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Message from the President

from the desk of
– TONY CHARGE FARPI–

Dear Colleagues

As the world changes, with COVID-19 accelerating digital transformation and the way we live and work, we are all scanning the horizon to visualize what the new normalcy or reality will look like. Rather than a static paradigm, it most likely will be an unfolding story and certainly not a 'new old.' While a full understanding of COVID-19 and its implications are being worked through, it behoves us to focus not only on recovery but opportunity through innovation as well as improvement and integration.

Resilience has been our focus on both sides of the proposition above, illustrated by:

1. publishing a major paper by Dr Carl Gibson, Chair of our Education Committee, as the first in a series of Monographs, which has already achieved a large global readership;
2. publishing network alerts which are reproduced below;
3. submitting a confidential response to the 'Public Invitation to Comment on Protection of Critical Infrastructure' by the Australian Department of Home Affairs;
4. further publications following our submission to The Royal Commission into National Natural Disaster Arrangements – Summer 2019/2020 Australian Bushfires;
5. expanding the Global Resilience Risk Policy group; and
6. commissioning a major study by the Centre for Advanced Risk Policy Studies (CARPS), bringing in a range of global expertise including The Brenva Institute and Oxford University.

Further announcements concerning resilience will follow.

Elsewhere, embracing our Global Risk Policy Network, ARPI congratulates European Risk Policy Institute Chairman Ivan Savov FARPI FERPI on the first five years of operation – with Ivan's 'strategic leadership and networking' to the fore, and now operating successfully across Europe. The full public release appears below.

Following ARPI's webinar in May for EIS Council members – comprising governments and corporates (NB information on EARTHEX has been forwarded to members via ARPI Buzz), we are very pleased to announce that ARPI and the EIS Council have entered a formal, collaborative partnership.

Development of ARPI's trilogy of planned educational courses, the first being a Certificate of Leadership

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in Strategic Risk Policy™ is progressing well and will be available shortly. The essence is innovation, distinctiveness and value-add.

Also, on the educational side, reflecting the market and member-value, we will move Buzz to a monthly rather than fortnightly publication, sequentially with the Journal to avoid overlap.

ARPI has a significant portfolio of 'human intelligence' among our membership which drives our work and influence and it is a great pleasure to announce the following Associate members have been appointed as Fellows reflecting their considerable contribution to ARPI and Strategic Risk Policy™ -

Tetyana Wotton, Darrell Cobner, Professor Liz Varga, Mark Robinson, Lynette Pinder, Dean Logan, Dr Ruth Ferraro, Paul Umbrazunas, Pip Wyrdeman, Craig O'Brien, Luke Jansen and Simon Louie.

Bios and photos of your Board of Management now appear on the enhanced website thanks to Dean Logan.

Best wishes

Tony Charge
President and Chairman
ARPI and GRPN

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Resilience policy and Strategic Risk Policy™ are now 'front and square' on the world stage. The following public release by ARPI highlights this and the linkage between Systemic Risks and Wicked Problems.

'It's Time': 'It's Not Too Late'.... Sovereign Resilience of Australia

Australia is failing to manage a 'Systemic Risk' as defined by Strategic Risk Policy™ – the impact of COVID-19. Unless this is overcome, COVID-19 will most probably become a national 'Wicked Problem' requiring a major, slow and costly redesign and rebuilding of parts of the 'Australian model.'

A 'Systemic Risk' differs from normal risks in that it has multiple or plural legal owners – and must be managed collaboratively and formally by the owners 'as one.' It cannot be managed separately using the old, linear 'silo approach' of working individually. The owners of the risk are the Federal, State and Territory Governments on behalf of today's Australians and future generations.

New problems require new solutions and cannot be solved using failed traditional risk management methods which in fact allowed the current situation to occur. 'Sleeping at the wheel' - 'Nothing to see here' are outdated, negative and dangerous – as those who failed to anticipate and do what is necessary, run for cover – 'It's someone else's fault or responsibility' - 'I'm here to help.'

Critical now is nationally driven, 'real' joint action to recognise, understand and take the necessary formal and collaborative action to prevent Australia suffering further damage. Secondly, to move quickly into national recovery and thirdly, front-load future resilience protection.

In June 2020, ARPI and its affiliate ERPI (the European Risk Policy Institute) through the Global Risk Policy Network, alerted the world to 'Risk Domino' potentiality. That is, while Australia (and other countries) are pre-occupied with COVID-19 they are highly vulnerable to other negative actions both internally and imported from overseas. Within days the cyber-attack on Australia was announced.

In fact, a combination of three inter-related negative causes are converging into a perfect storm to create the unwanted Wicked Problem – political disruption, economic dominance and social unrest. All three are man-made and imported to Australia, and reflect the 'Exponential Vulnerability Curve' operating across the world that ARPI warned of in June.

Importantly for humanity, mental well-being and our future, opportunity for innovation and growth, greater independence, and stronger resilience and sustainability of the great Australian way of life are possible and can be direct outcomes if the joint action approach outlined above is taken now.

ARPI, through its global Centre for Advanced Risk Policy Studies (CARPS) is working on new thinking and new approaches to resilience including in relation to critical global infrastructure. ARPI is directly advising governments and energy corporates around the world on employing Strategic Risk Policy™ to better inform their decision-making, through greater situational awareness from network information.

Meanwhile, ARPI calls on the Federal Government to ensure it knows who owns and thus controls Australia's critical infrastructure, energy resources and consumer

services – and secondly, to fully adopt Strategic Risk Policy™ thinking, approaches and frameworks to ensure informed policy decision-making.

Clarity, awareness and anticipation across Federal agencies and also across State and Territory Governments are fundamental pillars of protecting Australia for all Australians and building the future Australia that we all want to live and work in.

ARPI as Convenor of the Global Risk Policy Network (GRPN) congratulates Ivan Savov FARPI FERPI as Chairman of the European Risk Policy Institute (ERPI) on the first five years of operation.

Congratulations to the European Risk Policy Institute

The Australian Risk Policy Institute (ARPI), author of the global Strategic Risk Policy™ Model and Convenor of the Global Risk Policy Network (GRPN) congratulates the European Risk Policy Institute (ERPI) and its chairman, Ivan Savov FARPI, on its first five years of operation and many achievements.

ARPI Chairman Tony Charge said in congratulating Ivan Savov that 'as soon as Strategic Risk Policy™ was demonstrated globally, ARPI knew that its need, acceptance and application demanded ARPI create a global network of affiliated Institutes and professional networks.'

'We congratulate Ivan for his initiative and creativity in establishing ERPI to promote Strategic Risk Policy™ ('SRP') which is a breakthrough approach in thinking and frameworks to engage with leaders and senior managers for informed decision-making and due to COVID-19, developing more sustainable resilience programs' continued Tony Charge.

'ARPI's increasingly rapid growth includes a list of further nations and professional networks wishing to become part of the Global Risk Policy Network' added Tony Charge. 'While these engagements are realised, ARPI through GRPN and ERPI will release the first of three courses in Strategic Risk Policy™ - for leaders, managers and professionals' Tony Charge concluded.

The story of the European Risk Policy Institute (ERPI) so far:

In 2015, ARPI initiated the founding of the European Risk Policy Institute, as part of the establishment of the Global Risk Policy Network. Ivan Savov, Fellow of ARPI and associate since 2010, was appointed ERPI's Chairman and Convener of the Global Risk Policy Network Special Purpose Groups on Fraud and Counterfeiting, Anti-Money Laundering, Cybersecurity and Data Privacy.

In December 2015, Ivan Savov presented at the United Nations, ISO forum, the new Strategic Risk Policy™ Model and its implications in the fight against the multi-trillion global trade of counterfeit goods and their link to organized crime and terrorism. In the next five years, the ERPI team participated in a number of international conferences and events, presenting the subject and promoting the visionary solutions SRP provides in the fight with counterfeiting and organized crime, as well as in the areas of cyber-crime and data privacy.

In 2017, ERPI developed competence to provide leading training and advisory services on data privacy and cyber security, with focus on the new General Data Protection Regulation (GDPR), and from the end of 2017 until now, provides Data Protection Officer Training, lead auditor training for information security, data protection, SRP and risk management. ERPI academy has trained over 500 experts and continues to grow, with partnerships with leading universities.

Since its start, 5 years ago, ERPI has amassed over 12 thousand followers, risk experts from all sectors of industry, business and government from Europe and North America. ERPI is now in constant communication with the knowledge leaders from Cyber Security and Data Privacy and in 2019 awarded the Top 20 Global Communicators in Cyber Security in Data Privacy, many of whom are now Associates or Fellows of ERPI.

At its 5-year anniversary, ERPI is continuing its focus of growing GRPN influence, with focus on cyber and privacy, counterfeiting and fraud, and now expanding into the area of applying SRP in improving the stability of states and nations suffering from complex issues and crises, due to overlapping 'systemic risks' such as COVID-19 and escalating disruption and corruption. A pilot project in this latter area is currently being developed by ERPI in Bulgaria and the project will be later extended to several central and east European countries.

ERPI operates from its main office in Sofia, with representatives in the UK, Denmark, Germany, Italy and several other states.

As Strategic Risk Policy™ is increasingly recognised and embraced around the world as the new approach, new thinking and new frame connecting and rejuvenating the trilogy of leadership, risk and decision-making in today's changing world, it gives ARPI great pleasure to announce a further global partnership.

(ARPI) – Electric Infrastructure Security Council (EIS) Partnership for Collaboration

We are pleased to announce a partnership between the Australian Risk Policy Institute (ARPI) and the Electric Infrastructure Security Council (EIS) to promote awareness, understanding and application of ARPI's new thinking, new approaches and new frameworks about leadership, decision-making and risk for application to resilience of critical global infrastructure.

ARPI is the author of Strategic Risk Policy™ ('SRP'), Risk 4.0, purpose-designed for today's global environment, challenges and opportunities in order to facilitate informed decision-making. This is facilitated through greater situational awareness hence anticipation, predicated on paradigm change by leaders from silo-centric to network-centric thinking, being where information resides today. This enables strategic consideration of risk at a point of 'potentiality' or 'vulnerability' rather than later and reactively when risks arise or worse still, crises or wicked problems occur.

'We are delighted to support the EIS Council' said Tony Charge, ARPI Chairman. 'ARPI leads a Global Risk Policy Network and enjoys collaborative partnerships including the Australian National University and The Brenva Institute, with which it has created the Centre for Advanced Risk Policy Studies (CARPS) focusing on innovation in the field of global, sovereign and regional resilience.'

The Electric Infrastructure Security Council (EIS) facilitates national and international collaboration and planning to protect societies' critical utilities against uniquely severe Black Sky Hazards.

In welcoming the partnership, John Heitzel, Director of Resilience Planning said 'EIS programming and special projects help utilities and their partners develop and implement cost effective, consensus-based protection measures by hosting frameworks for sustained co-ordination, planning and best practice development.'

Adding that 'The EIS Council EARTH EX is one of the largest cross-sector training and awareness exercises in the world focused on resilience and preparedness. Over 41 countries were represented in EARTH EX 2019. This year's exercise is focused on the Electromagnetic Pulse and Cyber threats to our shared critical infrastructure. EARTH EX is free, self-facilitated and self-evaluated.'

'Could Australia's disastrous bushfires of 2019-20 be repeated without lessons learned being addressed? ARPI raises an alert that the answer is still 'yes' in October 2020. Improvements in preparedness, while showing signs of change, are not matched by fundamental preventive action, nor a move to more effective, national co-ordination. 'Who is responsible?' and 'what is happening?' remain primary concerns. ARPI calls for a major independent review of the nation's approach to critical incident readiness, responsiveness and management"

Australia's Bushfire Preparedness is Still Exposed

ARPI summarises the current situation as follows:

1. A clear future point of national, border-less responsibility, remains to be published;
2. Reports of disharmony exist among Federal, State and Territory Governments regarding approaches to 'risk management.' Worse still, that information is not being shared;
3. Entrenched public sector thinking is keeping 'risk' consideration to last-century 'risk management' processes which have been identified as 'mechanical, linear, silo-centric and based on risks behaving rationally.' COVID-19 has destroyed this fallacy;
4. 'Draft Propositions' published by the Royal Commission into National Natural Disaster Arrangements: Summer 2019/2020 Australian Bushfires, arguably do not focus sufficiently on prevention or preventive measures;
5. Bushfires arise simply from a combination of (excessive) fuel, oxygen and ignition;
6. Levels of critical fuel reduction and back-burning are reportedly well below 50% of minimum levels required for the approaching summer – ARPI awaits publication of the latest levels of achievement;
7. Reliance on a forecast 'wet summer' is high risk in both the short and longer terms as, at best, a wet

summer will present a greater fuel load for 2021-22, leading to higher bushfire risks then;

8. What lessons are being learned about changes in 'nature' from the present bushfires in the USA;
9. Continuing to pursue the traditional silo-approach to the concept of bushfire risk, rather than a network-centric approach as developed and promoted by ARPI, enabling early, preventive action against bushfires at the point of vulnerability, means that governments at all levels are exposed to not having the right information at the right time - and thereby failing to act faster; and
10. ARPI also challenges governments in Australia to publicly declare their awareness of and that appropriate measures have been taken and are in place, as bushfire response strategies, to overcome what is being alleged globally (through informed 'networks') that 5G lacks resilience particularly during crises – in terms of security, reliability and sustainability.

In conclusion, 'It's Time' and 'It's Not Too Late' - but the clock and fires do not stop for indecision.

The following article has been written by Pip Wyrdeman FARPI, General Manager Delivery at Providence Consulting and Director at Australian Risk Policy Institute (ARPI)

The benefit of hindsight

How many times have we heard – it was obvious in hindsight? It seems so easy for us, once an event has passed, to look back and wonder how we could possibly have missed it. It was right there! In hindsight. We can look at things and know that a thing could have been caused or prevented if only we had acted on something we'd already identified. "If only we'd done X, Y and Z when we had the chance". "In hindsight, we should have done A, B or C".

Call it ignorance, wilful or otherwise, or simply an inability to recognise the implications of our lack of action. Whatever we want to call it, it is getting harder and harder to claim "but we didn't know". Why? Because that hindsight is nearly always available to us before it becomes hindsight. We just have to recognise this and learn how to harness it.

That's what this new paradigm of Strategic Risk Policy™ allows us to do. To move beyond the mere identification of risk to a point of identifying the existence of vulnerabilities. Vulnerabilities that, if actions aren't taken to address them, may result in a risk. A point before a risk has become apparent. To where we can start to say – there are patterns forming here that may converge to become a risk. To get out ahead of someone becoming a risk to public safety by understanding the existence of certain vulnerabilities in them, in our public spaces, in our policies and processes and in our environment.

How good would it be to get to where we can choose to act on an identified vulnerability so that the risk it would result in never came into being?

ARPI is working to grow and educate on this new paradigm. To bring another way to think about risk that adds to the arsenal of strategic thinking and help drive a positive future. Hindsight can become foresight!

The following article has been contributed by Professor Robert Glaze FARPI, Chairman of The Centre for Advanced Risk Policy Studies (CARPS) and The Brenva Institute.

Too Small to Succeed? The Future of the English-Speaking Countries

The shrinking international influence of the former globally dominant English-speaking countries of the United Kingdom, the United States and Australia is now becoming clear to even the casual observer. While the nations in question do occupy large geographies, it is their institutions and real economies that are showing signs of being too small to scale in order to maintain their former vibrancy: instead they are tools of increasing velocity to escalate the volatility being unleashed by the coronavirus pandemic.

We are seeing the simultaneous eruption of inadequate responses to the pandemic, the rise of social and cultural unrest, rapidly rising unemployment, increased uncertainty among the citizens and core institutions struggling to maintain social order and political leadership that is declining in its ability to understand much less manage the fragility, unfolding throughout once certain and solid social, economic and government systems.

Short term thinking has replaced long term vision and created a "just in time" model for almost every aspect of the economies which has led to an "edge" based society that has created supply and distribution chains that no longer provide safety stocks of food or other goods and services.

The prevalence of larger numbers of the populations now marching unabashedly for this cause or that one, as political rights, now overtakes economic rights and the uncertainty compounds in the majority of the citizens. The one-time balance between political and economic rights which existed from the 1950's to 2010 has now evaporated as special interest groups of all political persuasions demand that their way is the right way. Without addressing the correctness of any one of these issues, we can state that they all find their origin in a long-time western world mantra for the "right of conquest" to take precedence. There is always an eventual price to pay when conquest is the prime directive

Intellectually, the world has tried to move-beyond the use of force to accelerate growth, instead employing sophisticated behavioral economics at the local, state, national and international level. Over the past few decades few wars have been actually won or lost, they have simply been media rationalized exercises that exhausted resources and lives of valiant fighters.

While the world has gotten smaller due to air transportation and broadband internet, the one-time leaders of these industries have gotten smaller as well. Their governance, economic and social systems have not scaled to keep up with the disruptions they themselves created through various technology advances. A slow but intense balkanization is underway in the states of the US, the UK and Australia.

The need to focus internally on the social, cultural and economic challenges has left the three English speaking countries adrift in an ocean of change that they are increasingly less a part of much less leading. We now approach a time when the world of the English-speaking peoples begins to shrink as their own populations succumb to large scale immigration by non-English speakers, and secondly, the rise of economic and technological leadership being led by non-English speaking nations whose populations number in the billions.

History has taught us that those who invent technologies are usually overcome and soon led by the less sophisticated but more aspirational rivals in the world. The same can be said of the empire that was the most advanced in world over 600 years ago, China. China withdrew into itself as a result of internal conflict and yet over the past 30 years has re-emerged as the new leader of technology, mass internal immigration absorption, economic expansion regionally and globally, and a form of "conquest" based on "goods and services" economic dependencies.

When Rome was shrinking in its decline, it became a darker place to live, then one night the Romans saw a great light on the horizon that was shining brightly, in the east was the new center of the emerging world, Constantinople!

Co-authored by Professor Liz Varga FARPI, Head of the Infrastructure Systems Institute at UCL Civil, Environmental and Geomatic Engineering, this abstract describes the challenges to the resilience of complex engineering and engineered systems (CEES) that have now emerged. The full article is available at: https://ieeexplore.ieee.org/document/9086026

A Review of Methods to Study Resilience of Complex Engineering and Engineered Systems

New challenges to the resilience of complex engineering and engineered systems (CEES) have been emerging due to the development of highly interactive systems, such as nuclear power plants, power-grids, spacecraft, telecommunication networks, health-care delivery, along with multi-level supply chain systems. Conventional methods of probabilistic modelling and quantification of well-recognised system failure scenarios fail to deal with unanticipated failure modes of complex engineered systems and their recovery options.

CEES defines a holistic system, since an engineered system requires an engineering system. An engineering system includes the set of processes and resources that produce a technical result, whilst an engineered system is a collection of components with specific characteristics which is the outcome of an engineering activity [1]. Systems' resilience is achieved by the capability of the system to sustain system functionality in different conditions and deal with uncertainties caused by natural hazards or human interventions. It is necessary to understand and assess uncertainty and interconnectedness within CEES to provide optimal resilient design and control solutions that can be trusted by society.

In the field of engineering resilience generally refers to the system's capability to bounce back from disruption, restoring some degree of before-shock performance, and exceeding it after recovery is desirable [2]. Most resilience definitions centre on uncertainty quantification, risk management and adaptation [3]. The scope of a resilient CEES is therefore to be able to prepare itself for an emergent situation by: increasing

system's awareness, determining weak nodes and components by monitoring them; predicting the possibility of failure by monitoring key points; being robust; exploiting redundancy; recovering functionality to fulfil system objective; and learning to improve future resilience.

Designing a resilient CEES is a significant challenge as there is a high level of interconnectedness between systems, as each belongs to a system of systems, constraining the value of adopting a traditional approach of assessing a system's resilience in isolation. Isolated assessment means to consider a restricted set of predetermined parameters and conditions, which fails to take account of the system's endless need to respond to changing needs and related adaptation and evolution processes over its entire life span. Coupled interdependencies between system components and among systems increase their complexity, and make resilience much more difficult to assess. Therefore, the impact on resilience of interdependencies, emergence, and other CEES characteristics should be understood using a complexity science framework which exposes the need for appropriate tools [1]. This supports the need to establish alternative methodologies for assessing a system's resilience, as traditional methods cannot address these challenges. Resilience has attracted significant attention in non-engineering academic domain such as ecology, psychology, economics and organisational science in recent years. Yet in complex engineering and engineered systems, most methods are merely descriptive statistics which are used after a disruptive event rather than methods that address uncertainty and interconnectedness of modern engineering solutions embedded in socio-technical systems [4], [5].

A growing community of interdisciplinary scholars, under the umbrella term of engineering systems research, are striving to provide a rigorous set of tools and methods to design and predict the behaviour of such large socio-technical complex systems [5]. Driven by the tenets of systems and complexity thinking, the engineering systems (ES) themes of interest to scholars are aspects of system interconnectedness, structure or architecture [6] and the influence of uncertainties [7], [8].

Addressing these issues of interconnectedness and uncertainties are the topic of the emerging domain on ES resilience. The construct of ES resilience is a measure of a system's preparedness toward known and unknown threats. Although ES resilience is characterised as an essential functional requirement of commissioned systems, resilience as a concept is still an evolving interdisciplinary domain that suffers from a considerable degree of taxonomical and methodological discrepancy. This is not least because the resilience of an ES is dynamic and changes over its functional life span, being influenced by a multitude of parallel, complex and dynamic interactions, both with elements located within and outside the system.

An apt ES resilience method should be able to provide a theoretical and methodological basis to account for interconnectedness and uncertainties that a system might experience over its functional life time. This necessitates the use of methodological pluralism to unpack the tensions in different scenarios originating out of the coupling of embedded and nested ES. Responding to these challenges and with an intention to contribute to the emerging field of complex ES resilience, a team of interdisciplinary experts joined efforts for this paper to frame the scope, methods and future directions of this domain.

The purpose of this paper is to introduce a set of methodological alternatives available in literature for conducting a normative, descriptive and prescriptive assessment of complex ES resilience, addressing the two primary issues of uncertainty and interconnectedness. This paper responds to these issues by providing six methods organised as follows: 2. Methods for taking uncertainties into account; 2.1 The Bayesian Network for quantifying uncertainty; 2.2 Robust Bayesian modelling for severe uncertainty; 2.3 Multidisciplinary Design Optimisation under uncertainty; 3. Methods for modelling complex interactions; 3.1 Resilience of networked systems; 3.2 Convergent Cellular Automata: theory and application to resilient systems; 3.3 Agent-Based Modelling for complex interactions.

Each of the six methods is described in the context of ES resilience, and provides at least one case study, with a critical assessment of benefits and limitations. The authors do not suggest that an exhaustive list of methods is presented. Instead the objective of the paper is to introduce the readers to the methodologies that can serve as a good starting point to study ES resilience.

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The following article has been written by ARPI Associate Lyric Hughes-Hale, editor-in-chief of Econvue. In this article Lyric argues that there is a clear link between hunger and political unrest—all the more prescient in light of current global challenges. It is available at https://econvue.com/pulse/hungry-world-econvue-spotlight-august-2020

A Hungry World - EconVue Spotlight - August 2020

Back to work after COVID, China is experiencing widespread food shortages. Post-pandemic, a combination of **historic flooding and drought** has caused China's leadership to worry about food supplies, and take action. Limitations on banquets and requests from local cadres to skip a patriotic meal have been widely reported. This past winter, the world watched China struggle with COVID before it literally went viral. Could China be the vanguard of a global food shortage caused not by aggregate supply, but by distribution bottlenecks? I believe that this new crisis is the reason that China is coming back to the negotiating table with the US for the Phase I trade talks, a partial retrenchment of its new **dual circulation** economic model aimed at lessening China's dependence on the outside world.

Oxfam and the United Nations **Committee on World Food Security** say risks to food supplies are growing worldwide. According to **CSIS**, at the beginning of 2020, 135 million people faced acute food insecurity; by the end of this year the number will be more than 265 million. Conflict zones such as Yemen, Syria, Lebanon, and of course North Korea are already experiencing starvation conditions, Africa has the highest rate of malnutrition in the world, almost 20%. The UN report forecasts that malnutrition will double as a direct result of the pandemic, and eventually more people will have died of hunger than from the disease itself. Similarly, to the WHO, existing international organizations do not have the scope or authority to avoid this disaster.

It's not only war-torn or failed states such as Venezuela that are facing a hunger epidemic. Depressed economic conditions as a result of COVID have clearly resulted in food insecurity in rich nations such as the US, where **29 million Americans report not having enough** to eat. Food bank lines have stretched for miles in cities across America, and school closures have meant that children who depend on school for at least one meal a day have nowhere to go to replace those meals.

Here in Chicago, school kitchens stayed open even as classrooms were closed. Last year, schools in the US served **20 million free lunches each day**. As school reopening dates change food distributors, especially of fresh food, don't know how to estimate and satisfy demand. Children are being deprived not just of education, but of the basic nourishment required for their brains to grow. We have decried the lack of Internet broadband or a laptop for 30% of the country's students; it is probably these same students who also face food insecurity. All of this will lead to worsening inequality over time.

The linkage between hunger and political unrest throughout history is obvious, and unless we address these issues soon, the world will not be a place of have and have nots, but of the hungry and the fed (no pun intended). The economic consequences of food shortages are also clear. Rising food prices could be the lever that pushes up inflation in a debt-fuelled world where even the slightest uptick in interest rates could break the recovery before it takes hold.

Higher food costs might seem counterintuitive in a world where energy prices, closely related to food prices, remain low. **Record crops** are forecast for the US this year. Food production hotspots are already seeing permanent cost-saving changes: the meat and poultry industry has **rapidly automated post-Covid**. Global rice and wheat production is also robust, but as Covid crisscrossed the globe countries such as Russia and Thailand curbed exports while food-importing countries stockpiled.

The problem is not the overall volume of food that matters, but how it is distributed: normal trade flows have been disrupted by COVID. Economist Amartya Sen's famous **study** of the Bengal famine concluded that it was lack of information, not availability of food that resulted in distribution chaos and mass starvation in India in 1943. Creating greater efficiency

through information technology could be a worthy, attainable goal for the many non-profits dedicated to global nutrition as well as their technology company sponsors. Otherwise, the hunger games could begin, with lethal consequences for the world and the hoped-for economic recovery.

The following article has been written by ARPI Associate Michelle Wucker. Michelle is the founder and CEO of Gray Rhino & Company. In this article, Michelle argues that the ability to manage uncertainty is a major business skill. The article is also available at https://www.strategy-business.com/blog/Why-managing-uncertainty-is-a-key-leadership-skill?gko=8c1b4

Why managing uncertainty is a key leadership skill

In early 2020, **Wafels & Dinges**, a popular Belgian waffle truck fleet, was in major expansion mode. It was planning to add brick-and-mortar restaurants in some markets, including in the Mall of America in Bloomington, MN., and American Dream in the Meadowlands of New Jersey, where it would peddle espressos and cranberry-rosemary waffles. But when the COVID-19 national emergency was declared on March 13, owners Thomas de Geest and Rossanna Figuera realized they had exactly enough cash on hand to give their workers two weeks' severance pay. Tearfully, they said goodbye and emptied their bank account.

Once they made the painful decision to let their employees go, the couple made arrangements with creditors and landlords. Then they focused on what they could do to help others. They found the answer in their mission: to give people the happiest moment of their day.

"In crises, we're always solving problems, but suddenly it hit me that there was nothing we could solve. There was nothing we could do. That's when the acceptance began," said Figuera, the Venezuela-born cofounder of the company she and her Belgium-born husband left corporate careers to build in 2007. "That's not something you learn: It's something you are supposed to fight. But on the other side of surrendering, there was peace, very contrary to what you would expect. In that peace, we found clarity."

They pivoted to online ordering, which until then had been a very small side business, and moved operations from New York City to Denver, Colo., where they already had one store. Their option to donate waffles to frontline healthcare workers was enthusiastically embraced by customers, enabling the company to bring back some employees. Wafels & Dinges is now shipping nationwide, not only to its customers but also to hospitals.

As it brutally disrupts life and business as we know it, COVID-19 has brought into sharp relief a crucial business skill: the ability to navigate uncertainty. That means knowing what you can control and what you cannot, aligning your company and employees with a shared purpose, holding to a clear vision of where you want the company to be, and trusting your team to help your company get there.

Today's economy is a real-life laboratory, an environment that supports the conclusion of a 2019 study of dozens of global leaders that identified the op leadership skill needed today as comfort with risk and with ambiguity — that is, the absence of certainty or clarity.

"The best CEOs are able to live with ambiguity in a way that others can't," said Christa Lynne Gyori, CEO and cofounder of the research organization Leaders on Purpose, which carried out the study. They do so by staying centred around a strong sense of shared purpose — the ambition to create value by contributing to the welfare of society — just as Wafels & Dinges did.

The business leaders who are best at managing in uncertain worlds also rely on systems thinking that allows them to sort out complex problems, the report concluded. They prioritize diverse inputs, teamwork, and partnerships. These leaders assemble the best team they can, and trust that team to find the information the organization needs to get through a crisis.

"These CEOs understand they don't need to know it all themselves," said Tatjana Kazakova, chief strategy officer and cofounder of **Leaders on Purpose**. "But they do need to be ready to see an opportunity in uncertainty and to have a logical understanding of how to get to where they need to be. They have the ability to go into a dark room and know how to bring light — but [aren't] afraid to go into the dark room."

We are all in the "dark room." The pandemic has created an enormous uncertainty shock, which a team of economists **recently described as** "larger than the one associated with the financial crisis of 2008–09 and more similar in magnitude to the rise in uncertainty during the Great Depression of

1929–1933." The measurement tool they created, which was based on stock market volatility, media, and business expectation surveys, the **U.S. Economic Policy Uncertainty Index**, hit an all-time high of 861.16 on May 17, more than four times where it stood on New Year's Day, before the novel coronavirus hit global headlines.

The group expects the U.S. economy to contract by 11 percent by the end of the year. Significantly, it estimated that 60 percent of that contraction will be the direct consequence of uncertainty: that is, a condition in which important information is unknowable.

Because nobody knows what is next, no CEO can reasonably be taken to task for not knowing everything. That provides an opening for leaders who have deployed a top-down, command-and-control leadership style to switch to a mind-set that helps them and their teams better navigate uncertain conditions.

Leaders don't have to like dealing with uncertainty in order to master it. "You can be uncomfortable with uncertainty. We don't grow if we don't feel uncomfortable," said Lori Michele Leavitt, a business coach, consultant, and author of ***The Pivot: Orchestrating Extraordinary Business Momentum.*** That's why the same skills that CEOs need to navigate crises are useful in normal times, when the sense that everything is "fine" can lead to stagnation. "You have to continuously be in that spot where you are progressing and learning and changing," Leavitt said.

The biggest challenge for many business leaders, in Leavitt's view, is to see their role as orchestrating, not commanding. That means making sure your employees are in touch with their own desires and potential just as much as your business is aligned with its sense of purpose.

The point isn't for CEOs to be the hero, Leavitt said, but for them be able to say, once they are past the crisis: "Look at how the team was built up during this time! Look at what they did! Look how they stepped up!"

That behaviour makes all the difference between whether employees respond to uncertainty by becoming more creative and proactive, or overstressed and paralysed. The ability to cope with uncertainty and keep pursuing your mission will be the difference between success and failure.

Written by John Coyne on behalf of the Australian Strategic Policy Institute, this externally sourced article argues that the critical military installations of Exmouth are underfunded, and constitutes a vulnerability in Australia's defence strategy. The article is available at https://www.aspistrategist.org.au/exmouth-base-needed-to-plug-naval-gap-between-perth-and-darwin/

Exmouth base needed to plug naval gap between Perth and Darwin

To make sure that northern Australia is ready to support a range of defence contingencies, the region must have socially and economically prosperous communities. Supporting the development of these kinds of communities is no easy task, because it requires a coordinated effort across multiple levels of government. With few votes, and even fewer politicians representing the voters who cast them, getting coordinated policy action on northern Australia Canberra is a challenge.

Australia's traditional approaches to critical infrastructure investment, like the user-pays model, do not work as well in the north. It's little wonder, then, that local, state and territory governments and entrepreneurs in the north look to the defence organisation to support their ideas.

Our progressively more unpredictable strategic environment supports the bold new infrastructure investments (such as **condensate plants**, **rail spurs** and **ship lifts**) proposed for many northern jurisdictions. These kinds of investments often benefit national security and defence contingencies while also stimulating short- and long-term economic activity. Unfortunately, market forces usually fail to support such investments. Western Australia's North West Cape illustrates this point well.

Since World War II, the North West Cape and, in particular, the town of Exmouth have been an operational and strategic outcrop for Australia and its allies. Today, with rising geopolitical tensions in the Indo-Pacific, the area is key strategic terrain for a range of contingencies.

The Exmouth township sits approximately 1,300 kilometres north of Perth. It rests on the closest point of the Australian mainland to Christmas Island and the Cocos (Keeling) Islands, the British Indian Ocean Territory and the Sunda Strait in Indonesia—one of Australia's main ocean trading routes to Asia.

Naval Communication Station Harold E. Holt sits 25 kilometres north of Exmouth on the North West Cape. It is home to the very low frequency radio transmission facility designed to communicate with both Australian and allied submarines. The strategically important **Royal Australian Airforce Force Base Learmonth** is 35 kilometres south of the town and shares facilities with the local airport.

Unfortunately, **Exmouth** itself remains severely underdeveloped, which imperils the resilience not only of the local community, but also of the defence presence in the area.

Road trains supply Exmouth with fuels for both civilian and Australian Defence Force use. Aviation fuel in Western Australia is single-sourced from the state's only operating refinery, which is in Kwinana, south of Fremantle. Every one of the approximately 6 million litres of aviation fuel stored at Learmonth is trucked 1,300 kilometres by road.

The 8 million litres of diesel consumed annually at the joint communications facility is imported from overseas via a tanker berth at Point Murat, which is adjacent to the facility but unfortunately also within the Ningaloo Coast World Heritage Area. These arrangements leave the Defence Department with significant supply-chain vulnerabilities.

At present, there are very few viable options for refuelling warships between HMAS Stirling in Fremantle and Darwin. The absence of an appropriate port facility also means that naval vessels operating to the west and northwest of Australia must return to Stirling for refuel and resupply.

Enhanced maritime infrastructure at Exmouth could extend the range of the Royal Australian Navy's operations in the Indian Ocean. Refuelling the Collins-class submarines in Exmouth would likely extend their patrol ranges by up to two weeks.

A veteran-owned and privately funded multiuser port is currently being planned for Exmouth. A multiple-berth jetty is intended for vessels of up to 12 metres of draught, which would allow the operation of every class of RAN vessel and most allied ships in service.

This project offers multiple benefits to both Australia's sovereign strategic fuel resilience and the RAN's operational sustainability. RAN fleet unit replenishment could be conducted at this new facility before operations and during respite periods. Replenishment at sea could also then be undertaken via tankers drawing from Exmouth fuel reserves.

The Australian Border Force would also benefit significantly from this option. This kind of investment will also provide long-term benefits for the local community by promoting several new economic opportunities.

So, with all these potential security, social and economic benefits, what's the problem? Especially given that the federal government is looking to enhance resilience, promote economic growth and invest in critical infrastructure.

Defence is reticent to make a long-term commitment to using the facility when its long-term operating budget seems in general to be on shaky ground.

The **Northern Australian Infrastructure Facility's** loans don't support the kinds of infrastructure investments that Defence and northern communities need either. And without a long-term Defence commitment, NAIF and equity investors are far from keen to invest. And without an 'anchor' client, making the project work is hard.

This is not an argument for Defence to jump into the driver's seat. The Department, with its growing long-term commitment to capital investments, is understandably loath to make long-term operational expenditure commitments or infrastructure investments outside its existing bases.

Defence also can't be expected to carry the northern Australia resilience and investment can alone.

In the absence of a national security strategy and a national security adviser, the government needs to consider establishing a strategic investment fund that is focused on supporting these kinds of entrepreneurial efforts and could underwrite Defence's contribution. A key priority for the fund should be identifying nation-building projects that have economic, social, resilience and national security benefits but have not yet been able to get off the ground.

The following externally sourced article tells of how the Pressurized Cargo Module (PCM), developed by Thales Alenia Space, is on a new resupply mission to the International Space Station, with approximately 3,600 kg of precious cargo on board. The article is available at https://www.thalesgroup.com/en/worldwide/space/press-release/14th-mission-cygnus-spacecraft-its-way-international-space-station

The 14th Mission of Cygnus Spacecraft on its way to the International Space Station

Turin, October 3rd, 2020 – The Cygnus spacecraft, dedicated to deliver supplies to the International Space Station (ISS), has been successfully launched by an Antares rocket from Wallops Island, Virginia, on its 14th operational mission. **Cygnus** comprises two main elements: A Service Module, built by Northrop Grumman, and an enhanced Pressurized Cargo Module (PCM), developed and built by Thales Alenia Space, a joint venture between Thales (67%) and Leonardo (33%). Northrop Grumman also builds the **Antares rocket**.

Since 2013, Cygnus missions have been the main enabler of the safe resupply of the International Space Station, a lifeline designed to transport the fundamental cargo, including oxygen, water, scientific experiments, crew supplies, and spare parts. Since the end of 2015, the enhanced Cygnus configuration features a more efficient design, able to accommodate more payload weight (over 3,500 kg) and volume.

Each resupply mission to the ISS contains crew supplies and vehicle hardware but also increasingly carries scientific investigations in the areas of biology and biotechnology, Earth and space science, physical sciences, and technology development and demonstrations.

The newly launched spacecraft is carrying a new raft of experiments such as Plant Habitat-02, dedicated to the Assessment of Nutritional Value and Growth Parameters of Space-grown Plants, which will cultivate radishes as a model plant that is nutritious and edible. This investigation is critical for NASA's human exploration of the Moon and Mars. Two other experiments will be carried by Cygnus's PCM: the Universal Waste Management System (UWMS) will demonstrate the technology for a compact toilet for astronauts and an investigation from the University of Puerto Rico will test oxidation of ammonia in microgravity as a potential means of producing water and energy to be used on deep-space exploration missions.

The Cygnus's PCM will also carry a health investigation named Leveraging Microgravity to Screen Onco-selective Messenger Ribonucleic Acid (mRNA) for Cancer Immunotherapy that will test a biologic drug that could be used for the treatment of leukemia. As part of "the ISS Experience", a cinematic virtual reality (VR) series documenting life and research aboard the space station, Cygnus' PCM is carrying a 360-degree virtual reality camera which is set to capture a spacewalk in cinematic virtual reality as well as a footage of Earth and the exterior of the space station.

As an outpost of humanity in space, the ISS, for which Thales Alenia Space provided 50% of the pressurized modules, represents the largest and most complex space laboratory ever built, permanently inhabited for past twenty years, defying the difficult rules of physics, metrology, astronomy and interplanetary flight. The constant presence of astronauts in orbit is possible thanks to pressurized modules, that allow life and scientific research in the microgravity environment, and the development of useful technologies and knowledge, not only for space exploration, but to improve our life on Earth – in line with Thales Alenia Space for Life aspiration.

Thales Alenia Space has supplied cargo modules to Northrop Grumman since the start of the Cygnus program. The first contract in 2009 was for the delivery of nine modules, while a second contract in 2016 added nine more. Fourteen operational PCMs plus a demo module have been launched to date, four in the original version and eleven in the enhanced version.

About Thales Alenia Space

Drawing on over 40 years of experience and a unique combination of skills, expertise and cultures, Thales Alenia Space delivers cost-effective solutions for telecommunications, navigation, Earth observation, environmental management, exploration, science and orbital infrastructures. Governments and private industry alike count on Thales Alenia Space to design satellite-based systems that provide anytime, anywhere connections and positioning, monitor our planet, enhance management of its resources, and explore our Solar System and beyond. Thales Alenia Space sees space as a new horizon, helping to build a better, more sustainable life on Earth. A joint venture between Thales (67%) and Leonardo (33%), Thales Alenia Space also teams up with Telespazio to form the parent companies' Space Alliance, which offers a complete range of services. Thales Alenia Space posted consolidated revenues of approximately 2.15 billion euros in 2019 and has around 7,700 employees in nine countries.

Written by Carolyn Cohn, this externally sourced article argues that unemployment is going to be the biggest worry for the world in the coming decade. The article is available at https://www.reuters.com/article/us-world-economic-forum-survey/unemployment-is-worlds-biggest-risk-business-leaders-say-idUSKBN26S3JA

Unemployment is world's biggest risk, business leaders say

LONDON (Reuters) - Unemployment is seen as the biggest worry over the next 10 years for business executives around the world, closely followed by concern about the spread of infectious diseases, according to a survey by the World Economic Forum. Unemployment rates have rocketed due to lockdowns and other restrictions to combat the coronavirus pandemic, with fears of worse to come in countries which have furloughed workers.

"The employment disruptions caused by the pandemic, rising automation and the transition to greener economies are fundamentally changing labour markets," said Saadia Zahidi, Managing Director at the World Economic Forum (WEF). "As we emerge from the crisis, leaders have a remarkable opportunity to create new jobs, support living wages, and reimagine social safety nets to adequately meet the challenges in the labour markets of tomorrow."

The Regional Risks for Doing Business survey, which surveyed 12,012 business leaders from 127 countries, makes up part of the WEF's global competitiveness report, to be published next month.

The study surveyed respondents' views of 30 risks in total. Worries about the spread of infectious diseases have also come to the fore, rising 28 places from last year's survey.

Fiscal crises, cyber-attacks and profound social instability were the third, fourth and fifth biggest risks, the survey showed. But climate change risks are also rising up the agenda, WEF said, while worries about militant attacks fell.

The survey has been released ahead of WEF's first Jobs Reset summit later this month. It was published by WEF together with Marsh & McLennan MMC.N, SK Group and Zurich Insurance ZURN.S.

Written by James Frost of the AFR, this externally sourced article argues that ASIC's guidance has added to uncertainty in the area of credit risk. The full article is available at https://www.afr.com/companies/financial-services/deferral-risks-heightened-by-asic-guidance-20200915-p55vu0

Deferral risks heightened by ASIC guidance

Risk advisory firm Rhizome says the Australian Securities and Investments Commission's guidance on how to treat customers in financial hardship due to COVID-19 has added to the uncertainty lenders face as the six-month deferral period ends.

Rhizome founder and APRA's former head of credit risk, Will Peterson, said the stakes had never been higher as banks assess the first of around 900,000 loans and decide on a course of action for each loan.

"ASIC's vague pronouncements around making all reasonable efforts to keep consumers in their homes just creates more uncertainty. What happens when customers just won't pick up the phone or don't want to work with the bank to achieve a good outcome?" Mr Peterson said.

Over the next two months, banks will assess around 450,000 frozen loans that have reached the end of their deferral period. The Australian Financial Review reported on Tuesday that one in five customers were "ghosting" their banks by not responding to phone calls, text messages, emails or letters.

Banks are contacting customers with the aim of getting them to restart payments, to apply for an extension of the deferral period or to have their loans restructured. In cases where customers are unable to resume payments, even over longer terms, they will be asked to consider whether the loan is in their best interests.

Mr Peterson says the risks of poor outcomes for customers and banks is high as lenders introduce new processes and employees to deal with previously unheard-of problems, raising the risk of reputational harm on one hand, or poor asset quality on the other.

"There is no magic solution and it really comes down to the risk maturity, capability and capacity of the bank to handle the volume of customers needing assistance," Mr Peterson said.

Among the questions banks need to ask themselves is do they have the right people in frontline positions dealing with customers in hardship, with thousands of

workers parachuted in from other divisions and even employers.

"There's definitely a risk that they aren't the right people for some of these calls. This is where you really need to have good hindsight testing to identify those that don't have the skills or experience or need more training," Mr Peterson said.

The transition to working from home exacerbates the issue because call centre managers no longer walk the floor and it's more difficult for operators to seek additional guidance.

"Given the nature of these interactions, numerous challenges are present and the likelihood that something will go wrong is high," Mr Peterson said.

Deferrals combined with the safe harbour provisions were creating a moral hazard where overly optimistic but insolvent business owners believe they can trade their way out of the downturn but in reality create new counter-party risks for sound businesses.

"The consequences for SMEs trading while insolvent aren't there anymore. They say 'Yeah, yeah, we can pay the invoice' when they can't and then you have solvent companies who have large receivables with a zombie company and limited ability to enforce,"
Mr Peterson said.

The following book review has been written by Dr Carl A. Gibson FARPI, Chair of ARPI's Education Committee.

Streetlights and Shadows (written by Gary Klein)

'Although not a new book (published in 2011), I still regard it as one of the greatest books about managing risk, and it is not about risk management! With the ubiquity of 'Standardised' risk management and the proliferation of risk registers, we often forget that risk management should be focused on increasing our understanding of uncertainty and making better decisions. Gary Klein is one of the great pioneers of decision-making in theory and in practice, and this book explodes many of the myths that surround traditional thinking about risk and decisions. There are only two books that I reread every year: "Streetlights and Shadows" and the "Lord of the Rings" (yes I know it is really three books).'

Book Reviews

Monographs in Risk and Resilience Volume 1
This monograph published at **www.arpi.org.au** is the first produced by ARPI and has been written by the Chair of the Education Committee Dr Carl Gibson.

Congratulatory Note from US Nitro Firex
Recently, Nitro Firex, an US aerospace fire-fighting company sent a congratulatory note to ARPI for its submission to the Royal Commission into National Natural Disaster Arrangements—Summer 2019/2020 bushfires. It is great to see that ARPI's contributions to bushfire risks are being noticed across the globe.

Other News and Updates

Cambridge Conference on Catastrophic Risk 2020 – 2020 Hindsight: Our Final Century Revisited
16-19 November

The Cambridge Conference on Catastrophic Risk '2020 Hindsight: Our Final Century Revisited' (CCCR 2020) is our third major international conference. It follows our 'CCCR' conferences in **2016** and **2018**. The programme will draw on key themes from Lord Martin Rees' seminal 2003 book Our Final Century

ARPI Congratulates
Associate Konrad Buczynski of SECTARA
The SECTARA platform was recently nominated as a NSW State Finalist in the Australian Information Industry Awards. As an SaaS security risk assessment/ management platform it is designed for practitioners to complete security risk assessments (scope agnostic).

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