The preparedness, responsiveness and recovery triality

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Chapter 25

The Preparedness, Responsiveness and Recovery Triality:
 A Pandemic Research and Policy Framework

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Trying to understand a crisis from a vantage point within a crisis is a difficult research exercise. A sense of perspective is required as well as an ability to stand back from the distractions of the immediate and current uncertainties including when the crisis might end and the shorter- and longer-term consequences. Nevertheless, this book makes a significant contribution to research debates because of when it was written and published, and the diversity of insights that are explored. It is and will remain a 'pandemic book', here recording snapshots and memories and impressions of how the world was perceived, how research was conducted during such unprecedent times and what the initial and preliminary research questions were and emerging outcomes.

From a research perspective, three important lessons can be drawn. First, COVID-19 highlighted that responding to a crisis requires on-going and rapid improvisation. This shifts the focus from strategy and planning, including budgetary planning, to improvisation and rapid adjustments by individuals, organizations, and governments. At a national level, governments were too often criticized during 2020 for engaging in too many policy U-turns (Rawlinson, 2020). This type of criticism failed to appreciate that a global crisis requires policy improvisation and agility including as many U-turns as are required. The real danger would come from plan continuation bias based on the application of a strategy that did not accept that policy U-turns might be required to avoid negative impacts (Clearfield and Tilcsik, 2018). The second, is about speed and, in particular, the need for rapid innovation to develop medical solutions to reduce COVID-19 related mortality. This includes innovations in the treatment of COVID-19 patients and the development of vaccines. Speed also includes the ability to develop an evidence base on the virus to support policy improvisation. The third is the necessity to break down disciplinary boundaries to develop solutions to the immediate impacts of COVID-19 on people, place, and policy. The interdisciplinary and international nature of COVID-19 research is highlighted in this edited collection.

While concerns were raised in the academy regarding how COVID-19 was going to impact research productivity, particularly for those with caring responsibilities, the pandemic also triggered a significant increase in research output. Rapid turnarounds were made to grant applications to government funded research councils, with pilot and small-scale studies funded that were intended to unwrap the immediate responses and impacts of the crisis. Limited options to travel led to alternative and more creative ways to conduct research where the role of overseas international partners was revealed as particularly important. From a medical and health perspective, "the COVID-19 pandemic forced clinicians and researchers to look beyond

traditional professional boundaries, working at a speed that would have previously been unthinkable" (Kneebone and Schlegel, 2021:90). In a context where interdisciplinary research is more and more encouraged to deliver meaningful impact, the pandemic highlighted the importance of working across disciplinary boundaries. COVID-19 has in turn highlighted unusual and imaginative opportunities for collaboration and interdisciplinary research. For example, it has created:

> "a radical shift from face-to-face to remote consultation. Clinicians and patients have developed unfamiliar ways of interacting. We suggest there is much for health professionals to learn from creative performers, such as musicians, actors, and close-up magicians. These performers can be adept at capturing and shaping each audience member's attention via remote technology, sustaining engagement throughout the performance, and ensuring that all participants perceive the experience as worthwhile" (ibid).

Innovations and creativity have arisen from the pandemic and from rapid shifts in practice and in everyday living.

One of the key questions concerns the priorities that should shape COVID-19 related academic research. Linked to this is the need to develop some form of conceptual framework to inform both the research and policy agenda. One approach is for research to focus on the immediate impacts of COVID-19 but placed within the wider context of the impacts COVID-19 has had on reconfiguring existing trends, models, and knowledge. An alternative approach is to focus on longer-term impacts and patterns of adjustment.

This chapter is divided into three sections. The second section brings together the contributions made by the individual chapters in this book to develop an overarching policy and research framework for exploring pandemics. The third section concludes by exploring responsible citizenship as one core element of a pandemic conceptual framework.

Preparedness, Responsiveness and Recovery Triality Research and Policy Framework

Ten critical issues can be identified that cut across the chapters in this book:

1) With globalisation, disease anywhere is potentially disease everywhere. Global solutions are required for global problems combined with localised and contextualised approaches (Andres et al., 2020). The focus here is on preparations and initiatives to avoid pandemics and other forms of global crisis.
2) It is critical to differentiate between biology and everyday living. This is to highlight the importance of understanding the ways in which different personal circumstances and different ways of living are configured and impacted by shocks, and in turn affected by policy development and implementation in response. Place matters here as does intersectionality.
3) Life is precarious, but this precariousness is unevenly experienced. Covid-19 has exposed existing precarities and often made these more acute. The question remains whether the issues underpinning them will be recast and reframed, and in turn addressed. This includes understanding the ways in which COVID-19 has enhanced existing inequalities.
4) The pandemic has elevated improvisation, bricolage, buffering and the temporary as significant processes that underpin adaptative approaches to liveability and livelihoods. That which was assumed and considered as permanent, as established practice, or as a

right, or benefit became conditional, placing adaptability at the core of everyday living and thinking.

5) Understanding the immediate and longer-term impacts on work, working practices and organisational routines.
6) Identifying alterations in behaviour including consumer behaviour, but also everyday routines linked to liveability and lifestyles.
7) Data capture, and analysis to support effective policy interventions has become even more pertinent, and yet arguably more contested.
8) Understanding gaps in, and innovations required for, healthcare provision including vaccine development, vaccination programmes and the development of medical practice during crisis situations.
9) Identifying the immediate and longer-term impacts of the pandemic on the COVID-19 generation including understanding educational, employability and healthcare impacts.
10) A focus on understanding the interrelationships between multiple impacts.

These ten issues represent an outline for pandemic orientated research and a related policy agenda. The challenge is to develop an overarching conceptual framework that will assist in identifying research gaps, but also to develop links between what might initially appear to be unrelated research projects.

The COVID-19 pandemic has highlighted that humanity's exposure to the risks identified by Beck and Giddens in the concept of a risk society has intensified (Beck, 1992; Giddens, 1998, 1999). An alternative reading of the risk society is based around Jenga Capitalism in which system interdependency and complexity results in exposure to new forms of hidden and incalculable risks (Bryson, 2021). In 2018, Bill Gates argued that the world needs to prepare for pandemics in the same way that countries prepare for war (Gates, 2018). This was a visionary statement in which he highlighted the need for pandemic simulations and preparedness exercises. He also noted the need to work on rapid-response platforms to produce, safe and effective vaccines. Gates argued that "What the world needs is a coordinated global approach to pandemics that will work regardless of whether the next pandemic is a product of humans or of nature. Specifically, we need better tools, an early detection system, and a global response system" (Gates, 2018: 2057). The key here is preparedness combined with global cooperation.

The complex impacts of COVID-19, or of any pandemic, could involve a nexus or a plexus, but perhaps the initial starting point for the analysis is a *triality*. A triality is a relationship between three vectors. There are three vectors or stages to a pandemic:

- Pandemic preparedness.
- Impacts adaptations and improvisations as responses during a pandemic.
- Pandemic recovery.

These three stages are interlinked and form a triality. The degree of pandemic preparedness enhances the ability of a society to control outbreaks preventing an epidemic and then a pandemic from occurring. Preparedness also reduces the immediate and longer-term impacts of a pandemic. Part of pandemic preparedness involves investment in organisational slack in the data collection and analysis process, vaccine development and production and in healthcare services. Pandemic preparedness provides a structure within which policy improvisation is embedded.

Every pandemic is and will be different and requires a distinct blend of policy interventions (Kucharski, 2020). The interactions between preparedness and response during a pandemic

then impact on processes of pandemic recovery. The interrelations between *preparedness, responsiveness, and recovery* suggests that all countries should establish a *Preparedness, Responsiveness and Recovery Triality Research and Policy Framework* (PRP) supported by ongoing interdisciplinary research (Figure 25.1).

INSERT FIGURE 25.1 HERE

People and Places must be at the centre of the PRP framework followed by a focus on organisational and government policy innovation, impacts, improvisation, and adaptation strategies. Nevertheless, the direct impacts of a pathogen are on individuals rather than organisations. Organisational impacts should be conceptualised as indirect impacts of the failure to address the primary impacts of a pathogen on individuals. People cannot be isolated from the places they inhabit; place plays an important role in pathogen transmission and in the ability to control or regulate transmission.

Each element of the PRP framework involves society, economy, governance, and data. These four elements are multi-scalar with important iterations between local, regional, national, and global scales. It is important to appreciate that scale is relative and experiential. Every individual's locality is defined by practice and experience rather than determined by administrative boundaries (Bryson *et al*., 2021a). This has important implications for the relationship between place, scale, liveability, and lifestyle. Different places provide opportunities to define the local scale through distant forms of place-bounded experience. In this context, the relationship between scale, place and people is malleable as the experience of scale is the outcome of a socially constructed process.

There is an additional important cross-cutting theme within this approach that highlights the importance of understanding the relationship between biology and life (Bryson *et al*, 2021a). This is to distinguish between the biological dimensions of living and the biographical. This is an important distinction to make. In his posthumous writings, Ludwig Wittgenstein outlined the notion of a "form of life" (Wittgenstein, [1977], 1998). In a discussion of this notion Fassin, argued that a form of life highlights tensions "between universal and particular, biology and biography, law and practice" and that these "three lines of force" enable the rethinking of "collective human experiences that, albeit distant in time and space, can be conceived of as similar forms of life" (2018: 45). The point is that the alignment of different processes, factors or vectors come together within an individual and enable the construction of a distinct biography or form of life and this a place-based process. For COVID-19 a key research challenge is to understand the short- and long-term direct and indirect impacts on the ways in which individuals configure their own biographical narratives. This includes developing a form of life understanding as a cross-cutting theme within the PRP framework.

The PRP framework highlights the importance of considering society including educational impacts and social care. It also highlights the ways in which COVID-19 transformed the lives of individuals by destroying jobs, creating new employment opportunities, and transforming work. This includes the emergence of new forms of labour and related advantage and disadvantage. In addition, understanding the relationship between forms of governance and the impacts on forms of life is important. For COVID-19 this involves exploring the immediate and longer-term impacts on public policy. This includes understanding the longer-term

financial consequences of COVID-19 on public policy including approaches to dealing with the COVID-19 fiscal deficit that will become a new future generational burden.

The COVID-19 pandemic has offered significant new avenues of enquiry regarding the role of data, the nature, quality and scientific reliability of data, and its malleable use to support actions and policy, and this includes wider landscapes of expertise. The shift towards Big Data and the application of new technological tools to monitor and model movements, circulations, trends, and all sorts of dynamics has characterised cities and their economies for decades. Companies and governments have been embracing these technologies and applying them to new approaches to urban planning and management. This includes the development of smart cities (Meijer and Bolivar, 2016). COVID-19 has highlighted the role data plays in supporting real-time policy improvisation during crisis situations. Data has become a key tool in minimising virus transmission through strategies that are designed to regulate human behaviour. The pandemic has returned data and data analytics to the centre of the political decision-making process.

Data and data analytics cut across the three elements of the PRP framework highlighting the importance of evidence-based policy. It is important to distinguish between the role played by scientists and experts in the political process. The primary role is to provide data and informed opinion, but this does not include decision-making. Decisions must be made politically as they reflect trade-offs between alterative interventions. These trade-offs reflect available information combined with existing capacity and capabilities. These trade-offs are also reflected in decisions to invest in preparing for pandemics; any investment reflects funds that could be invested to address more immediate problems. A key political decision involves how much time and investment should be spent on trying to reduce the impacts of events that might occur at some time in the future. Pandemic preparedness is a critical process, but it is also highly politicised as there are always more immediate demands that need to be addressed.

Pandemic Preparedness
Initially post COVID-19 policy and research might focus on understanding how and why the pandemic occurred and on identifying and delineating the immediate impacts. These are important issues, but they are not the most important ones. Part of the political debate will be about apportioning blame (Hood 2010). For a pandemic this is an interesting exercise in understanding the origins of a cultural inflection point. Nevertheless, the key research question is not based around looking backwards but looking ahead to develop strategies that will prevent the next disease outbreak from becoming a pandemic. This involves nations working together to advance the interests of humanity rather than the interests of any one nation-state. It involves investing in the infrastructure required to identify possible pandemics and ensuring that international treaties are developed that will support pandemic prevention. The pandemic offers the opportunity to move beyond political agendas and to work towards a wider greater good. We are very aware that this is a utopian ambition.

It is worth reflecting on the Chinese word for crisis: 危机. This consists of two characters. The first '危' means danger or precariousness and the second '机' change, or a change point. COVID-19 is an opportunity for change. This includes countries setting aside concerns with advantaging the interests of their citizens with an appreciation that the continuation of human life on this planet will increasingly rely on developing a new and effective approach to global cooperation. Global problems require global rather than local or national solutions. Part of the solution involves a global strategy to invest in vaccine development and related infrastructure. There are many problems here. No nation state would perhaps transfer the power required to

prevent an outbreak from developing into a pandemic to an international agency. Nevertheless, MacKenzie laid down a challenge when she argued that:

> "It shouldn't be beyond our wit to design something that works in the common interest, as that, by its very definition, benefits everyone. The current dispensation based on the unassailable sovereign rights of nation-states (especially rich ones) in any conceivable situation does not work in a world of shared catastrophic risk. The world is networked, and it takes a network to run a network' (2020: 231-232).

There are three issues here. The first challenge is in developing the policy frameworks required to prevent pandemics from forming including surveillance, track and trace and containment measures. The second involves identifying possible pathogens that might have the potential to lead to an epidemic or pandemic and investing in the development of vaccines. Many of these vaccines will never be needed. Part of this involves investing in new diagnostic approaches to facilitate early identification of a potential problem. Third, ensuring that sufficient production capacity is in place to produce enough vaccines when required. All wealthy countries should commit to provide a proportion of their national GDP to support investments in vaccine development and related infrastructure.

Predicting the future is always something to avoid. Nevertheless, the suspicion is that there will be limited investment in the politics required to develop an effective global framework to prevent future pandemics. One problem is that COVID-19 has not been a virulent virus with a high mortality rate. A French study identified that in-hospital mortality for patients with COVID-19 was 16.9% (Piroth *et al.*, 2020: 1). The current pandemic has, however, highlighted the interconnected nature of global systems. There will be another pandemic and perhaps the next pathogen will come with a much higher mortality rate; some have already been identified with death rates of up to 75% (Constable, 2021). The danger is that individual countries might learn from the impacts of COVID-19, but sufficient political momentum might not develop to support a global dialogue between nations regarding the development of effective strategies to prevent pandemics, leaving especially the poorest countries on the side, as ticking pandemic timebombs. It may take another pandemic for national governments to cooperate to develop global solutions. This is also the case for the climate change crisis. Despite several international agreements and mandated national targets, the necessary reductions to CO_2 emissions are far from being achieved.

In reflecting on the above, the following are some of the key policy and research challenges that need to be addressed to enhance pandemic preparedness:

1) "Prepare for pandemics in the same serious way [a country] prepares for war" (Gates, 2018: 2058).
2) Health needs to be a cross-cutting issue that is embedded in government and organizational communication strategies.
3) Identify possible pathogens that might transfer to humans and result in the development of a pandemic. Invest to develop medical innovations including rapid-response vaccine development platforms.
4) Invest in medical diagnostics.
5) Invest in pandemic simulations to inform preparedness.
6) New approaches to planning, designing, and managing urban environments are required, that reduce respiratory transmission.
7) An interdisciplinary focus and commitment on creating healthy cities is required that blends medical, sociological, and economic perspectives.

8) Inequalities need to be reduced to enhance the ability of individuals and households to respond to external shocks.

9) Pandemic education should be introduced as a mandatory topic in primary and secondary schools, akin to other forms of citizenship education. This includes training on social distancing and responding to pandemics.

10) Address some of the existing health conditions that enhance vulnerability to pathogens.

11) Enhancing the quality and quantity of data, and the capacity and quality of analysis linked to preventing pandemics. This is about developing approaches to data analytics to reduce the risks related to Jenga capitalism.

12) The need to foster and strengthen the resilience of critical global supply and local or national distribution chains.

13) Acknowledging and nurturing the role played by local actors in community development.

14) To identify and remove risks related to system convergence based around the development of a *cyber-energy plexus* that might impact on the ability to identify and control the spread of pathogens (Bryson et al., 2021b). Any failure in one part of this plexus might result in systemic failure. China's response to COVID-19 was based on the application of a cyber-energy plexus that enabled on-going monitoring of citizens. Any failure in this plexus would compromise China's ability to respond to crisis situations.

15) To identify places on this planet that are more exposed to disease transmission from elsewhere. These are the global hubs, and it is these places that need new systems in place to identify and control possible pathogen outbreaks.

16) To shift the policy and business debate from productivity, growth, and efficiency to include discussions on organisational slack and the types of buffering required to cope with major external shocks. An over-emphasis on productivity and growth in regional and national policy enhances risks and reduces organisational and national resilience.

Pandemic Responsiveness and Impacts

COVID-19 provides an opportunity to explore different approaches adopted by individuals, companies, regions, and nations to mediate the impacts of COVID-19. Nevertheless, every pandemic is different, but enhancing responsiveness to crisis should provide additional benefits in terms of responding to both acute and chronic shock. The key challenge is to focus on pandemic preparedness as this is the pathway to effective pandemic responsiveness.

Understanding the impacts of a pandemic involves appreciating the ways in which additional shocks are layered on to existing forms of vulnerability and disadvantage. There is a literature on the triple burden of malnutrition that focuses on overnutrition, undernutrition and micronutrient deficiencies (Gómez, et al., 2013; Hickey and Unwin, 2020) and another on the triple burden of motherhood that highlights the triple responsibilities linked to paid work, unpaid domestic work, and emotional work (McLaren et al., 2020). These literatures highlight the complex interdependencies that exist between different but connected elements of an individual's life. A pandemic adds another layer to these burdens. In many respects, the intersectionality approach is an alternative framework for understanding the burden's that cohorts experience given the alignment of a series of processes or factors (Crenshaw, 2019; Ho & Maddrell, 2020). It is possible to argue that the best way of understanding the short- and long-term direct and indirect impacts of COVID-19 is by applying an intersectionality informed approach.

Assigning causality to a socially inflected process is extremely difficult. COVID-19 impacts have not been linear; there have been complex feedback loops involving multiple impacts that interact with one another in complex ways. Understanding these interdependencies requires the application of an intersectionality approach facilitated by mutual learning. COVID-19 has highlighted the importance of combining hierarchical approaches to policy development with horizontal approaches based on the co-creation of knowledge through public participation. During a crisis transparency, reflection and clarity are important dimensions of the policy development and engagement process and play an important role in enhancing the effectiveness of policy responses to a pandemic (Rowe and Frewer, 2000). Pandemic responsiveness includes agility based on rapid improvisation but set within a wider policy framework that has been developed as part of a national approach to contingency planning.

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Responding to a pandemic requires the implementation of a multi-scalar approach that is sensitive to the needs of people in place. The following are some of the key policy and research challenges related to pandemic responsiveness:
1) To develop an intersectionality informed approach to mitigating the impacts of a pandemic on the most vulnerable.
2) To identify the vulnerabilities that need to be addressed to enhance the ability of a population to respond to a pandemic.
3) To enhance the role communities play during a crisis.
4) To shift the focus away from dissecting COVID-19 and related responses to identifying policy initiatives that need to be developed to enhance individual, regional, and national responsiveness during a crisis.
5) To develop a multi-scaler understanding of the role place-based connectivity plays in pathogen transmission.
6) To develop multi-channel communication strategies.
7) To invest in behavioural research to inform policy intended to encourage alterations in human behaviour during times of crisis.
8) Ensure core public and private services have contingency plans in place including the ability to shift to socially distanced delivery modes.
9) Identifying which private services can and should be defined as essential for supporting everyday living.
10) To enhance the resilience of essential services.
11) To explore approaches to the development and implementation of agile policy that reflects a process of real-time policy improvisation.

An important part of pandemic responsiveness includes a focus on mental health and well-being. Lockdown, and social or physical distance, severed individuals from the direct support networks of their friends and family. Face-to-face interactions were replaced with, for example, telemediated exchanges or chatting whilst exercising. Some people perceived this to be a form of enforced social isolation as their everyday people-focussed routines and conventions were curtailed. Temporary spaces of hope and belonging emerged. This included people supporting one another through lockdowns. It also included the 'we applaud' initiative in France (Ball, 2020) and similarly the "clap for carers/heroes" initiative in the UK in which weekly clapping in support of medical workers occurred during the first wave of lockdowns (Mitchell, 2021). In Spain, Italy, the U.S., France, Italy, Lebanon, India, and Germany, for example, communities engaged in improvised and organised shared musical events. Balconies, windows, and rooftops were converted to temporary stages on which

residents played musical instruments, engaged in group or household singing and danced to lift the spirts of those living in their immediate neighbourhood (Taylor, 2020). In Australia, New York and Norway families started dressing up to take out their wheelie bins filled with waste for collection and photographs were shared on social media. In the UK, Caption Tom Moore's 100th birthday was approaching on 20 April 2020. On 6 April 2020, during the first lockdown in the UK he began a fundraising campaign to support NHS charities. This involved walking one hundred 25-metre lengths of his garden. He had raised £30million by the morning of his birthday. This led to a number one single and a knighthood. When he later died with Covid-19 in February 2021, the Prime Minister led a national clap in his honour.

A key lesson from the pandemic was the ability of the virus to circulate and cross over national boundaries. Vaccination as one solution to COVID-19 requires all countries to establish COVID-19 vaccination programmes. The distribution of vaccine pre-orders across the globe is testament to the very uneven geography of access to vaccines (Table 25.1). In January 2021, COVID-19 vaccines were politicised as some countries engaged in "vaccine nationalism" that involved placing restrictions on the flow of vaccines across national boundaries. A representative from WHO noted that "Anything that restricts the ability to get these products out will affect our ability to control this disease and prevent variants emerging. The world is going to have to collaborate to get out of this" (Eaton, 2021). With global problems we are all in this together; nation first approaches will only lead to perverse negative effects. At a WHO press conference on 29 January 2021 "a nurse from Pakistan and a midwife from Uganda pleaded for vaccine supplies" and yet these essential workers are not even in the vaccine queue (Eaton, 2021). As it stands COVID-19 vaccination may be required annually or uncontrolled contagion may then spread rapidly. If some countries are excluded from vaccination cycles, then the virus will spread again and mutate leading to new pandemic episodes. Pandemic preparedness is both a national and a global policy challenge.

Pandemic Recovery
For COVID-19 recovery is a known unknown. Very little knowledge is available about the ways in which systems, countries, governments, communities, and individuals respond to the duration and scale of the impacts that have emerged with COVID-19. In an ideal world there should be no need for pandemic recovery as pandemics should be prevented with outbreaks identified and isolated rapidly. The need for pandemic recovery reflects failure in national and global pandemic preparedness.

The extent of the pandemic recovery problem is defined by the duration and nature of the crisis. The longer the crisis the more complex the impacts will be, and the recovery process will stretch over a long period. It is important to appreciate that a crisis with a long duration permanently alters people, places, and policy. There is no simple and straightforward return to some pre-crisis forms of live. COVID-19 is a cultural inflection point and these change the future.

Effective pandemic recovery is founded upon pandemic preparedness. This includes:
1) Having community structures in place to support people, place, and policy in a local context.
2) Data and analytical preparedness to inform policy development and implementation. This includes the application of a diagnostic process to support policy interventions.
3) Balancing the tensions between existing conventions and policies and the need for rapid interventions to support recovery.

4) Focusing on immediate impacts, but also longer-term impacts. These should be considered symbiotically and not treated in isolation.
5) Identify training interventions to bring people back to work. This includes identifying new skills that have developed in response to the pandemic. These may be skills that enhanced individual, household, or organisational resilience in response to the crisis. These skills need to be identified and disseminated as part of the pandemic and crisis preparedness process. There should be modifications to the primary and secondary school curricula.
6) Recovery from a pandemic is a time to transition to a new state and this includes enhancing pandemic preparedness. It also includes identifying new vulnerabilities that have been identified during the pandemic and developing appropriate strategies.
7) Most importantly balancing the priority agenda – typically economic recovery – against community and individual recovery. A key policy challenges is to support the co-creation with citizens of healthy and resilient living.

These three activities - preparedness, responsiveness, and recovery – involve people, place, and policy. Preparedness informs responsiveness and recovery. The experience of responsiveness and recovery should inform enhancements to preparedness. A crosscutting issue is the role played by citizens in contributing to these three activities. This suggests that one outcome of COVID-19 is a new appreciation of the role citizens play in shaping societal and place-based outcomes.

Concluding thoughts: Responsible Citizenship and Pandemics
The pandemic has cast a light on the roles played by people as citizens including what responsible citizenship looks like, and the boundaries between the citizen and the state and the rights and responsibilities that demarcate these boundaries.

First, the pandemic has made us consider personal responsibility and capacity – what we can do, directly and indirectly, both for ourselves and for society. Some things are obvious, but yet still remain contentious for some. Having the vaccine for example, is of benefit to the individual – reducing our personal risk of death and serious illness – but only suppresses the pandemic if taken by the majority. To refuse the vaccine is the right of any individual in a liberal democracy, but so is the right of others in society to live as healthily as possible. It therefore requires us to think not only about our personal preference, but the collective endeavour. The social distancing measures that we have been told to follow also fall into this bracket – we have individual responsibility and ability (save for those with certain conditions), to wear masks, wash our hands, and keep a distance from one another. Doing so requires us to form habits, remind one another of 'the rules' and do things that are a mild personal inconvenience, but which while not having obvious personal immediate benefits (we are not to know, for example, if the person we walked by in the supermarket would have given us COVID-19 had we not been wearing a mask), but they reduce rates of spread in the community when done by all. Other rules, including stay at home orders, while 'easy' to follow in and of themselves require personal sacrifice and difficulties of varying magnitude – from missing birthdays and religious celebrations, to balancing work commitments with home schooling. Again, to breach or bend these rules as individuals may have limited personal consequence, but if breached by everyone would limit their effectiveness.

Contestation and tensions between personal and 'social' responsibility have occurred throughout the COVID-19 pandemic. A key tension is the balance between economic development and interventions intended to reduce virus transmission. To be responsible is to

spend and support the economy; consumption creates and support jobs. Direct and indirect taxation linked to consumption then supports essential public services. During the pandemic government had to balance the needs of the economy against the immediate need to reduce infection rates. This was a policy trade-off between livelihoods, morbidity, and mortality. During the pandemic consumer behaviour altered. A debate on responsible consumption emerged. Calls to 'shop local' were intensified. Independent businesses experienced higher demands on their services than in previous years. This was not just about travel restrictions and lockdowns, but an appreciation that local shops add value to the fabric of local communities and the void that would be left should they not survive (Makortoff, 2020).

In the longer term, the bringing of personal responsibility into the collective psyche and discourse – provides regular reminders of the value of small, personal acts as a keyway out of the current crisis and indeed the conformity with which these are followed, offers a glimmer of hope that other acts of personal responsibility can be applied to other crisis currently underpinned by the tragedy of the commons. Consider for example, the growing calls to reduce meat consumption, fly less, and walk a short distance rather than use the car – these acts of individual choice demonstrate, if undertaken, a personal sacrifice for the collective good of mitigating and slowing the climate change crisis. That sacrifices have been made during the pandemic, and that benefits have been gleaned as a result of and as a trade-off to these sacrifices, offers the potential for more utilisation of such tools for other crisis situations. This, however, has some very significant impacts on the ways in which individuals live their lives. This includes the assumption that family members may be spread all over the world but can re-unite easily.

Second, the pandemic has challenged our expectations about the boundaries between personal responsibility and state action, and highlighted failings in the current relationships that existed long before Covid-19. For example, in the UK, individuals, charities, and businesses stepped in to provide food packages to those families in need where the Government was slow to respond and where centralised provision did not meet societal expectations of what 'good' and fair support looked like. Similarly, these groups stepped in to provide laptops to pupils in need, where government had been slow to act. Such responses from the citizenry have been rapid in some instances and slower in others, highlighting the changing expectations and hope about the ability of government and related services to deliver. Debates about the speed of vaccine roll-out, and quality of test and trace services, also highlighted expectations about the level of service one should expect from a government. While such experiences may spark a fresh wave of volunteering and citizen action, they also challenge us to think about the types of state we want, and the extent to which we are willing to pay for it. Since 2008 successive governments have undertaken sustained programmes of retrenchment in spending, limiting the breadth and scope of services, which included health services, and importantly the capacity to act in an agile and proactive way in times of crisis.

Third and more indirectly, the pandemic highlighted the importance of education as a cornerstone of responsible and effective citizenship. In relation to fighting the pandemic itself, education on personal hygiene has been essential. This has been instilled in school settings, with children of the COVID generation arguably embedding new standards of hygiene previously only practiced by medical practitioners. This will have a positive impact on society and future generations. Moreover, the daily exposure to figures on infection rates, death rates, and hospital occupancy, in particular, in a context of heightened stress, anxiety and contestation over policy response, have demonstrated the importance of statistical literacy if not competency, to understand the realities of the context in which we are navigating.

While these every day experiences underpin the value of institutionalised and social education, the inflection point of the pandemic presents an opportunity to rethink what aspects of education are prioritised, both in terms of skills, syllabus, and assessment. The disruption to examinations, for example, highlights the type of education and pedagogy that is preferenced, and the vulnerabilities and unfairness inherent within this system. Moreover, the pandemic has exposed a raft of gaps in knowledge, for example around the interpretation of data, that may need to be strengthened.

All this highlights that understanding the origins and impacts of a pandemic requires a careful appreciation of the complex interrelationships between people, place, policy and history. This suggests that the development of an effective *Pandemic Triality Framework for policy and research*, or a national pandemic contingency strategy, requires a strategy that recognises local context. This local context includes appreciating the ways in which different places are key contact zones for the transmission of pathogens and other places are less exposed to the rapid transmission of pathogens from elsewhere. These key contact zones need effective measures in place to identify and control potential pathogens.

A new form of risk society has emerged, and COVID-19 is one indicator of the new forms of risk that all living on this planet are exposed to. The danger is that government focuses on the distractions of the immediate and in the context of major global challenges the immediate policy distractions may appear to be trivial. The key is to ensure that all governments develop effective strategies to identify and control new forms of risk. One challenge is that many of these risks are invisible and incalculable, but this does not mean that a discussion on risk identification and avoidance should not occur. COVID-19 has highlighted that the primary policy response to a pandemic should focus on avoiding pandemics from occurring. Pandemic preparedness is the pathway to effective pandemic responsiveness and recovery.

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