure that citizens have the freedom to compete for and benefit from personal capital (which includes their health). Therefore, while rehabilitation and disability design led to the existence of facilities such as a shower that people with disabilities could use, a new problem emerged regarding where such facilities should exist, and at whose expense.

At the time the Building Act 1991 was passed, the accepted ideas associated with rehabilitation and disability design, and the dangers of the associated practices, were:

- As neo-liberal discourse proposes, rehabilitation combined with disability design in the places where people work, shop and take part in the activities of government can transform people with disabilities into free citizens. They are able to compete with other citizens to further develop their human and material capital, and, as members of the productive population, they are free to make choices regarding where and how they live.
- The practice of leaving it to the market to determine what building users need aims to free the market from restrictions that could detract from the nation's wealth, but results in design that discriminates, creating disability. This perpetuates the exclusion of people with disabilities from obtaining human and material capital, being able to compete in the housing market, and having their needs recognised by government.
- Private dwellings do not typically have attributes that contribute appropriately to the health, physical independence and well-being of building users with disabilities; building users with disabilities would have difficulty escaping from many private dwellings should they catch fire, for example. Thus, leaving the design of private dwellings to market forces has meant that building users with disabilities cannot use most private dwellings safely.

The role of the state in managing dangers through building control – injury, the burden of care, and safer buildings for everyone

Although buildings accessible to people with disabilities had become a possibility, NZS4121:1971 consistently limited its reach. Disability design was limited to general public buildings and facilities,[8] maintaining the notion that access for people with disabilities to private dwellings sits outside the state's interests. However, by this time New Zealand had nearly 130 years of central or local government jurisdiction over private dwellings in order to manage dangers to the health of the general population.[9] The country was also about to see the Accident Compensation Act 1972 and its 1973 (No. 2) amendment revolutionise the relationship between the state and the activities of citizens in their private dwellings, leading to the possibility of resolving the problem of architecture depreciating the country's human capital.[10]

In order to eliminate the waste of resources caused by litigation related to personal injury, the Royal Commission of Inquiry into Compensation for Personal Injury in New Zealand (Woodhouse, 1967) proposed a connection between the interests of the nation and the cost of injured citizens. Recognition of the cost of personal injury to the nation's human capital, regardless of whether the person slips in the shower at work or at home, extended the state's interests into the safety (or otherwise) of the activities of citizens within their private dwellings:

> It is obvious enough that a worker does not cease to be a worker as he leaves his factory at 5 o'clock … If he slips and is disabled in the factory shower-room as he prepares to go home, he will be entitled to all the advantages of the Workers' Compensation legislation and may even succeed against his employer in a negligence action. Yet if he suffers the same accident upon his arrival at his home he will receive nothing at all, or at best the assistance provided by the Social Security Fund. From the point of view of the injured workman these inconsistent results develop from a diagnosis by causes and a disregard of their similar effects. When it is recognised that in each case it is the community which pays, the discrimination assumes an air of unreality. (ibid., p.35)

State-funded modification of private dwellings, where there was a demonstrable benefit, was … extended to other citizens with disabilities following the passing of the Disabled Persons Community Welfare Act 1975.

For individuals with disabilities from injury, the Accident Compensation Commission (later renamed the Accident Compensation Corporation) took control of the distribution of material compensation, the resourcing and regulation of rehabilitation processes employed to regain the lost human capital, and monitoring and regulation of the causes of injury. Hospitals and other institutions employed rehabilitation practices to transform the injured, and, with the institution's approval, those deemed capable of being discharged into

the community could receive state funding to install a wheelchair-accessible shower (among other things) that would realise the promise of transformation (Accident Compensation Act 1972, s49(2)c).

Although the Accident Compensation Act initially maintained tradition by not recognising the human capital of non-earners, the potential for housewives to be a cost or benefit to the productive worker[11] saw the 1973 amendment (No. 2) ensure that all injured citizens would be eligible. That entitlement was given whether they had quantified their human capital in the workforce, sustained that capital by providing members of the workforce with a supportive environment, or had been or potentially could be a member of the workforce. State-funded modification of private dwellings, where there was a demonstrable benefit,[12] was then extended to other citizens with disabilities following the passing of the Disabled Persons Community Welfare Act 1975.[13] This Act also legislated for NZS4121 to improve access to streets and premises open to the public,[14] and for the registering, resourcing, inspecting and determining of standards for collective/group living facilities.[15]

As the installation of disability design into private dwellings by the state, via accident compensation or welfare, was limited to the particular circumstances of the injured or otherwise disabled individual, there was no apparent need for further government involvement in private dwellings in this regard. However, in addition to rehabilitation of the injured, the Accident Compensation Act established a role for the state in monitoring the causes of injury. In 1986 a national series of 'safe house' seminars drew on this data to advocate for government interest in the design of houses to reduce the cost of accidents within the home. Aspects of disability design, such as the level-access shower, were identified as safer for everyone (Pope, 1986).

With New Zealand being in the unique position of having information about the causes and costs of disability associated with injury within homes, disability design was connected to resolving loss of human capital via discriminatory architecture in private dwellings, while preventing the creation of disability via injury. The idea of connecting the interests of disabled users of private dwellings with the health and wealth of the nation was considered revolutionary. A World Rehabilitation Fund monograph – *From Barrier Free to Safe Environments: the New Zealand experience* – was received as presenting 'a way of thinking about our built environment which we have hinted at but never fully conceptualised ... the concept that an accessible environment is an intrinsically safe one' (Wrightson and Pope, 1989, p.68). Drawing from this idea, the NZS4102 Code of Practice for Safer House Design (Standards Association of New Zealand, 1990) was published, providing advice on design for all new dwellings to 'eliminate or reduce the risk of injury by accident' (p.5), and recommending level-access showers for everyone to prevent trips and slips.[16] Thus, only one year before the passing of the Building Act 1991, New Zealand was considered at the forefront of thought regarding the safety, health, independence and well-being of all building users. However, when the Building Act 1991 was passed, disability design remained reserved for social and commercial spaces and private dwellings were excluded.

> While rehabilitation and disability design discourses had promised to transform people with disabilities into citizens able to compete with others to meet their needs in the housing market, the persistence of institutionalised living into the 1990s shows that this promise was never fully realised.

The passing of the Building Act 1991

With the passing of the Building Act 1991, nearly 30 years ago, the state established its current relationship with building users and building design. The Act's purpose was (among other things) to ensure the safety, health, physical independence and well-being of building users. Alongside this stated purpose, the Building Act centralised the government of building activities and established a commercial relationship with local authorities, who could charge fees and be held liable for costs. Similarly, the early 1990s saw significant change in the government of people with disabilities in New Zealand, with a shift away from funding or providing disability supports to a market model where services would be purchased (Lay, 1991; Shipley and Upton, 1992; Moore and Tennant, 1997). The rationale for this shift was increasing costs and a lack of consistency for consumers (Building Industry Commission, 1990; Shipley and Upton, 1992).

Although the Disabled Persons Community Welfare Act 1975 had gone some way towards addressing architectural discrimination, it was clear that its purpose was to provide financial assistance to individuals with disabilities and to support voluntary and private organisations that were concerned with the community welfare of individuals with disabilities. In contrast, the Building Act provided an opportunity to make all buildings safe and usable for all people, including those with disabilities. However, parliamentary debates demonstrate that in 1991 politicians could draw on discourses that allowed the safety, health, independence and well-being of people with disabilities to be excluded from private dwelling design.

Despite an apparent rejection of eugenics, the view that 'disabled people' should not have autonomy over their lives and that concentrated living in institutions was in the interests of the nation and the 'disabled people' themselves was still considered acceptable. National MP Hamish Hancock argued, for instance:

> In recent years there has been a lot of talk about all disabled people moving into the community as of right. In some cases that has been found not to be in their best interests. It has also been found to be enormously expensive and there can be duplication, not only of housing, but also of medical care and other care that those people need … it could open up a whole area of litigation in which disabled people, or those people who represent them, could argue about what is appropriate or inadequate ... It is really for the medical people to make a decision that is in the best interests of the disabled people concerned. (Hancock, 1991)

While rehabilitation and disability design discourses had promised to transform people with disabilities into citizens able to compete with others to meet their needs in the housing market, the persistence of institutionalised living into the 1990s shows that this promise was never fully realised. Furthermore, although there had been strong involvement of people with disabilities in politics around the time the Disabled Persons Community Welfare Act was passed and into the 1980s (Angus, 1996; Tennant, 1993), their interests were poorly understood by those creating the 1991 Building Act. As National MP David Carter stated:

> The committee received many submissions – and I must say that they were very good submissions that the committee was pleased to receive because those of us who are not affected by disabilities have some difficulty in understanding the problems of those who do – from some people who were able to advise us and to point out the problems that they encounter. I am confident that as a result of those submissions the committee has acknowledged those difficulties and it has done its best in the Bill to provide for people with those problems. (Carter, 1991)

Indeed, in the early 1990s there was much debate about whether people with disabilities should have the right to be protected from discrimination, and the human capital of those disabled other than due to accident remained largely unrecognised (Dalziel, 1991; Cullen, 1991a). While there was a well-established connection between housing, building activities and the health and wealth of the nation,[17] at the time the Building Act 1991 was passed the economy was said to be in decline (Matthewson, 1991) and the proportion of dependents was said to be growing.[18] In determining that private dwellings were not required to be designed in accordance with disability standards, the government was simultaneously attempting to both reduce costs associated with housing modifications and withdraw state responsibility for housing conditions (Shipley, 1991; Cullen, 1991b; Luxton, 1991; Swain, 1991; Tizard, 1991).

When the Building Act was enacted nearly 30 years ago, members of Parliament were immensely pleased that they had maintained the allowances given to people with disabilities to access such public spaces.

Conclusion

Since the establishment of New Zealand's colonial government, the need to construct places and passages that free citizens can access for the purpose of social or commercial interaction has been deemed essential for the creation of 'one great nation' (Wynyard, 1854, p.8). When the Building Act was enacted nearly 30 years ago, members of Parliament were immensely pleased that they had maintained the allowances given to people with disabilities to access such public spaces.[19] Despite a 165-year history of New Zealand government involvement in ensuring that private dwellings do not risk population health, private dwellings were excluded from regulation that would make them accessible to people with disabilities. Such exclusion highlights a problematic relationship between the government and citizens with disabilities.

Whether or not the government sees an ethical responsibility in ensuring the same benefits for people with disabilities as for other users of private dwellings, the interests of the state are entangled with the problem of architecture that creates dependence. This is despite a century of efforts to address the problem of the 'dependent'. At present, state-funded assessment and modification of private dwellings to meet the situational needs of individual citizens represent costs to the nation. This situation not only excludes people with disabilities from free movement within the housing market; it creates additional issues, as many private dwellings now function as guest houses, childcare centres, businesses, and medical and dental surgeries, which means either further exclusion of people with disabilities from participation in society, or that expensive retrofitting by small business owners is required. The dangers of this current practice are several:

- Retrofitting of buildings that are or were private dwellings is the most expensive way to include disability design (Page and Curtis, 2011). These costs will remain and continue to grow while new buildings are designed in ignorance of the problem that endures.
- By attaching disability design to individuals with disabilities (via Ministry of Health or Accident Compensation Corporation funding), the idea that people with disabilities should be under the control of health

practitioners is maintained, putting their privacy and autonomy at risk. This practice also limits the ability of the population to be freely mobile in the housing market and to contribute to the health and wealth of the nation. Furthermore, once the person with the disability vacates a private dwelling, there is no incentive for the homeowner to keep accessible features, meaning accessible dwellings may be converted back into inaccessible ones.

- Current legislation means that people with disabilities do not have their safety, health, independence or well-being assured in private dwellings in New Zealand.
- The lack of availability of private dwellings that people with disabilities can use encourages institutionalised living, with the associated danger of putting their privacy, autonomy and right to live in the hands of others.

The problematic exclusion of people with disabilities as users of private dwellings must be addressed. A full review of the Building Act 1991 in terms of building performance for all building users is needed. Consideration should be given to the buildings that must be required to meet disability design standards (for example, by adding private dwellings to the list of buildings that must meet the NZS4121 standard), or state involvement in the building market to ensure that people with disabilities are included as building users. This could involve development of incentives to encourage homeowners and developers to meet disability design standards in private dwellings (see, for example, Hamilton City Council's development contributions policy and Thames–Coromandel District Council's disability strategy). Radical rethinking about the exclusion of people with disabilities as members of the population of building users is needed, along with recognition that the current exclusion risks citizens' privacy, autonomy, freedom to live outside institutions, and ability to build human, social and physical capital.

1 See Moore and Tennant, 1997 and Tennant, 1996 for a detailed history of New Zealand policy and disability.
2 See Sullivan, 1995 for an analysis of eugenics discourses in relation to people with disabilities in New Zealand. See Mostert, 2002 for a detailed study of the management of people with disabilities as a population of 'useless eaters'.
3 In 1923 the minister of health asked: 'What is our duty towards the deficient. The answer which common-sense dictates is to place them in an environment where with their little comprehension they will not feel their disability; where they will be as happy as possible; where they will be trained for and engage in simple employments according to their capacity; where, as children, they will not, by association, prejudice the outlook of their normal brothers and sisters; and where, as adults, they will not have the opportunity to come in conflict with the law or to reproduce their kind … for the vast majority, in its interest and the public's, this should be the permanent home' (Pomare, 1923, p.2). The Mental Defectives Act 1911 and its 1928 amendment established and extended legalisation of permanent segregation of the mentally defective.
4 See Paul, Spencer and Stenhouse, 2017 for a more detailed account of the practices of eugenics in New Zealand.
5 Indeed, debates related to rights to life and freedom for people with disabilities continue in recent history (e.g. Jaye et al., 2019; Klausen, 2017; Stace, 2013).
6 This radical way of thinking is associated with the so-called 'social model of disability'.
7 The American steering committee had originally included shower design (Nugent, 1961); the final version limited its scope to 'general buildings' for the purpose of efficiency, eliminating reference to shower facilities (American Standards Association Project A-117 Steering Committee, 1961, p.2).
8 The 1971 version only considered passenger and transport terminals, and public lavatories as essential. While there was mention of hospitals, rest homes, hotels, motels, hostels and swimming baths where showers would likely be available, it was not until the 1985 edition that shower specifications were included.
9 For example, the Raupo Houses Act 1842, Auckland City Council Act 1853, Canterbury Municipal Ordinance 1860, Public Health Act 1872, Bubonic Plague Prevention Act 1900, Maori Councils Act 1900, Health Act 1956.
10 Although the Act also applies to visitors to the country, it is the relationship with citizens that is of interest here.
11 'If the scheme can be said to have a single purpose it is 24-hour insurance for every member of the workforce, and for the housewives who sustain them' (Woodhouse, 1967, p.26).
12 'The Director-General shall not make a grant to any person … unless he is satisfied that the disabled person can be expected to enjoy the benefit of the alteration to the home for a period sufficient to justify the amount of the expenditure involved' (Disabled Persons Community Welfare Act, 1975, s14(3)).
13 This funding is now governed by the New Zealand Public Health and Disability Act 2000.
14 Limited to new or reconstructed streets, new buildings or buildings undergoing major alterations, and with the proviso that the director-general may at any time exempt any or all from the requirement for modification. Reference to this section of the New Zealand Public Health and Disability Act was included in the Building Act 1991. The current Building Act refers to NZS4121 directly.
15 This regulation is now included in the Health and Disability Services (Safety) Act 2001 and in the categories of buildings that the current Building Act states must now meet NZS4121 standards.
16 Universal design has extended this discourse of what was 'disability design' into design that is better for 'everyone'. 'The basic premise of Universal Design is that all people have differing abilities and needs when using the environment and to create a positive experience for the building user'. The aim is to create 'Buildings for Everyone' (BarrierFree New Zealand, 2019).
17 'Housing is a basic social need. Housing is one of the building blocks of the so-called decent society. The Opposition knows that having decent housing leads to good health, proper education, a stable community, and a chance for people to take part in their community, irrespective of wealth' (Swain, 1991); 'Everyone knows that the building industry is absolutely pivotal for the economy – it provides jobs and skills, and it has a multiplier effect in the sense that it is able to impact on other industries, and particularly on regional Communities' (Swain, 1992b).
18 'For the first time in our history we have reached the point at which every full-time worker in New Zealand – every single one of the people who are working full time – pays taxes to support a person on a benefit or a pension, their spouses and their children. Somebody had to make hard and unpopular decisions' (McLay, 1991).
19 'Members of the House will note that the purposes and principles of the Bill include commitments to people with disabilities. Section 25 of the Disabled Persons Community Welfare Act lays the groundwork by spelling out the categories of buildings to which people with disabilities must have access. The Bill will reinforce that commitment and will help to make it happen. I am particularly pleased about that aspect' (Lee, 1991).

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Zara Molijn

Barriers to Active Travel
Among Primary School-Aged Children in Wellington

Abstract

Active school travel (walking, biking, scootering or skating to and from school) is declining in Wellington. This is concerning because active forms of transport benefit children's mental and physical health, as well as producing wider societal benefits such as less noise, reduced air pollution, lower congestion and fewer greenhouse gas emissions. This article explores the barriers to active school travel among primary school-aged children in Wellington, based on an anonymous online survey of parents. The results indicate that the main barriers to active school travel are related to safety concerns, family schedule complexities, and the efficiency of other modes of transport. Possible solutions include a walking school bus programme and more flexible working hours for parents, specifically during school drop-off and pick-up times.

Keywords primary school children, active travel, Wellington, barriers, parental considerations

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Active forms of transport such as walking, biking, scootering and skating are shown to benefit children's mental and physical health (Collins and Kearns, 2010). Moreover, systematic analyses reveal that children who engage in active school travel are more likely to attain the recommended levels of physical activity compared to their passive travel counterparts (Ikeda et al., 2018). In addition to individual benefits, active travel produces wider societal benefits, such as reduced air pollution, reduced traffic congestion, climate change mitigation and urban noise reduction (Collins and Kearns, 2010; Environmental Health Indicators New Zealand, 2019).

Despite its positive impact, the active school travel rates of New Zealand children have decreased over the past 30 years (ibid.). Instead, New Zealand children are commonly getting to and from school in private motor vehicles. These nationwide trends are similar to the active school travel trends being observed in the Wellington city area, and, as a result, traffic congestion is an increasingly prevalent issue for the Wellington City Council (Wellington City Council, 2019; Let's Get Wellington

Figure 1. Respondents' distance from focal child's school

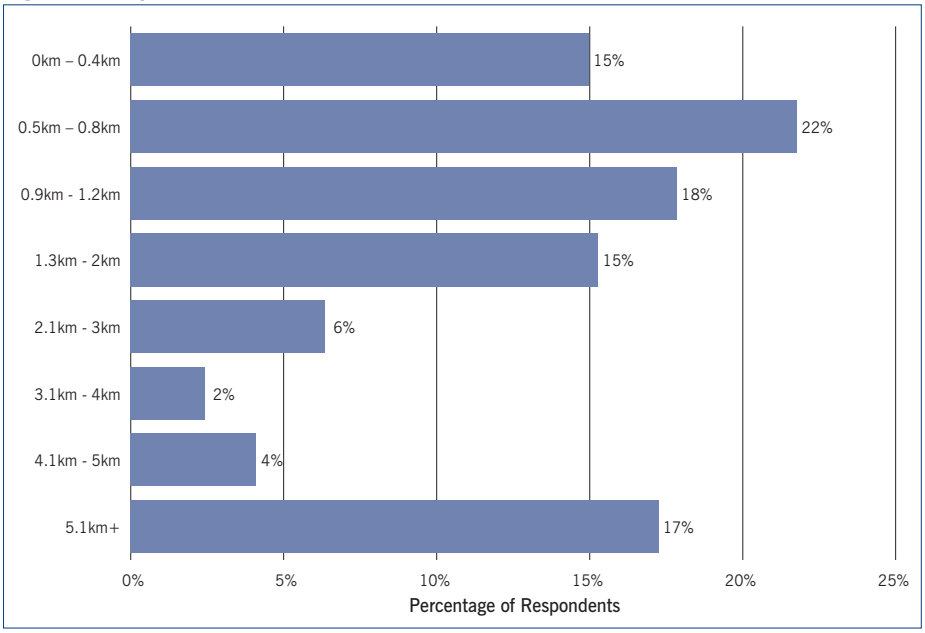
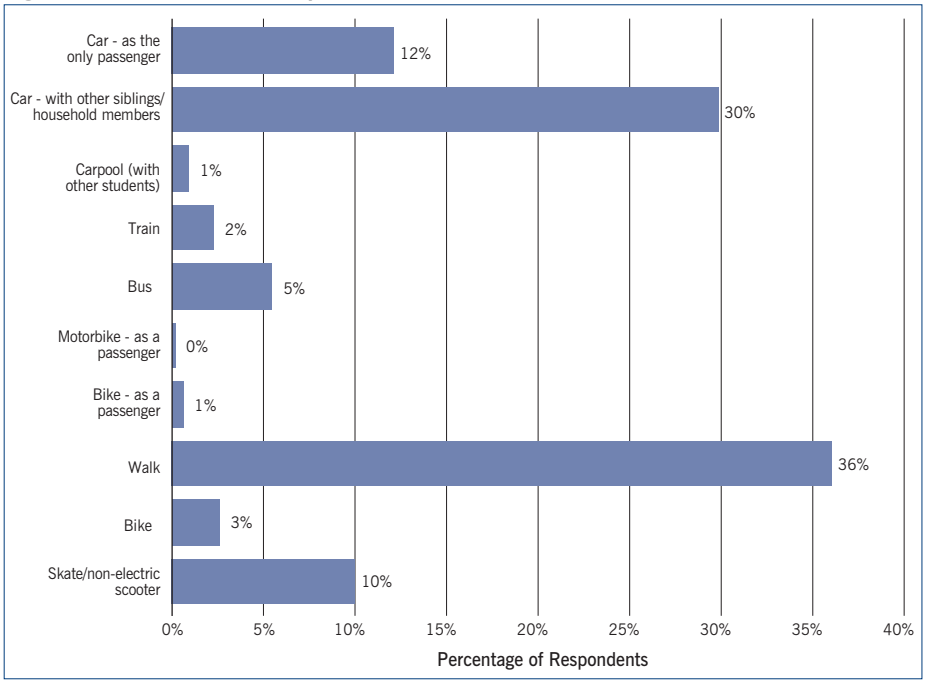


Figure 2. Usual mode of transport to school[3]



Moving, n.d). Consequently, the council is working alongside organisations, schools and parents to deliver seven programmes, ranging from initiatives which promote regular active school travel, to skill-based programmes in schools that build children's confidence to cycle and scooter (Wellington City Council, 2019). These initiatives include: Pedal Ready, Bikes in Schools, walking school buses, Moving March, the Active Travel Action programme, Park and Stride and the micro scooter safety programme. In order for these initiatives to be successful, it is important to first understand the barriers that are inhibiting uptake.

Currently, to gain knowledge about active school travel trends in the Wellington city area, the city council administers a residents monitoring survey (Wellington City Council, 2017, 2019). Unfortunately, this survey only seeks to monitor current active school travel trends and does not seek to identify the underlying reasons behind these trends. As a result, there is a gap in the knowledge base, and more specific, comprehensive engagement is needed. Thus, the primary aim of this study was to identify barriers to active travel for primary school-aged children in the Wellington city area.

This was addressed by conducting an anonymous online survey open to all parents and caregivers of primary school-aged children in Wellington city. The survey focused on primary school-aged children because younger children typically cannot travel independently and may be more susceptible to built-environment challenges such as navigating busy roads.

Methodology

Survey approval and distribution

The survey conducted for the research received ethics approval from the Human Ethics Committee at Victoria University of Wellington (application ID number 0000029252). To reach the parents and caregivers of primary school-aged children in the Wellington city area, all 68 eligible schools were emailed and asked if they could distribute the survey to the families on their mailing list who had students in years 0–8. Schools with low parent engagement in the survey were followed up with a cold call to ask if they required any extra information to move forward with the processing and distribution of the survey.

Target population and survey sample

The target population was calculated by considering three main points: first, the survey asked for only one response per household; second, there are 18,796 primary school-aged children in the Wellington city area (Education Counts, 2020); and third, according to GBD 2017 Population and Fertility Collaborators (2018), on average New Zealand mothers are having 2.1 children.1 In turn, it was calculated that the target population for the survey was approximately 8,950 people.

Of the 736 survey responses that were collected, only 664 responses could be used, due to 69 responses being less than 60% complete and three respondents having only answered the initial screening question.[2] As a result, the survey sample was 7.4% of the assumed target population.

Survey sample description

Overall, respondents identified as 79% female, 20% male and 1% gender diverse; the average age of respondents was 43 years old. Respondents reported that focal children (youngest primary school-aged child in the respondent's care) identified

as 52% female, 47% male and 1% gender diverse. The mean age of focal children was 7.9 years old, with the most common age range being 5–6. At 85%, the most common ethnicity of focal children was European/Pākehā.

Responses covered approximately two-thirds (45 schools) of the schools in the Wellington city area. The mean decile rating for identified schools was 8.8 and the median decile rating was 10. The mean decile rating of the 68 eligible schools was 8.6 and the median decile rating was 9. Thus, in terms of decile rating the sample was mostly representative of the population.

Findings

Respondents' distance from focal child's school

Figure 1 shows that 55% of respondents live a 15-minute walk or less (0–1.2km) from their child's school, with the average distance being 2km. Additionally, 17% of respondents live more than 5.1km from their focal child's school.

Focal child's usual mode of transport to and from school

Figure 2 reveals that 50% of focal children travelled to school using an active mode of transport (walking, biking, scootering or skating), 43% travelled to school in a car and 7% travelled to school using public transport.

The after-school mode choice findings were fairly similar; however, it was found that children were 5% less likely to use an active mode of transport when travelling home after school. Further, children were 5% more likely to travel from school to home in a car.

Frequency of active school travel[4]

Tables 1 and 2 display the frequency at which active travel modes were used to travel to and from school. It was found 73% of children travelled to school actively at least once a week. The most common mode of active transport was walking, with 27% of children walking to school every day of the week. Interestingly, this was 4.3% higher than for those who walked home. In comparison to walking, biking and scootering/skating were used much less frequently.

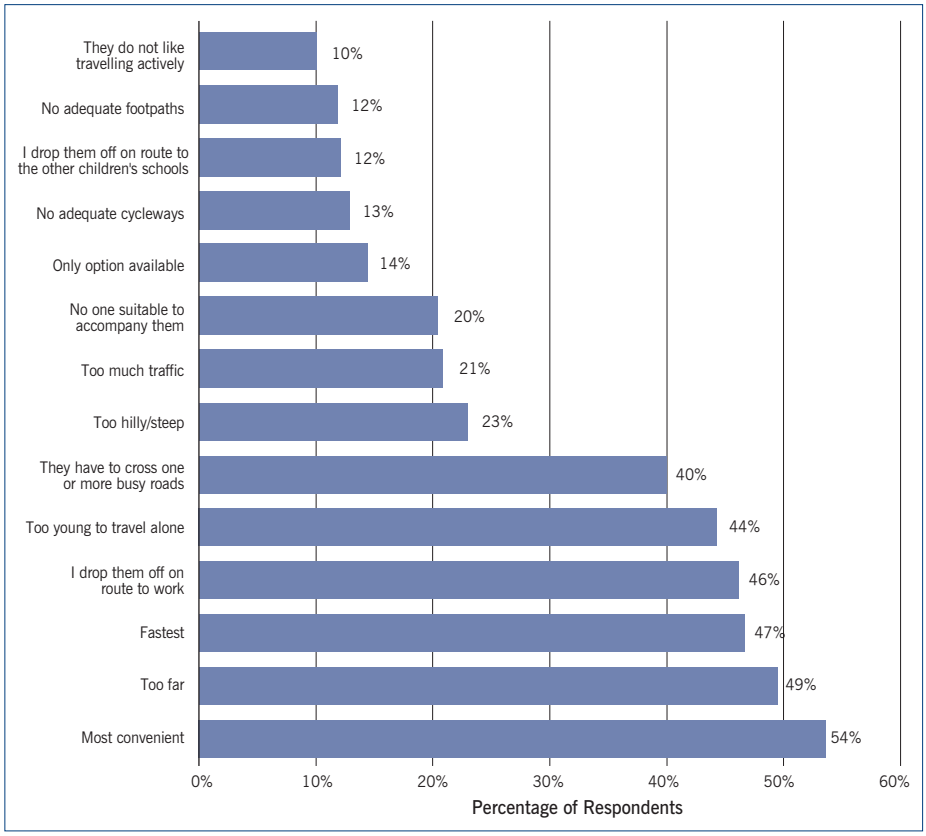
Table 1. Frequency of child's active travel to school by active mode of transport

Active Mode of Transport	Never	Less Often	1-2 Times a Week	3-4 Times a Week	5 Times a Week
Walking	39.8%	11.8%	10.9%	10.1%	27.3%
Biking	85.4%	7.6%	3.9%	2.0%	1.1%
Scootering/Skating	68.8%	13.5%	7.8%	6.8%	3.1%

Table 2. Frequency of child's active travel to home by active mode of transport

Active Mode of Transport	Never	Less Often	1-2 Times a Week	3-4 Times a Week	5 Times a Week
Walking	42.3%	11.8%	10.4%	12.4%	23.0%
Biking	85.9%	7.4%	4.2%	1.5%	0.9%
Scootering/Skating	71.4%	14.4%	7.2%	5.2%	2.1%

Figure 3. Barriers to active travel when travelling to school[6]



Barriers to active travel when travelling to and from school

Figure 3 displays the top barriers that slow the uptake of active travel among primary school-aged children when travelling from home to school. There were a wide range of responses, so only barriers that are cited by 10% or more of respondents are shown.[5]

Figure 4 reveals the top barriers that slow the uptake of active travel among primary school-aged children when travelling from school to home. Again, there were a wide range of responses, so only barriers that are cited by at least 10% of respondents cited are shown.[7]

When assessing the difference in barriers for school morning travel and after-school travel, dropping children off en route to work received 46% of all responses; in comparison, picking children up en route from work to home received 24% of all responses. The barrier of activities before school received 3% of all responses, while the barrier of activities after school received 35% of all responses. Further, barriers to afternoon active school travel included focal children being too tired, being picked up from school by a nanny or being in after-school care.

Figure 4. Barriers to active school travel when travelling home[8]

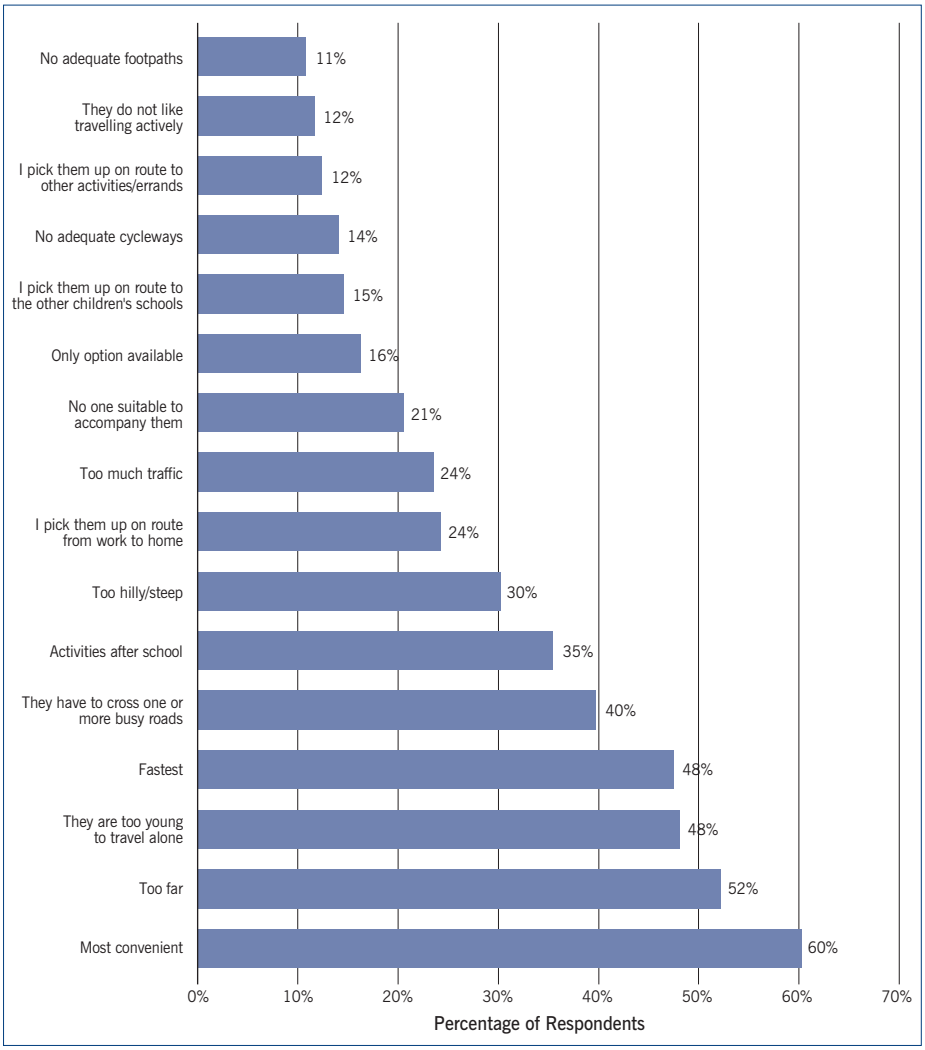


Table 3. Knowledge of child's school participation in active school travel initiatives

Active school travel initiative	Have not participated	Unsure	Have participated
Pedal Ready	42.6%	39.8%	17.6%
Bikes in Schools	44.6%	39.4%	16%
Walking School Buses	51.9%	28.0%	20.1%
Moving March	20.1%	19%	60.9%
Active Travel Action Plans	44.4%	48.3%	7.3%
Park and Stride	48.8%	44.5%	6.7%

Parental circumstances

Parental and family circumstances are strongly related to a number of the barriers that slow the uptake of active travel for primary school-aged children.

The survey revealed that 56% of respondents were in full-time work and 24% were in part-time work. Sixteen per cent of respondents stated that they did not have flexible working hours, 48% of respondents stated that they had somewhat flexible working hours and 35% of respondents stated that they had very flexible working hours. Sixty per cent of respondents said that the flexible working hours allowed them to travel more actively with their children.

Regarding mode of transport to work or study, 60% of respondents travelled to work in a car as the driver, 20% of respondents travelled in a bus, 12% walked, 10% biked and 10% worked or studied from home. With respect to commute time, 59% of respondents took 11–30 minutes to travel to work and 28% of respondents took more than 30 minutes. The mean commute time was 23 minutes and the median commute time was 25.5 minutes. These findings are significant because focal children's active school travel is likely affected by these commute trends (Conlon, 2013).

Eighty-six per cent of respondents stated that they lived with a partner, and of these 83% stated that their partner was in full-time work. Of respondents' partners, 35% did not have flexible working hours, 48% had somewhat flexible working hours and 17% had very flexible working hours. Fifty-one per cent of respondents stated that these flexible working hours did not allow their partners to travel more actively with their children.

Regarding mode of transport, 41% of respondents' partners travelled to work or study in a car as the driver, 17% took the bus, 12% walked and 14% biked. With respect to commute time, 67% of respondents' partners took 11–30 minutes to travel to work and 21% took more than 30 minutes to travel to work. The mean commute time was 22.2 minutes and the median commute time was 25.5 minutes.

Knowledge of focal child's school participation in active school travel initiatives

As previously stated, there are several initiatives in Wellington primary schools aimed at increasing children's participation in active travel. In addition to asking parents and caregivers about barriers to active travel, the survey also asked about their knowledge of their child's school's participation in these different initiatives (Table 3). Walking school buses were participated in the least out of the initiatives, at 51.9%. Respondents were most unsure about whether their child had participated in the Active Travel Action programme, at 48.3%. The survey identified Moving March as having the highest participation rate at 60.9%.

Discussion

Barriers to active school travel

The survey found that the most common barriers to active school travel when travelling to and from school were: the preferred mode of transport being the fastest or the most convenient; respondents' children being too young to travel alone; respondents' homes being too far away from school; and respondents needing to drop their children off en route to work. Other notable barriers included children having to cross busy roads, and

active school travel routes having too much traffic or being too hilly or steep.

For the 55% of respondents who live within 1.2km of their child's school, the active school travel barriers would likely relate to the safety of the built environment, the availability of a suitable person (if needed) to accompany a child on their active school travel journey, and having someone suitable at home after school (if needed) to look after the child. For parents who live beyond an actively travelable distance, the focus turned to the barriers surrounding the usability, convenience and cost of public transport. Thus, people in these two key groups face different barriers and should be surveyed with different questions if we are to better understand the barriers to active school travel.

Distance considerations

When assessing how far children travel from their home to their school, the survey found that the mean distance was 2km (around a 25-minute walk) and the median distance was 1.05km (around a 10–15-minute walk), with 55% of respondents living a 15-minute walk or less from their child's school. This is important because previous studies have found that a major predictor of active school travel engagement is the distance children live from their school (Mandic et al., 2020; Oliver et al., 2014; Smith et al., 2020). Moreover, Tang states that if active school travel is to be optimised, a child should live a five-minute walk from their school or closer (Tang, 2021). Thus, a potential group of people who could be nudged by thoughtful policy are the 55% of respondents who live within a 15-minute walk of their child's school. Given that 49% of focal children are using active modes of transport to travel to and from school, evidence-based policy would see this number rise to 55% of children as a minimum target.

Notably, of respondents who reported that they had more than one primary school-aged child, 83% stated that their primary school-aged children travelled to and from school in the same way. Thus, active school travel initiatives in the Wellington city area should target households as opposed to individual children.

Safety-related barriers

When asked to think about the statement 'cycling in the city is safe', 46% of participants in the Wellington City Council residents monitoring survey in 2019 reported they were dissatisfied or very dissatisfied with this statement. When asked to think about this same statement for their children, 76% of respondents were dissatisfied. Additionally, when asked about walking in Wellington central, respondents noted concerns about sharing footpaths with scooters and cyclists (Wellington City Council, 2019). Thus, to incentivise active travel for children and adults who are within a walkable or rideable distance of their destination, adults and children need to feel safe and be safe.

The active school travel survey conducted for this research included an open text question on why it would be unsafe for their child to actively travel a short distance to school unaccompanied, to which there were multiple responses. In particular, one respondent stated:

> We would let our youngest walk or ride everyday if we didn't have to accompany them. They are good at making judgement decisions as to when it is safe to cross, however there are two streets which are 50km/h zones with significant blind spots which are a very real concern.[9]

Comments such as this highlight the real barriers for children engaging in active school travel, and why children may not be travelling actively even when living within a short distance of their school.

Family circumstances and efficiency-related barriers

The survey showed that a main factor in respondents' travel habits was that the travel was fast and convenient. In the 2019 residents monitoring survey, 39.2% of Wellington city respondents reported that driving around the city was quite easy or very easy. When thinking about cycling around the city, only 28.9% of respondents reported that it was quite easy or very easy. When thinking about walking around the city, 92.5% of respondents reported that walking was quite easy or very easy (ibid.). These statistics are reflective of the thoughts of adults in the Wellington city area and would likely be different when thinking of children navigating the transport networks. Thus, if active school travel is to become more accessible in Wellington city, it needs to be comparatively easier than using private or public transport and should be developed with children in mind.

Prior literature has shown how parents' attitudes and commute patterns are intertwined with their children's opportunities for active travel ...

Prior literature has shown how parents' attitudes and commute patterns are intertwined with their children's opportunities for active travel (Activity Nutrition Aotearoa, 2018; Smith et al., 2019; Susilo and Liu, 2016). Due to the majority of the survey sample consisting of women aged 35–44 and full-time workers commuting to work or study in a car, with this commute time most commonly taking around 25 minutes, active school travel initiatives aiming to engage with parents/guardians in Wellington city need to have this demographic and their key barriers in mind.

When asked about flexible working hours, 48% of respondents and 48% of respondents' partners reported that they had somewhat flexible working hours, while 35%

of respondents and just 17% of respondents' partners had very flexible working hours. Moreover, 40% of respondents stated that the flexible working hours provided by their work did not help them to facilitate active school travel; similarly, 51% of respondents stated that their partners' flexible working hours did not help them to facilitate active school travel. Thus, it is likely that if more workplaces offered 'very flexible' working hours, respondents and their partners would be better positioned to facilitate active school travel.

In the closing open text section of the survey, a number of respondents highlighted the impact that parental working arrangements had on active school travel. One commented:

> school start time. For any parents that work, a normal day begins at 9am. Most schools only open at 8.30. Half an hour is not a lot of time to get from school to work, so often, parents will choose to drive rather than take a bus/train or use active transport. If the parent is driving to work, they will drive the kids to school first. Also, consideration of sibling's transport requirements. Easy to factor in active modes of transport if you are all doing the same thing, but if everyone needs to be in different places, it's more convenient and time efficient to drive.

This comment supports the findings of the survey and underlines how intertwined children's active school travel habits are with the travel habits of those in their household.

Notably, a focus on parental work schedules is somewhat lacking in active school travel literature. One respondent echoed this when stating:

> I am impressed this survey is delving into home circumstances and family work commitments. These overwhelmingly dictate mode choice. Many families would love to use active modes, but it can be difficult to fit in to family routines.

Differences between before-school and after-school active travel

Interestingly, the survey found that children engaged in active modes of transport slightly more when travelling to school (50%) than when travelling from school (45%). Moreover, it was more likely for children who travelled in private vehicles or used public transport to use the same mode of transport when travelling to and from school than for those who travelled actively. This finding was also reflected in answers to the questions about the frequency of active school travel. When assessing the before- and after-school barriers to active travel, additional barriers such as focal children being too tired, being picked up from school by a nanny or being in after-school care featured as barriers to afternoon active travel.

Conclusion

Currently, the initiatives undertaken by Wellington City Council are insufficient to address the declining rate of active school travel. Further, programmes must be considered in tandem with those already in action to achieve the goal of at least 55% of children (those living within a 15-minute walk of their school) travelling actively.

Given the strong indication that safety, convenience and efficiency are key barriers to active school travel, it is recommended that a city-wide walking school bus programme be established, addressing parents' safety concerns and not requiring all parents to attend every morning. Additionally, to mitigate safety concerns regarding younger children it is recommended that the current micro scooter safety programme be offered to children in years 0–3, as they are ineligible for the Pedal Ready courses. This research also found that wider-reaching access to the Active Travel Action programme, including for children in years 5–8, may assist with addressing the barriers to travel.

Further, the study suggests the need for infrastructural changes: safe crossing options within a 20-minute walking radius of primary schools, adequate footpaths and cycleways within a 20-minute walking radius of primary schools, speed reduction around schools at drop-off and pick-up times, and traffic reduction around schools at drop-off and pick-up times.

Other key barriers could also be managed by encouraging workplaces to offer parents/guardians more flexible working hours, especially during school drop-off and pick-up times, and incentivising households with primary school-aged children to travel actively.

When assessing the implementation of new active school travel initiatives, the overarching goals should be to ensure that the initiative: is convenient; aligns with the family schedule; safe (objectively and subjectively); is equitable; fosters active school travel skills and knowledge; and fosters awareness and in turn an understanding of the importance of active school travel. Further, for the organisation implementing such initiatives, affordability and political feasibility are obviously vital considerations.

1 Although the survey found that the mean number of primary school-aged children a parent/guardian had was 1.5, the target population was calculated using the 2.1 average due to the survey sample size being significantly lower than the assumed population.
2 Of the analysed responses, 649 of them were 100% complete.
3 After analysing the open text answers, bike – as a passenger and motorbike – as a passenger were added to the travel modes.
4 The active school travel frequency statistics are in line with Wellington City Council's active school travel findings stated in its 2018/19 annual report (Wellington City Council, 2019).
5 After analysing the text answers, the following options were included: cheapest; I am not physically able …; not enough time to travel actively; there is no space to store the necessary active travel equipment in our home. Answers that received less than 10% of responses were: there is no space to store the necessary active travel equipment in our home (0%); not enough time to travel actively (0%); I feel pressured by other people/parents to take them to school in this way (0%); I drop them off en route to other activities/errands (0%); they travel in this way because they don't want to get bullied (1%); cheapest (1%); too much crime (2%); do not have the necessary active school travel equipment (2%); I'm not physically able to facilitate active school travel and/or the child in my care is not physically and/or mentally able to travel actively (2%); their peers travel to school in this way so they want to as well (3%); activities before school (3%); not enough time to travel actively (4%); I drop them off en route to other activities (7%); bad weather (7%); they have a lot to carry (9%).
6 Responses total more than 100% due to the question being multiple choice. Number of respondents = 320; number of responses = 820.
7 After analysing the text answers, the following options were included: cheapest; I am not physically able …; not enough time to travel actively; there is no space to store the necessary active travel equipment in our home; after school-care/nanny picks them up from school; too tired after school. Answers that received less than 10% of responses were: There is no space to store the necessary active travel equipment in our home (0%); I feel pressured by other people/parents (1%); cheapest (1%); they travel in this way because they don't want to get bullied (1%); too much crime (2%); not enough time to travel actively (2%); I am not physically able to facilitate active school travel and/or the child in my care is not physically and/or mentally able to travel actively (2%); do not have the necessary active school travel equipment (2%); after-school care/nanny picks them up from school (3%); too tired after school (3%); their peers travel in this way so they want to as well (4%); bad weather (9%); they have a lot to carry (9%).
8 Responses total more than 100% due to the question being multiple choice. Number of respondents = 370; number of responses = 1846.
9 The author can provide a summary of comments upon request.

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Appendices

Summary statistics of socio-demographic information and household circumstances (questions B1-G1)

Variable		n	Mean	Median	Mode	Min	Max
B1.	# of Primary school-aged children (PSAC)	664	1.5	1	1	1	5
B2.	PSAC get to and from school in the same way	314	0.83	1	1	0	1
C1.	Respondents' gender	651	0.80	1	1	0	1
C2.	Respondents' age	659	42.7	39.5	39.5	29.5	69.5
C3.	Respondents' ethnicity	647			European		
D1.	Do you have a partner	658	0.86	1	1	0	1
D2.	Work status	656			Full-time work		
D3.	Flexible working hours	540		Somewhat flexible	Somewhat flexible		
D4.	Flexible working hours facilitate active travel	437	0.60	1	1	0	1
D5.	Respondents' usual primary mode of transport to work or study	566			Car driver		
D6.	Respondents' commute to work or study (minutes)	507	23	25.5	21-30	5.5	35.5
D7.	Partner's work status	566			Full-time work		
D8.	Partner's flexible working hours	531		Somewhat flexible	Somewhat flexible		
D9.	Partner's flexible working hours facilitate active travel	339	0.49	0	0	0	1
D10.	Partner's usual primary mode of transport to work or study	532			Car driver		
D11.	Partner's commute to work or study (minutes)	494	22.2	25.5	21-30	5.5	35.5
E1.	Adults in the house	661	1.9	2	2	1	5
E2.	Children in the house under 4 years old	661	0.28	0	0	0	4
E3.	Children in the house year 9 and above	661	0.37	0	0	0	1
F1.	Focal child's gender	649	0.53	1	1	0	1
F2.	Focal child's age	661	7.9	7.5	5-6	5.5	11.5
F3.	Focal child's ethnicity	644			European		
Decile of participating schools		45	8.8	10	10	3	10
Decile of all eligible schools		68	8.6	9	10	3	10
G1.	Distance from home to school (km)	661	2.0	1.05	0.5 - 0.8	0.2	5.55

Summary statistics of children's usual mode of transport to and from school and barriers to active school travel (questions G2-G5)

Variable		n (Respondents)	n (Responses)	Mode
G2.	Focal child's mode of transport to school	660	660	Car
G3.	Top safety barrier when travelling actively to school	320	820	Too far for the focal child to travel actively
G3.	Top family barrier	257	345	I drop them off on route to work
G3.	Top social barrier	51	54	They do not like travelling actively
G3.	Top efficiency barrier	256	389	Most convenient
G3.	Top other barrier	113	125	Only option available
G3.	Top overall barrier when travelling actively to school	338	1733	Most convenient
G4.	Focal child's mode of transport from school to home	646	646	Car
G5.	Top safety barrier when travelling actively from school to home	331	847	Too far
G5.	Top family barrier	283	397	Activities after school
G5.	Top social barrier	58	63	They do not like travelling actively
G5.	Top efficiency barrier	268	399	Most convenient
G5.	Top other barrier	125	140	Only option available
G5.	Top overall barrier when travelling actively from school to home	370	1846	Most convenient

Summary statistics of children's frequency of active school travel and respondents' knowledge of initiatives (questions G6-G12)

Variable		n	Median	Mode
G6.	Frequency of walking to school	651	Less often	Never
G7.	Frequency of walking from school to home	652	Less often	Never
G8.	Frequency of biking to school	664	Never	Never
G9.	Frequency of biking from school to home	647	Never	Never
G10.	Frequency of scootering or skating to school	650	Never	Never
G11.	Frequency of scootering or skating from school to home	653	Never	Never
G12.	Pedal ready participation	578	Unsure	No
G12.	Bikes in schools participation	576	Unsure	No
G12.	Walking school bus participation	576	No	No
G12.	Moving March participation	637	Yes	Yes
G12.	Active travel action plan participation	565	Unsure	Unsure
G12.	Park and stride participation	566	Unsure	No
G12.	Other active school travel initiative	4		GWRC Walk or Wheel Week

Logan Samuelson

Giving Light to the Waimapihi

the challenges of governance and policy for daylighting urban streams in Aotearoa New Zealand

Abstract

This article examines the challenges posed by governance and policy to stream daylighting efforts in the urban context of Aotearoa New Zealand. Building on the work of McLean (2020), it examines the prospect of daylighting the Waimapihi stream in Te Whanganui-a-Tara–Wellington. It then provides recommendations for future directions in freshwater management in light of ongoing reforms in the policy sphere, calling for a more inclusive scope of protection within Aotearoa New Zealand's foremost resource management legislation.

Keywords stream daylighting, deculverting, freshwater policy, storm water infrastructure, resource management, Three Waters reform

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As our urbanised environments continue to grow, stream daylighting presents one pathway towards rekindling our connection with the non-human environment. Stream daylighting can be defined as 'the practice of removing streams from buried conditions and exposing them to the Earth's surface in order to directly or indirectly enhance the ecological, economic, and/or socio-cultural well-being of a region and its inhabitants' (Khirfan, Mohtat and Peck, 2020, p.1). Stream daylighting presents a host of economic, social, cultural and ecological benefits in alignment with environmental goals aimed at well-being, restoration and conservation, and should not be dismissed. In this article I provide examples of implemented stream daylighting projects in Tāmaki Makaurau–Auckland and Te Whanganui-a-Tara–Wellington, highlighting their resulting benefits. I then look at the example of the piped Waimapihi stream in Te Whanganui-a-Tara to demonstrate governance and policy challenges to future stream daylighting efforts. In doing so, I aim to advance the work of McLean

(2020) and illuminate the governance and legislative conditions under which further stream daylighting projects could be made feasible in our own backyard.

Stream daylighting: benefits and motivations

Urbanisation and stream modification have had significant impacts on stream ecological health. Of stream modification methods in urban contexts, culverting or diversion of streams into pipes has been described as the most severe form of modification (Neale and Moffett, 2016). It is often the smallest streams that are the most affected by urbanisation, due to the economic feasibility of their burial (Elmore and Kaushal, 2008). Stakeholders might look to stream daylighting as a means of ameliorating the negative impacts of urbanisation and modification on stream ecological health and of revitalising our waterways for human and non-human benefit alike.

Open waterways have the potential to provide a host of benefits. Lewis, Mansell and Hendy (2014) suggest amenity values, community interaction and well-being, storm water treatment and flood management. Stream daylighting could also prove to be less costly than continuing to maintain and replace existing piped infrastructure (Wild et al., 2010). Furthermore, daylighting can contribute to multiple policy goals in the environmental, social and economic spheres. According to Wild et al., daylighting 'has a high potential to improve aquatic and marginal habitats' (ibid., p.415) through ecological revitalisation; improves fish connectivity and habitats; provides social benefits such as educational opportunities for schools, where classes can visit and carry out learning activities in 'outdoor laboratories'; and increases recreation and amenity values, creating valuable public space such as parks and footpaths for walking, running and cycling and for enjoying nature and the surrounding wildlife. These are just some of the ways stream daylighting can enhance human and non-human well-being.

Examples of urban stream daylighting in Aotearoa New Zealand

One example of stream daylighting in the urban context of Aotearoa New Zealand is the Waitahurangi and Parahiku reaches of the Avondale stream in Tāmaki Makaurau, a project completed in 2013. A number of engineering accomplishments are reported to have enhanced the stream's ecology and biodiversity (Liptrot, 2013). For community members the park now serves as a place where people can gather and enjoy the outdoors. Students can engage in educational activities in science and the arts. Others have found fulfilment in the park through the establishment of community orchard projects and enhanced accessibility to resources for customary use (ibid.). Lewis, Mansell and Hendy (2014) similarly report increased amenity and community values, opportunities for community involvement and education, water quality treatment, reduced flow velocities, increased flow capacity, mitigated flood potential, increased abundance and richness of aquatic ecological habitat and enhanced terrestrial habitat. Neale and Moffett (2016) found a significant improvement in stream invertebrate communities, which will go on to support the wider ecological systems of this stream as food for native fish and birds. The project also supports Māori cultural and spiritual values through the provision of natural resources for customary gathering and use (Lewis et al., 2014).

The 2005 [daylighting of the Waitangi stream] was designed to place culture, heritage and history at the forefront to account for the area's significance to tangata whenua and tangata tiriti alike.

Another example of stream daylighting is the Waitangi stream in Waitangi Park, Te Whanganui-a-Tara in 2005 (Campbell et al., 2010; Greene and Johnson, 2021). Prior to colonisation, this landscape was highly significant in terms of cultural and ecological value to Māori inhabitants. Following settlement of the area by European colonists, the Waitangi stream was diverted into piped water infrastructure in 1859. The 2005 project was designed to place culture, heritage and history at the forefront to account for the area's significance to tangata whenua and tangata tiriti alike. The project aimed to achieve a cultural, aesthetic and ecologically functional public space, and to treat storm water through its incorporation of a wetland environment and active riparian edge. Monitoring results have since shown that the installed wetland effectively removes contaminants from the piped storm water of the Waitangi stream (Campbell et al., 2010; New Zealand Institute of Landscape Architects, n.d.). Additionally, the park provides urban green space and aesthetic value, and supports biodiversity (Campbell et al., 2010; New Zealand Institute of Landscape Architects, n.d.). In 2010 it was determined that the stream was a suitable habitat for native species (Campbell et al., 2010). Today the park boasts recreational value, connectivity to the greater urban framework in which it is positioned, and cultural installations which connect the park to historical narratives embedded within the site (New Zealand Institute of Landscape Architects, n.d.).

The daylighting projects of the Avondale and Waitangi streams provide the foundation for us to consider additional projects in our own backyard. To do so, I draw on the work of McLean (2020) to envision the prospect of daylighting the Waimapihi stream in Te Whanganui-a-Tara.

Giving light to the Waimapihi

Before exploring the prospect of daylighting the Waimapihi stream, it is important to understand its complex history and the modification produced through colonial interaction. Te Aro Pā was one of the principal early 19th-century settlements of Te Whanganui-a-Tara, inhabited primarily by Taranaki iwi, Ngāti Ruanui, and Te Ātiawa. In 1841 Baker Polhill arrived and established a successful timber business in what is now lower Aro Street, Aro Valley, sourcing his timber from the area that became known as Polhill's (or Polhill) Gully. In the 1960s Victoria University of Wellington became interested in the Polhill and surrounding area as a site for expansion, but community members challenged this on the basis of its potential for wildlife restoration and recreational use. In 1989 the Polhill Reserve – now known as Waimapihi Reserve – became a Wellington City Council recreational reserve (Brassel, 2014).

The waterways of Aotearoa New Zealand, including those situated within urban contexts, are highly significant to Māori well-being and ways of life (Durie et al., 2017). In te ao Māori, waterbodies are viewed as living beings possessing mauri (life force) and as ancestors; hapū refer to their place within the universe in reference to them. While in te ao Māori the connection between humans and land is one of whakapapa (genealogy), European colonists viewed land in terms of commodity and utility value. Colonists thus segmented and privatised land according to these values, resulting in landscape modifications and severe environmental degradation (McLean, 2020). Originally the Waimapihi stream was an open waterway, flowing over a floodplain towards the sea. However, early colonisers found the stream to be a hindrance to the availability of land for development and urbanisation, a contributing factor to persistent flooding, and a health hazard due to its historic usage as an urban sewage system. As a result, most of the stream was piped by the late 1890s. Today the Waimapihi flows from its headwaters within the Waimapihi Reserve, enters the pipe through which it continues underneath Te Aro, and discharges into Wellington harbour.

[The] economic challenge to daylighting highlights the cost–benefit analysis logic at the core of Western approaches to environmental management: decision making is contingent on outcomes deemed financially appropriate.

Despite its piping and burial, evidence shows that the Waimapihi is still very much a living waterway. According to a report commissioned by the Greater Wellington Regional Council, electric fishing and spotlighting methods from 2016 to 2019 showed the presence of banded kōkopu, kōaro, kōura, unidentified galaxiidae, and other unidentified fish in the Waimapihi stream's headwaters before it enters the pipe downstream (Harrison, 2019). The Waimapihi stream also boasts the fifth-highest score on the macroinvertebrate community index (MCI) of all urbanised Wellington waterways, at 119, indicating the presence of macroinvertebrates, which provide a source of food for fish and birds. Furthermore, there remains fish presence and passage within the piped section of the Waimapihi stream as species attempt to migrate upstream (McLean, 2020).

McLean explored the potential social and ecological benefits of daylighting the Waimapihi, and the political and legal challenges it entails. She argues that daylighting the Waimapihi could have positive social and environmental impacts, as it could kindle a reconnection between humans and the natural environment by fostering an appreciation of and a heightened sense of responsibility for the stream. This could result in an increased awareness of the stream's health and the employment of alternative methods of community care, stewardship and monitoring, leading to a healthier, richer and thriving ecosystem. Through daylighting we might witness the reintroduction of more native fish species and habitats, as well as flora that would both support and be supported by such an ecosystem. Such a vision is an attractive proposition. Bolstering the well-being of the stream would have co-benefits for human well-being, opportunities for amenity value, aesthetic value, public education, recreation, and resources for customary use. But there are challenges to achieving this vision, based in freshwater management practices, governance frameworks and legislative tools.

Governance and policy challenges to daylighting the Waimapihi

Most challenges to daylighting the Waimapihi arise from the development of the city of Te Whanganui-a-Tara on top of it. As piped streams become enveloped by the continued urbanisation of their environments above, they become part of a complex network of city infrastructure which becomes increasingly costly to manipulate. Persuading politicians and the public that the inherent value of restoration is higher than the cost thus becomes a key challenge. This economic challenge to daylighting highlights the cost–benefit analysis logic at the core of Western approaches to environmental management: decision making is contingent on outcomes deemed financially appropriate. Undermining this logic, though, is the consideration that maintaining crumbling infrastructure may be more costly in the end (ibid.; Wild et al., 2010). It is thus important for decision makers to consider the ongoing

economic and environmental costs of keeping streams piped versus the one-off cost of daylighting, in light of the ongoing improvements to social and ecological well-being demonstrated elsewhere through daylighting projects. This is an especially important consideration, as pipe infrastructure is already reaching the end of its life.

Another challenge arises from complex governance frameworks which decide which institutions possess which responsibilities along different segments of the stream. Various government organisations, such as the Ministry for the Environment, Greater Wellington Regional Council, Wellington City Council and Wellington Water, have different legislative or governance roles depending on the section in question (McLean, 2020). The results are inter-organisational and interdisciplinary complexities that hinder management objectives and practices. Institutions, or their underpinning disciplines, are often siloed as a result. This problem could be addressed through a greater alignment between governing institutions, legislative tools, strategies, investment plans and programmes of action.

The third challenge arises from the dominant policy tool for resource management in Aotearoa, the Resource Management Act 1991 (RMA). According to part 1 of the RMA, water for the purposes of the act 'does not include water in any form while in any pipe, tank, or cistern'. Piped and buried waterways are therefore not even defined as water under the RMA, much less as streams containing ecosystems, biodiversity, or characteristics attributed through tikanga (customs and traditional values) or te ao Māori (McLean, 2020). In te ao Māori, as noted above, water is seen to possess mauri, which must be respected, stewarded and protected through kaitiakitanga (environmental stewardship). A key mandate of the RMA is to improve the biodiversity and health of waterways, but in the case of urban waterways this can only be achieved if it is acknowledged that piped streams are actually waterways containing fish and wildlife habitats to begin with. Further, the presence and passage of native fish species in the piped section of the Waimapihi stream demonstrates how the RMA is presently failing to protect species. Ultimately, increasing the scope of legislative coverage to include water in piped waterways, along with the fish species that inhabit and pass through them, could result in enhanced social and ecological values by recognising them as something to be preserved and protected. By giving effect to te ao Māori by adopting a view where water within a stream, piped or not, is considered a living entity, people would be more compelled, or even required, to respect its life. This way, the RMA could fulfil its purpose of 'safeguarding the life-supporting capacity of air, water, soil, and ecosystems' (s5(2)(b)). Instead, the burial of the Waimapihi has resulted in a loss of governance under the RMA, and so the stream has been failed by the current legislative framework (ibid.).

> Adopting an alternative view of human–water relations in which piped water is seen as a resource whose management could produce co-benefits for humans and non-humans alike could lead to more inclusive protection and management in the policy sphere.

Discussion

To understand the complex institutional relations that inform the operation of the public service system for environmental management, we might apply a 'complexity lens' (Eppel, 2016). Eppel states that:

> System governance relies upon different types and sources of knowledge … Such knowledge is either siloed in the case of more discipline-influenced knowledge or highly distributed, uncodified and often heavily value-laden. Collaborators must learn about the problem and its solutions from each other. They must also learn the way forward through experimentation and learning by doing. (p.8)

This provides one explanation for how institutions may become isolated from one another as they speak different 'languages' and are attributed specific responsibilities, acting through respective disciplines, which may lead to tension with those of others. Institutional stakeholders must instead collectively identify and determine the shared values and objectives that inform their respective environmental management practices. Further, the emphasis on 'learning by doing' under this approach reinforces how projects like the daylighting of the Avondale or Waitangi streams are not doomed to fail just because they are unfamiliar or lack certainty of outcome.

Governance frameworks and their primary policy tools could also benefit from an alternative view of human–water relations, recognising that piped waterways are more than just water. This approach evokes tenets of te ao Māori and attributes of mauri and kaitiakitanga. As Cousins states, 'Stormwater needs to be governed as a resource rather than a nuisance, hazard, or liability' (Cousins, 2017, p.1157). As institutions and resource management have been decentralised, a host of stakeholders have been introduced into the governance of freshwater systems containing waterways like the Waimapihi. These stakeholders range from landowners to businesses, community groups, NGOs

and government agencies, contributing to a multi-level governance structure linking together national, regional, city and third-party governance (ibid.). As a result, 'overcoming and negotiating the challenges presented by water's multiple roles and functions requires particular modes of social, political, and economic control to enable transformations of how society and water interrelate' (ibid., p.1145). Eppel (2016) and Cousins (2017) demonstrate how complex institutional governance over resources can be, especially when disciplines and objectives are misaligned. This becomes especially complex when we consider that the RMA doesn't even recognise piped water as a resource to be managed. Giving effect to te ao Māori and expanding the scope of RMA protection to include piped freshwater ecosystems would be one step towards aligning institutional objectives.

Blue suggests that reimagining the health of waterways might recognise, take into account, and even prioritise the notion of both human and non-human well-being: deconstructing the Western duality of the human and natural worlds 'could offer an opportunity to juxtapose environmental wellbeing alongside ongoing discussions of what it means for people to be healthy' (Blue, 2018, p.470). An incorporation of this understanding ultimately has the potential to better inform management decisions and strategies for freshwater that bolster co-benefits for humans and ecological systems alike. 'Rather than relying on naturalness, a revitalised river health might be framed as maintaining the character and agency of rivers as living entities … It might mean renegotiating what matters, recognising less easily articulated meanings and values' (ibid, p.471). The recognition in policy tools and governance frameworks of the more-than-human qualities of freshwater systems, including piped streams, would be one step towards better freshwater management, to which stream daylighting could make a valuable contribution.

Conclusion

This article illustrates the complex challenges posed by governance and policy frameworks for the effective management of piped freshwater systems and the viability of stream daylighting as a means of surmounting them. In the case of the Waimapihi, governance is hindered by a complicated hierarchy of roles and responsibilities, depending upon which segments of the stream we point towards. Institutions are isolated from one another in both discipline and objective. In the policy sphere, there is a clear lack of scope and legislative oversight under the RMA, which is thus failing the resources it is purportedly dedicated to protecting. In both cases, a shift in the scope of responsibility and collective objectives is needed for more effective management of our waterways. The management of all of our waterways is currently under review through the Three Waters reform programme. Furthermore, there are calls for the development of systems-wide solutions and improvements for storm water management, including replacing or funding new infrastructure and adapting for climate change (Department of Internal Affairs, 2019; Resource Management Review Panel, 2020). It is unclear whether the goals of this reform are intended to encompass such a shift, but I suggest that they could and need to. Adopting an alternative view of human–water relations in which piped water is seen as a resource whose management could produce co-benefits for humans and non-humans alike could lead to more inclusive protection and management in the policy sphere. This could go on to inform objectives and practices in the governance sphere which might pave the way for stream daylighting projects. Such projects have the potential to generate co-benefits for human health and well-being while simultaneously supporting ecological systems, creating positive feedback between the two, and achieving the common goal of effective and sustainable environmental management more generally, not just of our waterways.

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