Introduction: Shock chains and parallel shocks

Towards a social science of the recovery society

Bryson, John R.; Andres, Lauren; Ersoy, Aksel; Reardon, Louise

DOI
10.4337/9781802201116.00008

Publication date
2024

Document Version
Final published version

Published in
Pandemic Recovery?

Citation (APA)
Bryson, J. R., Andres, L., Ersoy, A., & Reardon, L. (2024). Introduction: Shock chains and parallel shocks: Towards a social science of the recovery society. In L. Andres, J. R. Bryson, A. Ersoy, & L. Reardon (Eds.), *Pandemic Recovery?: Reframing and Rescaling Societal Challenges* (pp. 1-25). Edward Elgar Publishing. https://doi.org/10.4337/9781802201116.00008

1. Introduction: shock chains and parallel shocks: towards a social science of the recovery society

John R. Bryson, Lauren Andres, Aksel Ersoy and Louise Reardon

In 2021, we edited a book entitled *Living with Pandemics: Places, People and Policy*. This book provided an account of the first year of the COVID-19 pandemic (Bryson et al., 2021a) as well as outlining a pandemic research and policy framework that included a discussion of recovery processes (Bryson et al., 2021b). A shock or disaster is linked to some type of recovery process, which might also include the impossibility of recovery. This book is the first to explore *Pandemic Recovery* framed within an analysis of recovery from all types of shock. The starting point is the final chapter of the *Living with Pandemics* book which noted that:

> 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. (Bryson et al., 2021b: 299–300)

Recovery from COVID-19 also needs to go hand-in-hand with enhancing pandemic preparedness and this has important impacts for urban planning and building design (Andres et al., 2022a, 2022b).

Everyday living is an ongoing experience that combines the expected with the unexpected. There are anticipated shocks that are experienced by all and these range from the trivial to events that redefine everyday living; trivial shocks may come with automated responses whilst major shocks may result in long-term disruption and learning to live with the outcome of the shock. These different types of shock come with different types of recovery process – from the automated learnt response to improvisation and even panic. Everyday living is about learning to read environments and other people to reduce expo-

sure to risk. This is about diagnosing possible risks and engaging in mitigation and adaptation of social practices.

In 1986, Ulrich Beck argued that the nature of societal risks had changed with the emergence of a new type of modernity that resulted in the formation of a risk society which he defined as "a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself" (Beck, 1992: 21). To Beck, a new form of risk had emerged based on non-calculable uncertainty. There was a paradox here in that solutions must be found "to problems that we are often unable to articulate" (Sørensen, 2018: 11). These include extremely complex problems including structural inequalities, uneven development, the impacts of disruptive socio-technical innovation and climate change. Technological innovation is considered to reduce risk, but "risk might in fact be increasing due to technology, science and industrialism rather than being abated by scientific and technological progress" (Jarvis, 2007: 23).

One of the characteristics of the new *risk society* identified by both Beck (1992) and Giddens (1998) was the relationship between new forms of risk and human activity rather than non-human activity including natural disasters. To Giddens, in a risk society, there are external risks and manufactured risks with the latter being the result of human interventions (Giddens, 1999). Anticipated risks come with avoidance strategies that might also include preparedness planning, including contingency and resilience planning, and related investments. Nevertheless, it is impossible to avoid all risks. Risks that are experienced and which produce negative impacts then come with different types of recovery process. This suggests that the concept of a risk society should be juxtaposed with that of a *recovery society*. A recovery society is one which is increasingly preoccupied with trying to respond to a multitude of shocks of different durations and intensities. One shock and related recovery process may come to dominate a society relegating other recovery processes to be of secondary importance. This process can be defined as a response to the distractions of the immediate or the shock and related recovery process that is perceived to have taken precedence. Adjusting to a shock involves different types and durations of behavioural change. Some changes might be temporary and other adaptations might become permanent.

A recovery society is the outcome of a risk society that has failed to prevent, minimize or channel risks and hazards. The outcome is that risk is materialized in negative direct, indirect, induced and latent impacts that then initiate some form of recovery process. Improvisation as a form of buffering to shock is a central process within a recovery society (Bryson et al., 2020). Recovery processes are defined by the duration and nature of a shock (or accumulated shocks). There is an assumption that longer durations will be associated with longer recovery processes. Recovery is an important and complex process which has been examined through disconnected academic debates (Coyne and

Lemke, 2012). These include studies that focus on post-disaster recovery processes with an emphasis on environmental events including earthquakes and floods (Olshansky et al., 2012). There are also studies that focus on building obsolescence and related recovery processes including different approaches to financialization (Bryson, 1997; Bryson et al., 2017) and those that explore recovery in the context of alterity, agility, flexibility, improvisation, and temporary urbanism (Bryson et al., 2018; Bryson et al., 2020; Bryson and Vanchan, 2020; Andres et al., 2021; Thomas and Bryson, 2021; Bryson et al., 2023). In many accounts this post-disaster literature focuses on exploring different approaches to resilience, with resilience being traditionally understood as a process of rebound to something approaching a former (pre-shock) state (Andres and Round, 2015).

There is a different strand of literature that explores recovery from brain injuries focusing on mechanisms and principles for recovery (Nudo, 2013) for individuals rather than places. This medical literature is important and different to the post-disaster resilience literature. First, the medical literature places people at the centre of recovery processes. There is a tendency for the post-disaster recovery and resilience literature to either ignore or decentre individuals from the factors that triggered shocks, and related impacts on people. This raises the important question of recovery by what or whom and from what and for whom? The answer to this question depends on the nature of the event that has initiated some type of recovery process but also who is crafting the recovery narrative. Socio-economy recovery processes, and related research, should always place people at the centre of the analysis (Rusten and Bryson, 2010).

Second, the literature on brain injury emphasizes the importance of post-injury neuroplasticity or the ability of the brain to adjust to trauma (Bryson et al., 2021c). This includes trauma or some shock initiating "a cascade of molecular and cellular regenerative events" that "results in both temporary and permanent changes" (Nudo, 2013: 1). Shocks then can initiate a cascade of regenerative or recovery events; the form that this cascade takes is place and time specific and impacts on every individual or household differently. Permanent changes could be adaptive or maladaptive highlighting that recovery processes might lead to negative outcomes. There is a danger of assuming that 'recovery' comes with some degree of positive outcome and that recovery means a return to some prior state.

There are many different aspects of recovery to consider including the duration and scale of a shock and the related duration of a recovery phase. This is further complicated by different approaches to governance that facilitate different degrees or types of intervention. Underpinning this are approaches to managing a shock during the peak phase of a shock and then dealing with recovery once the shock has passed and transitioned towards being a persistent

or legacy disruption. There is then the important issue of interventions and investments that are intended to enhance positive outcomes in response to shocks by individuals, organizations/groups and governments. This might include approaches to encouraging the formation of some form of persistent resilience (Andres and Round, 2015).

Recovery processes in response to shock are variegated and the impacts are also variegated. This variegation highlights the complex interactions that occur between people living in place, or the difference that place makes to lifestyles and processes of adjusting and responding to, or even avoiding, shocks. Intersectionality is important here, or the burden that cohorts within a population experience given the highly individualized alignment of processes or factors that create differentiated forms of vulnerability (Crenshaw, 2019; Ho and Maddrell, 2020; Bryson et al., 2021a). Cohorts will experience shocks differently with some failing to recognize that a shock has occurred whilst others experience a process in which everyday living becomes even more challenging. Some cohorts will improvise solutions to a shock enabling rapid recovery whilst others may be unable to improvise and may experience a longer period of shock.

In 2012, Olshansky et al. argued that "the study of post-disaster recovery is in its infancy, and there is as yet no body of theory to guide researchers" (2012: 173). This is still the case. One of the problems is that there has been too much emphasis placed on sudden and intense shocks that are of limited duration, for example floods and earthquakes, and not enough attention given to shocks like the COVID-19 pandemic that are of unknown duration and intensity. This chapter seeks to identify a set of principles to underpin the development of a social science of recovery that would support and enhance all types of recovery processes in practice.

OPTIMIZATION VERSUS FLEXIBILITY AND THE PROBLEM OF MAINTAINING SOCIAL ORDER

The contexts for the discussion of recovery in this chapter are the ongoing impacts of the COVID-19 pandemic, and other disruptions that are directly or indirectly connected to the pandemic. In early 2020, the world economy was turned upside down as everyday living and economic activity was negatively impacted by virus transmission and preventive regulations (Bryson et al., 2021a). Governments had very different responses to this pandemic and these differences reflect the nature of the national healthcare and political systems combined with different approaches to governance and the management of social order.

At the forefront of learning to live with the pandemic were healthcare systems which were tested in an unprecedented way. Tensions between

rigidity, flexibility or plasticity, along with the legacies of under-resourcing were revealed in some contexts. There is a compounding tension in public service provision between optimizing provision to reduce societal costs and in ensuring that additional capacity or organizational slack exists that might be needed during a crisis. Organizational slack is defined as the presence of actual or potential resources within an organization which facilitate adjustment to external and internal pressures, and this includes any unexpected increase in demand (Bryson et al., 2021a). It may include flexibility and the ability to pivot from one task to another, but without too much friction. Organizational slack represents a form of proactive rather than reactive response to potential shocks and is the opposite to system optimization (Perrow, 1984). During the pandemic the tensions between organizational optimization and slack were perhaps more acutely experienced in health and social care service areas. Such tensions were exacerbated by the privatization and financialization of healthcare provision including the application of private finance initiatives (PFI) as a way of funding public capital projects.

Organizational slack comes with opportunity costs, or resources that are allocated to provide additional capacity that could be spent on supporting other policy objectives (Bryson et al., 2021b). Organizational slack provides flexibility, but it is a flexibility that might never be required. It is important that sufficient organizational slack exists, but there is no way of determining what level of additional capacity is required for an unknown crisis. For healthcare systems the key issue was the speed of adaptation during the COVID-19 pandemic based on the ability to expand rapidly or to prioritize healthcare provision to try to reduce the pandemic's immediate impacts. Nevertheless, these types of prioritized response result in a cascade or domino effect as patients do not obtain timely treatment for illnesses that are not directly related to the pandemic. Organizations and societies have different abilities or capabilities to adapt to different degrees, scales and durations of shock. Some shocks, and related recovery processes, fit within existing structures of provision, but other shocks disrupt existing structures and public or private sector initiatives intended to reduce the extent of the shock may displace existing service provision.

The first duty of a government is to keep citizens safe, and a country secure from threat. The difficulty is that there are limited resources available, and every government must make decisions regarding resource prioritization. For COVID-19, every society made decisions regarding which cohorts should be prioritized. Priority could be given to those groups defined as key workers or the most vulnerable. Once vaccines had been developed a decision had to be made regarding which groups should be vaccinated first; the outcome varied by country with some countries prioritizing the most vulnerable, usually older people and those with existing health problems, whilst others prioritized

employees. This prioritization process includes calculating how much should be spent on reducing the risks related to longer-term threats compared to expenditure to support everyday living (Bryson and Vanchan, 2020). This is a resource allocation process that ideally should create some degree of systematic slack, but too often the focus is on optimizing resources. Inflationary pressures may create real-term cuts that could rapidly undermine any form of accumulated systematic slack. Central to this process is investing in education and services that are intended to encourage and ensure the continued maintenance of social order. A crisis like a pandemic or an earthquake challenges existing social order. There is always the potential for a breakdown in social order to occur that would lead to further destruction of property or societal systems including essential infrastructure which can then lead to unnecessary death. The maintenance of social order is a critical feature of a recovery society.

Social order has two meanings. On the one hand, this term is associated with the work of Thomas Hobbes and his book *Leviathan* published in 1651 (2008). Hobbes initiated a debate in the social and political sciences that explores how and why social order is maintained in societies. To Hobbes a social contract emerges in a society based on individuals implicitly or explicitly surrendering some of their freedoms in exchange for protection and maintenance of some form of agreed social order. There is a large and complex sociological and political literature on social order, but central to these debates is an appreciation of the mechanisms that prevent social disorder from occurring (Hechter and Horne, 2009; Enroth, 2022). These mechanisms might include extensive and intrusive surveillance of citizens and the threat of enforcement or actual enforcement.

On the other hand, the term social order can refer to the institutions and social structures that support the maintenance and definition of social order in one specified context. Central to the maintenance of social order are mechanisms of persuasion including the educational system and the national media. There are different solutions to encouraging the maintenance of social order. These range from approaches based on violence, intimidation and enforcement to more subtle mechanisms. The concept of 'choice architecture' is important here as this highlights that there are alternative solutions (Parikh, 2017). These alternatives include self-determination with a focus on encouraging citizens to behave responsibly. Trust must form between citizens and those involved with governance and this trust might be challenged during shocks and related recovery processes. A narrative of places and cohorts that have been left behind might form leading to outbreaks of disorder that challenge the established social order. A crisis also provides an opportunity and excuse for a government to enforce social order, and one outcome might be a reluctance to remove some of these crisis-related restrictions on citizen behaviour.

There is a tendency to isolate a shock or traumatic event from other events that are intrinsically connected. The implication is that any one country or individual experiences multiple simultaneous shocks with each involving some form of recovery. Most of these shocks are ignored: as they are so minor, adjustment is automatic. The COVID-19 pandemic was only one of many shocks being experienced by countries and individuals from late 2019, but for many governments, individuals and companies the pandemic came to dominate their lives as an unprecedented disruption. There is here an important but overlooked shock or trauma prioritization process. For some individuals and companies, the pandemic was not considered to represent a shock and everyday living continued with no or very limited disruption. Ukraine is an interesting example of trauma prioritization. On 24 February 2022, Russia invaded Ukraine and for the Ukrainian people any concern with COVID-19 was replaced with a focus on repelling Russian troops from Ukrainian territory and in dealing with the day-to-day impacts of being at war.

There is no agreement when the pandemic might conclude despite a stated 'exit' or 'return to normal' that most countries have adopted. There are different perspectives here. In July 2022, Charumilind et al. (2022) argued that "after the short, sharp shock of Omicron, the pandemic phase of COVID-19 looks to be ending for most locations, unless a significant and severe new variant emerges". Pandemic recovery is place or context dependent with different countries applying very different approaches to managing COVID-19. COVID-19 is still considered to be a major challenge to citizen and national safety; every country is experiencing a different form of adaptation to the virus as part of an ongoing recovery process. Most countries have now adapted and learnt to accept that COVID-19 will become endemic within the population. This highlights that one form of recovery is configured around managing a shock that has transitioned to become a manageable but persistent disruption. This transition towards managing endemic COVID-19 requires citizens having access to effective vaccines and medical treatments. Differences in the distribution of vaccines and availability of therapeutics in low-income countries, amongst other factors (including demographic profiles but also other priorities, for example daily survival in African cities) partly accounts for variation in the transition towards managing COVID-19 as an endemic virus.

DURATIONS AND PHASES – FROM SHOCK TO RECOVERY

There are different durations and scales of shock or trauma and different recovery periods. A continuum of shocks and recovery processes should be developed that acknowledges that different durations and scales of shock have important implications for recovery processes. A shock may not be

experienced as a linear process and may include phases of acceleration, de-acceleration or pause.

There are shocks that occur in an instant and in which the shock and recovery process coincides. These are the types of shocks that individuals experience every day. These are intimately tiny shocks that are part of Perec's 'infra-ordinary'. To Perec "what speaks to us, seemingly, is always the big event, the untoward, the extra-ordinary"; social problems only become a matter of concern when something extraordinary happens (Perec [1973] 1999: 209). This concept of the infra-ordinary highlights the importance of the mundane and the everyday or that which is taken for granted. There is another side to the infra-ordinary in that any one tiny shock might be unimportant, but an accumulation of tiny shocks has the potential to negatively impact on individual wellbeing. A tiny shock may reflect delays experienced whilst travelling with any single delay being comparatively unimportant. At another scale, a regional economy is negatively impacted by a domino effect of intimately tiny shocks which also results in an accumulation effect (Bryson and Vanchan, 2020). The accumulation impacts of many minor traumas in urban populations result in "heightened stress associated with city living [and] may be one factor that predisposes urban inhabitants for the expression of symptoms of psychiatric illness" (Lambert et al., 2015: 110). This includes background noise, air pollution and other stresses that combined negatively impact on health and may also reduce resilience and the ability to recover from shock.

An important distinction must be made between people-centred recovery processes in urban versus non-urban environments. The neuroscience literature on the impacts of city living on brains is developing. Part of this literature suggests that any aspect of an environment that enhances interactions between individuals and their surroundings results in enhanced responses to stimuli and the outcome is that this "promotes the formation of contingencies between responses and outcomes" (Lambert et al., 2015: 110). This suggests that enhancing awareness of the context an individual inhabits is a risk reduction strategy which also contributes to shaping recovery responses. There is a complication here in that research on individual exposure to urban environments has highlighted that urbanization decreases attentional engagement. People living in cities display reduced powers of general attention compared to people living in non-urban settings (Linnell et al., 2013). The implication is that urban residents are saturated with signs and symbols with the quantity of information available for processing challenging cognitive functions. The brain's response is to focus on reading some elements of an urban environment and ignoring other aspects. This might enhance exposure to trauma as signs that might prompt avoidance or risk alleviation strategies might be ignored by some urban residents.

Not all shocks are potentially damaging and not all require recovery processes. The duration and scale of a shock is a critical dimension that is closely related to recovery processes. The COVID-19 pandemic included different phases and each phase was related to a different intensity of shock or a different intensity of interventions intended to reduce virus transmission or mitigated the effects of these measures. For recovery a critical issue is the length of time an individual, group or system experiences a shock. A period of shock is also a period during which damage can occur. There is a domino effect to account for which resonates at various scales. The implication is that reducing the duration of a shock reduces the time an individual, group or system is in an actual or potential damaging state. Strategies intended to avoid shock or reduce the duration of any one shock will have the potential to speed up recovery processes.

One issue here is the ability of an individual, group or system to cope with shock without experiencing damage. When this occurs then there is no need for a recovery process to commence. Within cities intimately tiny shocks accumulate for an individual and eventually a threshold is crossed beyond which damage begins to occur; this may result in psychiatric illness. Different individuals will have different thresholds based on their ability to absorb shock or to ignore shock. The same is the case for regions, cities, countries and their economies. Thus, a shock, large or small, experienced by a city in an emerging economy might not be experienced as a shock but rather it might be perceived to be part of the infra-ordinary. A place that experiences regular shocks, for example a village that regularly floods, may recover more rapidly compared to a village that is flooded for the first time. Places or people may be accustomed to responding to reoccurring shocks and a regular practice of recovery forms. The same type and intensity of shock might in other settings be considered as extraordinary and thus a shock that would result in greater damage and the necessity for recovery processes to be initiated.

Much of the post-disaster literature focuses on time-limited shocks, for example a flood. Shocks of long and unknown duration are more unusual and include pandemics, wars and economic recessions. Disruptive innovation might also be experienced as a shock by some people and places, and this is especially the case if existing conventions are disrupted. The World Health Organization (WHO) and the US Centers for Disease Control and Prevention have developed guidance documents on pandemic phases that enhance understanding of the interactions between shocks and recovery processes. In 2009 the WHO updated its guidance on preparing and responding to an influenza pandemic (WHO, 2009). This identified six influenza pandemic phases: no viruses circulating; virus identified; sporadic clusters identified; verified human-to-human transmission identified; virus spreads to at least two countries; and a pandemic period in which community-level outbreaks occur in at

least one other country. A virus with relatively mild or not very specific symptoms has the potential to skip from Phase 3 to Phases 5 or 6. Alternatively, rapid containment might mean that Phase 4 rapidly reverts back to Phase 3.

In the WHO approach there are two additional periods (WHO, 2009). First, there is a post-peak period during which disease levels will have declined below an observed peak. This period is of unknown duration as pandemic activity may decrease in some countries but continue to intensify in others. Moreover, there might be a second virus transmission period. Second, there is the post-pandemic period during which disease activity returns to levels associated with seasonal influenza. Each phase comes with opportunities for interventions that would prevent a pandemic occurring. Prevention is much more important than instigating effective recovery processes as any shock of scale and with a long duration comes with the possibility for extensive damage. Damage includes death, chronic illness, for example Long COVID, but also negative impacts on the socio-economy, wellbeing and health.

In 2016, the US Centers for Disease Control and Prevention displayed the WHO's continuum of pandemic phases as a distribution curve based on a hypothetical global average of pandemic cases (Centers for Disease Control and Prevention, 2016). This is based on four phases of pandemic risk preparation – preparedness, response, recovery and preparedness – that then overlap with the four phases of the pandemic continuum: interpandemic phase; alert phase; pandemic; and transition phase. The four risk preperation phases overlap with one another and have blurred boundaries. Thus, there is a blurred transition boundary between preparedness and response and between response and recovery. This highlights the problems of recovery processes related to a shock that is of unknown duration and where the conclusion of the shock occurs over a period of time. Even during shocks of known duration recovery processes based on a combination of adaptation and mitigation processes occur in parallel with the shock. Nevertheless, there is often a lag time between the initiation of the shock and the implementation of recovery processes. Recovery must commence as soon as possible to reduce the damage that might result during the shock period. This is about trying to dampen the impacts of the active phase of the shock. During a pandemic this is about trying to reduce virus transmission and limiting any longer-term impacts, and for a flood this is about trying to reduce the impacts of the flood on people, animals and infrastructure.

The WHO's pandemic continuum assumes that a pandemic will be followed by another pandemic and that the gap between pandemics reflects an interpandemic phase. This approach could be applied to all known shocks including an inflationary period leading to a cost-of-living crisis that results in more households experiencing food and energy poverty. All national and regional economies will experience recessionary shocks and the period between these

recessionary shocks will be of unknown duration, but another recessionary shock will always occur. Thus, for the economy it is possible to identify inter-recessionary periods that occur between recessions. This is an important point for recovery as it highlights the systematic nature of shocks and the need for societies, companies and households to invest in processes that might reduce the impacts of future shocks. This is about anticipating that shocks will occur and about being prepared. Nevertheless, the most vulnerable households, companies and countries will find it difficult to invest in initiatives designed to reduce the impacts of future shocks. For companies, preparation should include holding sufficient reserves to reduce damage related to recessionary shocks. The more strategic companies will have set aside an investment fund that will be used to acquire assets from fire sales that occur when facilities, plants, equipment and raw materials can be acquired from failing companies. The term fire sale refers to a closeout or the final sale of a company's complete assets based on complete liquidation. This term emerged to describe the sale of heavily discounted goods due to fire damage.

Climate change must be considered as an unusual form of shock that is different to rapid-onset disasters. This is a shock that has emerged gradually and after an extensive period there has been an escalation in the intensity of this shock. There are major methodological complications in linking the accumulation of shocks that are related to climate change to anthropogenic impacts on climate. This complicates the process by which climate change is defined as a shock and when agreement over this definition began to form by academics and then politicians. There is a scale dimension here. Climate change is not a shock until it begins to produce negative impacts, for example droughts or flooding. When these negative impacts are linked to climate change and begin to be experienced then climate change becomes perceived to be a threat, shock or emergency.

Recovery processes to climate change are difficult and constructed around the concepts of mitigation and adaptation. Mitigation strategies are intended to limit the damage that might result from anthropogenic climate change and adaptation strategies are central to recovery processes as societies learn to live with the consequences of climate change. A key difficulty, however, is the timescale of the shock and related mitigation and adaptation strategies and this is further complicated by difficulties with relating cause to effect. The causality issue is critical as this applies to defining shock and recovery processes. One challenge is in persuading individuals and societies to adjust their behaviour to limit climate impacts. This type of lifestyle adjustment is central to climate change mitigation and adaptation and requires an accumulation of micro, meso and macro adjustments to everyday living. The challenge here is in persuading households that instigating micro alterations will contribute to mitigation and adaptation to climate change.

Recovery from a shock should include an appreciation of any hysteresis effects. In economics, hysteresis is a process that results in the persistence of effects after the initial cause of the effects has been removed. In sociology, Pierre Bourdieu highlights that hysteresis occurs during times of dislocation and disruption in response to a crisis (Bourdieu, 2000) while Graham (2020) has argued that "the COVID-19 pandemic raises significant sociological issues of intersectionality and inequality, as precarity, risk and harms are experienced unevenly. Hysteresis is differential in its effects" (Graham, 2020: 450). For COVID-19 hysteresis effects include the transition towards online retailing, the adoption of different forms of hybrid working and the impacts of Long COVID or mental wellbeing issues. The issue here is any long-term alteration in individual or group behaviour that can be directly linked to the shock phase. In some respects, this can be conceptualized as a set of ripples or waves whose origins can be traced back to the shock or it could be conceptualized as a form of social or economic scarring. During recessionary periods, for example, unemployment increases, but employment may never recover to the same level during the next inter-recessionary period as cohorts within the population adjust to living differently during a period of unemployment. A good example would be high earners with no work–life balance experiencing a period of unemployment, or under-employment, during a recession. Some may realize that their work–life balance needs to be adjusted and they may decide to seek less demanding employment that would result in a reduction in household income and the contribution they make to the economy. A period of extended unemployment negatively impacts life satisfaction, and this may not fully recover to pre-unemployment levels.

Hysteresis has important implications for the debate on resilience (Alawneh and Rashid, 2022). There are many definitions of resilience, but all highlight processes related to some system experiencing a shock that then rapidly returns to some desired state. For example, one review of the resilience literature proposed a revised definition of urban resilience:

> Urban resilience refers to the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity. (Meerow et al., 2016: 45)

There are fundamental problems with the concept of resilience and one of these concerns hysteresis. A concatenation of hysteresis effects may mean that there is no possibility for a return to desired functions as the shock and related mitigation and adaptation processes that occur linked to recovery lead to fundamental structural changes resulting in permanent change. This high-

lights a major problem with the WHO approach to identifying a continuum of pandemic phases. The difficulty is that each interpandemic phase will have very different or slightly different characteristics. There is thus no return after a shock to the type of socio-economy, lifestyles or habitat condition that existed in the interpandemic phase that occurred immediately prior to the alert and pandemic phase. The shock will have resulted in a combination of intimately tiny and more structural changes. Shocks result in different degrees of change and some of these changes will be permanent and there will be no return to an earlier state. This process of adaptive and reactive change to shock must be central to any discussion of resilience and persistent resilience (Andres and Round, 2015).

CONCATENATIONS OF SHOCKS AND RECOVERY PROCESSES: SHOCK AND RECOVERY CHAINS AND SHOCKS AND RECOVERY IN PARALLEL

The concept of recovery raises the question of recovery from what? The problem is that all individuals, groups and territories experience concatenations of different types of shocks that occur in parallel, or sequentially in the form of shock chains. Parallel shocks and shock chains are associated with related recovery chains and parallel recovery processes. There is a scale issue here with different degrees, intensities and geographies of shock and each type of shock having different implications for recovery.

Shock and Recovery Chains

Shock chains, or a concatenation of shocks refer to shocks that occur in sequence and may be related or unrelated to one another. One outcome of shock chains is that there are also recovery chains, or recovery processes that occur in sequence, but with overlapping stages. This is an important point. Inter-shock phases that occur either side of a shock are also periods that are saturated with multiple other types of shocks. An inter-shock phase includes a transitory recovery phase that eventually concludes as recovery to one shock is considered to have occurred. Recovery from one identified shock cannot be isolated from other shocks that might occur once a shock phase concludes and enters a transition phase leading to an inter-shock phase. The difficulty is in understanding the multiple feedback loops that exist between one designated shock during the shock, transition and inter-shock phases and other shocks and related recovery processes. An example of this process is Russia's war with Ukraine that commenced during the start of the COVID-19 transition phase.

This war has resulted in multiple shock impacts some of which are highly localized within Ukraine, and others have resulted in shock waves that have

added additional shocks to other countries that are still adapting to COVID-19 and focused on pandemic recovery. Shock chains may transform the wider conditions that support any one country's national economy and may also occur regionally and be experienced by individuals/households and companies. A household may experience the death of a family member from an event that is completely disconnected from the current dominant shock phase that the household is experiencing. A regional or national economy experiences multiple shocks that transform and disrupt and these shocks may be unrelated to the current perceived dominant or overarching shock.

Shock chains complicate recovery processes as recovery is required for each shock and each shock will require a different recovery process. Furthermore, distinct recovery processes linked to different shocks may alter wider framework conditions with the implication being that a return to some form of prior state is impossible. Shock chains then are related to an accumulation of recovery processes with some recovery processes isolated and focused on a very carefully defined shock and other recovery processes becoming part of a bundle of simultaneous recovery processes. Bundles of recovery processes lead to feedback loops emerging between recovery processes; the outcome would be a significant alteration in conditions that are unrelated to one shock, but the outcome of iterative processes between what could be unrelated discrete shocks and linked recovery processes. Shock chains make it impossible to isolate one recovery process from a shock from other ongoing shocks and recovery processes. This highlights that people, places and infrastructure systems are continuously experiencing different degrees of shock, and these then require the formation of persistent resilience (Andres and Round, 2015).

COVID-19 represents a shock that displaced concerns about other forms of shock and their recovery processes. It thus represents a shock that becomes dominant for a period until the pandemic phase shifts towards a transition phase or until another shock that is of a greater intensity displaces COVID-19 and becomes perceived to be the current dominant shock. Recovery processes linked to other shocks may stall or be relegated as a dominant shock is prioritized; other minor shocks may then be considered as disruptions. Relegation might result in greater damage as the relegation of a recovery process may mean that recovery stops, or a lesser form of recovery occurs. Alternatively, recovery processes based on adaptation and mitigation to the perceived current dominant shock might contribute to recovery processes linked to other shocks. In any case, socio-economic and/or environmental transformation of some form will have occurred, and this will impact on many, but not all recovery processes.

Shock and Recovery Processes in Parallel

Shocks of different intensity occur in parallel, and this is also the case for recovery processes. At any one time, a country, region, individual or group will be experiencing multiple shocks in parallel. Some shocks will have impacts that evaporated at the moment that the shock occurred and there will no lasting impacts requiring recovery as recovery was instantaneous. Other shocks alter circumstances permanently, for example the death of a family member, or the closure of a supplier, and recovery will then need to be based on adaptation to the new set of circumstances. Parallel shocks complicate one another, and this is also the case for recovery processes. A prioritization process must occur, and this is an individual, group or country-specific process. For some individuals or companies, a shock occurs but is not acknowledged as a shock as the individual and company was prepared and could adapt rapidly. In some cases, a shock is perceived by one group, but not by another and this may reflect different degrees of vulnerability, or different degrees of exposure to a shock. Intersectionality provides one lens for understanding different degrees of vulnerability as "people's lives and the organization of power in a given society are better understood as being shaped not by a single axis of social division, be it race, gender or class, but by many axes that work together and influence each other" (Collins and Bilge, 2016: 2).

With parallel shocks recovery prioritization processes will occur that relegate some shocks to being of limited importance. There is a scale or intensity issue here that is combined with compounding effects. Thus, individuals experiencing multiple shocks simultaneously, for example divorce and bereavement, experience a compounding effect as it is impossible to sideline one shock over another. Part of this process will be the appreciation that some of these shocks require no adaptations or recovery processes. Thus, not all shocks require or demand recovery processes. A shock that is defined as dominant diverts attention from other shocks and their recovery processes and may result in major negative impacts as appropriate recovery interventions are sidelined as the focus shifts towards developing adaptations and mitigations to the dominant shock.

The Russian–Ukrainian war is an excellent example of the complexity of parallel shocks and linked parallel recovery processes. All wars include multiple scales of simultaneous shock and recovery processes. During a war missile attacks destroy military and civilian infrastructure. There are continual waves of destruction with each representing a shock that is part of a shock chain that was instigated with the start of the war. During a war there are parallel shocks and shock chains, and also parallel recovery processes and recovery processes that are linked to shock chains. Parallel shocks include households coping with bereavement that is unrelated to the war combined with war-related inflationary

pressures that intensify energy and food poverty. There are then disruptions to health, social care and educational services that result in a cascade of parallel shocks that are directly and indirectly related to the war. All these shocks and recovery processes are occurring within the same dominant shock – the war, but each has a different scale and duration. All regions experience multiple shocks that are in parallel and in chains and there are then ongoing parallel recovery processes or regenerative events that are complicated by recovery processes that are experienced sequentially as part of a chain of recovery processes. Chains of recovery processes will have overlapping stages and these overlapping recovery processes may work against each other or reinforce one another. A cascade of shocks occurs; some of these shocks are trivial and come with automated adjustment processes or recovery processes that are founded on established conventions. Some of these shocks are supported by developed and tested contingency plans. Other shocks are unexpected.

An appropriate terminology must be developed to support the emergence of a new social science of recovery. It is essential to move beyond considering shocks in isolation from other shocks and to develop and refine approaches to understanding parallel and chain shocks and recovery processes. At a regional or national level, or even at the level of the household or group, there needs to be greater awareness of the interplay between different shock and recovery processes that might occur in parallel and in chains. This type of complexity is best described not as a network of shock and recovery processes but as a *shock intertwingularity* and related intertwingularity of recovery processes.

The term intertwingularity was introduced by Ted Nelson in a book published in 1974 on computers. In the second edition of this book, he noted that hierarchical and sequential structures are often artificial (1987) and that they often represent the identification of 'false' patterns or a distorted sequential view of processes. To Nelson, an intertwingularity describes the complexity of the interrelations of human knowledge. In this account, the emphasis is placed on a complex array of interlinked and networked cross-connections of human knowledge that are intertwingled. This concept of intertwingularity can be applied to other processes including shocks and related recovery processes as the concept highlights the complex weaving together of processes of all types – it is a reflection on the interconnectedness of everything. The most complex intertwingularities emerge in the interactions between place, space, and the socio-economy – interactions within and between city-regions. Central to these interactions are shocks and recovery processes. Shocks and recovery processes that are working in parallel, or in chain-like structures, coalesce within territories and between territories as well as within groups and the complexity of these risk and recovery arrays represent another form of intertwingularity.

Mitigation and adaptation to climate change is complicated by shock chains and parallel shocks. The problem here is the time frame of the climate change

shock which far exceeds other types of shock. Climate change should be perceived as the dominant shock, but this never occurs as other more immediate shocks displace climate change mitigation and adaptation processes. COVID-19 displaced climate change and currently the cost-of-living crisis and inflation are displacing COVID-19. Climate change remains in the background as an ongoing and intensifying shock. The impacts of climate change are systemic but also highly localized, for example heatwaves, flooding and water shortages. Climate change is an overarching shock, but it is a shock that has multiple impacts of different durations, intensities and geographies. This is an example of causality as linking one localized shock to anthropomorphic climate change might be difficult and the outcome is that a set of localized recovery processes are instigated that fail to develop solutions to the drivers behind climate change.

CONCLUSION: ALTERNATIVE RECOVERY SPACES?

In 2020, the world was turned upside down given the duration and geographic reach of the COVID-19 pandemic. The initial response to COVID-19 was an attempt to downplay this new virus (Bryson et al., 2021a), but then rapid virus transmission occurred and the WHO declared that the world was experiencing a pandemic. Attempts to limit transmission included lockdowns and the closure of national borders. Recovery processes commenced as soon as the pandemic began to impact on socio-economic processes. Individuals, households and organizations began to improvise adaptations to COVID-19 and these represented the first stages of a recovery process.

There is a well-developed literature on resilience (Alawneh and Rashid, 2022), but much of this is conceptual or too focused on understanding resilience in the context of one shock. It is dangerous to isolate one shock from the multitude of shocks that are experienced simultaneously. Thus, countries are still recovering from COVID-19 whilst experiencing an energy crisis, a cost-of-living crisis, the impacts of the Russian–Ukrainian war, and the impacts of climate change. No shock can be isolated from other shocks, and this is also the case for recovery processes. At any one time, there are a multitude of multi-scalar shocks and recovery processes. This suggests that the debate on the risk society needs to be juxtaposed with a discussion of the recovery society (Beck, 1992). In fact, all societies are recovery societies as they are responding to and recovering from a multitude of shocks.

This book focuses on identifying and exploring different aspects of recovery societies in the context of COVID-19 but framed within a broader appreciation of other societal challenges, including anthropogenic climate change. The chapters in this book explore topics, themes and specialisms that are shaping ongoing discussions of recovery processes. Each chapter explores a different

aspect of recovery with a focus on exploring recovery in practice and concludes by setting out a future recovery-focused research agenda. The book is divided into five thematic sections after this introduction: people; organizations; place; climate change and sustainability; and the policy and practice of recovery.

In *Part I*, the chapters focus on adopting a people-based perspective on recovery, experiences, practices and processes. In *Chapter 2*, Joshua Kearney, John R. Bryson, Matthew Broome, Joanne Leach, Carlo Luiu, Francis Pope and Jonathan Radcliffe develop a neuroplasticity-informed perspective on urban resilience in the context of recovery from shocks. The chapter draws together two previously disparate literatures – urban resilience and neuroplasticity – to develop a new integrated *urban plasticity* approach. Urban plasticity is a fresh perspective through which to ask questions about the city and also, importantly, the people, places and people–place connections that form a city's identity and which contribute to urban recovery capabilities. In *Chapter 3*, Barney Warf explores the recovery from COVID-19 through a discussion of telecommuting and ethnic inequalities in the United States. During the pandemic, working from home afforded many people the luxury of minimal infection from COVID-19. White professionals enjoyed this opportunity far more than other groups. Drawing on the US example, it explores why Blacks, Latinos and Indigenous peoples are simultaneously marginalized in cyberspace and in terms of their relative risk of catching COVID. In *Chapter 4*, Brenda Parker and Catherine Leviten-Reid explore the ways in which housing and other forms of precarity have been exposed by the COVID-19 pandemic, but are rooted in decades of neoliberal, patriarchal, racist and colonial policies that have devalued some bodies, communities and activities, while accentuating housing as an asset for exchange rather than a right or as part of a broader caring infrastructure. The argument is that investment in both infrastructures of care and housing is required for all women and communities to fully recover and thrive as the COVID-19 global pandemic subsides. In *Chapter 5*, Rets'epile C. Kalaoane and Abraham R. Matamanda explore women and the urban informal economy with a focus on pathways towards inclusive African cities. This chapter examines how the rhythms and temporalities established by women in the informal economy were disrupted during the COVID-19 pandemic and then identifies improvisations that have emerged to facilitate a recovery. In *Chapter 6*, Surajit Chakravarty's focus is on India with a discussion of the precariat and the age of permanent crisis. The analysis interprets the pandemic through the framework of 'the precariat', and the 'age of permanent crisis', and proposes a post-pandemic research agenda for urban planning in India that focuses on identifying and addressing the fundamental issues that can minimize the impacts of crisis, and ensure that inclusive, humane and stable interventions are the norm at times of shock and trauma.

Part II shifts the focus to exploring recovery in the context of organizations. In *Chapter 7*, Patrick Diamond and Martin Laffin explore the central and local state after COVID-19 by exploring the contestation of the governance paradigm. The chapter argues that the COVID-19 pandemic, and its aftershocks, have unleashed a centralizing dynamic, entrenching the basic asymmetry and inequity in local–central relations across England which long preceded the pandemic. Power has been further concentrated at the centre of government which has consolidated managerial control while displacing 'self-organizing' policy networks. In *Chapter 8*, Lucy Natarajan, Hyunji Cho, Bernice Yanful and Abigail Woodward explore recovery in the context of food resilience urbanism. The pandemic focused attention on food security and social justice in urban settlements. Non-governmental organizations (NGOs) have made significant contributions to food distribution and supply, by drawing on their knowledge of places and local nutritional needs. This chapter explores the potential for reconstructing notions of hunger in urban places, and the importance of hard and soft infrastructures for food resilience. In *Chapter 9*, Andrew Herod explores work after COVID-19 in the context of a post-carbon future. The chapter explores some of the transformations in work brought about by the COVID-19 pandemic and the implications for the carbon-based economy's long-term future. This includes a discussion of production onshoring/nearshoring in response to supply chain disruptions, remote working and pressures to redesign buildings and to reorganize how work is structured. In *Chapter 10*, William Graves, Chuck McShane and Jonathan Kozar explore the intra-urban evolution of office districts. This chapter uses data on commercial real estate absorption and construction to speculate on the development of post-pandemic office districts in the second tier of the US urban hierarchy. New office space clusters are identified in areas adjacent to existing Central Business Districts (CBD). These post-pandemic office districts are generally found on centrally located, reclaimed industrial land with good access to consumption amenities. The location of these districts highlights that urban areas continue to offer critical elements to support production including airports, recreational opportunities and venues for face-to-face interaction. In *Chapter 11*, Godfrey Yeung examines the resilience of global supply chains and the possible implications for manufacturing in the post-pandemic era. The argument is that there could be more orderly selective decoupling and recoupling of the global production networks of some manufacturing sectors rather than a full strategic decoupling from China.

Part III explores recovery experiences and processes in the context of place. In *Chapter 12*, Aksel Ersoy, Luciano Cavalcante Siebert, Tong Wang and Paul Chan focus their attention on Artificial Intelligence (AI) and the role that this increasingly plays in solving complex problems. The application of AI to the built environment may through digitalization improve quality of

life, enhance adaptation to climate change and assist in the response to shock and recovery processes. In *Chapter 13*, Tianzhu Liu, Willem K. Korthals Altes, Frédéric Wallet and Romain Melot shift the focus towards recovery from the pandemic, but in the context of the reterritorialization of agricultural activities. Reterritorialization concerns local food being targeted towards local inhabitants instead of the global market and the pandemic accelerated this reterritorialization process. The chapter argues that planning for the reterritorialization of agriculture is a solution to perpetuating local agrifood activities and concludes with a research agenda that includes a focus on exploring the coexistence of local and global food systems. In *Chapter 14*, May Chu provides a very urban focus by exploring Hong Kong's intersecting political and health crises. Civil society networks across Hong Kong nurtured a social movement that enabled a prompt and adequate community response to the pandemic. One of the key outcomes of Hong Kong's intersecting political and public health crises is the changing governance context which has weakened autonomy given increased political re-engineering from China's central government. One outcome is a reduction in Hong Kong's resilience given the crackdown on civil society. In *Chapter 15*, Francesca Chiara Ciccarelli and Ilaria Mariotti explore remote work, coworking spaces and wellbeing with a focus on peripheral and rural areas. The COVID-19 pandemic accelerated the spread of remote work worldwide and this new work modality carries risks and opportunities for workers and communities. For individuals, remote work can positively contribute to their wellbeing including enabling more autonomy and a better work–life balance. However, remote work, especially working from home, is also associated with physical and psychosocial risks for workers' wellbeing. The chapter's focus is on the potential impacts of remote working on peripheral and rural communities.

In *Part IV*, recovery is placed in the context of climate change and sustainability. In *Chapter 16*, Paul Cairney, Irina Timonina and Hannes Stephan explore the prospects for a just transition and the shift towards sustainable climate change policies. The chapter notes that while COVID-19 and climate change present different policy challenges, they raise similar issues of inequality. The discussion explores the extent to which a longer post-pandemic period will present opportunities for governments to address the unequal impacts of climate crisis. In *Chapter 17*, Joanna Williams and Rendy Bayu Aditya review the impacts of the pandemic on circular innovations and transitions. Circular experiments existed pre-pandemic and others emerged in response to the pandemic. This chapter discusses the global trends emanating from the pandemic and the ways in which these could trigger the proliferation and scaling-up of circular experiments. In *Chapter 18*, John R. Bryson and Yinghao Zhang explore retailing in the context of pandemic recovery by exploring three ongoing process changes: the ongoing shift towards e-commerce; alterations

in the geography of consumer demand; and experiments to reduce retailers' climate footprints by reducing waste, shifting towards more eco-sustainable products, as well as introducing post-consumer recycling including reselling products. In *Chapter 19*, Li Wan and Jerry Chen develop a spatio-temporal framework for conceptualizing and measuring flexible working. The argument is that the transition from a conventional working model towards flexible working is not a simple change of workplace or working schedule, but involves transitions between latent, distinct lifestyles which can be empirically identified. The lifestyle choices are characterized by complex trade-offs between locational and time choices at both inter- and intra-day scales. In *Chapter 20*, Pol Fontanet-Pérez, Pere Suau-Sanchez and Xosé H. Vázquez explore pandemic recovery pathways and the aviation industry. The crisis generated by the COVID-19 outbreak was the most intense and longest-lasting in the history of aviation. The recovery pathway requires aviation stakeholders to balance short-term volatility with long-term interlinkages between the socio-economic impacts of aviation and climate change. Behavioural changes are identified and considered to explore whether they will bring aviation activity into a truly sustainable path.

In *Part V* of the book, the chapters explore recovery with a focus on the policy and practice of recovery. In *Chapter 21*, Martin Hurst explores the lessons for policy development that come from the pandemic. He argues for a shift in policy towards resilience as a generic issue and one for which a new framework is required for making funding/investment decisions. Some of the actions to combat COVID-19 involved spending money without conventional economic appraisal and behavioural change was positively advocated. In *Chapter 22*, Steve Gulati and Sheena Gohal explore response, recovery and resilience in the context of health leadership. The focus is on understanding how learning has been transferred, the healthcare leadership response to the pandemic and explorations of the implications for healthcare leaders in future practice. The argument is that during a phase of recovery within healthcare systems, leaders who adopt relational, innovative and creative styles through a collaborative approach will yield greater results in improving health systems in the post-pandemic environment. In *Chapter 23*, John R. Bryson, Lauren Andres, Aksel Ersoy and Louise Reardon explore pandemic recovery in the context of higher education. The argument is that recovery is a complex and highly differentiated process and is founded upon resilience that is configured from ordinary rather than extraordinary phenomena. These processes include established social relationships based on extant friendship networks combined with investments in digital skills and related infrastructures. For higher education, recovery has included a return to in-class teaching but facilitated by new approaches to hybrid working. In *Chapter 24*, Wouter J. Verheul explores the multiple values provided by the public domain, or good public spaces, and the

role they play in supporting placemaking. The discussion is focused on exploring the critical success factors that support placemaking through the design of good public spaces and reveals how placemaking contributes to recovery strategies. In *Chapter 25*, Lars Fuglsang explores pandemic recovery practices in tourism including the ways in which recovery and comeback strategies are framed by key actors in and around tourism businesses. Tourism recovery does not necessarily involve the adoption of sustainable tourism practices because the skills, understandings and materials are not in place. The chapter is a call for the application of a practice-based research approach to tourism and tourists' behaviours.

Finally, *Chapter 26* concludes this book by sketching out the new paradigm shifts and theoretical directions that are needed to better unpack recovery processes and behavioural changes in a context of preparedness for future shocks and crisis. We argue for a pluralistic understanding of recovery allowing for a better account of the diversity of 'recoveries' but also of their path-dependent and intersectional inequalities. We also highlight how agility and flexibility must be cultivated not only through reactive measures but through processes that encourage proactive adaptability.

One of this book's contributions is to remind social scientists that any one shock is never isolated from other shocks and that any one recovery process will be complicated by further related and unrelated shocks and their related recovery processes. This is to highlight the interactions that occur between shocks that are experienced in parallel or simultaneously, and those that are sequential and take the form of shock chains. This suggests that there needs to be further social science research on the complexity of shock and related recovery processes, and this is required to inform practice as well as policy development and implementation. A key issue to appreciate is that there are many alternative recovery pathways and that each emerges through a set of iterative relationships between people, place, organizations, institutions and governance processes. These alternatives reflect path dependency and previous decisions and related investments but are complicated by place-based intersectionality that compounds the ways in which parallel shocks and shock chains, and related recovery processes, interact with one another forming highly contextualized shock-related impacts which then mediate the impacts of recovery processes in practice.

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