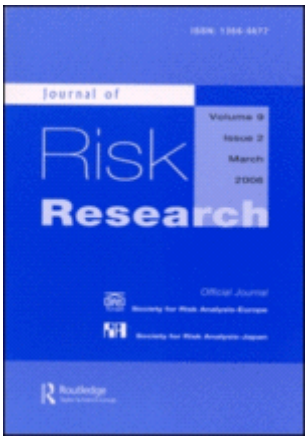


# Resilience in the Face of Uncertainty: Early Lessons from the COVID-19 Pandemic



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# Resilience in the Face of Uncertainty: Early Lessons from the COVID-19 Pandemic

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**Abstract**

The transboundary dynamics of COVID-19 present an unprecedented test of organisational resilience. In the UK, the National Health Service (NHS), a talisman of collective fortitude against disease and illness, has struggled to cope with inadequate provision of virus tests, ventilators, and personal protective equipment needed to fight the pandemic. In this paper, we reflect on the historic dynamics and strategic priorities that have undermined the NHS's attempts to navigate these troubled times. We invoke the organisational resilience literature to address 'the good, the bad and the ugly' of preparedness in readiness and response to the current pandemic. In particular, we draw on Meyer's (1982) seminal work on 'adaptation to jolts', excavating current preparedness failings. We argue an overreliance on perceived efficiency benefits of 'lean production' and 'just in time' continuity planning superseded strategic redundancy and slack in the system. This strategic focus was not simply the result of a failure in foresight, but rather a failure to act adaptively on knowledge of the known threats and weaknesses spotlighted by earlier projections of an inevitable pandemic threat. In conclusion, we consider how the UK Government and NHS must now undergo a phase of 'readjustment' in Meyer's terms, in light of these failings. We suggest that independent responsibility for national future preparedness should be handed to the NHS free from political interference. This would operate under the umbrella of a national emergency preparedness, resilience and response public body, enshrined in law, and similar in governance to the current Bank of England. This will help ensure that foresight is accompanied by durability and fortitude in safeguarding the UK against future pandemic threats.

**Keywords: Covid-19; NHS; Coronavirus; Organisational Resilience; Emergency Preparedness.**

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## 1. Introduction

*"Nothing has changed, yet everything is different"*

Jean-Paul Sartre

In the past few decades, businesses have maintained the continuity of their operations in the face of AIDS, SARS, Avian Flu, Zika, and Ebola amongst other health crises[1], and for the most part they have recovered quickly. A month after the outbreak of COVID-19 being reported by the World Health Organisation (WHO) on 31st January 2020, some commentators were already predicting a similar outcome, suggesting that worries were overblown and that we should carry on as normal (Sunstein, 2020). Some world leaders including Donald Trump mistakenly suggested that Covid-19 was *'not as bad a seasonal flu*' (Trump, 2020). Boris Johnson, the UK Prime Minister, in turn suggested that the UK could strike a balance somewhere between *'taking it on the chin'* and 'extra precautions', all while assuring that UK health workers "have all preparations, all the kit that they need for us to get through" (ITV 2020). Now such optimism is in short supply.

Though COVID-19 was previously unknown to science, its behaviour is typical of other coronaviruses. It is part of a large family of respiratory tract diseases that includes the common cold and its closest predecessor SARS (Severe Acute Respiratory Syndrome). Usually the symptoms of COVID-19 are mild to moderate, but for some, especially those with pre-existing health conditions, they can be fatal. While global epidemics aren't new, COVID-19 inhabits a world of growing complexity, technological advancement and interconnections, where relatively small risk events can develop in unexpected ways. It is a transboundary crisis with a current localised exponential growth rate of 2.5 (Boin, 2019; WHO, 2020).

These transboundary crises present a significant challenge for organisations, including businesses and public institutions. Established crisis management responses can be ineffective and business continuity can be severely disrupted as problems occur over multiple domains and manifest in unfamiliar ways. Often escalating and migrating risk quickly across political and social boundaries to affect society, businesses, and global financial markets (Grabowski and Roberts, 1997).

More challenging still, transboundary crises involve multiple actors and conflicting responsibilities (Burgess, Wardman and Mythen 2018). There are no easy solutions. As we have seen with COVID-19 a common early government response is to enforce social distancing through 'lockdowns', where non-essential leisure and work activities are banned in an attempt to limit transmission. However, the effects of these measures on consumer spending and business operations have been devastating, with multiple household names such as 'Flybe' filing for, or on the brink of, bankruptcy (Hollinger and McCormick, 2020).

How then should organisations navigate transboundary crises and what does the COVID-19 pandemic teach us about the effectiveness of their response? Can organisations adapt and survive, maintaining the

[1] For a complete list of recent disease outbreaks see: www.who.int/emergencies/diseases/en/

continuity of their operations in the face of an escalating global pandemic and equally threatening public policy responses to limiting its spread? In this paper we invoke the literature on organisational resilience to explore the good, the bad and the ugly in terms of preparedness and initial response.

## 2. The good, the bad and the ugly

"Unexpected events often audit our resilience." (Weick and Sutcliffe., 2007). Put another way, resilience is not an outcome, but rather a process (Weick et al.,1999) by which organisations continuously work to anticipate, and respond, to external threats on a continuous basis. In his seminal paper, Meyer (1982) suggests that "adaptations to jolts" can be understood as having an 'anticipatory', 'responsive', and a 'readjustment' phase. Subsequent literature on resilience has, generally, fallen into one of these three areas (Bahmra et.al., 2011). Sutcliffe and Vogus (2003) also examine adaptability of organisations in the face of both severe and less severe challenging conditions, noting that this adds "*both to the strength of the current entity and also to the strength of the future entity, in that resilience is the continuing ability to use internal and external resources successfully to resolve issues*" (2003, p96).

The hindsight of past incidents undoubtedly provides a window of foresight for those prepared to look into what their organisational resilience (or lack of) could be (Meyer, 1982). Take the case of H-E-B supermarkets in Texas, which had been developing and refining their emergency preparedness plans for over 15 years (Solomon and Forbes, 2020). The H1N1 swine flu virus in 2009 provided them with a 'window into the future' by which to learn key insights about ensuring product supply chains and employees were resilient to the challenges COVID-19. As early as the second week in January organisational personnel were establishing what worked and what didn't across the supply chains of all the major countries affected by the pandemic, making sure their local Texan communities were resourced correctly. This proactive approach stands in stark contrast to what we have seen in the UK, with mounting criticism that the difficulties confronting the NHS represent a fundamental failure of preparedness by the national government. Most stern criticism relates to NHS staff not being adequately tested or properly resourced with Personal Protective Equipment (PPE), and the poor provision of ventilators (along with trained staff able to operate them) for severely ill patients.

If a supermarket chain in Texas can react as quickly as it did, why has NHS preparedness for those on the frontline of the crisis been so wanting? To help address this question, it is instructive to examine the adaptive response and resilience of the NHS to the COVID-19 crisis so far.

For Meyer (1982), the anticipatory element of resilience is based upon 'foresight'. His examination of San Francisco hospitals found that foresight derives from organisations adopting entrepreneurial and outward looking strategies. An appreciation of the world around them (opportunities and threats), and an openness to new ideas (see also de Geus, 1999; Ashby et al, 2018) are clear. The importance of anticipation is also underscored by Weick and Sutcliffe's (2007) examination of High Reliability Organisations (HROs). They argue that organisations exhibiting high reliability are able to sense weak signals that may presage significant unexpected events, in so far as 'sense' means appreciating the meaning and implications of those signals (as opposed to perceiving those signals more rapidly). That said, anticipation will also include what Walker et al. (2014) refer to as 'planned resilience'; that is, business continuity and risk management plans that set out how to avoid or minimise the effect of a crisis.

In the case of the NHS and COVID-19, a lack of foresight into the possibility of a major pandemic outbreak does not appear to have been the main issue. Pandemic influenza is, and was, regarded as one of the highest risks faced by the UK. For instance, within the six year old national pandemic influenza response plan the CEO of Public Health England (PHE) states that *"Ensuring the country is fully prepared and able to respond quickly and effectively is a top priority for Public Health England and, of course, for the government"* (PHE, 2014a, p5). Moreover, in 2016, the NHS in collaboration with PHE conducted reasonable worst-case scenario stress test of its influenza preparedness called 'Exercise Cygnus' (NHS, 2017b). Whilst the results of this exercise have not been made public, the then Chief Medical Officer indicated afterwards that Britain faced the threat of "inadequate ventilation" (Lambert, 2020). Given that emergency preparedness, resilience, and response are statutory requirements of the NHS in the Civil Contingencies Act (2004), the onus was on the NHS and the government to tackle these clearly anticipated weaknesses.

The findings of 'Exercise Cygnus' and other such exercises in anticipation were clearly never acted upon in a meaningful way. Which is to say, responsibility for managing the stockpiles of PPE used by frontline health and social care staff as outlined by PHE (2014b) appears to have constituted little more than preparedness on paper only. Normally, redundancy in any system means that there is duplication and backups (Landau, 1969; Lerner, 1986; Husted, 1993). This technical redundancy within system critical processes is fundamental to their functioning under extreme environmental stressors (Grabowiski and Roberts, 1997). Whereas in this case, the NHS (2017) framework for managing a response to a pandemic influenza outbreak indicates that stockpiles of PPE and other such equipment are also made up of 'just in time' contracts for supplies (2017, p21). This then relied upon an assumption that supply chains would always remain resilient to failures (Grabowski and Roberts, 1997). In the event, what we have seen in the last few weeks is the current Health Secretary pleading in a reactionary way for companies to come forward who could build ventilators at scale and speed. Necessity is the mother of invention, and those manufacturers, and Formula 1 - University partnerships that have risen to the challenge to provide 'bounce back' should be commended (UCL, 2020). However, the reality is that the systemic threat posed by the pandemic has proven disruptive to the very supply lines of health equipment we are dependent upon to stop its spread and help those in most dire need of assistance. Had the warnings of 'Exercise Cygnus' been acted upon 4 years ago, such efforts would not be so fraught or needed in the first place.

Lean production methods, such as just-in-time supply chains, are not limited to the NHS in the UK. Global businesses and public institutions use them to reduce costs and improve responsiveness to consumer needs. While such methods can improve economic efficiency and production flexibility, helping to manage a range of strategic risks (e.g. fluctuating consumer demand) they are vulnerable to extreme operational stress. As Richardson (1994, p73) observes *"strategic management is not only the inventor of strategies for the management of chaos it is also the propeller of chaos itself*". That is not to say that operational stresses cannot be managed through collaboration with supply chain partners, as in the case of Toyota and the Aisin fire (e.g. Brüning, et al, 2015). However, when all of the available partners are simultaneously shut down, collaboration is no longer feasible.

The COVID-19 pandemic has revealed the weaknesses of lean production and just-in-time delivery. The effective closure of Chinese manufacturing from late January through much of February, with a tentative recovery in March has caused global disruption (McMorrow and Mitchel, 2020). China is the major global supplier of the personal protective equipment much needed in the fight against the virus. It also supplies

components for a range of products found in local supermarkets, a fundamental reason why H-E-B was so alert to the pandemic in the first place. H-E-B understood the importance of constantly monitoring this region given its business model's sensitivity to it. In the US, 94% of Fortune 500 companies experienced disruptions to their supply chains (Sherman, 2020). To make matters worse, restrictions on international travel, imposed to prevent the spread of the virus, have impacted on shipping and logistics activities, meaning that even when PPE was available it could not be delivered (Edgecliffe-Johnson, 2020; Peel, 2020). Nevertheless, lean supply chains do not explain the lack of urgency by the UK government and its agencies to ramp up their preparedness and systemic resilience in the face of early mounting evidence and warnings from mid-January (Huang et al, 2020; Wu et al, 2020).

History is littered with similar failings in organisational resilience and disaster preparedness (Perrow, 2011). Warnings by scientists about back-up diesel generators to water pumps being stored below sea level at the Fukushima Daiichi nuclear power station were also ignored (Srinivasan and Rethinaraj, 2013; Synolakis and Kânoğlu, 2015). The subsequent inability to cool the nuclear reactors with water after the tsunami knocked out power led to their eventual meltdown - the comparison is not lost in this current context.

An argument could be made that had the consequences of the H1N1 pandemic in 2009 not been 'mild' in the UK (PHE 2014a), and therefore tested the resilience of the UK's response plans more thoroughly, the need for stockpiling of PPE and ventilators to develop redundancy would have been taken more seriously.

Instead, the immediate aftermath of the H1N1 epidemic in the UK actually marked the beginning of the incubation period for this current crisis (Turner, 1976; Turner and Pidgeon 1997; Roux-Dufort, 2009). It is perhaps no coincidence that countries such as South Korea, which learned concrete lessons from its severe experience of SARS in 2002-03, have been better at both anticipating and containing COVID-19. Their sensitivity to ensure 'anomalies' do not become 'vulnerabilities' (Roux-Dufort 2009) was well placed, an example in the practice of 'foresight' leading to effective responsiveness.

As the unexpected 'jolt' hopefully subsides, 'readjustment', Meyer's (1982) third phase of resilience then draws our attention to the potential for adaptation in response to the crisis. In essence, he considers whether the event is regarded as a problem-solving exercise to be framed within existing institutional frameworks and strategies, or whether it raises more fundamental issues concerning core values and assumptions.

What then is the answer? Our current understanding of the situation is that the latter should dominate future preparedness for transboundary crises. Though nothing has changed, in the sense that future crises, including pandemics, are inevitable, the nature of these crises will be very different, requiring a rethink in anticipation and response.

We suggest that in a world of unfamiliar transboundary crises, the old solutions can prove best. This means redundancy, inventory and shortening the supply chain to ensure that products are close to where they are needed. Where the unexpected happens, resilience involves the ability to continue functioning and, if degraded, to 'bounce back' (Wildavsky, 1988; Weick and Sutcliffe, 2007) – the 'response' in Meyer's trifurcation. 'Planned resilience' may become more, or less, redundant as the organisation attempts to develop new capacities in response to unknown emergent situations. In Wildavsky's terms, it requires organisations "to investigate, to learn, and to act without knowing in advance what one will be called to act upon," (1988, p77), and in so doing avoid rigid, narrowing and maladaptive responses (Staw et al., 1981).

The strategic business model can be important here, where innovation, diversity, flexibility and the ability to work across boundaries may encourage new and adaptive approaches in the face of adversity (Meyer, 1982; Hamel and Valikangas, 2004). Likewise, the ability to deploy slack resources, both tangible and intangible, can act as a shock absorber to dampen the impact of events as well as fuel adaptive responses (Gittell et al., 2006; Meyer, 1982; Weick and Roberts, 1993). One example of this is Switzerland (Jones, 2020), which maintains one of the largest strategic stockpiles of essential goods in the world (3-6 months of basic foods, animal feed, and medicines). The Swiss Government increased these stockpiles in 2016, having become concerned about the fragility of modern supply chains (Switzerland's history of self-reliance and land-locked geography were key elements in this). As a result of these stockpiles, businesses and hospitals have been able to continue operating and consumer hording has been kept in check. Interestingly, one of the unintended consequences of the threat of a 'no-deal' Brexit has meant that some UK car manufacturers who had attended to the outcomes of reasonable worst case scenarios appear more operationally resilient to factory shutdowns (Campbell, 2020).

## 3. Conclusions and future research

In a world of growing complexity, technological advancement and interconnections, it's very easy to get blinded by the idea that the advances we have seen in every facet of our lives will ultimately protect us. The harsh reality today indicates that planning and preparedness will always trump technological reaction and adaptation. That is not to say that the ability to flex and remain malleable that technology provides is not to be appreciated - it is. However, a reliance on a reactionary approach to any crisis, not least a transboundary one, will be sub-optimal. There can be no substitute for actionable and feasible emergency preparedness and resilience plans, devoid of short term politicisation. Ultimately, it doesn't matter if you're a national health provider or a Texan supermarket chain. If you don't invest in developing resilience through financial resources and strategic direction, your likelihood of success is reduced. To paraphrase the Chinese proverb, without rice, even the cleverest cannot cook.

The relationship between the Civil Contingencies Act (2010) and the Health and Safety at Work Act (1974) will never be more strained than it is now. The risks employees are expected to face on a daily basis, due to the inadequacy of their government's approach to preparation for a key national risk, is unprecedented. This should never be repeated.

This is not to say that making fundamental changes to core institutional arrangements would be without its challenges, but this is not without precedent, and instructive lessons and inspiration can be drawn from changes introduced to another key UK sector. The stability of the UK's financial system is based on the Bank of England remaining free from day-to-day political influence, having specific statutory responsibilities for regulation across multiple domains. It is time that national emergency preparedness, resilience, and response to transboundary risks follows suit via a public body with governance arrangements similar to those of the Bank of England. This public body would be enshrined in law, with the NHS pandemic preparedness and resilience responsibilities falling under its umbrella. It is not the first time this idea of operational independence has been proposed for the NHS, albeit not specific to emergency preparedness, residence and response (Vaithianahtan and Lewis, 2008). The Department of Health, acting as the lead agency in pandemic preparedness, has been found wanting. No matter how low the probabilities

are, when societal stakes are so high there can be no room for complacency, posturing, political ideology, or underlap.

Given the current timeline and fluid nature of this virus our research agenda has been primarily focused on the ability to anticipate and respond to COVID-19 within the UK. We call for equal appreciation and credence to be given to the national and international 'readjustment' that follows, it will no doubt be critical to future resilience.

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We would like to thank everyone who has taken a swift personal response to this situation by staying at home. Given everything that is outlined above it is clear that we all must play our part in the responsive phase of this pandemic. Finally, we feel a special thank you is required for every health/social scare employee, every delivery driver, every supermarket assistant, and all those other service providers who have inadvertently become first responders. Putting your own lives in danger will be remembered as one of the greatest and largest peacetime feats of bravery humankind will ever display. Our paper is not intended to demean your efforts, by shining a light on the current situation we hope in some small way to ensure you are never placed in this situation again.

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