

Foresight driven recovery: The world after COVID-19

Were 'we' caught by surprise?

In a world of expanding existential threats one might ask what the 'collective we' should really be worried about most? By extension what might society do to mitigate the impacts of significant emergent threats! Without wanting to succumb to paranoia, humanity has a few non-trivial issues that warrant attention.

Over the past 200 years the world has become demonstrably smaller, closer, and more connected. With such changes have come prosperity and innovation aligned with cycles of industrial and technological development. But along with the obvious benefits of innovation have come a range of unexpected crises that remind us that certainty is often a scarce commodity.

In this increasingly complex world two factors can be relied on. The first is surprise. The second, post-surprise, is when we try to understand how the 'surprise' came about and often how under-appreciated or overlooked latent vulnerabilities or failure points that are central to any crisis remained unnoticed.

Notable incidents have ranged from large-scale corporate failures to policy-regulatory disasters with ongoing consequences to industries, global commerce, and members of the public in many countries. Notable examples within this category include failure in regulatory oversight of Mad Cow Disease in the U.K. (and more broadly elsewhere in Europe),¹ and commercial contexts the demise of Barings Bank² and the managerial implosions of the Enron Corp.³

It has been popularly argued that as society pursues innovation and the benefits of technological development it must also deal with an increased likelihood of unanticipated failures in both human and technological, systems that are by design and use becoming more detailed and complex. And while always shocking such disruptions might not be unexpected.

Because of these cascading phenomena, institutions would be unlikely to face single incidents but rather systemic failures appearing concurrently: *a network effect*. A further point to note is that both natural and technological hazards can impact directly on human systems as well as being propagated by them. Such events have been categorised as 'outside of the box,' 'too fast,' and 'too strange.'⁴

Emergent phenomena such as climate change, public and animal health crises, the increasing hyper-complexity of embedded information-communications-technology (ICT), and the threat of terrorism can be subsumed under this category. Instances of failure from such sources are likely to generate cascading impacts through unexpected pathways and fault lines throughout the private and public sectors.

The complexities of natural and socio-technical systems can render cascading impacts of emergencies difficult to anticipate and plan for. Further, under emergency conditions the pressure on senior decision-takers to 'make-sense' of multiple lines of information (during both crisis and consequence efforts) is significant.

Could such instances of emergent disruption be the result of inattentive governance or regulatory oversight, the impact of unforeseen circumstances or just plain bad luck? A viable consideration might also be that in the integrated post-modern world in which we live, institutional competencies for dealing with the pre-conditions of emergent failure are not evolving as fast as the causes and co-factors of such failures.

Interestingly, commentators in the early 1990's suggested that many institutional crises seemed to replicate in several common ways, yet never manifesting in the same manner.⁵

¹ Ainsworth, C. & Carrington, D. (2000) *BSE disaster: the history*, New Scientist, October 25. [Online](#)

² Cai, P. (2014) *The rise and fall of the Barings banking dynasty*, The Australian Business Review: [online](#)

³ Segal, T. (2020) Enron Scandal: The Fall of a Wall Street Darling, Investopedia, May 4, 2020: [online](#)

⁴ Lagadec, P. (2004) Crisis: A Watershed From Local, Specific Turbulences, to Global, Inconceivable Crises in Unstable and Torn Environments, at the Future Crises – Future Agendas Workshop: An Assessment of International Crisis Research, Sophia-Antipolis (Nice), France: [online](#)

⁵ Anderson, A. (1991) "Making a Success out of a Museum of Failure." in *New Scientist*, Issue 1772, June 8.: [online](#)

The suggestion that there are repeatable and recognisable stages in major socio-technical failure is compelling and is supported by a substantial literature grounded in the analysis of industrial and organisational failures over several years.⁶

Key findings from applied literature identify five key stages - these are:

- **Pre-conditions** ('signs' of disturbance were buried or ignored in background noise)
- **Trigger** (an escalation factors whether obvious or not or in real time);
- **Crisis** (the emergence of an effect [elevated disease case rates?] rapids spread of effect through society and socio-technical systems); and
- **Recovery** (recovery remediation and normalisation);
- **Learning** (identification and changes to functional capacities of organisation/systems).

Given the recurrence of corporate and other organisational failures in recent years, one might wonder if both self-regulation within corporate and industrial settings and active legislated risk reduction is becoming less ineffective in an increasingly complex and changing modern world. A question that might also be asked is how (and what) organisations and governments learn from such failures?

Does this idea hold for the governance of preventive systems against emergent disease? Arguably yes.

It would be difficult suggest that Covid-19 was unforeseeable - a 'black swan.' Those who support that notion may not be attentive enough to the biological complexity of living systems nor the value of peer reviewed science: especially in infectious disease and related areas of biology and ecology.

Global public health authorities have documented the emergence or re-emergence, and spread, regionally and/or globally, of emerging infectious diseases (EIDs) since the 1980's and before.⁷ These EIDs, mostly zoonotic or emerging from animal reservoirs and adapting to human transmission.⁸

As far back as 2014 researchers stated that there were up to 180 [then] recognised species of RNA virus that could infect humans: with average of two new species are added yearly. Related work further confirmed that near to 90% of human-infective species are considered zoonotic with many of the remainder have zoonotic origins. RNA viruses are routinely exchanged between humans and other hosts (particularly other mammals and sometimes birds) over both epidemiological and evolutionary time.⁹

The nexus of human, animal and plant health, along with agricultural practices, food production and human activity, are central to the current COVID-19 pandemic, given the likelihood that the transfer of the SARS-CoV-2 virus to humans occurred in a 'wet market' of live animals in the city of Wuhan. More broadly, around 60% of all infectious diseases in humans are zoonotic (transferred to humans by animals), and at least 75% of all new infectious diseases are from wildlife.¹⁰

Wet markets exist throughout many parts of the world and have been implicated in infectious disease outbreaks such as Middle East respiratory syndrome (MERS), Rift Valley fever and West Nile virus are all zoonotic in origin. One study of the 2002-03 sudden acute respiratory syndrome (SARS) outbreak suggested that a large reservoir of SARS-CoV-like viruses in horseshoe bats in southern China, combined with the long-established regional practice of consuming exotic mammals, was a potential cause of emergent disease.¹¹

⁶ Stead, E. & Smallman, C. (1999) "Understanding Business Failure: Learning and Un-Learning from Industrial Crises," in the *Journal of Contingencies and Crisis Management*, 7: 1-18. : [online](#)

⁷ Pavlovsky, E.N. (1996) *Natural Nidality of Transmissible Diseases, With Special Reference to the Landscape Epidemiology of Zoonothropose*. Urbana, Ill.: University of Illinois Press.

⁸ Waltner-Toews D. (2017) "Zoonoses, One Health and complexity: wicked problems and constructive conflict," in *Phil. Trans. R. Soc. B* 372: 20160171: [online](#)

⁹ Woolhouse M, Adair K. & Brierley L. (2014) "RNA Viruses: A Case Study of the Biology of Emerging Infectious Diseases," in Atlas R, Maloy S (ed), *One Health*. ASM Press, Washington, DC. : [online](#)

¹⁰ Editorial: 'Emerging zoonoses: a one health challenge', editorial, *EClinicalMedicine*, 1 February 2020, 19(100300): [online](#)

¹¹ Cheng VCC, Lau SKP, Woo PCY, & Cheng KY (2007) 'Severe acute respiratory syndrome coronavirus as an agent of emerging and reemerging infection', *Clinical Microbiology Reviews*, 20(4):660-694, [online](#)

While there are many examples over several years that could be referenced on scientific concerns about zoonotic transmission of disease¹² one notable set of ‘voices’ came in 2017 when Dr R Carrasco-Hernandez and colleagues published, “Are RNA Viruses Candidate Agents for the Next Global Pandemic? A Review” in the Institute for Laboratory Animal Research Journal¹³ where they state:

“Pathogenic RNA viruses are one of the most important groups of pathogens involved in zoonotic transmission events and are a challenge for global disease control. Not only the unknown viral species in the wild, but also those that have been known for decades - or even centuries - still represent a continuous problem to human and animal health. Their biological diversity and rapid adaptive rates have proven to be difficult to overcome and have stimulated the continuous development of pharmaceutical and medical technology. Also, the anthropogenic change of natural ecosystems and the continuous population growth are driving increased rates of interspecies contacts and the interchange of pathogens that can develop into global pandemics.”

The link between humans and domesticated animals and wildlife is a key factor in this emergent risk landscape. Again, recent thinking should be noted. Associate Professor Monica Schoch-Spana and colleagues from the Johns Hopkins Center for Health Security (JHCHS) offer a working definition of global catastrophic biological risks (GCBRs)¹⁴ as being:

“.. those events in which biological agents - whether naturally emerging or re-emerging, deliberately created and released, or laboratory engineered and escaped - could lead to sudden, extraordinary, widespread disaster beyond the collective capability of national and international governments and the private sector to control. If unchecked, GCBRs would lead to great suffering, loss of life, and sustained damage to national governments, international relationships, economies, societal stability, or global security.”

It is important to note the long chain of technical and scientific literature, dialogue and collaboration within and across multilateral institutions active in health promotion and biosecurity that have warned of the preconditions that have enabled the emergence of COVID-19 and earlier diseases.

One of many wakeup calls came in 2018 when the Johns Hopkins Center again went to print outlining the ideal attributes of a GCBR-level pandemic pathogen¹⁵ irrespective of the biological nature include:

- efficient human to-human transmissibility.
- an appreciable case fatality rate.
- the absence of an effective or widely available medical countermeasures.
- an immunologically naïve population.
- virulence factors enabling immune system evasion, and
- respiratory mode of spread.

The JHCHS provide further context by suggesting that key enablers that may limit the elevation of a pathogen to GCBR levels - and control - are decisive resource mobilization and countermeasure deployment.

So, in answer to the posited question of ‘being taken by surprise’ ... our systems of government may have been, but we should arguably have been more attentive to emergent threat.

There seems to have been significant, almost overwhelming technical and scientific evidence that we were close to the edge of a global biosecurity failure and that acute cases of novel disease were actively presenting in hospitals. Generically this could be called a ‘systems error.’

¹² Woolhouse M, Adair K. & Brierley L. (2014) RNA Viruses: A Case Study of the Biology of Emerging Infectious Diseases, p 83-97. In Atlas R, Maloy S (ed), *One Health*. ASM Press, Washington, DC.: [online](#)

¹³ R Carrasco-Hernandez, R et. al. (2017) ‘Are RNA Viruses Candidate Agents for the Next Global Pandemic?’, in A Review, *ILAR Journal*, Volume 58, Issue 3, 2017, Pages 343–358: [online](#)

¹⁴ Schoch-Spana, M. et. al. (2017) Global Catastrophic Biological Risks: Toward a Working Definition, *Health Security*, 15 (4) 323–328.: [online](#)

¹⁵ Adalja, A.A. et. al. (2018) The characteristics of Pandemic Pathogens, Center for Health Security, Bloomberg School of Public Health, Johns Hopkins University: [online](#)

We need to re-think what national security & continuity entails

We no longer inhabit a world of once familiar global security tensions, instabilities in financial markets and systems, imbalances in trading relationships or even seasonal variations in natural hazards driven by warming effected climate/weather patterns. Collectively humanity faces an evolving threat landscape categorised by multi-sourced hazards, impacting (directly and/or indirectly) on previously unknown, under-examined or ignored vulnerabilities requiring a paradigm shift in national capabilities.

Societal recovery after crises is often complicated and inevitably slow. A viable intent for governmental support should be returning communities and local economies to a semblance of pre-disturbance normality as efficiently as possible. Physical damage to essential lifelines, loss of housing stock, and the difficulties caused by evacuation will significantly add to community-wide and regional impacts. However, the experience of living through a disaster can challenge the wellbeing and sense of safety of all those involved and is particularly disruptive to community cohesion and viability.

Central to all questions of the pre- and post-COVID world is a convergence of complex social, technical, economic, and environmental issues. By anyone's assessment, options for mitigation, response, and recovery - all within the context of climate/weather variability, emergent or re-emergent diseases constitute *wicked*, real-world problems. Such issues may be characterised as:¹⁶

- Individually unique.
- consistently multi-causal, multi-scalar & interconnected.
- involving multiple stakeholders often with conflicting agendas.
- straddling organisational & disciplinary boundaries.
- having candidate solutions that are not right or wrong but merely better or worse.
- requiring a long time to evaluate solutions.
- being never completely solved.

While some reported COVID -19 symptoms may be like influenza or generic respiratory tract infections the potential for hospital intensive care unit surge capacities to be exceeded in extreme contexts has been overwhelming across the planet. The question of what to do about the cascading and cumulative effects of the infection on human activity systems on local, regional, and global scales remains current and is definitely 'wicked.'

Self-protection from COVID-19 has required isolation and social distancing and a re-emphasis on hand hygiene as well as the use of protective masks in public settings. Moving upscale, 'border' security became a significant issue with almost universal international and within-country movement restrictions active impacting the free and open transfer of goods, services, and people. Ultimately central aspects of modern life - familiar to many as global norms - have changed for the foreseeable future.

Aspects of COVID-19 driven change identified in Finland seem to be relevant to many locations.¹⁷ Notable issues identified include:

- **Virtuality:** Solutions replacing physical interaction, virtual interaction and experiences grow both on the 'business to business' and 'business to consumer' sides. The competitive disadvantage posed by Finland's remote location decreases.
- **Consumer activities transfer online:** Speed and ease are highlighted in buying and delivery. Sharing and recycling solutions may become more common.
- **Technological competences may become even more valuable.** Remote maintenance of machines and equipment, 3D-printing, e-commerce solutions, AI and platforms, industrial automation and robotics may scale up with the crisis.
- **Remote health and welfare services** along with tele-education, and the corresponding technologies become more common. This presents the healthcare sector with a broad range of new possibilities.
- **The meaning of home and living is in flux**, as homes are increasingly utilised for, for example, working, exercising, and cooking. Communal living and moving to rural areas may increase their popularity.

¹⁶ Wahl, D.C. (2017) Facing Complexity: Wicked Design Problems: [online](#)

¹⁷ Business Finland (2020) Business Finland Scenarios – Covid-19 Update: [online](#)

Such insights may be useful to economies elsewhere but the impacts of and adaptations to COVID-19 are not the only 'game-in-town,' especially for regions and economies vulnerable to natural hazards. An example from Oceania is relevant. The occurrence of Cyclone Harold in April this year - the middle of the COVID-19 crisis - created a range of cascading and cumulative impacts and significant dilemmas across the Pacific.

While public health protocols may advise closing borders and physical distancing as part of the coping with the virus, disaster relief normally entails rapid transfer of emergency supplies and the movement of support personal across borders and regions in devastated areas.

The Pacific Islands and Communities (PICs) are not alone in having to respond to the convergent challenges of climate/weather hazards and emergent diseases: these are currently global issues. A critical difference between the Pacific and many other regions is the significant pre-existing vulnerability of that region to natural hazards before the pandemic.

Distance from major continental land masses and being at the periphery of major supply chains and transportation routes does not confer protection from being impacted by the pandemic. The COVID-19 pandemic is an emergent global health and socio-economic crisis that is presenting cascading and accumulative impacts of great significance that will be present for a long time in the future.

As Dame Meg Taylor, Secretary General of the Pacific Islands Forum recently said,¹⁸ *"We Must Rise to Both crises" - our world is interconnected, and the impacts of transboundary issues are unavoidable.*"

The modern world evolved with the function of the free movement of goods, services, and people. The cumulative impact of COVID -19 have moved ideas of 'conventional' national security into newer waters where a hybrid threat landscape requires economies to think across multiple sources of harm, operating across different times scales, and deal with pre-existing social, technical and economic vulnerabilities.

Rethinking resilience - some options for the Indo-Pacific region and Australia.

Australia and arguably economies across the Indo-pacific region need to acknowledge the complex interdependence of diverse issues and the many relevant stakeholders that have standing in achieving enhancements in societal resilience.

They all face a myriad of threats and emergent discontinuities that frequently occur - often seasonally. It is also inevitable that crises will not wait in line to occur - concurrence is a reality that must not be forgotten. Several follow-on points seem relevant:

- The private and public sectors across all economies, in collaboration, must ensure they are not caught flat-footed by the almost inevitable future emergence of further disturbances that can escalate to catastrophic levels.
- 'Leadership' must ensure the right voices are heard in post-disaster reviews and in future planning processes that are needed for building sustained national resilience'
- There is a need to translate the many available and competing approaches to risk and vulnerability assessment and resilience building into the regulatory and design thinking needed to reduce exposure to biosecurity threats in our social, technical, environmental, and built environments.

The solutions and options development that are needed will require collaboration among parties that may never have openly worked together in the past.

¹⁸ Dame Meg Taylor (2019) COVID-19 and Climate Change: We Must Rise to Both Crises, April 17 (<https://www.forumsec.org/covid-19-and-climate-change-we-must-rise-to-both-crises/>)

One significant challenge for Australia involves not having a nationally coordinated multi-threat, risk management strategy: this is a need that should be addressed. It is important to note, though, that Australia is not bereft of strategic efforts on systemic risk reduction.

The recent development of a National Disaster Risk Reduction Framework¹⁹ along with companion reports on vulnerability assessment have been produced but comprehensive implementation of these efforts would be welcome.

Australian State governments have been active in developing risk-based approaches to the disruptions they face. A critical fact, however, is that national security (in conventional and emergent modes) is not a state responsibility. In addition to ensuring greater coordination among relevant departments and agencies, an updated strategy would support the assessment of new vulnerabilities (and reassessment of existing ones), as well as allowing for prioritisation of effort and funding allocations.

Many extant international examples of national risk assessment frameworks and processes operate in concert with a whole-of-economy security strategy. Assuming economies of scale exist for updating our ageing national strategy alongside developing a national risk management strategy, international risk governance practice suggests several core elements should be incorporated, including:

- comprehensive threat taxonomy frameworks - incorporating multi-sourced threats across domestic and international contexts (*As an exemplar Canada has used since 2013 an 'all hazards' risk taxonomy to guide thinking about national risk assessments It uses two analytical lenses to consider threats to national security*).²⁰
- a common risk lexicon - ensuring participating agencies 'speak the same language' (*For example, the United Nations Office for Disaster Risk Reduction's technical report on Hazard Definition & Classification*)²¹
- established communities of practice across central government agencies that use a standardised assessment methodology which applies an all-hazards/threats approach with input from both closed and open information sources
- enhanced linkages between national and international biosecurity systems covering animal, plant, and human health sentinel systems (the 'One Health' approach).²²

Consideration of such capabilities could be of interest to ASEAN and APEC economies. These would be logically fit well with current and historical developments and dialogues on wider area emergency planning and cooperation.

A summative capability critical to an Australian post-COVID recovery is an horizon scanning (foresight) capability that supports both general policy development and detailed assessments at agency and national levels.

There are several examples to draw on for inspiration of what might be done to enhance 'futures' thinking and the development of practical steps to enhance resilience and continuity of both supply chains and national economies. The OECD Future Global Shocks Project²³ is one example of a multilateral effort that might be emulated (and sustained) as part of anticipating extreme convergent disruptions.

Other exemplars of futures/foresight practice include the Danish Emergency Management Agency's Pandora (Forward looking Cell) concept,²⁴ the Finnish National Emergency Supply Agency's Security of Supply Scenarios 2030 report²⁵ and a 2020 joint study between Finland, Norway and Sweden on Security of Supply and Critical Infrastructure Protection.²⁶

¹⁹ National Resilience Taskforce (2018) National Disaster Risk Reduction Framework: [online](#)

²⁰ Government of Canada (2013) All Hazards Risk Assessment Methodology Guidelines: [online](#)

²¹ Recent examples include: UNDRR (2020) Hazard Definition & Classification Review Technical Report: [online](#)

²² World Health Organization (2019) *Taking a multisectoral, one health approach: a tripartite guide to addressing zoonotic diseases in countries*, WHO, Geneva (a joint publication of the WHO, Food and Agriculture Organization of the United Nations and World Organisation for Animal Health): [online](#).

²³ Casti, J. (2011) "Four Faces of Tomorrow," OECD International Futures Project on Future Global Shocks: [online](#)

²⁴ Danish Emergency Management Agency (2016) Pandora: Forward looking Cell (A concept Paper): [online](#)

²⁵ National Emergency Supply Agency (2018) Security Of Supply Scenarios 2030: [online](#)

²⁶ National Emergency Supply Agency (2020) Critical Nordic Flows: Collaboration between Finland, Norway and Sweden on Security of Supply and Critical Infrastructure Protection: [online](#)

A further particularly notable innovation currently being implemented across the European Union focusses on integrating strategic foresight as a major tool for developing resilience across member states.²⁷

It is time for a re-think on regional and global collaboration on enhancing sensitivity to changing conditions and settings that lead to emergent uncontrollable threat. Given the volatile threat landscape humanity faces we must invest in new and different thinking - together.

Our future is likely to be populated by a convergence of natural & socio-technically sourced disruptions: some can and should be anticipated, and their impacts reduced. Some will be surprises and some will result from neglect or loss of control or imagination: only humanity can choose.

²⁷ European Union (2020) 2020 Foresight Report: [online](#)