JOURNAL OF BEHAVIOURAL ECONOMICS AND SOCIAL SYSTEMS

Inaugural Edition
Volume I, Number I, 2019

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Global Access (GAP) is an independent not-for-profit institute for active policy that initiates strategic debate on the most pressing social, economic and structural issues facing Australia and the world today. It acts as a catalyst for policy implementation and new economic opportunities.

GAP promotes collaborative, multidisciplinary approaches to solving complex issues through the 'Second Track' process. In contrast to other think tanks, it focuses on practical outcomes and the 'how' and 'who' of project delivery.

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FOREWORD

The Journal of Behavioural Economics and Social Systems (BESS) will play an important role in Australia's political landscape by leveraging the insights of behavioural economics to promote positive policy implementation and enduring social change.

Daniel Kahneman reinvigorated the once 'dismal science' of economics by investigating how real people make choices in their day-to-day lives. I believe this approach can be applied more broadly to improve the delivery of programmes and policies whose implementation has fallen short of expectations.

The modern world is a complex web of relationships and interactions, in which co-existing silos of academic study can no longer produce answers of universal utility. *BESS* is therefore proudly multidisciplinary, welcoming research from a range of related areas and the practitioners who put these ideas to work for the public good. More than merely disseminating theoretical knowledge, this Journal will showcase and promote effective solutions for the most pressing problems of today.

BESS is a practical journal whose articles will not only explain our thinking process when making individual decisions, but how these interact in the social fabric of our communities. It will appeal to decision makers in government, industry, and consulting, as well as academics, by offering ways to implement these behavioural insights in their professional and personal lives. Most importantly, as well as helping us make more rational choices (and understand our more irrational mistakes), *BESS*'s focus on behavioural economics can help the most vulnerable and disadvantaged in our society build a brighter future for themselves.

Over the last twenty years Global Access Partners has produced innovative solutions to 'wicked problems' and become a well-respected catalyst for policy implementation and economic endeavour. It has carved a unique niche in Australian public life by focusing on the practical application of known and new knowledge, and *BESS* is another step towards its vision of a better Australia.

GAP's 'Second Track' approach encourages individual creativity and communal engagement, unconstrained by political or corporate considerations which inhibit official 'first track' interactions, and the wider application of this approach will be a major stand of work in future editions. Just as GAP has fostered social change and political progress by applying the 'Second Track' of informal diplomacy to the domestic policy sphere, it will now use the insights of behavioural economics to encourage the wider adoption of its recommendations among policy makers and the public.

I would like to thank everyone involved in the writing, design and production of this inaugural edition for their energy, enthusiasm and commitment. I call on the wider academic community to embrace the Journal in the same spirit and use it as a vehicle for disseminating new ideas in behavioural economics and social systems to benefit us all.

Peter Fritz AM
Sydney, August 2019

PREFACE

At *The Journal of Behavioural Economics and Social Systems (BESS)*, we believe in problem solving. When business transcends complicated and becomes truly complex, a new approach is needed. Wicked problems involve social justice, social change and social economy issues characterised by stakeholder multiplicity and policy confusion. Addressing this difficulty requires the ability to negotiate politically, under conditions of uncertainty, and to work effectively in networks and at the boundaries between academia, industry, and policy.

So we try to provide our readers with ideas that help them work in complex social systems acting as agents of economic, social, and policy change, solving problems that are too difficult for the rational-scientific approach. To do that, we invite leading experts in academia, business and government, to share their knowledge with us.

BESS focuses on the behaviour and interaction of economic agents in solving wickedly complex problems. The Journal aims to transform economic thinking by challenging the prevailing concept of human rationality. We welcome submissions that deal with a transdisciplinary social sciences

approach, especially psychology, or use experimental methods of inquiry. Thus, contributions in behavioural economics, experimental economics, economic psychology, social cognition, social networks, and judgment and decision making are especially welcome.

We publish manuscripts of various lengths and styles that might help us share leading-edge thinking.

There are five qualities we look for when evaluating what to publish:

1. **Expertise:** You don't have to be an academic. We welcome submissions from government, industry, and consulting.
2. **Evidence:** Our readers will want to know why they should trust your ideas. Showing supporting data or describing relevant examples is helpful. Case studies are also useful.
3. **Originality:** Aim to think outside the box. Readers turn to *BESS* is to discover leading-edge ideas. Try to be different.
4. **Usefulness:** Be practical. *BESS* readers seek ideas that will help them change the way they and their organisations actually do things. We want to make a difference by tackling problems that can change society for the better. Showing the reader how to apply your ideas in a real situation will make a difference.
5. **Writing that's persuasive and a pleasure to read:** *BESS* readers are practical, busy people. Try to capture their attention at the start by telling readers why they need to know this. Hold their attention by making your ideas easy to understand. While your ideas might be complex, your writing should be as simple as possible.

In summary, we will consider publishing anything that is interesting about group problem solving, particularly ideas that are novel, practical, and well-articulated.

Your work does not need to be academic. We are most interested in your ideas, so tell us what you know.

Dr Peter Massingham
Sydney, August 2019

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The increasing complexity of contemporary issues, driven by globalisation and accelerating social and technological change, is outstripping the ability of traditional methods to comprehend, let along control, them. Entrepreneur and philanthropist Peter Fritz AM explains why the time is right for Second Track solutions.

INTRODUCTION

Established in 1997, Global Access Partners has carved its own unique niche in Australian public life by tackling a wide range of social, economic and policy issues through its ground-breaking Second Track process of stakeholder consultation.

While most think tanks content themselves with the *'what'* and *'why'* of policy discussion, releasing learned but often ignored reports calling on others to take action, the Second Track encourages its participants to tackle the *'how'* and *'who'* of policy delivery themselves.

A Second Track process invites thought leaders from the public service, industry, academia and civil society to discuss a pertinent issue in a personal capacity, rather than as representatives of particular interests. A series of confidential meetings then allows a free and frank debate to move towards a constructive consensus about the types of action required.

Members then suggest practical remedies and design, undertake and oversee concrete projects or pilots to test their ability to generate tangible outcomes. Once their efficacy is proven on a limited scale, these solutions can be presented

with confidence to public policymakers or larger organisations for wider implementation to benefit more Australians.

The Second Track has its roots in informal, high-level, 'behind the scenes' negotiations between ostensible enemies in international diplomacy. The Camp David Accords[1] in the late 1970s and the Good Friday peace agreement in Northern Ireland in 1998[2] are notable examples of the power of the Second Track to tackle seemingly intractable political problems and generate stunning, seemingly impossible, breakthroughs.

Over time, GAP has incorporated a growing number of insights from behavioural economics to help the Second Track tackle 'wicked problems' in the Australian domestic sphere which traditional First Track approaches have been unable to solve, or even contemplate. An understanding of deep-seated psychology and human motivation, as well as textbook economics, is required to nudge potentially antagonistic stakeholders or defenders of the status quo towards positive change and encourage the adoption of solutions in the wider world.

THE SECOND TRACK AND BEHAVIOURAL ECONOMICS

Many decision-makers in politics, business and the public service have an educational background in economics. Indeed, this training is seen as an important, if not essential, foundation for making rational and informed decisions to maximise outcomes from resources and public utility. Similarly, these leaders are inevitably steeped in the formal First Track approaches to consultation and decision-making which dominate almost all major organisations.

First Track processes in every context have more in common than a formal procession of committees and briefings. They assume rationality on the part of their recipients and expect the defence of vested interests from their participants. Although more informal ways to socialise and network ideas and decisions have always surrounded them, such measures have rarely been formalised before now.

Philosophers in the 18th and 19th century discussed and accepted the psychological drivers of human activity in commerce as much as any other sphere of life, but the zeal of the new 'science' of economics to gain academic respectability by focusing on equations, rather than the 'crooked timber' of humanity soon excised this 'human factor' from their calculations.

The bedrock assumption of Adam Smith in the 18th century, and Karl Marx in the 19th, is that, for good or ill, consumers and producers make rational decisions to maximise their self-interest. The theoretical models used by these neoclassical economists invariably assume rationality on the part of real-world economic participants and explain deviations from theoretical outcomes in practice as the product of poor information flows or other barriers.

Herbert Simon's concept of 'bounded rationality'[3] argued that information shortages in people's environment hampered their economic decision-making in the 1950s, while in the following decade, Gigerenzer's ideas on 'fast and frugal' heuristics[4] held that limitations to people's ability to process information hamstrung their decision-making. Gigerenzer encouraged the use of simple but intelligent algorithms to make sense of the world, an insight which now informs modern machine learning.

1. https://www.jewishvirtuallibrary.org/egypt-israel-camp-david-peace-negotiations
2. https://www.cfr.org/backgrounder/northern-ireland-peace-process
3. H.A. Simon, *Models of bounded rationality*, Cambridge, MA: MIT Press, 1982
4. Gigerenzer and Goldstein, 1996

These ideas accepted the basic neoclassical premise that people are rational, and economist Gary S. Becker summarised the tenets of 'rational choice' theory in the 1970s,[5] arguing that people have stable preferences and maximise their gains in a rational manner, just as the textbook diagrams say they should.

However, the 1970s also saw the breakdown of the Keynesian post-war economic consensus into 'stagflation' in many Western democracies. Economists were no longer seen as infallible architects of growth and progress – indeed, as their jargon grew more convoluted to mask their part in the failure of their policies, cynics portrayed them as little more than fluent apologists for their false promises of the past.

A true science will predict the future as well as explain the past, but economics in the real world defies an economist's straight line. Real-world economics is the sum of billions of human interactions, motivated by a host of external, internal and unacknowledged factors, beset by feedback loops and unforeseeable circumstances. Changing anything in the world requires an appreciation of economics – one can usually follow the money to the truth – but economics in turn demands an understanding of humanity.

Prospect theory, developed by Amos Tversky and Daniel Kahneman[6] in 1979, accepts that apparently irrational decisions by consumers and producers are the rule, rather than the exception to it. Understanding people's skewed perception of future benefits can in turn inform the creation of policies which further the goals of policymakers, rather than frustrate them.

Prospect theory notes that people's willingness to take risks depends on the way their choices are framed, for example, as much as the choice itself. People also tend to be more willing to accept a small but certain prize immediately than a chance of a much larger one in the future. Perhaps, this stems from early disappointments in the fairground, but an evolutionary biologist might observe that humans have been primitive hunter gatherers for almost all their species' history and instinctively know that 'a bird in the hand is worth two in the bush'. The invention of agriculture, and with it settlements and civilisation as we know it, remains a very modern invention still to penetrate our deeper psyches.

Just as people would rather hold what they have, than risk it for future gains, so they would prefer to risk losing a larger sum in the future, than give up a smaller sum today. People dislike losses more than they enjoy gains, and this basic instinct helps shape both our economic decision-making and our unwillingness to risk our current circumstances, unless utterly wretched, for a potentially better future.

Tversky and Kahneman's research into 'heuristics and biases' offered traditional economists a rigorous methodological framework to investigate and understand the psychological drivers of economic decision-making. Adding a numerical element helped to build the concept's credibility with economists and the political leaders they advised until its broad acceptance today.

Other economists have built on this work, notably Richard Thaler whose theory of 'mental accounting'[7] argues that people think of value in relative terms, rather than the absolute terms

5. Becker, 1976
6. Kahneman and Tversky, 1999
7. Kahneman, Knetsch and Thaler, 1991

assumed by classical economics. People also derive satisfaction – transactional utility – from the deal they make to obtain something as well as the thing itself. Understanding this point, that the journey is as enjoyable as the destination for many people, helps explain why so many busy and successful people are willing to offer their valuable time and effort to Second Track activities.

Thaler also argued that people do not properly appreciate the opportunity costs of their actions and spending decisions. The benefits of the alternative things which time and investment could have made are seldom considered when examining the success or failure of a project. A high-profile hospital unit might save 20 lives, for example, and be considered a triumph, but the same money might have saved 2,000 if directed to preventative measures. People are also prone to the 'sunk cost' fallacy which makes them throw good money after bad.

It is important to note that these human instincts are a product of our evolution, rather than our individual intelligence. Educated people may think themselves immune from such careless assumptions or base instincts, but this leaves them even more vulnerable to them – indeed, they will be able to rationalise any absurdity not only to their own satisfaction but also to their company board or electorate.

This theory also explains why people treat money differently depending on how they happened to obtain it, while classical economists would consider all money as merely an identical means of exchange. If we are lucky enough to find $20 on the street, for example, we are likely to spend it on something frivolous rather than save it, while a large windfall, perhaps from an inheritance, will be seen as 'wealth' rather than a contribution to everyday expenses. This mental accounting also means people are happy to spend large sums through credit cards while they would think twice before handing out hard cash – one of the main, but never stated reasons why banks and retailers are so keen to encourage painless seamless credit card transactions.

Thaler and Sunstein developed the earlier ideas of Simon and Gigerenzer in their book *Nudge*[8] to argue that people can be encouraged to make better decisions by good information, prompt feedback and a host of small prompts in the right direction. These insights have been seized upon by marketers as well as government agencies, and the most successful examples of them are those which we do not notice at all.

Many major issues, from the individual physical damage caused by smoking or obesity to the existential threat of climate change, can seem too distant, or diffuse, or simply overwhelming for individuals to take action about. People rationalise their decision to take an extra slice of cake, or drive a mile instead of walking, by telling themselves this particular contribution will make almost no difference overall, although the aggregation of these choices over time spells doom for either the individual or the planet. Agencies and activists have always struggled to make people realise the long-term accumulative consequences of their immediate actions, or the power of tiny but concerted changes. Today the gamification of small but positive steps to offer personal feedback and immediate gratification – think of Apple's exercise 'rings' – helps people turn things around.

Dan Ariely's *Predictably Irrational*[9] shows how simple mental tricks can affect people's perception of numbers, data and prices. Offering people an 'anchoring point'[10] for their willingness to pay a particular price, for example, can change how much

8. Thaler and Sunstein, 2008
9. Ariely, 2008
10. Ariely, Loewenstein and Prelec, 2003

money they would be willing to part with, or shape their guesses around any particular data point. Such tricks are commonly used by marketers to shape people's perception of value, just as the 'zero price effect'[11] exploits people's predilection to over value something that is free.

People value getting a free sweet which otherwise costs 20 cents more than paying 1 cent for a sweet worth 21, despite the monetary difference being the same. Facebook, Google and another internet giants became rampant success stories because they realised that people will happily give up their privacy, data and common sense for the lure of 'free' services.

At the other end of the consumption scale, the higher prices of luxury goods are seen as a mark of quality in themselves and the willingness to pay it a sign of social and self worth, according to the theory of conspicuous consumption. People will gain more satisfaction from a product they spend more on, even if it is identical to a cheaper one, just as they gain more 'benefit' from a placebo than rationality argues they should.

Popular books like *Predictably Irrational* and *Nudge* helped bring the ideas of behavioural economists to marketers and policymakers as well as the general public itself. Interestingly, people's increasingly familiarity with the ways in which they are being manipulated does not appear to lessen the effectiveness of such strategies, just as placebos still have a measurable effect even when people know they are taking a sugar pill, rather than proven medicine.

The debunking of the mythical *homo economicus* and acceptance that real-life *homo sapiens* is no more perfect in his economic decision-making than any other aspect of life, has led organisations like GAP to use these psychological insights to encourage greater cooperation and new ways of thinking among groups of individuals from organisations where First Track procedures still hold sway.

DUAL-SYSTEM THEORY

Behavioural economics therefore traces the ways in which human decision-making is influenced by people's circumstances, experiences and psychology. It helps explain why people's decisions can vary over time and space and how they are shaped by deep-seated cognitive biases, fleeting emotions, and powerful social influences. Understanding human decision-making in this way creates hope that implacable enemies can find ways to reconcile, and that new processes can find solutions where traditional procedures based on the assumption of relentless rationality and interest protect are doomed to fail.

Kahneman's 'dual-system' theory gained credence in the 1990s and posits a duality in human thinking to further explain our patent lack of rationality. Owing something to Freud's notion of a conscious and unconscious, he argues that people make decisions based on feelings and experience, what he termed System 1, as well as rational analysis, or System 2.

System 1 decision-making tends to be reflexive, emotional and instinctive, while System 2 is more deliberate, cerebral and considered. We like to consider ourselves rational beings, but given our animal natures, our powerful System 1 reactions to visceral issues or major challenges often hold sway.

While Gigerenzer called for rational algorithms to help people operate successfully in environments of limited information, Kahneman argues that our instincts – System 1 – generates many of the cognitive shortcuts – or heuristics – we use in our

11. Shampanier, Mazar and Ariely, 2007

day-to-day activities. System 2 thinking may try to monitor or challenge such reactions but can be easily fooled or at least influenced by other internal psychological traits or external manipulation.

The 'availability heuristic' means that people's thinking is influenced by easily accessible examples or anecdotes, such as 'fake news' spread by social media on our ubiquitous smart phones. People will dismiss the weight of evidence supporting climate change on cold morning, as it allows them to avoid the issue and take the car for another day, just as they will use the example of 'Uncle Bill' who lived to 80 despite smoking thirty a day to ignore their own need to stop smoking.

The 'representativeness heuristic' tends to distort our calculation of probability and risk, while the 'affect heuristic' encourages us to see issues in terms of black and white, rather than nuanced shades of grey. The 'risks as feelings' model suggests our experience of an event is often shaped by the emotion we felt when making the decision to do it, which helps explain why we still enjoy a rainy holiday.

Salient information – data which people see as relevant to making a decision in a particular situation – can also be manipulated to encourage a desired response. Something with a success rate of 95% will have that fact trumpeted by its sales force, while a rival product would emphasise its 5% failure risk. Salience explains why brands spend vast sums on familiarising the public with their name, in the hope that this recognition will pop into our heads the next time we want to buy a car or breakfast cereal. Salience can also be used to encourage positive behaviours, and placing fruit and water next to a check out, rather than sweets and cola, helps boost the sales of the healthier option.

The power of System 1 thinking in our lives is manifested in people's deep-seated aversion to change. Rather than blame individuals for sloth, timidity or a lack of imagination, the Second Track recognises that habit, repetition and associative learning[12] mean that most people will always instinctively prefer the current situation to an alternative, unless given a strong personal incentive to change. This bias towards the status quo[13] – again, the valuing of the bird in the hand rather than two in the bush – is a constant source of frustration to proponents of reforms or innovations which could benefit all stakeholders, but the Second Track process accepts the need for nudges, incentives and innovations to whet people's appetite for change.

Assuming consent is a big step to securing it, both in finding leaders and participants in Second Track projects and selling services today. Products which have pre-ticked lists of added features – for added cost – will sell more extras than lists where ticks must be added. Even schemes with long-term and potentially life-changing consequences will have a much greater take-up rate if they are opt-out, rather than opt-in by nature. The number of transplant donors can be increased by an order of magnitude overnight, if an opt-out scheme replaces an opt-in card, for example, and the Australian Government's My Health Record follows the same approach to boost acceptance numbers.

People's inherent inertia means that positive changes which people must consciously opt out from will tend to have greater success than well-meaning schemes they must opt into. Although it raises questions about the ethics of customer choice, this psychological reality is the force behind many commercial and government 'nudge' approaches by self-styled 'choice architects'.[14]

12. Duhigg, 2012
13. Samuelson and Zeckhauser, 1988
14. Goldstein, Johnson, Herrman and Heitmann, 2008

Driven by their System 1 instincts to protect what they have, people tend to value the present over the future and are poor predictors of even their own future experiences, behaviours and perceptions of value, let alone society's. Just as governments are obsessed with the cosmetics of one year's fiscal measures (or at most the short 'forward estimates' period), so individuals will choose a piece of cake today over their waistline – and type 2 diabetes – tomorrow.

One test of childhood maturity is to leave a child with a sweet on a plate, promising an extra sweet if the adult returns to find the first sweet unopened. Few children can resist the immediate temptation, and we change little as we age. Although the ability to defer immediate gratification and plan for the future is a major predictor of eventual outcomes, adults tend to eat their cake straight away, just as human societies have always chosen rampant environmental degradation in pursuit of short-term gain over long-term sustainability.

These theories of time discounting[15] explain why Australia forces its workers to save for their retirements though compulsory superannuation, as most people would not do it voluntarily, and the eternal allure of 'buy now, pay later' deals.

George Loewenstein also observed a diversification bias[16] in buying habits which encourages people to choose a wider variety of products when buying for long-term needs. This means we might be more inclined to buy five different types of drink for a long trip when we would have been better off buying more of our favourite one. Loewenstein also noted people's 'empathy gap' with themselves, meaning that our predictions about our future behaviour made in a 'cold' state will bear little reaction to our actual behaviour in a 'hot state'.

The rosy picture we have of our future behaviour is a facet of people's general sense of over-optimism about eventual outcomes.[17] This has served humanity well in many ways – we were not deterred from sailing the seas or conquering the sky by shipwrecks or plane crashes – but also means that major projects are continually embarked upon with the same methods as those which have failed before because 'this time it will work' or different people are in charge. We constantly underestimate how long something will take or how much it will cost – be it a car journey to the CBD or a major defence project – despite the crushing weight of past experience. Conversely, we always overestimate how much pleasure – or pain – a future experience will bring us, which is why we keep buying cinema tickets and avoid the dentist.

The Second Track takes account of the internal and external forces shaping people's decision-making and uses them where it can for positive ends. By changing the perceptions of individuals, there is also hope they will change the organisations they help run. Even where organisations are presumed to target rational goals – such as profit maximisation – they are run by people who have the same swirling and opaque impulses as the rest of us.

Second Track thinking helps participants recognise these drivers to widen their own sense of the possible and to design projects which will shape people's behaviour in the wider world. As well as these individual traits, however, it also stresses the power of the group dynamic and the importance of quickly building trust among disparate individuals who have never met before.

15. Frederick, Loewenstein and O'Donoghue, 2002
16. Read and Loewenstein, 1995
17. Ariely and Loewenstein, 2006

BUILDING TRUST THROUGH THE SECOND TRACK

Trust is the glue which holds all groups and societies together. We trust that car drivers will stop at a red light. We trust that the bread we buy is made of grain rather than sand. We trust that teachers will look after our children and that water will flow from our taps. This trust has been built up over millennia, but we sometimes forget how hard it has been won and how it must still be enforced by regulation and the threat of punishment. There are no formal sanctions enforcing trust in a Second Track group, which underlines the importance of using group dynamics to build a sense of safety in sharing ideas and common purpose in turning them into reality.[18]

Just as trust had to be slowly and careful built between suspicious adversaries in Second Track diplomatic negotiations, it must be generated between conflicting stakeholders in a Second Track group to allow mutually beneficial progress to be made. Second Track groups look to build virtuous circles or supportive feedback loops to fast-track this development. While trust is a prerequisite of progress, progress is also a builder of trust, and incremental gain in one will positively affect the other.

People value trust far more than tangible goods. People in relationships care far more about their partner's fidelity than their looks or earning ability, whatever their initial source of attraction, and, as any soldier or Hollywood screenwriter will tell you, people would far rather face a dangerous physical risk in a united team than possible betrayal by a group member.[19]

Human society could not survive if the risk of detection and punishment were all that held us back from exploiting others to benefit ourselves. A religious, social or personal conscience stops most of us from doing wrong while no-one is watching, although official sanction must remain for those without such scruples. However, people's predilection for rationalising their poor behaviour must also be acknowledged. We judge others on their actions, but ourselves by our intentions, and we are all skilled at telling ourselves that our intentions were good, and that they just happened to result in our gain at someone else's expense.

Behavioural games such as the Prisoners' Dilemma show how fragile systems of mutual cooperation by suspicious individuals can be shattered by isolated instances of individual greed, but also how the mutual exchange of tokens – or experiences and ideas – can help cement ties of trust between very different people. There is a reason why visitors bear gifts in many different cultures.

There is hope that mutual cooperation can become the norm in most situations. Most adults, contrary to appearances on the road at times, retain a strong inbuilt sense of fairness[20] – almost as strong as a child's. Instances of road rage are inevitably sparked by someone breaking a convention of fairness, rather than the letter of the law or the slowness of a traffic flow. This innate sense of fair play encourages use to offer greater reciprocity when we receive a kindness, but also means we leap into disproportionate acts of retribution when we feel slighted. Charities send a cheap pen to a potential donor, hoping for a much larger gift in return, while countries may declare war over a provocation which, in hindsight, seems almost trivial. Britain and Spain fought an eight-year war in the 18th century after commercial and political interests in Britain stirred up outrage over the loss, several years before, of Captain Robert Jenkins' ear.

18. Zak and Knack, 2001
19. Bohnet, Greig, Herrmann and Zeckhauser, 2008
20. Fehr and Schmidt, 1999

The Second Track relies on the creation of trust between virtual strangers or outright enemies. Second Track group thinking helps these self-selected but disparate individuals find a common sense of purpose by encouraging personal, professional and business bonds beyond any particular outcome-oriented activities. The process also uses people's natural instinct to cleave to social norms by expecting positive and active participation in its groups, creating another positive feedback loop as people see this behaviour from others.

The Second Track brings together 'coalitions of the willing' and proceeds by mobilising support, rather than seeking to persuade or ultimately involve naysayers. Projects will flounder if they fail to generate the required support but will not be pulled because they are blocked by others. This encourages people to pursue ideas in Second Track groups they would not back in other situations, not because the idea was poor, but because the 'usual suspects' would waylay them.

Second Track thinking reduces the ability of vested interests to slow change by blocking or opposing it outright or, more subtlety, agreeing to change in principle but quibbling and stalling on every step in practice, so that nothing is achieved. Project coalitions can find new ways to bypass blocking entities, rendering the irrelevant, rather than bowing to their influence.

Social norms are a powerful driver of behaviour, and the Second Track creates its own ethos to help shape its participants' attitude as well as activity. People are more likely to moderate their drinking if they are told they consume more than average, whatever that average may be,[21] and in a similar way, they are motivated to offer more effort – or funding – if they see others in the group doing the same.

Rather than see an issue in First Track terms as a pawn in negotiations between existing and conflicting interests to find a least worst compromise, the Second Track places the issue at the centre of the discussion and offers room for people's community-based instincts to solve the 'tragedy of the commons' through mutually beneficial best-case scenarios.

While self-interest is often used as a motivator for personal involvement in particular projects, it is not the glue which binds a group together. Once the project gains momentum, the network effort of the group and their second- and third-tier social contacts creates access to people with the expertise and decision-making positions to turn ideas into pilots and then pilots into policy. Rather than suffer the destructive feedback loops of mutual distrust and game-playing seen in First Track processes, the Second Tracks positive feedback loops of mutual trust and reciprocity are fuelled by a succession of tangible outcomes rewarding and encouraging further efforts.

The disparate job titles of the high-level individuals involved in Second Track groups are perhaps less important than the more similar personality types of those who respond to the invitation and take an active part. The groups' voluntary nature means they naturally attract people who are motivated by good intentions, and the removal of their formal job title means their powerful System 1 instincts can be given free rein in a safe and mutually supportive environment, even when they must be suppressed in the participant's career.

Rather than remain inhibited by their more hide-bound peers in their professional role, a Second Track group creates a different dynamic to encourage people's better natures as well as

21. Diclemente et al., 2001

their best efforts. They are not only a safe space to think and play, but to achieve. The tangible benefits which projects may generate for individuals offer an incentive, but such people are invariably already comfortable in their chosen careers. The psychological and social benefits of participation are the real benefits, however much they are couched in conventional financial terms.

UNDERSTANDING REFORM

Well-intentioned and broadly accepted attempts at reform fail all the time,[22] not because their ideas are flawed, their target groups are apathetic, or their opponents are malevolent. They fail because of the many behavioural traits so deeply ingrained in human nature and society that they are seldom noticed or questioned and thus rarely tackled. Even the behavioural science strategies used by governments around the world have been trivial in their targets to date, while major issues remain ignored or addressed with First Track policies which have always failed in the past and will continue to fail in the future.

Second Track thinking embraces the fact that people tend to live in the moment, rather than think of the future and resist change even when it would benefit them. Projects whose incentives are based on more than classic economic calculations – effective though these can be at times – offer greater chance of success. Second Track groups do not blame people for acting like people always have, or look to change human nature overnight, but use human traits to nudge and encourage change which in turn creates momentum for more progress.

Many seemingly 'irrational' traits in humanity today seem far more rational when viewed in the light of millions of years of simian evolution. Evolutionary biology explains far more about our behaviour than an accountant's profit and loss account. Our ancient ancestors lived in a world of large predators and so a presupposition that every rustle in the grass betrayed a tiger would ensure survival, even if 99 out of every 100 alarms were false. A blithe dismissal of possible warning signs would look prescient on the other hand, encouraging that individual's false confidence in their abilities right up to the moment they were pounced upon and eaten.

While the odds of being eaten by a large predator are now much slimmer, modern humans have their innate risk aversion fed by a plethora of sensationalist press reports and internet memes which battle for our attention in a crowded marketplace of ideas. Articles which play down risks are unlikely to be read and generate advertising revenues, while breathless warnings of imminent doom are guaranteed more attention.

It is therefore entirely rational for people to use heuristic shortcuts to make sense of the world, rather than attempt to make sense of every stimulus and interaction from first principles. Indeed, such short cuts, at their best, are markers of intelligence, rather than a failure of thinking.

These short cuts, to return to Simon and Gigerenzer, allow people to make use of the limited information they have and the finite processing power of their brains to make sufficiently good choices to handle everything which life throws at them, and even optimise their options in a best-case scenario.

Second Track groups do not dispense with cognitive short cuts but try to replace negative and defensive fears with positive alternatives. The assumption that people can interact as free-thinking individuals, rather than blinkered representatives, unearth

22. A recent McKinsey report, based on responses from 2,900 public servants in 18 countries, including Australia, claims that as 80% of large-scale efforts to transform public services fail at translating 'bold visions into reality'. – Allas T. et al. (2018), Delivering for citizens: How to triple the success rate of government transformations, Report, McKinsey Centre for Government, May 2018

common ethical ground beneath their diverse roles and titles, turn discussion into action and drive tangible change themselves without waiting for government support, are the underlying assumptions of the Second Track process.

While GAP has amassed over 3,500 alumni over its 20 years, its Second Track groups still number around a dozen people. People still cannot manage more than 100 actual relationships at any one time, despite the illusion of infinite connectivity created by social media, and feel most comfortable in groups the size of an extended family or hunter-gatherer group.[23] Groups of this size are large enough to run down a mammoth, storm an enemy machine gun nest, play a game of cricket, or even design a new toothpaste commercial, but small enough to allow individuals to get to know each other and develop the mutual trust which all teamwork relies upon. They are large enough for the required spread of expertise and effort, but small enough for it to be used efficiently to achieve specific goals.

Proven both in international diplomacy and domestic policy discussions, the Second Track is now being analysed and formalised by academics for adoption elsewhere. The Second Track approach is not only applicable to other Western nations but can be used to improve Australia's relations with Pacific leaders, for example, or be employed in other countries, not least in Asia, which Australia is often told to look towards. Behavioural economics developed in the West can overcome the Western assumptions of self-seeking individualism and narrow economic rationalism of Australia itself. More collectivist cultures – whether than collectivism is a product of millennia of culture or decades of political indoctrination – may benefit from a twist which emphasises more individualist approaches. There is little point in preaching a more 'holistic' approach to issues in cultures built on a holistic perception of reality.

However, it may be hoped, given the optimistic can-do attitude of the Second Track, that such approaches can be developed, as the Second Track itself should be seen as a spectrum of effective alternatives tailored to particular circumstances, rather than a narrowly prescribed set of procedures. Each Second Track group is different, shaped by its participants and subject at hand as well as external circumstances. The Second Track is part of the 'test and learn' approach used ever more widely in both business[24] and the public sector[25] and, like behavioural economics before it, may be about to gain wider academic and political recognition beyond its existing cadre of participants.

Second Track groups have tackled a broad spectrum of issues, just as behavioural economics has been applied at least in theory to a wide range of activities, from commercial marketing to personal health and financial choices. Various governments, notably in the UK in 2010, but also in the USA and recently Australia, have created behavioural insights teams to offer nudges to particular agencies or activities and, just as these could be taken much further, so the Second Track can be employed in a wide range of organisations in both the public and private sector to find new solutions to old problems and encourage innovation and behavioural change.

Like behavioural economics – or any other fashionable phrase – care must be taken not to label any alternative approach beyond formal channels as the Second Track. While the discussions and projects of GAP's Second Track groups are varied, the procedure of three or four 90-minute meetings, supported by the creation of subgroups,

23. Rode and Wang, 2000
24. Davenport, 2009
25. Haynes, Service, Goldacre and Torgerson, 2012

teleconferences and an administrative secretariat – remains relatively constant. This gives structure to the meetings, builds on experience and offers either an end-date to groups which fail to produce outcomes, or force the creation of projects to turn productive discussions into world changing reality.

However, just as the adoption of the term 'behavioural economics' has allowed the economists which dominate public policymaking to adopt insights and strategies from psychology they would have otherwise dismissed, the acceptance of Second Track methodologies by decision-makers and thought leaders in government, business and the public service should encourage the use of a wider range of ideas and frameworks to improve policy and outcomes. The Second Track should not become a new limiting orthodoxy in itself but underline the need for alternatives to orthodoxy wherever the need appears. The 'test and learn' approach should always add to the 'conceptual toolkit' rather than declare it closed. While undue optimism about the future is a trap the Second Track investigation of complex project management warned against, the future prospects of success for the complex project of the Second Track itself appear bright based on the evidence in action so far.

In common with ideas from behavioural economics, the power of the Second Track can only be judged by its outcomes, just as individual groups and projects must prove their worth to survive and prosper. Despite their flexibility, broad scope and versatility, neither the Second Track or behavioural approaches will be required by every situation. Remembering that every problem looks like a nail to someone armed only with a hammer, proponents of the Second Track must remain open to other approaches, First Track or otherwise, if they are more appropriate.

It must be underlined that the Second Track complements existing approaches as part of the holistic approach it promotes, rather than seeking to usurp or replace them. This ability to improve the effectiveness of well-established consultation methods, careful deliberation by the public service and ultimately the vibrant chaos of democracy itself should mean established interests see the Second Track as another arrow in their quiver, rather than a gun aimed at their heart. Just as behavioural nudges to reduce smoking must be accompanied by traditional health campaigns, peer pressure and tax rises to support the common aim of cutting smoking, so the Second Track cannot be presented as a panacea, an end it itself, or a cheap replacement for existing strategies. It is a way to make the current system work better, not put it out of business altogether.

Furthermore, just as the ethical issues raised by public agencies surreptitiously 'nudging' citizens into desired behaviours, so the moral issues of the Second Track must be borne in mind alongside its practical advantages. Paternalistic nudges to human behaviour can be misused or misconstrued, just as Second Track discussions of potentially controversial issues can be painted as a conspiracy against transparency and accountability by headline-seeking newspapers or political opponents.

Ultimately though, the choice to participate in Second Track groups remains a personal choice, and their self-supporting nature means they must produce tangible benefits – including paying customers – for projects to succeed. Behavioural nudges, in a similar way, may shape choices, but they cannot mandate them for the individuals concerned. The potentially greater disadvantages of their alternatives should also be factored into calculations. Behavioural nudges are less coercive than mandatory bans, for example, and Second Track approaches are less expensive and must prove their worth more immediately and consistently than institutionalised, self-perpetuating First Track avenues.

WHY THE TIME IS RIGHT FOR THE SECOND TRACK

The failures of First Track processes are all around us, from the costly wreckage of failed IT projects in government to disastrous delays and budget bloats in Defence. Billions of taxpayer dollars are lavished on health and education, yet rates of chronic disease continue to soar while Australian children lag behind their international peers and a cohort of disadvantaged children is left behind to grow into disenchanted adults. The increasing complexity of many issues – driven by globalisation and accelerating social and technological change – is outstripping the ability of traditional methods created in the 18th, 19th and early 20th century to comprehend, let along control, them.

Complex problems can be differentiated from merely complicated ones in the way that an animal can be differentiated from a machine. A machine is a discrete collection of separate parts which can be disassembled and reassembled, while an animal cannot be resuscitated after dissection. Similarly, the human brain remains by far the most complex structure in the universe, despite the power of distributed computing to create the impression of intelligence and even creativity.

The need for a Second Track to generate more innovative policies and carry out trials more quickly is therefore increasing, as complex, environmental, social and political problems are outstripping the capability of traditional First Track procedures to tackle them. However, while it offers opportunity for new voices to join the discussion, the Second Track also relies on First Track participants to refresh their involvement by overcoming their reluctance to risk their 'day job' careers in novel pursuit of public good in their everyday roles.

Each group offers a protected as well as an alternative avenue for information sharing and activity. The groups' independence and confidential nature of each discussion, held under the Chatham House rule of non-attribution, offer a non-partisan 'safe space' in which long-held opinions and 'war stories' can be aired.

There can be no simple solutions to complex problems, although simple measures can help to tackle aspects of them. The feedback loops, diverse internal drives and external influences which make a problem complex must be understood to comprehend it, and the solutions offered must use a range of insights in turn. While economic issues require an understanding of behavioural economics, and the creation of effective groups needs an understanding of individual motivation and group psychology, so insights from other cutting-edge fields of study can be brought to bear on particular problems. The need to employ 'systems thinking' to understand and therefore tackle the problems generated by complex systems themselves will also be a priority.

Just as viewing people as living humans, rather than economic automatons, provides a more accurate understanding of economic and social activity in the real world, so viewing problems as teeming ecosystems, rather than monolithic entities, aids our ability to understand them. A psychological reluctance to break group norms and disturb the status quo can prevent people 'at the coal face' reporting on problems in major projects at an early stage as much as fears over the loss of career progression or pay.

Similarly, the eradication of a particular species in an ecosystem can have unforeseen but catastrophic effects on the rest of the ecosystem. The fact that tackling one part of a problem can create unforeseen consequences which make the situation far worse must always be remembered, and the multidisciplinary nature of Second Track groups increases the chance that someone will have the experience and expertise to raise objections before

it is too late. Even if ideas create their own problems, the use of small-scale trials helps expose them for remedial action before widespread damage to the public interest – and the idea itself – is caused.

Behavioural economists argue that complexity fosters bias and false assumptions in decision-making, ranging from overconfidence and disjunctive bias[26] fuelled by people's reluctance to share bad news, to the natural risk aversion spooked by the clash of well-rehearsed vested interests. Decision-makers, cognisant of the sorry fate of predecessors blamed for major project failures, also over-compensate for adverse events with low probability but significant consequences by building in too much costly redundancy into project plans.[27]

The Second Track allows individuals in formal leadership roles faced with complex tasks to escape the constraints of slow First Track procedures, limited stakeholder communication and the behaviours expected by well-remunerated roles. Appealing to a sense of crisis in Australia is seldom productive after almost 80 years of peace and 25 years of economic growth in a country with a continent's worth of natural resources. However, the nation's productivity, resilience and dynamism have plenty of room for improvement, and the problems facing the country and the wider world are not going to solve themselves.

The Second Track process has evolved over time in the light of practical experience to become a powerful framework to encourage better cooperation between government, business and academia as well as fresh thinking across diverse topics. While it never seeks to subvert the democratic process or escape due scrutiny, the Second Track offers a productive additional avenue to explore and tackle problems which might otherwise dog Australian citizens, communities and states without hope of resolution.

It is far more common for dynamic new companies to replace traditional market leaders with new models of production and supply, than for old companies to transform themselves to meet new market conditions. The Second Track allows a new approach to policymaking, rather than embark on a lengthy and probably fruitless attempt to remove the cruft from First Track approaches and reinvigorate them. Similarly, just as new 'unicorns' tend to have flat management structures, with a minimum of formal roles, so Second Track groups retain a fluid structure with people creating their own roles, rather than being prescribed them. This flat structure maximises the flow of information on which innovation depends and reduces bureaucracy to an absolute minimum. It encourages frankness and a willingness to see all sides of the debate, allowing partisan actors to enjoy a statesman like role at an age when they still have the power and position to affect policy.

This does not mean that an endless stream of 'blue sky' thinking is accepted uncritically. Indeed, the multidisciplinary nature of Second Track groups allows ideas to be tempered with reality and experience at an early stage. A businessman may know why an academic's solution is not practical, just as a physicist may be able to explain why some 'blue sky' thinking regarding new technologies is mere wishful thinking. The testing of ideas at an early stage prevents the group wandering blind alleys in search of new ideas and ensures that ideas are framed as steps towards practical solutions, rather than theoretical ends in themselves.

While projects which emerge from Second Track processes are often valuable in themselves and lead to wider and faster adoption, the tacit knowledge they bring to light can also help participants and those they advise make more informed and therefore better decisions in their First Track roles. The Second Track's ability to generate

26. Bazerman and Moore, 2013
27. Massingham, 2010

useful knowledge and spread and embed it within multiple, high-level and highly trusted social structures[28] is remarkable, and all the more important given the nature of many knowledge-based problems in society. A faster, more flexible and more agile world not only needs more agile policy discussion, but more support for the basic structures of government, commerce and civil society which sustain it.

Although Australia's frantic electoral schedule and fractious political scene offers the impression of vitality, policymaking is shaped by the need to reassure vested interests and mobilise voting blocks, rather than challenge them to change. The average minister spends little more than 18 months in any particular office, meaning that long-term plans hold little appeal when they involve current expenditure which will only benefit future officeholders. Simple problems are easily solved, or at least forgotten when they slip from the headlines, meaning that the issues which persist tend to be complex in nature, with a patchwork of competing stakeholders battling to protect their own turf rather than cooperate towards collective solutions.

The Second Track offers a way to cut the Gordian Knot of policy formulation and circumvent the turf wars, entrenched positions and stereotyped thinking which paralyse organisations internally, as well as the relationships between them.

The Second Track offers a way for individual organisations to raise, tackle and solve internal problems across departmental barriers in a safer, quicker and more effective way, as well as national issues. It reduces the risk of exploring and testing radical solutions, be they psychological, structural and technological in nature, while increasing the pace of implementation to match the frantic rate of external economic and social change.

The multidisciplinary nature of the Second Track allows participants to apply knowledge and techniques learned from peers in the group to other contexts. This will increasingly include the nature of the Second Track itself, as participants of these groups look to create their own Second Track processes in their own departments or organisations. By tapping tacit knowledge, leveraging the power of networks, and encouraging new thinking – not least through the adoption of cutting-edge technology to leapfrog legacy approaches – the Second Track uses methods and methodologies which have proved incredibly successful in the commercial world.

However, the difference is that the Second Track does not undermine existing democratic and public service processes. It is instead a way to complement them, support them, improve their outcomes and help them work better. It does not ask people in First Track roles to abandon them but does help utilise their talents to the full. It offers a stable framework in which otherwise fragile or ad hoc cooperative arrangements can flourish in a growing atmosphere of trust.

The Second Track also builds social capital – the knowledge created from relationships – and turns it into tangible activity and positive change which benefits not only the group's participants, but potentially all Australians. By allowing capable people with no common ties to quickly establish trust and create new social connections, it boosts the network effect of all their existing relationships, bridging different groups and creating a further array of possible projects, linkages and connections.

While the Second Track finds freedom outside the glare of publicity, its multidisciplinary nature mitigates against the secret creation of new, self-serving cartels against the public interest. Rather than carve up existing markets, it looks to create new niches in its commercial offerings or increase the outcomes from current spending.

28. Swan and Scarbrough, 2005

Small, independent groups of outstanding individuals can achieve outstanding results in pursuit of an agreed goal, but their efforts must be curtailed by common sense and a sense of humility if they are not to lead to disaster. The incorporation and interlinking of social networks they encourage not only increases their power to act but also serves as a brake on unethical activities.

Above all, the Second Track puts its faith in people to solve the problems which humanity has created. Technology is merely a way to put human ingenuity into operation, it is knowledge and creativity embodied in human beings – rather than disembodied books, reports or data systems – which counts. Just as the human factor is vital to understanding economics, and economics is crucial to understanding the world, so the human factor is at the heart of the Second Track itself. The Second Track unleashes and aggregates the tacit knowledge locked in the brains of its participants, as well as the idealism and passion in their hearts.

It is pointless to berate rational individuals in positions of power for a want of courage or imagination when the incentives in their place of work mitigate so strongly against it. Even the discussion of radical options can end a public servant's career, and politicians show little loyalty to officials which step beyond the orthodox. The Second Track offers a proven method to reduce the risks which individuals face when contemplating fresh or radical action. Australia has no shortage of good ideas, or good people to implement them, they merely lack the platform on which to demonstrate them, the platform the Second Track provides.

The Second Track values the future above the present, the new above the old, and the practical above the theoretical. Rather than accepting the dogma of prioritising short-term cashflows (such as the 'forward estimates') over the long-term, it believes that Australia and Australians are worth investing in. It encourages holistic approaches and system thinking to tackle complex problems, rather than reductionist measures to get through just another day.

The world has faced and overcome greater threats than those looming over it now, and in truth the pace of technological change was faster in the 1910s or 1950s than it is today. The problems we face are both comprehensible and solvable with the right structures in place. As well as helping to solve them, the Second Track offers people well-established in their careers the opportunity to learn from people they would not otherwise meet, tackle issues in ways they would not otherwise contemplate, and gain insights they may well use elsewhere.

STUDYING THE SECOND TRACK

After two decades of projects encompassing health, education, security, energy, regulation and the environment, GAP has commissioned a number of prominent academics, including Dr Peter Massingham, Director, Centre of Knowledge Management, University of Wollongong, and Ian McAuley, an Independent Public Policy Professional and Lecturer at the University of Canberra, to formulate a general theory of Second Track processes. Catherine Fritz-Kalish joined the research team as a partner investigator.

This theory will be based on twenty years of GAP's operations to both substantiate GAP's claims to its effectiveness and formalise its processes to encourage its adoption by a wider range of government agencies, consultative processes, commercial firms and social entities.

This research will examine the attitudes and assumptions which underpin First Track processes and assess the First Track's ability to handle the complex problems of today. It will then examine the both the structures and interactions of Second Track groups and the behaviours and cognitive processes

of individuals engaged in them. Finally, it will examine the effectiveness and distinctiveness of Second Track decision-making and offer metrics by which these can be assessed in the future.

The study's grounded theory approach[29] will allow the theory to emerge from the research activities surrounding each of the research questions. These structural, social, and cognitive elements will draw upon theory from multiple disciplines including knowledge management, behavioural economics, applied psychology, network analysis, complexity theory, ecology and corporate governance. The danger of creating universal principles on a handful of limited and subjective case studies will also be muted by 'triangulating' the data and seeking corroboration from multiple sources of evidence, ranging from surveys, focus groups, and face-to-face interviews to in-depth content analysis of GAP's many reports.

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29. Strauss and Corbin, 1998, Langley, 1999 and Neuman, 2006: 60

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ARTICLE

SECOND TRACK PROCESSES: A RESEARCH AGENDA

Dr Peter Massingham

Knowledge management expert Dr Peter Massingham proposes a fresh direction for Second Track research in terms of being a unique type of complex adaptive social system tackling complex problem solving. This approach will open new ways to explore and test their operation and demonstrate their practical utility.

INTRODUCTION

This paper proposes a research agenda for second track processes. Second track processes are a unique type of complex adaptive social system that applies second track thinking to solve wickedly complex problems. Second track thinking is a special type of social cognition. It involves principles of international diplomacy and conflict resolution which have been widely practiced as a diplomacy aid by the United Nations, departments of foreign affairs, and international legal firms for peace building, sustainable development, and conciliation. Second track processes creates the ability to negotiate politically, under conditions of uncertainty, and to work effectively in networks and at the boundaries between academia, industry, and policy.[1]

Second track is interested in problems that are too difficult for the rational-scientific approach. Wicked problems are 'social justice and social change problems'[2] that are inherently different from those associated with the industrial age.[3] The difference

1. K. Crowley and B. Head, The enduring challenge of 'wicked problems': revisiting Rittel and Webber, *Policy Sciences*, no. 50, 2017, p. 540
2. R. Yawson, The 'wicked problem construct' for organisational leadership and development, *International Journal of Business and Systems Research*, vol. 9, no. 1, 2015, p. 68
3. H. Rittel and M. Webber, Dilemmas in general theory of planning, *Policy Sciences*, vol. 4. no. 2, 1973, pp.155-169

is that wicked problems have 'consequences for inequity', and are the result of growing societal awareness of 'pluralism', 'differentiation of values', and 'sensitivity to the waves of repercussions that ripple through' 'interacting open systems'.[4] Wicked problems were originally proposed as a new professional capability.[5] The goal was to 'replace the classical paradigm of science and engineering as a basis for framing social science and modern professionalism'.[6] The research agenda for second track processes is similarly ambitious. Our goal is to transform economic thinking by challenging the prevailing concept of human rationality within the context of solving wickedly complex problems.

There is no existing theory which explains second track processes. There have been only a few studies of second track processes and they focus on diplomacy;[7] international conflict resolution,[8] and peace building.[9] A research agenda is a broad proposal describing a significant research problem and its importance, giving a detailed account of methods that may be used and why they are appropriate.[10] Our research agenda focuses on problem-solving groups as economic agents. Therefore, the research agenda is to develop a new general theory which explains how second track processes work, the knowledge produced, and how this knowledge can generate economic and social value. This paper outlines a research platform to theorise about second track. It adopts a transdisciplinary approach. The author welcomes collaboration from academics, practitioners, and consultants to explore the issues outlined and may be contacted by email.

Why This Research Agenda Matters

Today's business environment is complex. Society has developed a range of processes, methods and tools to deal with complicated tasks. People deal with these tasks according to expectations set by formal organisational structure, culture, job design, and performance appraisal. This has developed consensus about how senior management behave in their formal roles. We know what works for everyday complicated tasks. This is *First Track Processes*. However, the problems faced by today's business leaders are beyond complicated. Major tasks must be tackled in an increasingly uncertain environment, subject to uncontrollable external influences and constant change, against ill-defined and often mutually incompatible stakeholder requirements.[11] Challenges such as national security, the decline of the manufacturing sector, offshoring jobs, the housing affordability crisis, education and training to provide employment for future generations, health care for the aged, improved infrastructure, the national innovation agenda, and community services for the disadvantaged create a wicked range of problems. When business transcends complicated and becomes truly complex, existing processes are not enough. Doing things the way they have always been done will produce the same outcomes: projects that run over time, over budget, and fail to deliver expected results.[12]

The research agenda will have important implications for policy and practice. At a policy level, the Australian Government's National Innovation and Science Agenda (NISA) identified innovation as critical to Australia's future. Australia, like many

4. Rittel and Webber, p. 156
5. Rittel and Webber
6. K. Crowley and B. Head, The enduring challenge, 2017, p. 541
7. E. Çuhadar and B. Dayton, Oslo and Its Aftermath: Lessons Learned from Track Two Diplomacy, *Negotiation Journal*, vol. 28, no. 2, 2012, pp 155-179
8. M. Weissmann, The South China Sea Conflict and Sino-Asean Relations: A study in conflict resolution and peace building, *Asian Perspective*, vol. 34, no. 3, 2010, pp 35-69
9. T. Fort and C. Schipani, An Action Plan for the Role of Business in Fostering Peace, *American Business Law Journal*, vol. 44, no. 2, 2007, pp 359-377
10. W. Neuman, Social Research Methods – Qualitative and Quantitative Approaches, 6th Edition, Boston MA., Pearson, 2006, p. 502
11. www.iccpm.com, Complex Project Management: Global Perspectives and the Strategic Agenda to 2025, *International Centre for Complex Project Management*, 2016, p. 3.
12. www.iccpm.com

countries, has seen a recent slump in productivity growth. If productivity growth is not revitalised, Australia risks a prolonged period of stagnation. The Australian Innovation, Science and Research System requires six categories of enablers that facilitate innovation activities: policy, money, infrastructure, skills, networks, and culture.[13] The 2016 Innovation and Science Australia (ISA) report identified that of the three innovation activities – knowledge creation, knowledge transfer, and knowledge application – knowledge transfer is the least funded and researched area.[14]

At a practical level, the research agenda can directly improve the networks enabler within a national innovation system. This will require improved knowledge transfer, particularly between academia, practitioners, and consulting. The performance scorecard for Australia's innovation system reported that only 1.22% of publications have industry affiliated co-authors, which ranked at 27 out of 38 OECD[15] countries.[16] The ISA report explains why Australia's networks enabler is performing unsatisfactorily:

> **Networks: There is substantial evidence that Australia is poor at translating and commercialising its strong research base. International data suggests that collaboration between the research and business community is weak, and mobility of people between academic and business careers is low. Changes are underway, with governments, research organisations and businesses increasingly looking to more formalised models and roles to facilitate relationships and collaboration.**[17]

The accelerating pace of technological change is causing structural shifts in key industry sectors and employment patterns. Long-term trends, such as the ageing of the population and changes in the climate, present complex challenges that communities will have to solve together.[18] The complexity of tasks facing today's leaders is a game changer. It requires management of risk and uncertainty to deliver outcomes which address real-world need, within the context of abrupt and irreversible emergent effects that can escalate rapidly.[19] The consequences for Australia in failing to respond will be increasing failure in policy and program implementation. This level of complexity requires social networks capable of managing complexity work.[20] This research agenda presents an opportunity to deliver a blueprint for Australia and other countries to improve economic performance across multiple industry sectors and policy areas by working together, using second track processes.

TOWARDS A GENERAL THEORY

The research agenda is to develop a general theory of second track processes. This will require theorising from multiple disciplines, including knowledge management, behavioural economics, applied psychology, complexity theory, network analysis, and corporate governance. This theoretical diversity illustrates how no single discipline can explain second track processes. Figure 1 presents a conceptual framework, design, methods and analyses. The research method might begin with an exploratory study using a grounded-theory building approach,[21] which allows the researcher to build on and broaden existing findings and to generate new

13. Innovation and Science Australia (ISA), Performance Review of the Australian Innovation, Science and Research System, Commonwealth of Australia. Canberra, 2016, p. ix
14. ISA, p. ix
15. Organisation for Economic Co-operation and Development
16. ISA, p. xi
17. ISA, p. xiii
18. ISA, p. vi
19. www.iccpm.com, Complex Project, p. 14
20. www.iccpm.com, p. 14
21. A. Strauss and J. Corbin, *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage, 1990

FIGURE 1: General Study Framework

THEORY	Managing Complexity	Organisation Theory	Knowledge Sharing	Social Capital	Cognitive Structures	Risk Management	Integrated Reporting	Evidence
RESEARCH QUESTIONS	RQ1: What are the underlying attitudes and assumptions about first track processes? Are they broken? If so, why?	RQ2: What are the structural dimensions of second track processes? How are second track processes coordinated?	RQ3: What are the behavioural processes of second track processes? How is second track managed in terms of cooperation?	RQ4: What are the interaction processes associated with second track processes? Why are these effective?	RQ5: What are the cognitive processes associated with second track processes? Why are these effective?	RQ6: What are the decision-making processes associated with second track processes? Why are these effective?	RQ7: How can we measure the value of second track processes?	RQ8: How can we demonstrate the value of second track processes?
JUSTIFICATION	Constraints posed by formal leadership roles	Integrating mechanisms for loosely coupled social systems	Difficulty in sharing tacit knowledge	Creating social capital in loosely coupled systems	Need for cognition-based perspective	Weaknesses of traditional risk management, i.e. decision tree models	Difficulty in measuring hybrid economic and social value	Difficulty in measuring the problem solving capacity of a general theory
CONTRIBUTION	How second track processes may provide decision makers with complementary knowledge resources	Advance the knowledge-based view of the firm (KBV) by addressing the *coordination* problem of loosely coupled complex social systems	Advance the knowledge-based view of the firm (KBV) by addressing the *cooperation* problem of loosely coupled complex social systems	Examine how structural holes, i.e., loose ties, create social capital and what this is	Examine how social identity may motivate an individual to use their interpersonal cognitive complexity to help the group coordination or not	Examine how second track processes enable objectivity and cognitive clarity in risk management associated with managing complex tasks	Measure the value of second track process knowledge in the six capital areas of the IR framework	Develop a methodology for evaluating the outcomes of complex task problem solving
METHOD	Delphi Survey	Delphi Survey	Focus Groups	Focus Groups	Face-to-face Depth Interviews	Delphi Survey	Delphi Survey	Content Analysis

theoretical insights in under-researched fields, such as those covered by second track processes. The grounded theory approach will allow the theory to emerge from the research activities surrounding each of the research questions.

Figure 1 explains the overarching organising frame of the proposed research agenda, and how each part of the new general theory of second track processes may emerge from evidence. The theory may emerge from the research activities outlined below in the discussion of the research questions. These might include Delphi surveys, focus groups, face-to-face interviews, and analysis of the work produced by second track processes. Construct validity, internal validity, external validity and reliability may be addressed according to Yin's (2014) criteria.[22] Construct validity may be achieved by triangulating data using multiple research sources,[23] e.g., surveys, focus groups, and face-to-face interviews, as well as content analysis of considerable secondary data (reports). Internal validity may be achieved through the process of theory building; by explaining why the research question is significant, i.e., crucial for organisations and/or theory, and why there is no existing theory that offers a feasible answer.[24] The internal validity may also be provided by working with those who practice second track processes, such as Global Access Partners, to build rapport and develop trust, prolonged engagement and peer debriefing[25]. For reliability, the research might use theoretical pluralism to create a more nuanced and complete perspective of second track processes in practice. Further evidence of reliability may be found by demonstrating how second track processes have made a significant impact on Australia's social, economic, and political environment. Next the development of the conceptual framework is shown, as well as how it is integrated, and appropriate to the aims of the research agenda.

Managing Complexity

As business and society becomes more complex, it is debatable whether management scholarship has kept pace with this new reality[26]. This leads to the first research question: **RQ1: What are the underlying attitudes and assumptions about first track processes? Are they broken? If so, why?** The justification for exploring this question inductively is the constraints posed by formal leadership roles. Research in this area has focused on strategic leadership,[27] crisis management,[28] and risk management.[29] This previous research looks mainly at cognitive capabilities including anticipation, decision making, flexibility, and issue framing, as well as the ability to work with others. However, there are constraints. Behavioural economics theory explains that complexity has created a number of biases associated with managerial decision-making in the private sector including overconfidence bias and disjunctive bias[30] which tend to underestimate the probability of failure and create 'a conspiracy of optimism' illustrated by reluctance to share bad news. In the public sector, policy makers must consider how all affected parties might respond. Multiple stakeholders, with often conflicting

22. R.K. Yin, *Case Study Research: Design and Methods*, SAGE, Los Angeles, 2014
23. Yin, Case Study Research, pp. 120-122.
24. K. Eisenhardt and M. Graebner, Theory building from cases: opportunities and challenges, *Academy of Management Journal*, vol. 50, no. 1, 2007, pp. 25-32.
25. Yin, Case Study Research, pp. 110-1.
26. J. James, L. Wooten and K. Dushek, Crisis Management: Informing a New Leadership Research Agenda, *The Academy of Management Annals*, vol. 5, no. 1, 2011, pp. 455-493
27. R. Ireland and M. Hitt, Achieving and maintaining strategic competitiveness in the 21st century: The role of strategic leadership, *Academy of Management Executive*, vol. 19, no. 4, 2005, pp. 63-77
28. J. James, L. Wooten and K. Dushek, Crisis Management, 2011
29. P. Massingham, Knowledge risk management: a framework, Journal of Knowledge Management, vol. 14, no. 3, 2010, pp. 464-485; S. Maguire, and C. Hardy, Organising processes and the construction of risk: a discursive approach, *Academy of Management Journal*, vol. 58, no. 1, 2013, pp. 231-255
30. M. Bazerman and D. Moore, *Judgment in Managerial Decision Making*, 8th ed. John Wiley & Sons, 2013

interests, lead to excessive risk aversion.[31] Decision makers tend to over-compensate for adverse events with low probability but significant consequences,[32] for example, by building too much costly redundancy into project plans. The research agendas' contribution to theory in this area is to identify the constraints associated with formal leadership roles and why they exist. I propose that decision makers faced with complex tasks are constrained by a range of factors that exist due to the nature of their roles. These factors may include policy making which is reactive and ineffective; stakeholder communication limited by the conspiracy of optimism; and behaviours set by formal roles, self-interest, and inadequate key performance indicators. Research might explore these issues and use the results to measure the impact of second track processes, i.e., whether it provides a complementary approach which may help first track decision makers overcome these constraints.

Organisation Theory

Organisation theory has not kept up with the changing nature of developments in organisations[33] caused by the knowledge economy.[34] This leads to the second research question: **RQ2: What are the structural dimensions of second track processes? How are second track processes coordinated?** The justification for exploring this question inductively is the need for integrating mechanisms for loosely tied complex social systems. The increasing complexity of business, society and new technologies has led to numerous new forms of organisation and ways of creating value. These mechanisms of organisation and technology have leveraged combinatorial innovations[35] by creating new spaces for value creation, new ways of serving customers, and entirely new products, e.g., Uber's disruption of the taxi industry.[36] Such disruptions radically alter the way value is created in any given industry.[37] The knowledge-based view (KBV) of the firm was proposed to have a long-lasting effect on organisational theory,[38] particularly in the knowledge economy. The KBV identified two types of problems for organisational theory: cooperation (RQ3) and coordination (RQ2). Grant (1997) predicted that the knowledge economy would require new organisational forms to address these problems.[39] The research agendas' contribution to theory in this area is to advance the KBV and design business models which address the coordination problem of loosely coupled complex social systems. Loosely coupled systems 'are "anythings" that may be tied together either weakly or infrequently or slowly or with minimal interdependence'.[40] In problem solving groups, the means may be described 'as "loosely coupled to the end" in the sense that there are alternative pathways to achieve that same end things'.[41] The coordination problem is how to integrate the separate efforts of multiple individuals who may have varying levels of motivation and capacity to interact.[42] The KBV argues that the

31. I. McAuley, Behavioural economics and public policy: some insights, *International Journal of Behavioural Accounting and Finance*, vol. 4, no.1, 2013, pp.18-31
32. P. Massingham, Knowledge risk management
33. R. Grant, Reflections on knowledge-based approaches to the organization of production, *Journal of Management & Governance*, vol. 17, no. 3, 2013, pp. 541-558
34. P. Drucker ,The Coming of the New Organization, Chapter 1 in (1998) Harvard Business Review on Knowledge Management, Harvard Business School Press, Boston, MA, 1988, pp. 1-19; P. Drucker, Knowledge-worker productivity: the biggest challenge, *California Management Review*, vol. 41, no. 2, 1999, pp. 79-94
35. H. Varian, Computer mediated transactions, *The American Economic Review*, vol. 100, no. 2, 2010, pp. 1-10
36. C. Nielsen, M. Lund and P. Thomsen, Killing the balanced scorecard to improve internal disclosure, *Journal of Intellectual Capital*, vol. 18, no. 1, 2017, pp. 45-62
37. C. Christensen and M. Raynor, *The Innovator's Solution: Creating and Sustaining Successful Growth*, Harvard Business Review Press, Boston, MA, 2013
38. R. Grant, The Knowledge-based View of the Firm, Chapter 8 in Choo, Chun Wei; and Bontis, Nick (Editors), *The Strategic Management of Intellectual Capital and Organizational Knowledge*, Oxford University Press, New York, 2002, p. 135.
39. R. Grant, The Knowledge-based View of the Firm: Implications for Management Practice, *Long Range Planning*, vol. 30, no. 3, 1997, pp. 450-454
40. K. Weick,, Educational Organizations as Loosely Coupled Systems, *Administrative Science Quarterly*, vol. 21, no. 1, 1976, p. 5
41. Weick, p. 4
42. R. Grant, 2002, Chapter 8, p. 136

challenges for management are to 'establish the mechanisms by which cooperating individuals can coordinate their activities in order to integrate their knowledge into productive activity'[43] It is a challenge because it requires integrating mechanisms while preserving the efficiencies of specialisation. This means that the scale economies of being an expert must be traded off against the time it takes to engage with others. Research might examine how second track processes provide integrating mechanisms which resolve this trade-off decision. The outcome may be a business model which coordinates loosely coupled complex social systems.

Knowledge Sharing

The management of complex tasks involves tacit knowledge which is difficult to share because it cannot be separated from the knower.[44] This leads to the third research question: **RQ3: What are the behavioural processes of second track processes? How is second track managed in terms of cooperation?** The justification for exploring this question inductively is disagreement about whether tacit knowledge may be separated from the knower. Research in this area may be divided into three themes. The 'conduit' model defines knowledge sharing as the movement of knowledge between entities, which includes individuals, organisational units, or organisations.[45] This perspective on knowledge sharing assumes that knowledge can be separated from the knower. It sees knowledge as an object and that knowledge can also be objective. The conduit model privileges codified knowledge. The 'process' model defines knowledge sharing in a series of steps representing dyadic exchanges of knowledge between the knower (sender) and learner (receiver).[46] The constructivist model privileges individual knowledge and sees knowledge as subjective and empiricist. Rather than knowledge being an object that is simply transferred from one person's head to another's,[47] it is reconstructed by the learner (receiver) in dialogue with the knower (sender). The constructivist model involves two or more people – knower (sender) and the learner(s) (receiver) actively interacting and reconstructing meaning. Knowledge sharing has been defined as knowledge recreation constructed as a sequential collective action problem.[48] This means that the learner (receiver) recreates the knowledge shared by the knower (sender) in the cognitive process of learning it. The sharing occurs in the interpretation and meaning found, making sense of it, and in the doing process of using the new knowledge. This brings knowledge sharing to the point of knowing in action. The research agendas' contribution to theory in this area is to advance the KBV and design business models which address the cooperation problem of loosely coupled complex social systems. The cooperation problem results from the fact that different organisational members have different goals.[49] There are two areas of focus. The first is how to overcome the problems of sharing tacit knowledge in a loosely coupled system. How do individuals cooperate when there is no formal requirement to interact or share? How is tacit knowledge surfaced when the group does not actually use the knowledge in the act of doing? The second area of focus is how to capture tacit

43. R. Grant, The Knowledge-based View, 1997, p. 452.
44. H. Tsoukas, Do we really understand tacit knowledge? Chapter 21 in M. Easterby-Smith, & M. Lyles (Editors), *Handbook of Organizational Learning and Knowledge Management*, Blackwell Publishing, Hong Kong, 2003, pp 410-427.
45. J. Boudreau, Strategic Knowledge Measurement and Management. In S. Jackson, M. Hitt, and A. Denisi, (eds) *Managing Knowledge for Sustained Competitive Advantage: Designing strategies for effective human resource management*, San Francisco, CA, Jossey-Bass, 2003, pp. 365.
46. G. Szulanski, Exploring Internal Stickiness: Impediments to the transfer of best practice within the firm, *Strategic Management Journal*, 17 (Winter special issue), 1996, 27-43.
47. M. Easterby-Smith and M. Lyles, Watersheds of Organizational Learning and Knowledge Management. Chapter 1 in M. Easterby-Smith, and M. Lyles, (eds) *Handbook of Organizational Learning and Knowledge Management*, Hong Kong, Blackwell, 2003, pp 1-15.
48. G. Von Krogh, Knowledge Sharing and the Communal Resource. Chapter 19 in Easterby-Smith, M. and Lyles, M.A. (eds) *Handbook of Organizational Learning and Knowledge Management*, Hong Kong, Blackwell, 2003, pp. 372–392.
49. R. Grant, 2002, Chapter 8, p. 136

knowledge in a loosely coupled system. In exploring these questions, the three knowledge sharing themes – conduit, process, and constructivist model – may be examined. Particular attention may be paid to the constructivist model. Research in this area has proposed a socially constructed, context-specific representation of the reality of how tacit knowledge is shared within loosely coupled complex social systems.[50] In this way, useful knowledge spreads and remains embedded within multiple social structures.[51] The research agenda suggests examining how second track processes build social structures that can diffuse and embed tacit knowledge within the network itself. The outcome may be a business model which explains cooperation within loosely coupled complex social systems.

Social Capital

The core of the creative economy is based on individual creativity, skill and talent.[52] However, little is known about how groups of people from different organisations and disciplines can work together to create solutions to complex tasks. This leads to the fourth research question: **RQ4: What are the interaction processes associated with second track processes? Why are these effective?** The justification for exploring this question inductively is the difficulty in identifying how social capital is created by loosely coupled complex systems. Social capital is the value of social contacts at work. This value includes power, leadership, mobility, employment, individual performance, individual creativity, entrepreneurship, and team performance.[53] The importance of social capital has been widely acknowledged and demonstrated empirically.[54] There has been limited empirical research about 'how organisations' social capital develops over time, about the factors and processes enabling and constraining its development, and about possible related performance implications'.[55] This suggests we know what social capital is but less about how it is created. At a macro level, the creative economy describes how people generate value from ideas.[56] The creative economy is part of the knowledge economy and is seen as the output of the creative sector, especially for initiating disruptive innovation which provides sustainable competitive advantage.[57] At the micro level, whereas network research describes what is happening with relationships at work, social network analysis (SNA) explains why, and also the consequences. SNA is evolving to include more predictive power including direction of causality, levels of analysis, explanatory goals, and explanatory mechanisms.[58] The research agendas' contribution to theory in this area is to examine how structural holes, i.e., loose ties, create social capital and what this is. Structural holes are gaps within network structure caused by lack of social capital. Structural holes contradict the logic of network research and SNA. Social capital is typically measured by network structure concepts such as centrality (closeness) and cohesion (structural equivalence), i.e., convergence (similarity between actors).[59] The strength of ties[60] is seen as

50. J. Swan and H. Scarbrough, The politics of networked innovation, *Human Relations*, vol. 58, no. 7, 2005, pp. 913-943
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52. D. White, A. Gunasekaran and M. Roy, Performance measures and metrics for the creative economy, *Benchmarking: An International Journal*, vol. 21, no. 1, 2014, pp. 46-61
53. S. Borgatti and P. Foster, The Network Paradigm in Organizational Research: A Review and Typology, *Journal of Management*, vol. 29, no 6, 2003, pp. 991-1013
54. I. Maurer and M. Ebers, Dynamics of Social Capital and Their Performance Implications: Lessons from Biotechnology Start-ups, *Administrative Science Quarterly*, 51, 2006, pp. 262-292
55. Maurer and Ebers, p. 262.
56. J. Howkins, *The Creative Economy*, Penguin, London, 2002
57. D. White, A. Gunasekaran and M. Roy, Performance measures
58. Borgatti and Foster, The Network Paradigm
59. J. Galaskiewicz and R. Burt, , Interorganization contagion in corporate philanthropy, *Administrative Science Quarterly*, vol. 36, no. 1, 1991, pp. 88-105
60. M. Granovetter, The strength of weak ties, *American Journal of Sociology*, vol. 78, no. 6,1973, pp. 1360-1380

a positive indicator of social capital based on the motivational processes of social exchange theory and the norm of reciprocity.[61] Weak ties, on the other hand, might be considered as a negative outcome of social relations, i.e., the opposite of strong ties, characterised by mistrust and lack of respect; a problem to be overcome. Second track processes' loosely coupled systems should, therefore, have poor social capital performance. However, I propose that second track processes are very effective both in terms of how they generate social capital and the value of the knowledge this produces. This suggests that second track processes provide participants the opportunity to interact in ways otherwise unavailable and to combine to create new knowledge that is otherwise impossible. This enables the testing of Granovetter's proposition that weak ties may create opportunities for improved network performance through structural holes.[62] Structural holes create need to coordinate with each other to help build ego, i.e., activity or popularity, which is a positive outcome because individuals need to make the effort to build new relationships.[63] This effort increases heterogeneity in the network, i.e., diversity of views, and tolerance of different perspectives, which produces higher levels of creativity. The outcome may be a framework enabling social capital to be generated within loosely coupled complex social systems.

Cognitive Structures

Previous research on inter-organisational cooperation[64] tends to emphasise the relationships between breadth of functional experience and coordination, i.e., synergy.[65] The research agenda adopts the cognition-based perspective provided by personal construct theory and social identity theory.[66] This leads to the fifth research question: **RQ5: What are the cognitive processes associated with second track processes? Why are these effective?** The justification for exploring this question inductively is the need for a richer theoretical account of loosely coupled social networks as complex adaptive systems[67] from a cognition-based perspective. Personal construct theory is a proven approach toward understanding individuals' thinking.[68] It explains that individuals utilise cognitive structures, i.e., personal constructs, to make sense of their environment.[69] It is useful for understanding cognition within complex systems such as second track processes because research has shown that new environments may stimulate the development of new cognitive structures.[70] Interpersonal cognitive complexity is an important foundation for individuals' social behaviour.[71] It generates two benefits for individuals: (1) socio-cognitive capacity functions as a cognitive lens through which people interpret social situations and make inferences about others,[72] and (2) it enables an individual to better deal with

61. P. Blau, *Exchange and Power in Social Life, Wiley*, New York, 1964
62. Granovetter, The strength of weak ties
63. J. Coleman, Social capital in the creation of human capital, *American Journal of Sociology*, 94 (supplement): S95-S120, 1988
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66. T. De Vries et al., Antecedents of individuals; inter-team coordination: broad functional experiences as a mixed blessing? *Academy of Management Journal*, vol. 57, no. 5, 2014, pp. 1334-1359
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70. M. Buckenham, Socialization and personal change: A personal construct psychology approach, *Journal of Advanced Nursing*, no. 28, 1998, pp. 874-881
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72. B. Burleson and S. Caplan, Cognitive complexity. In J. McCroskey, J. Daly, M. Martin & M. Beatty (Eds.), *Communication and personality: Trait perspectives*: 233-286. Cresskill, NJ: Hampton Press, 1998

between-organisation situations, and, thus, influence the potential for coordination.[73] Social identity theory is a well-accepted theoretical perspective on intergroup relations.[74] Social identity theory explains motivational factors which influence social behaviours not explained by personal construct theory's cognitive focus.[75] Therefore, social identity theory may complement personal construct theory. Individuals' self-definition of who they are is influenced by their membership of social groups; and the importance of a group for an individual's identity is reflected in their identification with that group.[76] The more the individual identifies with the group, the more likely they are to work hard to achieve success for the group. Researchers were surprised to find that self-interest promotes, not impedes, collaboration in loosely coupled complex systems.[77] This suggests that individuals with strong interpersonal cognitive complexity skills may seek to build strong social identity with these groups by self-promotion. The research agendas' contribution to theory in this area is to examine how social identity may motivate an individual to use their interpersonal cognitive complexity to help the group coordination or not. Personal construct theory identifies cognitively complex individuals as developing the capacity to use a range of interpersonal constructs to reconcile incompatible goals and expectations between group members with different organisational membership.[78] However, it does not explain whether individuals will use this capability.[79] Research has argued that individuals may choose to use their interpersonal cognitive complexity for a range of reasons or not at all.[80] Therefore, social behaviours caused by interpersonal cognitive complexity cannot be explained by personal construct theory alone. The outcome may be to determine whether second track processes create new interpersonal cognitive complexity capability and social identity which are used by individuals to help group coordination.

Risk Management

The increasing complexity of tasks is widening the gap between what first track processes can deal with and what is needed. The research agenda may focus on the risks posed by this gap. This leads to the sixth research question: **RQ6: What are the decision-making processes associated with second track processes? Why are these effective?** The justification for exploring this question inductively is the weaknesses of traditional risk management, i.e., decision tree models. Risk is typically defined as 'the potential for realisation of unwanted, adverse consequences to human life, health, property, or the environment'.[81] Risk management is now a well-developed scientific discipline, particularly in the natural sciences, engineering, and medicine.[82] There are well-established systems where risks are conceptualised, measured, and assessed. These systems have focused on risk analysis, from which an established set of practices for assessing, managing, and communicating risks has emerged.[83] This has contributed to risk management by enabling 'better

73. D. O'Keefe and H. Sypher, Cognitive complexity measures and the relationship of cognitive complexity to communication, *Human Communication Research*, no. 8, 1981, pp. 72-92
74. A. Richter et al., Boundary spanners' identification, intergroup contact, and effective intergroup relations, *Academy of Management Journal*, no. 49, 2006, pp. 1252-1269
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77. Martin and Eisenhardt, Rewiring: Cross-Business Unit Collaborations
78. De Vries et al., Antecedents of individuals
79. B. Burleson and W. Denton, The relationship between communication skill and marital satisfaction: Some moderating effects, *Journal of Marriage and the Family*, no. 59, 1997, pp. 884-902
80. Burleson and Caplan, Cognitive complexity
81. Maguire and Hardy, construction of risk, p. 231
82. Maguire and Hardy
83. Maguire and Hardy

informed, more consistent, and more accountable' risk decisions.[84] Organisational risk management has typically been grounded in classical decision theory, where risk at a macro level is regarded as reflecting variation in the distribution of possible outcomes, their likelihoods, and their subjective values.[85] This approach is based on determining what the risk actually is, predicting the probability and the consequence and outcomes of that risk, deciding what path to take to either avoid or take the risk, and finally, developing and implementing strategies to respond to the risk.[86] However, some researchers argue that the normative approach of decision trees is ineffective due to environmental complexity and individuals' cognitive constraints.[87] The research agendas' contribution to theory in this area is to examine how second track processes enable objectivity and cognitive clarity in risk management associated with managing complex tasks. The conceptualisation of risk management might use two concepts: risk exposure and risk response.[88] This has been proved to address the underlying problems with traditional decision tree models by focusing risk assessment on the knowledge necessary to manage the risk event, rather than the activity.[89] This conceptualisation of risk management identifies the risk event (risk associated with losing knowledge in important activities), the level of exposure (likelihood and consequences of the risk occurring), and the risk response (capacity to fill the gap). The research might examine how second track processes perceive risk and whether this aligns with the decision tree model or the knowledge risk model. This may assess whether second track processes address the cognitive bias (subjectivity) and complexity (environmental uncertainty) inherent in decision tree models.

Integrated Reporting

Performance measurement and reporting has traditionally been the domain of accounting and financial reporting. However, there is increasing recognition that a new approach is needed which links value creation and performance measurement to contemporary business models.[90] This leads to the seventh research question: **RQ7: How can we measure the value of second track processes?** The justification for exploring this question inductively is the difficulty in measuring the hybrid mission of economic value and social value.[91] The management of complex problems need to create value for stakeholders (i.e., partners) and society at large, as well as for individual clients.[92] Integrated reporting (IR) is a single report which summarises the essential information from all other reporting. It represents an umbrella approach which pulls together the key elements of all other reports, to produce information on which assurance conclusions may be drawn, and following high quality international assurance standards.[93] IR fits with the management of complex tasks due to its systems-thinking perspective, which includes ecosystems, communities and countries.[94] The research agendas' contribution to theory in this area is to measure the

84. H. Kunreuther and P. Slovic, Science, values and risk, *Annals of the American Academy of Political and Social Science*, no. 545, 1996, pp. 116-125
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86. S. De Zoysa and A. Russell, 'Knowledge-based risk identification in infrastructure projects, *Canadian Journal of Civil Engineering*, vol. 30, no. 3, 2003, pp. 511-22
87. J. Adams, *Risk*, UCL Press Limited, London; P. Massingham, Knowledge risk management, 1995
88. P. Massingham, Knowledge risk management
89. Massingham
90. Nielsen, Lund and Thomsen, Killing the balanced scorecard
91. R. Layton,, There could be more to marketing than you might have thought!', *Australasian Journal of Marketing*, vol. 24, 2016, pp. 2-7
92. G. Gundlach and W. Wilkie, The American Marketing Association's New Definition of Marketing: Perspective and Commentary on the 2007, Revision, *Journal of Public Policy & Marketing*, vol. 28, no. 2, 2009, pp. 259-264
93. International Federation of Accountants, January 2017, *Enhanced Organizational Reporting Integrated Reporting Key*, IFAC Policy Position 8, p. 1
94. J. Dumay and T. Garanina, Intellectual capital research: a critical examination of the third stage, *Journal of Intellectual Capital*, vol. 14, no. 1, 2013, pp. 10-25

value of second track process knowledge in the six capital areas of the IR framework. The IR framework presents an opportunity to provide nuanced narrative about the knowledge resources produced by second track processes which is interactive (learning) and forward-focused (growth) and has a systems-thinking perspective (cause and effect). The outcome may be a framework for measuring the value of the knowledge resources produced by second track processes.

Evidence

An important measure of research impact is whether the lessons learned can be internalised by practitioners[95] by improving their problem-solving skills and helping them to recognise the various ways to solve problems. The research agenda may design a method for measuring the codified outcomes of second track processes, i.e., its reports. This leads to the eighth research question: **RQ8: How can we demonstrate the value of second track processes?** The justification for exploring this question inductively is the difficulty in measuring the problem-solving capacity of a general theory. Reports may be analysed using content analysis (CA). CA lets a researcher identify the messages and meanings in a source of communication, for example, reports.[96] This can be extended to consider the source (who), encoding (why), channel (how), message (what), recipient (to whom), and the decoding process (to what effect).[97] To further reconstruct the reality of second track processes, critical discourse analysis (CDA, a form of content analysis) may be used to code the meaning in the messages within the text of the reports. CDA aims to uncover the embedded meanings in everyday rhetorical discourses that point to beliefs, ideologies, and values of a social community[98] (Brummett 2008). Each report might be analysed in terms of (a) goal, (b) task, (c) complexity, (d) stakeholders, (e) second track processes, (f) knowledge resource produced, (g) outcomes against the six IR capitals emerging from RQ7, and (h) evidence of outcomes from the report. The last category – (h) – may include interviews with key people involved in the project and/or the task itself to obtain an expert perspective on the usefulness of the codified knowledge produced, i.e., the report. This might include questions about whether recommendations were implemented, and whether the report complemented first track processes.

CONCLUSION

This paper outlined a research agenda for second track processes. Second track processes represent an exciting opportunity to transform economic thinking by challenging the prevailing concept of human rationality within the context of solving wickedly complex problems. The framework presented in Figure 1 presents eight opportunities for specific research programs. I invite readers to accept this invitation and conduct research in these areas and submit findings to this journal. Our goal is to build global momentum around this research agenda. As our world becomes increasingly complex, our grand challenges require us to work collaboratively in social networks that build capability to solve wickedly complex problems. Second track process can deliver this capability. The research agenda is to understand what second track is and why it works.

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ESSAY

TWENTY YEARS ON THE SECOND TRACK: GAP CASE STUDIES

Catherine Fritz-Kalish

The Second Track was developed by Global Access Partners from principles established in track two diplomacy to encourage rational conversations in contested policy spaces. GAP's co-founder Catherine Fritz-Kalish traces the origins and outcomes of her company's most successful Second Track projects.

INTRODUCTION

Australian governments of all persuasions have been looking for new and more effective ways to consult with industry, academia and the community in developing and implementing new policies. The 'first track' involves government's existing, familiar and often near-universal processes for consultation and interaction. These include the highly structured and formal 'green' and 'white' paper processes and public inquires through to less formal, but still very common, methods of broad stakeholder consultation.[1]

The 'second track' processes are much less familiar. The idea behind them is that more personal interactions can be encouraged between people in government, business and the community to complement, rather than risk, the formal machinery of government. These interactions are characterised by a certain degree of informality (with the consultations possibly being 'off the record' or held under the Chatham House rule), a focus on engaging 'the right people', and an emphasis on privacy, rather than publicity, in the process.

1. Speech by Dr Ian Watt AO at the GAP Conference on Regulatory Affairs: Opportunities for Business, Parliament House of Victoria, 25-26 September 2018

This is not a novel concept. 'Second track' or backchannel diplomacy pre-dates the establishment of formal diplomacy and even the nation state itself, as it encompasses every kind of non-governmental, informal and unofficial contacts and activities between private citizens, groups of individuals or other 'non-state actors'. The concept was only formalised in the 1980s and has never been a substitute for traditional diplomacy, but it can help officials manage and even resolve conflicts by exploring possible solutions beyond the bounds of conventional thinking.

Joseph V. Montville of the US State Department coined the phrase back in 1981 at the height of the Cold War.[2] He argued that 'track two' can '*reduce or resolve conflict, within a country or between countries, by lowering the anger or tension or fear that exists, through improved communication and a better understanding of each other's point of view*'.

GLOBAL ACCESS PARTNERS

Our own Second Track journey began in 1997, although the realisation that our work fits within the concept of diplomatic 'track two process' came much later. We did not know where GAP would lead us when we launched the company – indeed, the success of GAP in amending and developing its business model to fit changing circumstances exemplifies the very approach that we promote.

GAP has carved its own niche in the Australian policy landscape, but above all, the company's growth has been fuelled by the passion, interests, expertise and skills of its founders, partners and employees. Our vision and activities have evolved over the years, but our core principle has remained unchanged. GAP brings capable people together to not only consider an issue of social importance but develop solutions which members can take ownership of and implement for the benefit of all. This discussion is informed by the group's diversity of personal views, enlightened by a spirit of open-mindedness, and empowered by a commitment to positive thinking.

This is the Second Track process – an unofficial but potent complement to the formal 'track one' of government policy-making.[3] At its best, the Second Track drives the deep engagement, trust building and reciprocity which allows otherwise antagonistic stakeholders to find mutually beneficial solutions to seemingly immovable 'rocks in the road'.

We launched in July 1997 as a boutiqué consulting firm helping small and medium-sized enterprises and start-up businesses gain access to larger markets, and soon branched out by organising a program of national and international multidisciplinary forums and congresses which led to the establishment of a range of consultative committees. In 2007, GAP created an online policy discussion and blogging website, *Open Forum*, which was followed by the Second Track programme in 2008 – a series of multidisciplinary taskforces to tackle topics relevant to economic policy development and Australia's productivity. In 2009, GAP began consulting for government and business on digital engagement strategies and in 2010 launched two new initiatives – a series of Annual Growth Summits and a virtual business network for Australia's top performing medium-sized businesses, *First 5000*.

The Second Track process has gradually become GAP's flagship, offering a unique way for key industry stakeholders to work alongside current government initiatives without becoming entangled in public sector red tape. This novel approach has increased the ability of individuals to encourage real and lasting change in their areas of expertise and interest. Its success demonstrates that innovative approaches to stakeholder interaction can be developed, tested and refined for the public good, without risking the traditional government processes.

2. W.D. Davidson and J. V. Montville, 'Foreign Policy According to Freud', *Foreign Policy*, Vol. 45, Winter 1981-1982
3. L. Louise Diamond and J. McDonald, Multi-Track Diplomacy: A Systems Approach to Peace, Kumarian Press, 1996

The Australian Government endorsed the Second Track as a valid method of stakeholder engagement at the GAP Congress on Regulatory Affairs held at Parliament House in Melbourne in September 2008.

Today, GAP operates as an independent, not-for-profit institute for active policy. We initiate and facilitate strategic debate on the most pressing social, economic and structural issues facing Australia and the world. Shaped by Peter Fritz's philosophy of positive, collaborative problem-solving and an emphasis on tangible long-term results, GAP looks beyond the *'what'* and *'why'* of policy discussion, focusing instead on the *'how'* and *'who'* of policy delivery. It promotes good public policy and acts as a catalyst for policy implementation and new economic opportunities.

Our global network, made up of over 4,000 experts in a variety of fields, has been built on years of loyalty and dedication. We have always remained a bipartisan platform for discussion and change. Bringing many different people together to work on common problems using GAP's Second Track process cultivates a uniquely creative environment.

SECOND TRACK IN A NUTSHELL

GAP's Second Track process has been developed over twenty years of high-level discussion and practical implementation. The process brings multidisciplinary groups of people together to discuss common challenges and encourages collaboration towards concrete solutions.

Each member attends in a personal capacity and contributes their experience, networks, influence and expertise. Members are sourced from a wide range of stakeholders to ensure a wide-ranging discussion and encourage broad support.

GAP's facilitation encourages a free-flowing, open and honest discussion which frees participants from predetermined positions, sparks innovation and builds consensus.

GAP's Second Track is a two-stage process, with an initial discussion phase followed by practical pilots, commercial services and policy implementation. The Second Track builds long-term relationships between participants to empower permanent change.

Discussions take place in a series of meetings recorded under the Chatham House rule of non-attribution. This allows time to progress and test new ideas and develop effective solutions.

EXAMPLES OF GAP SECOND TRACK OUTCOMES

A report on genetic screening for a breast cancer drug which changed Victoria's health policy (2007)

In 2007, in partnership with the Australian Centre for Health Research (AHCR) and Deloitte, we brought together the National Pharmacogenomics Consulting Group to examine the medical and economic benefits of genetic testing in diagnostics and drug therapy. Hosted by the Garvan Institute of Medical Research and co-funded by GAP, ACHR and Roche Diagnostics Australia, its meetings were chaired by Dr Stan Goldstein.

The Group found that significant reductions in costs and adverse drug reactions could be achieved if pharmacogenomics were widely adopted in Australia. In particular, they saw the potential of testing for cytochrome P450 (CYP450) variations to predict Tamoxifen treatment outcomes in women with breast cancer.

The Group's work informed a report on *Improving the Quality Use of Medicines in Australia*,[4] prepared by Deloitte Access Economics and funded by the ACHR. The report was used to develop

4. Deloitte/National Pharmacogenomics Consulting Group, 'Improving the Quality Use of Medicines in Australia: Realising the Potential of Pharmacogenomics', report, 2008, https://www.globalaccesspartners.org/Improving_the_Quality_Use_of_Medicines_in_Australia.pdf

the Pharmacogenomics Decision Support System (PDSS) in 2010, funded by the Victorian Government and implemented by Melbourne Health and genetic testing company GenesFX. PDSS links a patient's DNA results with known drug metabolic profiles to predict the likely outcomes of treatment with particular drugs.

PDSS software was introduced and tested in a joint trial by GenesFX and Melbourne Health in mental health units in Bundoora and Sunshine,[5] and the project was evaluated by Victoria University.[6]

GenesFX has now changed its name to myDNA and offers a one-off pharmacogenomic test which identifies gene variants in four major enzyme systems that metabolise commonly prescribed medications. MyDNA identifies how the patient's genetic structure will affect their response to particular medication so doctors can prescribe the most suitable drug and dosage. *MyDNA* tests for CYP2C19, CYP2C9 and CYP2D – the latter is the one associated with the efficacy of Tamoxifen – and is available across Australia, New Zealand, Canada and the UK.[7]

Establishment of the Centre for Social Impact (2008), a national centre for philanthropy and social investment

Following an approach by Baillieu Myer AC and Peter Fritz AM to Prime Minister John Howard, the Hon. Mal Brough MP, then the Minister for Families, Community Services and Indigenous Affairs, commissioned a working party in 2006 to investigate the potential of philanthropy in the higher education sector.

The Working Group on Education and Training in Philanthropy and Social Investment comprised senior executives from business, academia, government and non-profit organisations and was jointly chaired by Peter Fritz AM, Managing Director of GAP, and Prof Ian Young, Vice-Chancellor and President of Swinburne University.

The results of the Working Group's extensive research into opportunities for grantmaker education in Australia were presented in two reports to the Australian Government, with the key recommendation being the founding of a national center for philanthropy and social investment.

Following the Group's recommendation, the Australian Government has provided an endowment of $12.4 million (matched by industry funds) for the establishment of the Centre for Social Impact (CSI).[8] CSI is a collaboration of three universities – the University of New South Wales (UNSW), Swinburne University of Technology, and The University of Western Australia. It provides managerial education, executive support and research for the not-for-profit sector.

The value of and support for CSI was recognised by a public lecture delivered by the Deputy Prime Minister, the Hon. Julia Gillard MP, hosted by the Centre on 28 February 2008, and the official launch of the Centre at the UNSW by the Governor-General, Major General Michael Jeffery, on 16 July 2008.

One of the most significant initiatives of CSI was the launch of the NSW Social Impact Grants.

5. R. Kleinman, Personalised prescribing promises to save mental health millions, The Sydney Morning Herald, 5 February 2015, https://www.smh.com.au/healthcare/personalised-prescribing-promises-to-save-mental-health-millions-20150205-136pxz.html
6. K. Sweeny, 'Pharmacogenomic Proof of Concept Study: Economic Analysis', Report to Gene FX Health Pty Ltd, VISES, Victoria University, Melbourne, 2014, http://vuir.vu.edu.au/35192/
7. MyDNA, https://www.mydna.life/; also Business Victoria, A safer and more effective prescribing, http://www.business.vic.gov.au/case-studies/a-safer-and-more-effective-prescribing
8. Centre for Social Impact, https://www.csi.edu.au/about-csi/

Public consultation on NSW strata law reform (2012)

In 2012, GAP used its digital platform, Open Forum, to run an online public consultation for the NSW Government on proposed changes to strata and community title laws[9]. The consultation generated 1,230 individual comments and almost 600 suggestions for procedural change or law reform. As a result, over 90 legislative changes[10] were passed by the NSW Parliament in 2015 and came into force on 30 November 2016. This was the most significant social reform in strata since 1961.

Development of Australia's first National Cloud Computing Strategy (2013)

In 2010, Global Access Partners assembled a taskforce of senior representatives from major firms and leading technology experts to discuss the potential of cloud computing with the government. The group focused on industry development opportunities, security and privacy and was co-funded by the Department of Broadband, Communications and the Digital Economy. It was chaired by Keith Besgrove, First Assistant Secretary in the Department's Digital Economy Services Division.

The taskforce and a subsequent one-day executive workshop and national conference led to the establishment of the National Standing Committee on Cloud Computing in 2011 and the development of Australia's first national cloud computing strategy.[11] The strategy was launched in May 2013 at CeBIT by Senator the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy. Since then, it has been expanded and developed by subsequent administrations, with cloud computing becoming an integral part of public computing solutions.

Establishment of the International Centre for Democratic Partnerships (ICDP) to build stronger relationships between Australia and the Pacific (2017)

The idea for a non-government Australian organisation to help strengthen civil society in the South Pacific and enhance Australian influence came from a meeting of the GAP Institute for Active Policy Advisory Board in Sydney on 12 February 2015.

The meeting noted the success of the USA's National Democratic Institute in helping emerging democracies around the world, and saw the opportunity for a new institution to support and complement the work of the Australian Government in the South Pacific.

The Board envisioned a strategic, region-wide, integrated approach to strengthen relationships with island nations and secure better political and commercial outcomes from Australia's considerable investment in regional aid.

GAP formed a small working group to develop a business case for the proposed International Centre for Democratic Partnerships (ICDP). This working group was chaired by Dr Ian Watt AC and included representatives from the Australian National University, University of Technology, Sydney and the University of Adelaide.

The ICDP business case was presented to the Department of Foreign Affairs and Trade in January 2016, and in December the same year, DFAT

9. Global Access Partners, Strata Laws Online Consultation Final Report, April 2012, http://www.globalaccesspartners.org/Strata_Laws_Online_Consultation_Final_Report_Apr2012.pdf
10. NSW Fair Trading, Major changes to strata laws, https://www.fairtrading.nsw.gov.au/about-fair-trading/legislation-and-publications/changes-to-legislation/major-changes-to-strata-laws
11. Commonwealth of Australia, National Cloud Computing Strategy, May 2013, https://www.communications.gov.au/sites/g/files/net301/f/National_Cloud_Computing_Strategy.PDF

released a tender for *Pacific Connect* – a pilot programme to forge stronger relationships between emerging leaders in Australia and the Pacific. GAP and its partner Strategic Development Group, guided by Dr Watt AC and Peter Fritz AM, won the tender and in July 2017, GAP incorporated ICDP as a non-profit company.

Over the last two years, ICDP has been implementing *Pacific Connect* through a series of regional Second Track dialogues and practical projects in the Pacific.

The Australian Space Initiative: a private/public partnership model for a national space agency (2017)

On 16 September 2016, Andrea Boyd, an Australian scientist working at the International Space Station in Cologne, delivered a stirring address[12] at the GAP Annual Economic Summit.[13] She urged Australia to grasp the commercial opportunities of the new space market and protect its national sovereignty by establishing a national space agency.

Inspired by her address, GAP assembled a 'space tiger team' to build on the momentum for change. The team included Ms Boyd, former astronauts Dr Andrew Thomas AO and Prof Gregory Chamitoff, as well as Australian and international scientists, entrepreneurs, innovators, financial analysts and legal experts. Chaired by Dr Jason Held and co-funded by GAP, the team delivered three policy submissions to the Australian Government.

GAP launched its *Australian Space Initiative* in April 2017 and established a new Taskforce on Space Industry to build on the team's recommendations. The Taskforce, co-funded by GAP and the Department of Industry, Innovation and Science, called for the creation of a commercially focused Australian space agency and delivered its report to government in August 2017.

The government announced its plans for a federal space agency at the 68th International Astronautical Congress in Adelaide in September 2017 and pledged $41 million for the Australian space sector in the 2018 Budget. Australia has now joined its international peers in having a dedicated space entity, opening new opportunities for Australian businesses in one of the most promising global markets of today.

Australia's first soil carbon credit units (ACCUs) to mitigate carbon emissions (2019)

In November 2009, a GAP taskforce of scientists, public policy experts and business leaders, chaired by Dr John Hewson AM, released a report entitled *Low-Carbon Economy: Business Opportunities for Australia*.[14] The document highlighted the potential for biological sequestration to reduce excess atmospheric CO2 and urged the federal government to adopt a soil carbon sequestration policy. The group suggested the introduction of 'soil carbon credits' as an incentive for farmers to change their farming practices to reduce carbon emissions.

The proposition was further developed, discussed and promoted through the Second Track process over the next decade, thanks to the relentless efforts of regenerative agriculture advocates such as Dr John White, Major General Michael Jeffery AC and Dr John Hewson AM. Several public policy forums and advisories were facilitated by GAP, including the Summit on Food Sustainability in 2013,

12. Speech by Andrea Boyd at the 2016 GAP Annual Economic Summit, http://www.openforum.com.au/innovation-outer-space-and-opportunities-australia
13. Global Access Partners, Final report of *A Vision for Australia – Spaces of Australian Innovation*: GAP 7th Annual Economic Summit, 2016, http://www.globalaccesspartners.org/A_Vision_for_Australia_2016_Summit_Report.pdf
14. Global Access Partners, Low-Carbon Economy: Business Opportunities for Australia; Low-Carbon Economy Taskforce report, October 2009, http://www.globalaccesspartners.org/Low%20Carbon%20Economy%20Task%20Force%202009%20Report.pdf

the Taskforce on the North, Agriculture and the Environment,[15] the National Standing Committee on Energy and the Environment (NSCEE), and *Open Forum*.

These efforts culminated in the release of the first Australian carbon credit units (ACCUs) in a soil carbon project under the Emissions Reduction Fund in March 2019.[16] The credits were the first to count towards Australia's national targets under the Paris Agreement They were also the first soil credits worldwide to be eligible under the Paris accord, according to Corporate Carbon which oversaw the project.

IN CONCLUSION

Impressive though its track record has been, the potential for the Second Track to generate new ideas and improve policy outcomes still excites me. The Second Track offers a practical solution to the many issues caused by Australia's short election cycles, intense partisanship and lack of long-term thinking. It gives the public service and other organisations a relatively safe space to consider radical policy options and builds a community of like-minded, courageous people committed to building a better world for themselves, their communities and their nation.

Whatever our individual talents, we are stronger when we work together, and spark ideas in debate and collaboration we might never have found on our own. The Second Track offers a methodology with wide applications in business, government and civil society, and I am proud of GAP's efforts to turn its potential into practical outcomes to benefit us all.

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15. Global Access Partners, The North, Agriculture and the Environment: Report of the GAP Taskforce, March 2016, http://www.globalaccesspartners.org/North-Report.pdf
16. Renew Economy, Issuance of the first Australian carbon credit units to a soil carbon project, press release, 14 March 2019, https://reneweconomy.com.au/issuance-of-the-first-australian-carbon-credit-units-to-a-soil-carbon-project-37846/

ARTICLE

SIMPLIFYING THE MANAGEMENT OF COMPLEXITY: AS ACHIEVED IN NATURE

Dr Shann Turnbull & Distinguished Professor James Guthrie AM

Governance scientists Dr Shann Turnbull and Prof James Guthrie AM use stakeholder firms to illustrate how to simplify the management of complexity and use natural laws to transform corporations into common good enterprises to counter global existential risks.

INTRODUCTION

This paper considers the research question: how can business organisations manage complexity simply on a comprehensive and reliable basis? More specifically, we ask: is the current dominant architecture of businesses as centralised command and control hierarchies the best fit to allow complexity to be sufficiently simplified so that humans with limited data processing abilities can reliably manage complexity?

The methodology involves using elements of complexity theory. According to Andrus,[1] complexity theory is based on 'four significant theoretical building blocks': general system theory;[2] information theory;[3] chaos theory,[4] and fractal theory.[5]

Subsumed into these building blocks is what Wiener,[6] an MIT mathematician, described as 'Cybernetics'. French physicist and mathematician

1. D.C. Andrus, 'The Wiki and the Blog: Towards a Complex Adaptive Intelligence Community', *Studies in Intelligence*, vol. 49, no. 3, 2005, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=755904, p. 3
2. L. von Bertalanffy, *General System Theory*, New York, George Braziller, 1968
3. C.E. Shannon, 'A Mathematical Theory of Communications', *Bell System Technical Journal*, vol. 27, no. 3, 1948, pp. 379-423
4. E.N. Lorenz, *The Essence of Chaos*, Seattle, University of Washington Press, 1993
5. B.B. Mandelbrot, *The Fractal Geometry of Nature*, New York City, Macmillan, 1977
6. N. Wiener, *Cybernetics: Or Control and Communications in the Animal and the Machine*, Cambridge, MIT Press, 1948

Ampère, first coined the word 'cybernetique' in his 1834 essay to describe the science of civil government.[7] This topic has taken centuries to develop with contributions in the 20th and 21st by respectively Smuts[8] and Turnbull[9] and in this article.[10]

The word cybernetics is based on the Greek for 'steersman' or 'governor'. Wiener[11] defined cybernetics as, 'the science of control and communication in the animal and the machine'.[12] As pointed out by Ashby,[13] a London neurologist, 'The truths of cybernetics are not conditional on being their being derived from some other branch of science'.

Beer[14] pioneered the application of cybernetics to management and developed his concept of 'Viable Systems Management' (VSM). Another name for cybernetic analysis was 'operations research'[15] or 'systems' thinking.[16] Beer advised[17] Turnbull that he had never extended VSM to include governance variables. This is understandable. The first textbook on corporate governance was not published until 1984[18]. As President of the World Organisation of Systems and Cybernetics, Beer encouraged Turnbull to contribute to the cybernetic literature that resulted in Turnbull's framework for designing sustainable urban communities.[19]

Shannon's contribution[20] to complexity theory was as a Bell Telephone engineer. Shannon was concerned with the engineering problems of transmitting communication signals without error. In the second paragraph of his seminal article, he makes it clear that he was not concerned with the usual meaning of the word 'information' that communicates meaning. Shannon was only concerned with the accuracy of communicating data that can be measured in 'bits', which, in turn, could communicate meaning if errors did not arise in the data.

Bits are perturbations in the matter and energy that make a difference. To avoid ambiguity, this paper will use the more common term of 'bytes' that represents eight bits of data. In contemporary times many electronic devices routinely report the volume data in units of bytes that devices may receive, process, store, or transmit. This development provides a basis for empirical research using bytes as the unit of analysis that did not exist when theories of the firm were being developed.

Information is data that provides meaning to an observer. However, different observers of identical data may obtain radically different meanings. Information is a social construct that cannot be

7. H.S. Tsien, *Engineering Cybernetics*, McGraw Hill, 1954
8. J. Smuts, *Holism and Evolution*, London and New York, Macmillan, 1926
9. S. Turnbull, 'Emergence of a Global Brain: For and from World Governance', *Working paper*, 2003, http://papers.ssrn.com/abstract_id=637401
10. S. Turnbull, 'Design Criteria for a Global Brain', *The First Global Brain Workshop*, Vrije Universiteit Brussei, Belguim, 5 July 2001, http://pespmc1.vub.ac.be/Conf/GB-0-abs.html#Turnbull
11. Weiner, *Cybernetics: Or Control and Communications in the Animal and the Machine*
12. W.R. Ashby, *An Introduction to Cybernetics*, New York, Wiley, 1957. http://pespmc1.vub.ac.be/books/IntroCyb.pdf, p. 1
13. W.R. Ashby, *An Introduction to Cybernetics*, p. 1
14. S. Beer, *Management Science: The Business Use of Operations Research*, London, Aldus Books, Doubleday, New York, 1968
15. S. Beer, *Management Science: The Business Use of Operations Research*
16. von Bertalanffy, *General System Theory*
17. 1996, August 3 meeting in Toronto, Canada where Turnbull was presenting his paper, read by Beer, on 'Stakeholder Governance: A cybernetic and property rights analysis', published in R. I. Tricker (ed.) *Corporate Governance: History of Management Thought*, Ashgate Publishing, London, 2000, pp. 401-413
18. R.I. Tricker, *Corporate Governance: Practices, Procedures, and Powers in British Companies and their Boards of Directors*, Gower, London, and the Corporate Policy Group, Oxford, 1984
19. S. Turnbull, 'A Framework for Designing Sustainable Urban Communities', *Kybernetes: The International Journal of Systems & Cybernetics*, vol. 36, no. 9-10, 2007, pp. 1543-1557, https://dblp.org/pers/hd/t/Turnbull:Shann
20. Shannon, 'A Mathematical Theory of Communications'

reliably defined and so measured in physical units. Other related social constructs are 'knowledge' and 'wisdom'. Knowledge can be simplistically described as how to use information; wisdom can be described as when to use knowledge. While information, knowledge, and wisdom cannot be metered, no change in their status or distribution can occur without the transaction of bytes.

Transaction Byte Analysis (TBA), developed by Turnbull,[21] provides a basis for grounding aspects of the social sciences in the natural sciences. This is because no interaction between any living things can occur without the transaction of bytes. Also, the emergence of any information, knowledge or wisdom within or between living things requires the transaction of bytes.[22] The creation, nature, and characteristics of living things are determined by the bytes embedded in their DNA and how these interact with their environment. These interactions generate instincts and behaviour patterns to survive birth and dynamic unknowable complex environments. TBA can be used to explain why DNA embeds complex contrary behaviour into creatures as the most efficient way to generate variety to allow them to survive birth and become self-governing in complex environments. TBA has also been used to establish 'The science of corporate governance', and more generally 'the science of governance'.[23]

The British Telecom research laboratories pioneered measuring the capacity of humans to transact bytes by our five senses of touch, taste, smell, sound and sight.[24] Kurzweil,[25] an MIT speech recognition scientist, identified the neurological limits for our brains to receive, store, process, and transmit bytes. These limits identify the degree to which complexity needs to be simplified, to allow individuals of any species to survive and thrive in dynamic complex unknowable environments reliably.

As noted by Simon,[26] in the first words of his seminal essay on *The Architecture of Complexity*: 'There are some properties common to many complex systems'. Their emergence in biology can be explained from the need to economise bytes and so the materials and energy needed to create and maintain life. The ability of innate materials to learn how to reproduce their patterns of energy and materials with adaptive variations to create and maintain reproducible life crucially depends upon a sustainable data memory and data processing capability. The human brain vividly illustrates the importance of the need to economise bytes to minimise data processing materials and energy. While our brains may be only two per cent of our body weight, they surprisingly consume ten times more energy than the rest of the body.[27] Ashby[28] notes: 'The gene-pattern, as a store of channel variety, has limited capacity. Survival goes especially to those species that use the capacity efficiently'.

21. S. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', PhD Thesis, Macquarie Graduate School of Management, 2000, https://papers.ssrn.com/abstract_id=858244
22. S. Turnbull, 'Grounding Social Theory in the Natural Sciences', Research Committee 33 on Logic and Methodology in Sociology, Fundamental Issues in Social Research, XVth World Congress of Sociology, International Sociology Association, July 12, 2002, http://ssrn.com/abstract_id=321140; S. Turnbull, 'Grounding Sociology in Cybernetics', Research Committee 51 in Socio-cybernetics, New Paradigms for Understanding Society, XVth World Congress of Sociology, International Sociology Association, July 13, 2002, https://ssrn.com/abstract=321203
23. S. Turnbull, 'The science of corporate governance' *Corporate Governance: An International Review*, vol. 10, no. 4, 2002, pp. 256-272, http://ssrn.com/abstract_id=316939
S. Turnbull, 'The Science of Governance: A Blind Spot of Risk Managers and Corporate Governance Reform, *Journal of Risk Management in Financial Institutions,* vol. 1, no. 4, 2008, pp. 360-368, https://papers.ssrn.com/abstract_id=1742584
24. P. Cochrane, 'Hard-drive: Bandwidth and brandwidth', *Telegraph*, 6 April 2000, https://www.telegraph.co.uk/technology/4748353/Hard-drive-Bandwidth-and-brandwidth.html
25. R. Kurzweil, *The Age of Spiritual Machines*, New York, Penguin Group, 1999
26. H.A. Simon, 'The Architecture of Complexity', *Proceedings of the American Philosophical Society*, vol. 10, no. 6, 1962, pp. 467-482
27. *The Physics Factbook*, https://hypertextbook.com/facts/2001/JacquelineLing.shtml
28. Ashby, *An Introduction to Cybernetics*, p. 270

Simon[29] used probability analysis to explain in awkward language how the complexity of life needed to be created from 'sub-assembles', 'stable intermediate forms', 'able to maintain their own existence', and in 'nearly decomposable systems in which interactions among the sub-systems are weak, but not negligible'. Introducing the concept described by Koestler[30] as a 'Holon', allows the awkward language used by Simon to be dispensed with as is explained in the following section.

Words are the tools of thinking. New words are required to introduce new ideas. Complexity theory introduces the need for adopting new words to create parsimony in thinking, to facilitate analysis and communication. There is also the need a need to use established words in different ways to describe processes found in complexity theory. Examples are described by Andrus,[31] who describes six processes of complexity theory with the words: (1) self-organisation; (2) emergence; (3) relationships; (4) feedback; (5) adaptability, and (6) non-linearity.

Other processes could be added. But some crucial missing concepts are: 'tensegrity', 'holon', and 'holarchy'. These introduce powerful explanatory concepts for understanding, evaluating, and managing complexity. A search of the titles, abstracts, and keywords of over 861,000 articles archived in the Social Science Research Network suggests that these concepts have not become widely recognised as being part of complexity theory. Alternatively, there exist the possibility that authors have neglected to highlight these words and/or have used different words to describe similar concepts. The awkward language used by Simon,[32] and as identified with other authors by Mathews[33] provide examples. Mathews in turn does not use the word 'Tensegrity' but this is what he is referring to in describing the defining features of Holons. Instead Mathews refers to Holons possessing: 'Centralisation/decentralisation'; 'Bottom-up/top-down'; 'Autonomous/integrated'; and 'Order/Ambiguity'.[34]

To fill or explain this apparent gap in complexity theory, the following section discusses tensegrity, holons, and holarchy. The third section considers the limitations of managing complex activities in public, private, non-profit, or government sectors using hierarchies. The fourth section describes network organisations and considers their ability to simplify the management of complexity reliably. The concluding section identifies why and how elements of an ecological form of governance could be introduced in practice.

TENSEGRITY, HOLONS, AND HOLARCHY

Tensegrity

This word describes how seemingly opposite or contrary characteristics or forces may be complementary, interconnected, and interdependent. Neuroscientists Kelso and Engstrøm[35] describe how nature, in the form of DNA, hard-wires humans to be both competitive~cooperative, selfish~generous, suspicious~trusting, and so on. Kelso and Engstrøm introduced the tilde '~' symbol to indicate such relationships.

29. Simon, 'The Architecture of Complexity'
30. C.O. Koestler, *The ghost in the machine*, London: Hutchinson, 1967
31. Andrus, 'The Wiki and the Blog: Towards a Complex Adaptive Intelligence Community', pp. 7-9
32. Simon, 'The Architecture of Complexity'
33. J. Mathews, 'Holonic Organizational Architectures', *Human Systems Management*, vol. 15, 1996, pp. 27-54, pp. 36-38
34. J. Mathews, 'Holonic Organizational Architectures', pp. 52-53
35. J.A.S. Kelso and D.A. Engstrøm, *The Complementary Nature,* Cambridge, MA, MIT Press, 2006

Buckminster Fuller[36] combined the words 'Tension' and 'Integrity' to create the word 'Tensegrity'. The compression and tension struts of Fuller's geodesic domes, allows the greatest area to be covered by the least weight of materials. Like geodesic domes tensegrity allows humans to obtain a 'requisite variety'[37] of communication and control responses using the least amount of data processing materials and energy to transact bytes to survive complexity.

Not many stable, let alone dynamic structures could be constructed from just all the bones in a human body that performs best in compression. Likewise, for all the muscles in a human body that best perform in tension. Combining these contrary~complementary types of materials results in radically different characteristics to emerge for the whole system. Harvard biologist Ingber[38] described tensegrity as 'The architecture of life'.

Tensegrity allows DNA to efficiently transmit and generate a requisite variety of complexity for the survival of its reproduction in complex environments. While computers now exceed human abilities in data processing, they have not yet matched the compactness, energy efficiency and mobility of human neurological data processing.

Bohm,[39] a quantum physicist, suggested that tensegrity is the architecture of the universe. Photons of light exhibit properties of being either a particle or a wave. Similar duality exists with quantum states of 'superposition'.[40] Tensegrity generates variety. Evolutionary processes require variety to generate complexity. A simple example of how variety can be generated from identical sub-components with contrary~complementary characteristics is illustrated by the periodic table of all known atomic elements. Each element is created from different combinations of three sub-components call protons, neutrons, and electrons.

Tensegrity creates the most efficient way to either create or survive complexity. It reflects the ancient Chinese idea of Yin and Yang, providing a healthy life. It is a feature that could improve the health, efficiency, resiliency, and survivability of organisations, yet management theorists and most practitioners have neglected it, despite its benefits. Tensegrity radically challenges a mindset seeking to promote cooperation, teamwork, and accountability only upwards, and control only downwards.

Holons and holarchy

Protons represent 'holons' that are simultaneously a 'whole' and a 'part'. Protons represent a 'whole' of its sub-atomic particles described as 'quarks' and 'gluons'.[41] Protons, in turn, become a 'part' of an atom. Different atoms, in turn, combine to form different types of molecules. The proton's sub-atomic particles, protons, and the atoms they create form a 'holarchy'. A holarchy is quite different from a command and control hierarchy because its holonic parts can exist independently and *in turn reproduce* contrary~complementary characteristics.

A defining feature of holons is that they possess tensegrity. Holons also possess relative autonomy of the system of which they are a part. They demonstrate tensegrity by also possessing system dependence. As a result of their autonomy~dependence, no part of the system

36. R.B. Fuller, 'Tensegrity', *Portfolio and Art News Annual*, vol. 4, 1961, pp. 112-127, 144, 148
37. Ashby, *An Introduction to Cybernetics*, p. 211
38. D.E. Ingber, 'The Architecture of Life', *Scientific American*, January 1998, pp. 30-39
39. D. Bohm, *Wholeness and the Implicate Order*, London, Routledge, 1980
40. Cornell University, https://arxiv.org/abs/1901.02810
41. A. Deshpande and R. Yoshida, 'The Deepest Recesses of the Atom', *Scientific American*, June 2019, pp. 26-33

will possess complete information about any other part.[42] Holons can exhibit various forms of tensegrity by combining opposite characteristics not found in hierarchies like centralisation~decentralisations and top-down~bottom-up characteristics. Mathews[43] describes how holons may undertake different functions at different levels of a holarchy. Some determine 'what holon do', others, 'how their tasks are combined' or 'why some tasks are accomplished and not others'.

Concepts illustrated by VISA Inc.

Dee Hock, the founding Chief Executive Officer of the VISA International credit card organisation invented his name for holons by combining the words 'chaos' and 'order' to create the word 'chaord'. Hock[44] defined a chaord in two ways:

1. Any self-organising, self-governing, adaptive, nonlinear, complex organism, organisation, community or system, whether physical biological or social, the behaviour of which harmoniously blends characteristics of both chaos and order.
2. An entity whose behaviour exhibits observable patterns and probabilities not governed or explained by the rules that govern or explain its constituent parts.

Hock described 'chaordic' in three ways:

1. The behaviour of any self-governing organism, organisation or system, which harmoniously blends characteristics of order and chaos.
2. Patterned in a way dominated by neither, chaos, or order.
3. Characteristic of the fundamental organising principle of evolution and nature.

VISA Inc was created by Hock in 1970 as a producer~consumer cooperative of competing~cooperating US banks. The banks consumed the credit card services produced by VISA that was created by cooperating with their credit card competitors. Hock[45] explained that the organisation 'had multiple boards of directors within a single legal entity, none of which can be considered superior or inferior, as each has irrevocable authority and autonomy over a geographic or functional area'. Consistent with the observation above by Mathews,[46] Hock observed: 'No part knew the whole, the whole does not know all the parts, and none had any need to. The entity, like millions of other chaordic organisations, including those we call body, brain, forest, ocean and biosphere, was largely self-regulating'.[47]

In firms with only a single board, coordination between different functional and geographic activities requires delegation and the establishment of some form of formal or informal 'matrix'[48] organisation. This requires executives responsible for the integration to increase their data processing, information, and knowledge.

The significance of the observation by Hock and Mathews about the compartmentalisation of data results in a substantial reduction in the need for transacting, storing, and processing bytes, data, information, knowledge, and wisdom. Economising bytes provides ways to economise materials and

42. Mathews, 'Holonic Organizational Architectures', pp. 39-40
43. Mathews, 'Holonic Organizational Architectures', p. 41
44. D. Hock, *Birth of the Chaordic Age*, Berrett-Koehler Publishers, San Francisco, 1999
45. D. Hock, *Birth of the Chaordic Age*, p. 191
46. Mathews, 'Holonic Organizational Architectures', pp. 39-40
47. D. Hock, *Birth of the Chaordic Age*, p. 191
48. P. Lasserre, *Global Strategic Management*, 4th Edition, New York, Palgrave Macmillan, 2018, p. 405

energy and also simplify complexity. Mathews[49] noted: 'The reduction in data complexity, achieved by the holonic architecture is prodigious'. This is why the adoption of holonic communication and control architecture becomes a fundamental strategy for comprehensively and reliably simplifying complexity.

Each participating bank had its VISA board to control the issue of credit cards that competed with all other participating banks cooperating in adopting a common name, brand, marketing, operating functions, and data processing. The competing banks cooperated in the appointment of 'compound boards'[50] to control the various common functions.

Each bank represented a self-governing unit that in turn was part of a self-governing organisation subject to competitive~cooperative compound relationships. In these ways, the VISA organisation could be described in the words of the Ostroms[51,52,53] and Ostrom and Allen[54] as 'polycentric compound republics'.

Other stakeholder-controlled firms like the employee controlled John Lewis Partnership that has a board for each store in the UK and the stakeholder controlled Mondragón Corporacion Cooperativa (MCC) in Spain that has boards for each cooperative component, also meet the test of forming polycentric compound republics. These two firms, like VISA, possess numerous boards of directors and/or control centres creating distributed intelligence and a special type of network governance. Turnbull[55] described this special type of network governance as 'ecological' because it represents the architecture of natural systems.

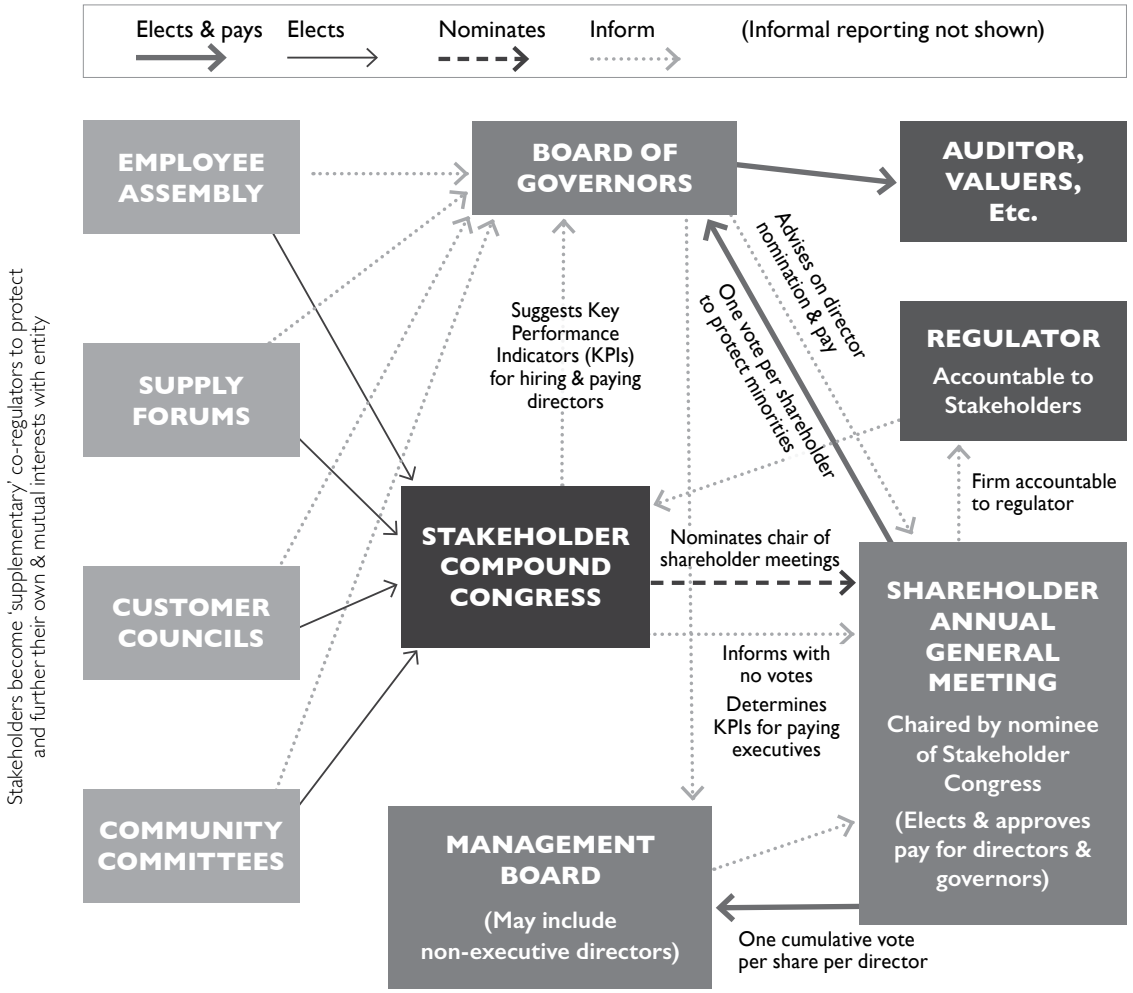
Ecological governance is radically different from the hierarchical paradigm implicitly assumed by graduate schools of business, management, and government. Instead of relying only on top-down command and controls, ecological governance introduces competing~cooperative bottom-up direction and accountability, as indicated in Figure 1. Refer to 'Employee Assembly', 'Supply Forums', 'Customer Councils' and 'Community Committees' that also represent 'Polycentric Republics' as referred to above.

The human brain provides an illustration. Our brain has no Chief Executive Neuron.[56] Different parts of the brain compete for decision-making dominance according to human internal existential needs and external risks and opportunities.[57,58,59] Ecological governance explains how millions of very small-brained ants can make complex decisions from the bottom up about when, where, and how to design, build, operate, and maintain their complex homes.[60]

49. Mathews, 'Holonic Organizational Architectures', p. 30
50. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples, p. 27
51. E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990
52. E. Ostrom, 'A Polycentric Approach for Dealing with Climate Change', *World Bank: Policy Research Working Paper 5095*, 2010, http://documents.worldbank.org/curated/en/480171468315567893/pdf/WPS5095.pdf
53. V. Ostrom and E. Ostrom, 'Public Choice: A Different Approach to the Study of Public Administration', *Public Administration Review*, vol. 31, no. 2, 1971, pp. 203-216
54. V. Ostrom and B. Allen, *The Political Theory of a Compound Republic: Designing the American Experiment*, Plymouth, UK, Lexington Books, 2008
55. S. Turnbull, 'A Vision for an Eco-Centric Society and How to Get There', The Ecological Citizen, vol. 1, no. 2, 2018, pp.141-142, http://www.ecologicalcitizen.net/pdfs/Vol%201%20No%202.pdf
56. Kurzweil, *The Age of Spiritual Machines*, p. 80
57. J.A.S. Kelso, *Dynamic Patterns: The Self-Organization o Brain and Behavior*, Cambridge MA, MIT Press, 1995
58. J.A.S. Kelso, G. Dumas, and E. Tognoli, 'Outline of a General Theory of Behavior and Brain Coordination', *Neural News*, vol. 37, 2013, pp. 120-131
59. NINDS, National Institute for Neurological Disorders and Stroke. The Architecture of the Brain, 2018, https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Know-Your-Brain#The%20Architecture%20of%20the%20Brain
60. D. Attenborough, *The Empire of the Ants*, [BBC Documentary], 2019, https://www.youtube.com/watch?v=RdPsVpD6b08

FIGURE 1:[61] Ecological governance described by Ostrom can make corporations a 'common good' benefiting all stakeholders as sought by worlds' biggest investor (Fink 2018)

Separation of governance powers from management allows independent bottom-up and outside-in stakeholder intelligence to integrate governance into Corporate Social Responsibilities to monitor and control misconduct. Systemic contestability of decisions protects and nurtures with less costs the interests of stakeholders, the firm, and society.



For publicly traded, large private firms, non profits and government corporations to make shareholders and regulators responsible for the wellbeing of stakeholders

61. Developed by the author in various forms from 'Figure 5, Stakeholder council', in: S. Turnbull, 'Best practise in the Governance of GBEs', in J. Guthrie (ed.), *Making the Australian Public Sector Count in the 1990's*, Sydney, IIR Conferences, 1995, p. 105

Holonic governance in nature and society

Field Marshal Jan Smuts[62] was the first to note the holonic architecture of natural systems. He wrote his book *Holism and Evolution* between being Prime Minister of South Africa on two occasions. His biographer, Crafford,[63] described his ideas in the following way:

> **It had very much in common with his philosophy of life as subsequently developed and embodied in his Holism and Evolution. Small units must develop into bigger wholes, and they in their turn again must grow into larger and ever-larger structures without cessation. Advancement lay along that path. Thus the unification of the four provinces in the Union of South Africa, the idea of the British Commonwealth of Nations, and, finally, the great whole resulting from the combination of the peoples of the earth in a great league of nations were but a logical progression consistent with his philosophical tenets.**

The nested networks of stakeholder governed cooperative in the Basque area of Spain, described at the MCC grew similarly by combing smaller units, a process extended to a global level by Turnbull.[64, 65] Simon[66] explained the advantage of this approach. He used probability analysis to suggest how the complexity of life could have been established similarly by federating sub-ordinate components in different ways as occurs in the periodic table. This process allows contrary~complementary subordinate components to be selected to sustain the establishment of tensegrity in higher orders of a holarchy that allows the process to be repeated. No such variety is created and replicated in command and control organisations. They represent order without also possessing the variety of chaos required for discovering how to manage complexity simply and create reproducible adaptations to do so. The MCC illustrates ecological governance in a much richer way than VISA.

The creation and maintenance of holarchic organisations are dependent on assembling subcomponents that create tensegrity. As noted above, humans are hardwired to possess contrary~complementary behaviour to meet the test of being a Holon. Such contrary behaviour is not required in command and control hierarchies that depend upon subservience and obedience. This denies hierarchies accepting or using tensegrity to create variety to manage complexity. Individuals and organisations that possess tensegrity obtain stability~agility to cope with challenges from unknowable dynamic complex environments with the capability of adaption to sustain their existence. The existence of life provides the truth of this statement.

Another fundamental requirement for individuals or organisations to manage complexity is to possess a 'requisite' variety of communications and control channels. The profound implications of the natural laws of requisite variety identified by Shannon[67] and Ashby[68] are discussed in the following sections with their implications for hierarchical organisations.

LIMITATIONS IN MANAGING COMPLEXITY WITH HIERARCHIES

Theory of Firms as Hierarchies

The theory of a firm developed by Coase[69] was limited to organisations that possessed an 'authority system', 'master and servant' or employer and employee relationship as found in command and

62. Smuts, *Holism and Evolution*
63. F.S. Crafford, *Jan Smuts: A Biography*, Kessinger Publishing, 1943, p. 15
64. Turnbull, 'Design Criteria for a Global Brain'.
65. Turnbull, 'Emergence of a Global Brain: For and from World Governance'
66. Simon, 'The Architecture of Complexity'
67. Shannon, 'A Mathematical Theory of Communications'
68. Ashby, *An Introduction to Cybernetics*
69. R.H. Coase, 'The Nature of the Firm', *Economica*, vol. 4, no. 16, p. 403, 1937, https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1468-0335.1937.tb00002.x

control hierarchies. Coase reasoned that such firms exist because instructing employees how to make a complex product can reduce cost more than transacting through market contractors for its components. Williamson[70] developed this theory of hierarchical firms to create what is referred to as Transaction Cost Economics (TCE). Williamson[71] recognised the existence of the MCC and the 'dilemma' its non-hierarchical architecture created for TCE.

At a time without electronic devices, ubiquitously reporting bytes, Williamson[72] explicitly recognised the importance of data processing in developing a theory of a firm. He stated: 'Bounded rationality involves neurophysiological limits on the one hand and language limits on the other. The physical limits take the form of rate and storage limits on the powers of individuals to receive, store, retrieve, and process information without error.'

Williamson[73] even noted that 'groups may also be formed to economise information costs'. Williamson[74] also developed 'An information processing' viewpoint to describe the need for multi-divisional (M-form) firms by stating: 'the problem of organization is precisely one of decomposing the enterprise in efficient information processing'. Ecological governance used by nature achieves this objective as illustrated by VISA avoiding the complexity of a matrix structure and the MCC illustrating how to decompose decision making of a single board into many boards as illustrated in the Tables presented below.

Coase[75] also recognised that as the size of firms increased 'there may be decreasing returns to the entrepreneur' from 'the costs of organising'. These costs include data processing in hierarchical firms to which the analysis was limited. Hierarchies develop because of the limited ability of managers to reliably supervise and mentor a large number of subordinates for whom they are directly responsible. To avoid information overload, managers limit their span of control and allow their subordinates to appoint sub-mangers to create a hierarchy.

Why Hierarchies Can Only Simplify Complexity Incompletely

Table 1 assumes a span of control of eight subordinates to indicate only the size of a firm. The crucial assumptions made in constructing the table are: (1) only half the data available to lower level workers are communicated up the chain of command; and (2) errors in reporting only affect 15% of the data. This means the volume of correct data communicated to a superior becomes 85% of 50% = 42.5%. If there are four levels of communications to the CEO, then the correct data obtained by the CEO is only 6.3%; hence 96.7% of the data available is missing or incorrect.

The communication problem can be illustrated by the party game of 'telephone'. In this game, a chain of four or more people, have to relay a message privately from one to another as accurately as possible. Even with the best intentions, the message reported at the end of the chain can be quite different from the message revealed to the audience at the end by the first member in the chain.

In command and control hierarchies, where the pay and tenure of those reporting may be determined by the information being reported, a compelling incentive exists, consciously or unconsciously, to distort, bias, misreport and omit bad news. The missing or wrong information may have existential consequences for the business. This indicates why and how hierarchies can be prone to simplify

70. O.E. Williamson, *Markets and Hierarchy: Analysis and Anti-trust Implications*, NY, Free Press, 1975
71. O.E. Williamson, *The Economic Institutions of Capitalism*, NY, Free Press, 1985, p. 265
72. Williamson, *Markets and Hierarchy: Analysis and Anti-trust Implications*, p. 21
73. Williamson, *Markets and Hierarchy: Analysis and Anti-trust Implications*, p. 42
74. Williamson, *The Economic Institutions of Capitalism*, p. 283
75. Coase, 'The Nature of the Firm', p. 394

TABLE 1[76]

Hierarchies simplify complexity incompletely with errors

Decision makers lose data, information, knowledge, and wisdom of their stakeholders

HIERARCHY	DATA UPWARDS			EMPLOYEES	
Sectors Private or public Citizens/legislature	**Volume:** Loss 50% per level	**Correct:** 85% of lower level	**Missing or wrong meaning**	**Say span of eight**	
				Per level	Accumulated total
Shareholder/Minister	Negligible	Unreliable	Unknown		
Board of directors	3.1%	1.4%	98.6%		
Chief Executive Officer	6.3%	3.3%	96.7%	1	1
Senior management	12.5%	7.7%	92.3%	8	9
Middle management	25.0%	18.1%	81.9%	64	73
Team leaders	50.0%	42.5%	57.5%	512	585
Workers	100.0%	100.0%	0.0%	4,096	4,681

complexity incompletely and so dangerously. It could explain the 'killing of the balanced scorecard'.[77]

Hierarchies Introduce Excessive Power to Facilitate Corruption Without Challenge

Another problem in hierarchies is the concentration of power. Corporations controlled by a single board of directors obtain both the power to manage the business and the power to govern the corporation. The governance powers involve: nominating directors, controlling meeting of shareholders who vote on director appointment and pay, counting the votes, deciding which votes are acceptable, and deciding how to vote open proxy forms, nominating, managing and paying the auditor who judges the accounts with absolute power to identify and manage systemic and operational conflicts of interest.

There is no ethical commercial need for directors who manage businesses also to possess powers to govern the corporation. Separation of powers is a crucial condition precedent for simplifying complexity. It makes possible the introduction of distributed intelligence and decision making to minimise data processing overload. Systemic checks and balances are introduced, as are found in political systems that seek to promote democracy. But crucially the division of powers allows executives and the business to possess tensegrity to generate requisite variety to manage and adapt to complexity.

Venture capitalists provide proof that a division of power does not jeopardise business operations, even when business risks are systematically greater at their start-up stage. It is standard practice for venture capitalists to agree with shareholders to take over governance power in return for providing

76. Based on an analysis by Downs, A., *Inside Bureaucracy*, Little Brown & Co., Boston, 1967, pp. 116-118

77. C. Nielsen, M. Lund, and P. Thomsen, 'Killing the Balanced Scorecard to Improve Internal Disclosure', *Journal of Intellectual Capital*, vol. 18, no. 1, 2017, pp 45-62

equity funding. Some bankers, even when lending money with security, may also make it a condition of the loan that they possess some governance powers. These are typically vetoed powers on what their funds can be used for, the nomination or tenure of directors, and their remuneration.

The reason why venture capitalists and bankers involve themselves in governance powers can be explained by the observation of Lord Acton:[78]

> **Power tends to corrupt, and absolute power tends to corrupt absolutely. Great men are almost always bad men, even when they exercise influence and not authority, still more when you superadd the tendency or the certainty of corruption by authority.**

This insight suggests that all unitary boards systemically facilitate corruption of their directors, their organisation, and so society. Corporate governance pioneer Tricker[79] points out that unitary boards allow directors 'to mark their exam papers'. Such systemic conflicts of self-interests are widely accepted in Anglophone jurisdictions and even promoted by so-called 'prudential' regulators. This explains why executives in such jurisdictions lose their moral compass to understand what is wrong – a point systemically highlighted by the Australian Royal Commission into misconduct in the banking, superannuation and financial services industry.[80] The costs for correcting the industry's wrongdoing are expected to reach $A10 billion.[81]

Hierarchies Become Subject to Groupthink

Even if conflicts of self-interest are not present, the efficacy of hierarchies is dependent upon the subservience of subordinates. Command and control hierarchies are dependent on obedience. It can be career threatening to question orders, introduce a variety of thought or action, and, especially, to become a whistleblower. This provides a compelling career incentive to become a team player by adopting 'groupthink'. In a commissioned submission to the Royal Commission, Professor Sah[82] pointed out that groupthink can lead to 'moral disengagement' ... 'vindicating immoral systemic practices' to 'provide exonerations for each other'.

The effect of groupthink on firm performance is a concern of BlackRock Inc. BlackRock is publicly traded on the New York Stock Exchange and is the biggest investor in the world with $US6.4 trillion under management. Its co-founder, chairman and CEO, Larry Fink[83] wrote to the CEOs of his investee companies to raise his concerns that boards of directors could 'succumb to groupthink or miss new threats to a company's business model'. He wanted 'a new model for corporate governance', one that must: 'benefit all of their stakeholders, including shareholders, employees, customers, and the communities in which they operate'.

The idea that corporations should do no harm and promote the common good is not new in the US. 'Over several decades starting 1844, nineteen states amended their constitutions to make corporate charters subject to alteration or revocation by

78. Lord Acton, 1887, letter written to an ecclesiastical scholar in the context of not supporting papal infallibility, April, https://en.wikipedia.org/wiki/John_Dalberg-Acton,_1st_Baron_Acton
79. R.I. Tricker, 'New Frontiers for Corporate Governance', CSJ, Hong Kong Institute of Charted Secretaries, January 2011, http://www.bobtricker.co.uk/assets/bob-tricker---new-frontiers-for-corporate-governance.pdf
80. Royal Commission, *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry*, Final Report, February 2019. https://financialservices.royalcommission.gov.au/publications/Pages/default.aspx
81. J. Eyers, 'Bank Compensation Costs Could Hit $10b', *Australian Financial Review*, 14 May 2019, https://www.afr.com/business/banking-and-finance/bank-compensation-costs-could-hit-10b-20190513-p51mt6
82. S. Sah, *Conflicts of Interest and Disclosure*, Research Paper, November 1, 2019, p. 5, https://financialservices.royalcommission.gov.au/publications/Pages/default.aspx
83. L. Fink, 'Larry Fink's Letter to CEO's, A sense of purpose', BlackRock 2018, https://www.blackrock.com/corporate/investor-relations/2018-larry-fink-ceo-letter

legislatures.'[84] In 1894, at the request of the Central Labor Union of New York City, the State Supreme Court revoked the charter of the Standard Oil Company of New York.[85]

In contemporary times shareholders, directors, and managers typically see their duty to maximise shareholder benefits rather than share benefits with their stakeholders. The perception has arisen that stakeholder interests are subject to, or are in conflict with, the interest of shareholders. The power relations in corporate hierarchies support this view. A key observation of the Royal Commission[86] was 'the asymmetry of power and information between financial services entities and their customers'. The Royal Commission[87] noted that consumers were exploited by their financial service entities 'because they could'. However, no recommendation was made to challenge the industry's excess power by introducing elements of ecological governance, as illustrated in Figure 1 with details in Turnbull.[88]

Similar conflicts of interest occurred in pre-modern societies when the short-term interests of individuals or groups to over exploit common good hunter-gathering resources could deny their benefits for everyone. This problem is referred to as 'the tragedy of the commons'. Elinor Ostrom[89] was awarded the Nobel Prize in 2009 for identifying how a special type of governance architecture described as 'polycentric compound republics' could avoid the tragedy of the commons. This ancient idea is now described as 'a new way to govern'[90] that is referred to as 'ecological' in Turnbull[91] and Turnbull and Pirson[92] for the reasons described in this article.

Hierarchies Lack Reliable Communication and Control Channels

Hierarchies not only lack variety to create tensegrity but they also lack variety to reliably and simply communicate and control complexity. This observation, with the 'Missing or wrong meaning' shown in Table 1, is sufficient to explain why hierarchies are systemically unable to reliably detect and communicate and control complexity. It explains the observations of Hock cited later in this article and why existential risks to society have become a wicked problem.

Like all systems in the universe, humans depend upon the integrity of stability that is challenged by environments creating tension for change. Hierarchies, in the public or private sectors, not subject to systemic challenge become stagnant, change resistant bureaucracies like political dictatorships.

Shannon's[93] Law of Requisite Variety of communications channels to increase the reliability of signals as much as desired and Ashby's[94] related Law of Requisite Variety of control channels to increase the reliability of controlling complexity as much as desired provide the foundations for establishing the natural sciences of: regulation, cybernetics, governance, and self-governance.

84. R.L. Grossman and F.T. Adams, *Taking Care of Business: Citizenship and the Charter of Incorporation*, Cambridge, MA, Charter Ink, 1993, https://www.ratical.org/corporations/TCoB.pdf, p. 13
85. Grossman and Adams, *Taking Care of Business: Citizenship and the Charter of Incorporation*, p. 17
86. Royal Commission, *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry*, p. 1
87. Royal Commission, *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry*
88. S. Turnbull, 'Causes and Solutions for Misconduct in the Financial Services Industry', *Law and Financial Markets Review*, 2019, April, https://doi.org/10.1080/17521440.2019.1602694
89. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*
90. S. Turnbull, *A New Way to Govern: Organisations and Society after Enron*, Public Policy Booklet No. 6, London, New Economics Foundation, 2002, https://ssrn.com/abstract=319867
91. S. Turnbull, 'How Might Network Governance Found in Nature Protect Nature?' *European Company Law*, vol. 11, no. 2, pp 98-102, 2014, https://www.kluwerlawonline.com/preview.php?id=EUCL2014019
92. S. Turnbull and M. Pirson, 'The Future of Management: Network Governance', *European Financial Review*, 1 May 2019, http://www.europeanfinancialreview.com/the-future-of-management-network-governance/
93. Shannon, 'A Mathematical Theory of Communications'
94. Ashby, *An Introduction to Cybernetics*, p. 206

Further to the statement of Ashby[95] that 'cybernetics has its own foundations', he proves mathematically that the Law of Requisite Variety 'owes nothing to experiment' or the nature of variety being in question or the processes of regulation or control.[96] 'The law states certain events are impossible.'[97] The simplistic articulation of the law is intuitively sensible that 'only variety can control variety'.[98] More formally Ashby states that: 'only variety in R [regulator] can force down the variety due to D [disturbance]'.

Ashby's[99] Law of Requisite Variety of control also means that:

> **R's capacity as a regulator cannot exceed R's capacity as a channel of communication. In the form just given, the Law of Requisite Variety can be shown in exact relation to Shannon's theorem 10, which says that if noise appears in a message, the amount of noise that can be removed by a correction channel is limited to the amount of information [bytes] that can be carried by that channel.**

The implications of the laws of requisite variety are profound in modern societies governed by command and control hierarchies used by governments to regulate the complexity of businesses and individuals, or for CEOs of large complex organisations in the private, non-profit, or government sectors. It denies the ability of government regulators to achieve their objectives reliably. Likewise, the law denies CEOs of large complex hierarchal entities to reliably comply with regulators and/or to reliably establish and maintain quality in providing goods and/or services or providing benefits for 'all stakeholders'.[100]

The Law of Requisite Variety explains the insights of Dee Hock, the founding CEO of the credit card company VISA Inc. Hock[101] stated:

> **Industrial Age, hierarchical command and control pyramids of power, whether political, social, educational or commercial, were aberrations of the Industrial Age, antithetical to the human spirit, destructive of the biosphere and structurally contrary to the whole history and methods of biological evolution. They were not only archaic and increasingly irrelevant; there was a public menace.**

Hierarchies exacerbate the problem of: 'Regulating the very large system'[102] because it is impossible to directly 'amplify' regulation. Ashby[103] states that an amplifier 'in general is a device that, if given a little of something will emit a lot of it'. 'The Law of Requisite Variety, like the laws of Conservation of Energy, absolutely prohibits any direct and simple magnification but it does not prohibit supplementation.'[104] For example, one person may take a day to move many heavy objects that could take the same person driving a crane to achieve in a fraction of the time by supplementing his energy from another source.

Ashby[105] gives an example of a person wanting to keep the temperature of a water bath constant by

95. Ashby, *An Introduction to Cybernetics*, p. 1
96. Ashby, *An Introduction to Cybernetics*, p. 208
97. Ashby, *An Introduction to Cybernetics*, p. 209
98. Ashby, *An Introduction to Cybernetics*, p. 207
99. Ashby, *An Introduction to Cybernetics*, p. 211
100. Fink, 'Larry Fink's Letter to CEO's, A sense of purpose', BlackRock 2018
101. Hock, D., 'The Chaordic Organization: Out of Control and Into Order', *World Business Academy Perspectives*, vol. 9, no. 1, 1995, p. 7, https://www.ratical.org/many_worlds/ChaordicOrg.pdf
102. Ashby, *An Introduction to Cybernetics*, p. 244
103. Ashby, *An Introduction to Cybernetics*, p. 244
104. Ashby, *An Introduction to Cybernetics*, p. 268
105. Ashby, An Introduction to Cybernetics. pp. 268-269

checking its temperature 100 times a day to create 36,500 corrections a year. Ashby uses 'bits' as the transaction cost to make corrections directly or indirectly by supplementing control by acquiring a thermostat for which the cost in bits is minor. The thermostat provides a way to *amplify control indirectly*. It is through supplementing the very weak power of TV broadcast signals with external power sources that the signals become sufficiently amplified to communicate with humans.

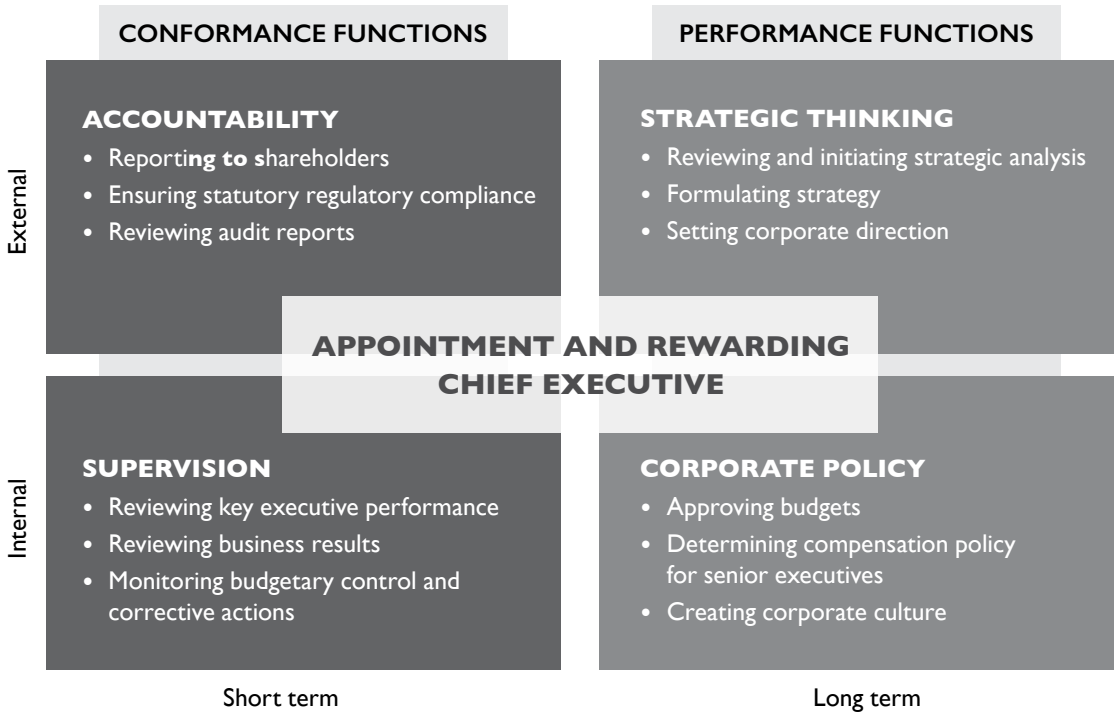
How such processes can be introduced into social organisations is considered in the following section.

DISTRIBUTED DECISION MAKING IN NETWORK ORGANISATIONS

Distributed decision making creates an important way to simplify complexity. The MCC stakeholder cooperatives provide a practical example. They show how ecological governance decomposes decision making of a single board into a variety of control centres to introduce distributed intelligence and so a much richer form of democracy.

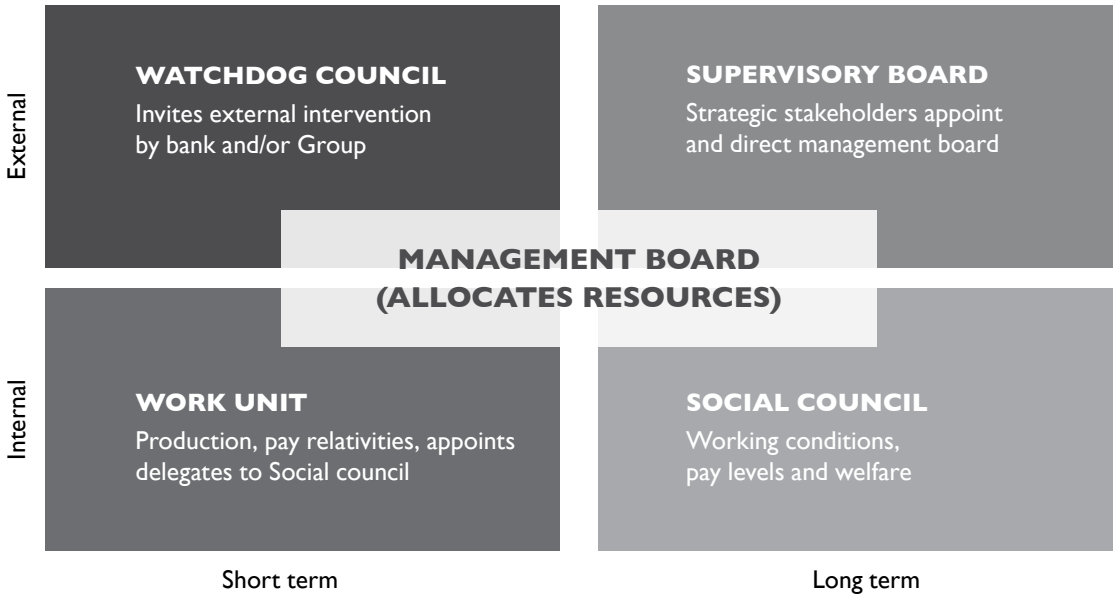
Tricker[106] identifies the five main functions and activities of a unitary board as set out in Figure 2 .

FIGURE 2:[107] Functions and activities of a unitary board



106. Tricker, *Corporate Governance: Principles, Policies and Practices*, pp. 245, 287
107. Reproduced from R.I. Tricker, *International Corporate Governance*, Simon & Schuster, Singapore, 1994, pp. 245, 287

FIGURE 3:[108] Functions and activities of Mondragón compound board



In a MCC stakeholder cooperative the five functions and activities of a unitary board are distributed to five separate decision-making centres, as shown in Figure 3. Each centre becomes elements of a 'compound board' as defined in Turnbull.[109] Figure 4 compares the workload of each of the five elements of the compound board with a single board typical of Anglophone cultures. It reveals how the workload of a unitary board is distributed over all members of the firm to create bottom-up and outside-in feedback to the traditional top-down process.

There can be many different 'work units' that make decisions on relative pay rates of their members.

These self-managing units could also be described as 'polycentric' republics or a 'holon'. They appoint delegates to the social council that is itself a compound board. In this way, individuals, work units, and the social council become part of a holarchy. The firm, its cooperative group, and the MCC each represent a self-managing entity that can be described as 'polycentric compound republics'. Alternatively, they could be described as a holarchy created by ecological governance. Each level takes on different roles along the lines cited by Mathews,[110] whose article did not mention the MCC or Tensegrity.

108. Reproduced from Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', p. 245, based on: W.F. Whyte and K.K. Whyte, *Making Mondragón: The Growth and Dynamics of the Worker Cooperatives Complex*, Ithaca, NY, ILR Press, 1988
109. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', p. 41
110. Mathews, 'Holonic Organizational Architectures', p. 41

FIGURE 4:[111] Mondragón compound board compared with unitary board

BOARD TYPE →	MONDRAGÓN COMPOUND BOARD					ANGLO
Control centres[a]	**Watchdog Council**	**Supervisory Board**	**Management Board**	**Social Council**	**Many Work Units of:**	**Unitary Board**
Members	3	5-8	4-6	~5-25	~10-20	~4-12
Function[b]	Governance processes	Appoint Management Board	Organise operations	Worker welfare	Production, Elect Social Council	Manage
Activities	Efficacy and integrity of processes	Integrate strategic stakeholders	Efficient allocation of resources	Establish working conditions	Job organisation and evaluation	Direct and control
Internal[b]	X		X	X	X	XXXX
External[b]	X	X				XX
Short term[b]	X		X		X	XXX
Long term[b]		X		X		XX

Degree of decomposition of information processing labour indicated by allocations of 'X'

a Omits the General Assembly, which elects Watchdog Council and Supervisory board;

b Descriptions follows typology of R. I. Tricker, Corporate Governance: Principles, Policies and Practices

111. Reproduced from Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', p. 245. R.I.M. Dunbar, 'Co-evolution of neocortical size, group size and language in humans', *Behaviorial and Brain Sciences*, vol. 16, pp. 681-735, 1993

When a MCC firm grows in size to beyond manageable human neurological limits[112], it divides into two like an amoeba. One firm then becomes a supplier or customer of the other. This creates a lateral division of decision-making labour. It also contributes to creating groups of firms that share some functions like accounting and marketing through a cooperative of the cooperative group. The MCC now has a number of these cooperative groups, each with its internal system of network governance to share the functions of up to a dozen or so firms like a Keiretsu group.[113] The cooperative groups are then federated at a third level of the holarchy to create the MCC as illustrated and described in Turnbull.[114]

How the concept of holons radically simplifies and explains the complexity of the 200 firms in the MCC system is demonstrated in a 'Table 6.1, Holon typology of Mondragón'.[115] The possibility of using the architecture of nature to govern humanity to preserve both nature and humanity is articulated in Turnbull,[116,117] in a way to that could also establish: 'government of the people, by the people, for the people'.[118]

The existence of the MCC in Europe, the John Lewis Partnership in the UK, and VISA international in the US provides evidence that network governed firms with an ecological communication and control architecture can be established without any changes in the law in major jurisdictions. How the insights and concepts demonstrated in such firms could be introduced to simplify the complexity of publicly traded firms, large private firms, non-profits, and government owned firms is next considered.

OPPORTUNITIES FOR SYSTEMICALLY SIMPLIFYING ORGANISATIONAL COMPLEXITY

This section considers how elements of ecological governance could be systematically introduced to publicly traded firms, large private organisation, non-profit organisations and government bureaucracies. The incentive to do so is to improve operations by increasing the ability of organisations to reliably simplify complexity comprehensively. Another incentive is to eliminate and mitigate the systemic conflicts of interest in hierarchies. Governments have an incentive to adopt ecological governance to minimise the size, cost, and complexity that alienates voters. Government departments, corporations, and agencies could become role models[119] to ironically remove key arguments for privatisation. It would introduce 'Associational Democracy'[120] to augment and reinforce legislative democracy.

Neither economic markets nor simple hierarchies occur in nature. Nature survives and excels by using variety introduced by tensegrity to produce competition for survival. Tensegrity is both denied and discouraged in hierarchies. A condition precedent for introducing tensegrity is to separate the power to manage from the power to govern, as shown in Figure 1. This shows both a 'Management board' and a 'Board of governors'. Turnbull[121] has

112. R.I.M. Dunbar, 'Co-evolution of neocortical size, group size and language in humans', *Behaviorial and Brain Sciences*, vol. 16, pp. 681-735, 1993.
113. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', p. 225
114. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', p. 245
115. Turnbull, 'The Governance of Firms Controlled by More Than One Board: Theory Development and Examples', Table 6.1, Holon typology of Mondragón, p. 221
116. Turnbull, 'Emergence of a Global Brain: For and from World Governance'
117. Turnbull, 'Design Criteria for a Global Brain'
118. A. Lincoln, Handwritten copy of 1863 Gettysburg address prepared for Colonel Bliss, 1864, http://www.abrahamlincolnonline.org/lincoln/speeches/gettysburg.htm
119. S. Turnbull, 'Best Practice in the Governance of GBEs', pp. 99-109
120. P. Hirst, *Associational Democracy: New forms of economic and social governance*, Policy Press, Cambridge, 1994
121. Turnbull, 'Corporate Charters with Competitive Advantages'

twice introduced this arrangement in enterprises he has founded. It allowed him to negotiate exceptions from the law with the regulator because superior investor protection was introduced. It provided an example of how to introduce a systemic process for de-regulation by introducing elements of self-governance that is an intrinsic feature of ecological governance.[122]

Regulators are created to protect stakeholders. It makes political sense to make regulators accountable to KPIs set by stakeholders, as indicated in Figure 1. Governments could then determine the remuneration and tenure of its regulators subject to them meeting stakeholder KPIs. It would encourage regulators to adequately resource stakeholders to become co-regulators, as indicated in Figure 1 and described in Turnbull.[123] This would also protect responsible Ministers and the Government.

How elements of ecological governance could be introduced in various types of large complex organisations is indicated in Figure 1, which features generic illustration of ecological governance with stakeholders as co-regulators. Polycentric self-managing stakeholder organisations, as illustrated on the left-hand side of Figure 1, could be introduced by changes in the constitution and by-laws of corporate entities such as achieved by Turnbull.[124] Stakeholder forums introduce the 'requisite variety' of both communication and control channels to crosscheck augment and mentor management as much as desired by increasing the density of their networks. The detailed steps for their introduction are inspired by the Citizen Utility Boards (CUBs) introduced by Ralph Nader to reduce regulatory capture in the US[125].

Evidence of CUB efficacy is their existence decades later (details are provided in Turnbull).[126,127] The operating advantages for shareholders, directors, managers, auditors, and stakeholders are detailed in Turnbull.[128] The 'bottom–up' stakeholder associations in Figure 1, represent holons or the 'polycentric' self-governing 'republics' referred to by Ostrom[129] and Ostrom and Allen.[130] The stakeholder boards jointly establish a compound board, as shown in Figure 1 to provide political processes to manage the various conflicts of interest between investors and stakeholders and between different stakeholders. It is these conflicts that introduce tensions to create tensegrity to maintain cooperative checks and balances to avoid and mitigate tragedies of common corporate interests.

Figure 1 represents 'a new model of corporate governance' needed for Fink[131] to achieve his objective of firms benefiting all stakeholders. As revealed by the Ostroms, it is an ancient form of governance. Organisations that promote benefits for all their stakeholders become a common good.[132] In this way, global firms could become an instrument for promoting global common goods such as cleaner air, water, oceans, and healthy environments for nurturing bio-diversity to maintain humanity and the wellbeing of the planet.

122. S. Turnbull, 'The Theory and Practice of Government De-regulation', *International Finance Review: Institutional Approach to Global Corporate Governance*, vol. 9, 2008, pp. 117-139, http://ssrn.com/abstract=1008453
123. Turnbull, 'Causes and Solutions for Misconduct in the Financial Services Industry', Law and Financial Markets Review, 2019, April, https://doi.org/10.1080/17521440.2019.1602694
124. Turnbull, 'Corporate Charters with Competitive Advantages'
125. B. Givens, *Citizen Utility Boards: Because utilities bear watching*, Centre for public interest law, University of San Diego, School of Law, California, 1991
126. Turnbull, 'Causes and Solutions for Misconduct in the Financial Services Industry'
127. Turnbull, 'The Science of Governance: A Blind Spot of Risk Managers and Corporate Governance Reform'
128. S. Turnbull, 'Discovering the "Natural Laws" of Governance', *The Corporate Board*, March/April, ed. R. Ward, Vanguard Publications Inc.: Okemos, MI, 2012, http://ssrn.com/abstract=2062579
129. Ostrom, 'A Polycentric Approach for Dealing with Climate Change'
130. Ostrom and Allen, *The Political Theory of a Compound Republic: Designing the American Experiment*
131. Fink, 'Larry Fink's Letter to CEO's, *A sense of purpose*, BlackRock, 2018
132. Turnbull, 'Causes and Solutions for Misconduct in the Financial Services Industry'

The alternative was articulated by Hock[133] nine years before the 2008 global financial crisis, who noted:

> **We are experiencing a global epidemic of institutional failure that knows no bounds. We must seriously question the concepts underlying the current structures of organization, and whether they are suitable to the management of accelerating societal and environmental problems – and, even beyond that, we must seriously consider whether they are the primary source of those problems.**

The problem of avoiding the 'global epidemic of institutional failure' is becoming much more pronounced in the current century as complexity accelerates. This paper provides insights as to why this so and how they can be overcome. The solution depends upon this knowledge being shared and applied. The insights of this paper demonstrate, that it is impossible for governments, their regulators or private sector CEOs of large organisations to reliably and comprehensively regulate complexity relying solely on their current top-down systems.

The Australian Royal Commission referred to above failed to recognise this point submitted by Turnbull[134] and so failed to identify both the root causes and systemic solution to the problems they were investigating. This systemic problem of hierarchies is also being investigated by Australian Royal Commissions into: 'Aged care Quality and Safety' in 2018, and 'Violence, Abuse, Neglect and Exploitation of People with Disabilities' in 2019.[135]

The challenge for society, and especially for schools of business or government, is that their implicit assumption that command and control hierarchies represent the natural order of things is the fundamental cause of existential risks; a belief reinforced by the dominance of monotheism. This may explain why the theory and practice of designing corporate charters to introduce elements of ecological governance remains an intellectual black hole.

The authors pioneered the first MBA unit in the world that provided education on how to evaluate and design network governed organisations at Macquarie University in 2003. Elements of our course were introduced to graduate law students at the Swiss International Law School in 2015. Columbia Law Professor Katharina Pistor developed the course with Turnbull[136] being required reading with a video introduction by Turnbull.[137] The authors would welcome the opportunity to assist scholars and educational institutions in developing similar courses that could also be used to extend management education to managing global problems.

The importance of this article was highlighted by the US Business Roundtable[138] which announced on 18 August 2019 that 181 of its CEOs had committed 'to lead their companies for the benefit of all stakeholders – customers, employee, suppliers, communities and shareholders'. While the BlackRock CEO was a signatory, there is no mention of his proposal for 'a new model of corporate governance' cited by authors. CEOs committed to many stakeholders would be accountable to no one. This would undermine shareholder primacy, a feature that is preserved by the authors in their Figure 1.

133. D. Hock, *Birth of the Chaordic Age*
134. S. Turnbull, 'Causes and solutions for misconduct in the financial services industry', September 21, reference number POL.0001.2000.0003, 2018, and S. Turnbull, 'Regulating Financial Misconduct: Should the existing law be administered or enforced differently?' October 26, reference number: POL.1000.0001.0917, https://financialservices.royalcommission.gov.au/Submissions/Documents/interim-report-submissions/POL.9100.0001.0917.pdf.
135. https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Browse_by_Topic/law/royalcommissions
136. Turnbull, *A New Way to Govern: Organisations and Society after Enron*
137. S. Turnbull, *Practices, science and art of drafting corporate charters and Bylaws*, Video posted at: https://vimeo.com/137118382/1d7e82ce27
138. https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans

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ARTICLE

A BLUEPRINT FOR INNOVATION COLLABORATION: IMPLEMENTING THE COFFEE HOUSE CONCEPT

Dr Peter Massingham

The seeds of modern economic development and international trade were sown in the coffee houses of 17th century London. Dr Peter Massingham revisits their development to explore new models of collaboration between business and academia to boost Australia's innovation performance.

PREAMBLE

The impetus for this paper began at Global Access Partners Annual Economic Summit 'Spaces of Australian Innovation' in September 2016. One of the themes of the Summit was how to improve Sydney's performance as an innovation hub. The Summit agreed that Sydney represents an opportunity to become a global leader as an innovation city. At that time (2016), considerable work was being done by the Greater Sydney Commission and the Sydney Innovation Hub Taskforce to improve Sydney's innovation performance. At the Summit dinner, Ms Lucy Turnbull gave a keynote address on the concept of *coffee houses*. Coffee houses of the 17th-18th century London were places where 'intellectuals, professionals and merchants thronged… to debate, distribute pamphlets, do deals, smoke clay pipes and drink coffee rather than ale'.[1] They were the original hubs of innovation. Lloyds of London began in 1688 at Edward Lloyd's coffee house; in 1698, the owner

1. History.co.uk, no author, https://www.history.co.uk/history-of-london/londons-coffee-houses (accessed 25 May 2019)

of Jonathan's coffee house started the London Stock Exchange;[2] in 1771, senior engineers began holding dibber meetings at the Kings Head Tavern that led to the Society of Civil Engineers.[3] During discussions at the Summit, a project concept emerged to modernise this model of innovation collaboration by developing communities of practice (CoP) across Sydney. The concept design was that these CoP will be physical spaces for business, consultants and academics to share knowledge and encourage innovation in the city.

INTRODUCTION

There is substantial evidence that despite Australia's highly educated population, well-developed economic infrastructure, and creative and practical culture; the nation's innovation performance needs improvement. The Australian Government's 2015 National Innovation and Science Agenda (NISA) identified innovation at the heart of a strong economy. In 2007, Australia ranked 9th globally in terms of its knowledge economy.[4] Australia can no longer rely upon natural resources, agriculture and manufacturing to compete globally. In 2016, Australia ranked 19th in the 2016 Global Innovation Index.[5] Bill Ferris AC, former Chair of Innovation Science Australia (ISA), said that 'We need to significantly lift our game if we want to be a top tier innovation nation'[6]. ISA's framework identifies three innovation activities: knowledge creation, knowledge transfer and knowledge application.[7] Australia is rated above average compared to other OECD[8] countries in creation, and average or below in the other areas.[9] The worst performing area is knowledge transfer. ISA's framework identifies six categories of enablers that facilitate innovation activities: policy, money, infrastructure, skills, networks and culture.[10] This paper examines the networks enabler and how it might improve knowledge transfer.

The paper's focus is on how to improve the networks enabler within the context of a city. Innovation occurs in multiple ways: by an individual, in groups, in organisations and between organisations. Within this context, innovation may occur in clusters of innovators located in close physical proximity. Silicon Valley is an example. Cities can be innovators in the sense that they represent communities of innovation. Cities are also able to facilitate innovation by providing each of the six innovation activities. This paper examines how to improve a city's performance as an innovation hub. Sydney, as Australia's highest ranked innovative city, can lead the way for the rest of Australia. Sydney is ranked 10th in the Innovative Cities Index.[11] It is the 3rd ranked city in Asia after Tokyo (1st) and Singapore (6th). This paper outlines a framework to understand the nature of innovation collaboration at a city level. The framework may be used to build on Sydney's position, for example, learn why Sydney is performing well, share these lessons with other cities, and improve Sydney's ranking.

COLLABORATION FOR INNOVATION

The paper's underlying assumption is that innovation performance may be improved by people collaborating. Innovation is defined as an economic or social term, as changing the yield of resources, and as changing the value and satisfaction obtained

2. History.co.uk
3. J. Rogers, and M. Ports, ASCE is Born, *Civil Engineering*; vol, 72, no. 11/12, 2002, pp. 188-191
4. Knowledge for Development (K4D) Program, http://web.worldbank.org/archive/website01030/WEB/IMAGES/KAM_V4.PDF, p. 5 (accessed 25 May 2019)
5. Innovation Science Australia (ISA) (2016) Performance Review of the Australian Innovation, Science and Research System. Commonwealth of Australia. Canberra, p. x
6. ISA, p. i
7. ISA, p. ix
8. Organisation for Economic Co-operation and Development
9. ISA, p. xi
10. ISA, p. ix
11. 2 Think Now Data Innovation Agency, https://www.innovation-cities.com/innovation-cities-index-2018-global/13935/accessed 28 May 2019

from resources by the consumer.[12] Human capital is the primary source of innovation.[13] Human capital represents the human factor in the organisation: the combined intelligence, skills, and expertise that give the organisation its distinctive character[14]. Innovation collaboration may be defined as the development and implementation of new ideas by people who engage in discussions with others within an organisational context.[15] People share and create human capital in communities of practice (CoP). CoP are groups of people who share a concern, passion, or set of problems about a topic, and who deepen their knowledge in this area by interacting on a regular basis.[16] CoP can support and enable innovation processes in organisations,[17] and improve organisational performance.[18]

There is evidence that Australia needs to improve its performance in terms of innovation collaboration. The national investment in research and development (R&D) currently totals 2.1 per cent of GDP[19]. The Australian Government invests around $10 billion in R&D, and other participants in the ISR[20] System (primarily the business community) invest twice as much again[21]. Only about 5% of these funds are allocated to knowledge transfer[22]. Therefore, the focus of this paper – innovation collaboration – is an under-researched area. The Federal Government's policy highlights how innovation is not just about new ideas, products and business models; innovation is also about creating a culture of embracing risk, moving quickly to support good ideas and learning from mistakes.

Increasingly, external professional or occupational social networks are being distinguished from traditional internally focused CoP. However, these external CoP are more difficult to manage, have less goodwill and shared identity amongst participants, and highlight socio-political power inequities which represent barriers to knowledge sharing.[23] These problems are particularly evident at a city level due to the multiple, complex and interdependent social systems.[24] Australia's innovation system involves multiple stakeholders, and the main groups are business and academia. Australia has world-class universities and research organisations with several ranked in the top 100 globally, but is ranked lowest in the OECD in research–business collaboration.[25] Strengthening the relationship between its innovative businesses and our research organisations is crucial to Australia's economic success. Business may be further disaggregated into 'for profits', 'not-for-profits', government organisations, and consultants. Innovation occurs within each of these types of organisations within a city. Building linkages across these social systems will require several layers of collaboration.

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13. P. Massingham, *Knowledge Management: Theory in Practice*, Sage Publishing, London, U.K, 2019
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18. K. Bradley et al., Managing a new collaborative entity in business organizations: understanding organizational communities of practice effectiveness, *Journal of Applied Psychology*, vol. 96, no. 6, 2011, pp. 1234-45
19. ISA, Innovation review, p viii
20. Innovation, Science and Research (ISR) System, ISA
21. ISA
22. ISA, Innovation review, p viii
23. C. Nielsen and J. Sort, Value exchange in university–industry collaborations, *International Journal of Technology Transfer and Commercialisation*, vol. 12, no. 4, 2015, pp. 193-215
24. R. Kitchin, T. Lauriault and G. McArdle,. Knowing and governing cities through urban indicators, city benchmarking and real-time dashboards, *Regional Studies, Regional Science*, vol. 2 no. 1, 2015, pp. 6-28.
25. ISA, Innovation review

MANAGING THE COFFEE SHOP MODEL

Communities of Practice (CoP) have traditionally been seen as informal, self-selecting, self-managing groups that operate open-ended without deadlines or deliverables.[26] This voluntary aspect can be a strength and a weakness. The strengths are the democracy and participation that enable the knowledge-sharing practices CoP strive for.[27] This empowerment seems necessary for the creativity and adaptability that effective CoP require. As a result, CoP have been handled with a light touch and tend to be nurtured rather than commanded and controlled.[28] The weaknesses are that CoP are dependent on participants' motivation and goodwill which threaten their continuity; and they are not accountable.[29] This means that CoP may become little more than opportunities to chat with limited personal or organisational gain or practical outcomes in terms of innovation. Research has recognised that CoP have heterogenous purposes and performance with different characteristics and dynamics[30]. The type of external CoP that drives innovation at a city level must be managed.

Professional practice CoP have diverse characteristics created by people who do not usually work together and come from different knowledge perspectives.[31] Participants may lack a shared sense of communal identity created by being employees within the same organisation.[32] As a result, these external CoP require more formal controls such as membership criteria and performance outcomes.[33] These controls introduce problems of power, conflict and internal dynamics in CoP.[34] These problems threaten the need for democracy and participation considered essential to knowledge sharing within CoP.[35] Professional practice CoP are the social system required to drive innovation collaboration within cities and improve the network enabler, particularly collaboration between business and universities. However, they will not work on the voluntary basis adopted by the internal CoP model. Professional practice CoP lack the sense of identity and goodwill generated by employee membership. This creates attitudinal and behavioural problems. Improving the networks enabler and knowledge transfer within a city's innovation system requires an understanding of these problems and how to solve them.

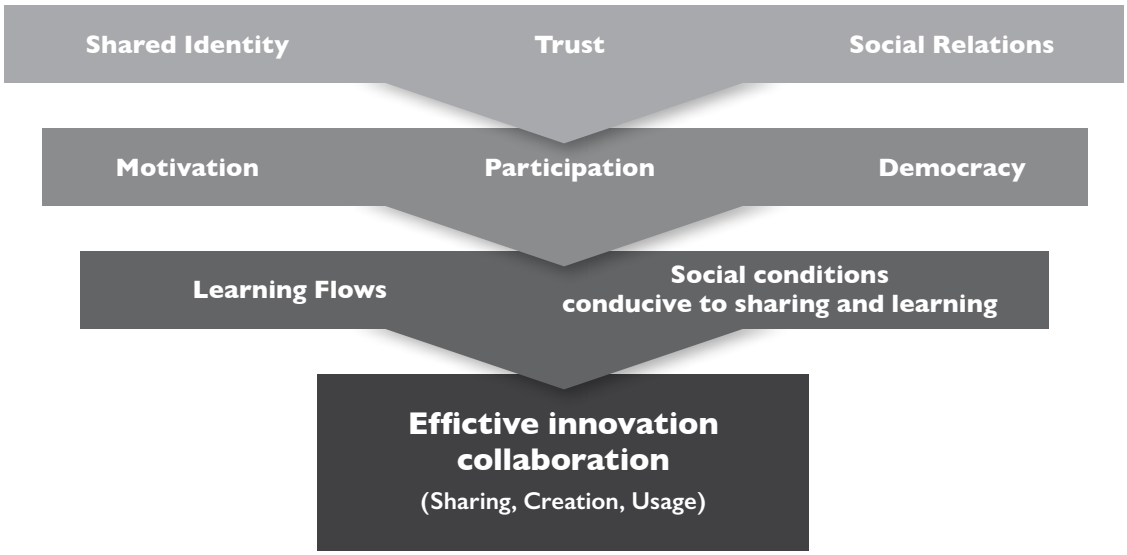
TOWARDS A BLUEPRINT OF INNOVATION COLLABORATION

Current thinking

Research has found that the willingness to innovate is created by communities that share a sense of purpose, values, and rules of engagement[36]. Research has found that cross-community CoP require special knowledge processes to build identity, trust, and social relations necessary for effective knowledge transfer[37]. These processes might include boundary spanning roles; absorptive capacity, transfer capability, and motivation for both the knower (donor) and the seeker (recipient) in the

26. P. Baumard, *Tacit Knowledge in Organizations*, London, Sage, 1999
27. P. Massingham, An Evaluation of Knowledge Management Tools Part 2: Managing Knowledge Flows and Enablers, *Journal of Knowledge Management*, vol. 18, no. 6, 2014c, pp. 1101-126
28. A. Ward, Getting strategic value from constellations of communities, *Strategy and Leadership*, vol. 28, no. 2, 2000, pp. 4-9
29. Massingham, Knowledge Management Tools Part 2
30. A. Amin, and J. Roberts, *Community, Economic Creativity, and Organization*, Oxford, Oxford University Press, 2008
31. D. Hislop, *Knowledge Management in Organizations: A critical introduction, 3rd Edition*, Oxford University Press, 2013
32. M. Bettiol and S. Sedita, The role of community of practice in developing creative industry projects, *International Journal of Project Management*, no. 29, 2011, pp. 468-79
33. J. Swan, H. Scarbrough and M. Robertson, The construction of communities of practice in the management of innovation, *Management Learning*, vol. 33, no. 4, 2002, pp. 477-96
34. S. Fox, Practice, Foucault, and actor-network theory, *Journal of Management Studies*, vol. 37, no. 6, 2000, pp. 853-68
35. P. Massingham, The Researcher as Change Agent, *Systemic Practice and Action Research*, no. 27, 2014a, pp. 417-448
36. L. Hill et al., *Collective Genius: The Art and Practice of Leading Innovation*, Harvard Business Review Press, Harvard, 2014
37. Hislop, *Knowledge Management in Organizations*

FIGURE 2: Innovation Collaboration: Communities of Practice Model



CoP knowledge exchange; as well as understanding the nature of the knowledge being transferred; and inter-organisational dynamics such as power, trust and risk, structures and mechanisms, and social ties.[38] Figure 1 presents a conceptualisation about how to manage professional practice external CoP with a specific focus on connecting knowers (experts) and learners (users) to build innovation capability.

New thinking

The Blueprint

This section presents ideas on how professional practice CoP may be managed to facilitate knowledge flows necessary to improve innovation performance at a city level. The ideas suggest how to improve the networks enabler necessary for knowledge transfer between innovation system stakeholders, particularly business and universities. Figure 2 presents a four phased model about how to manage professional practice external CoP at a city level.

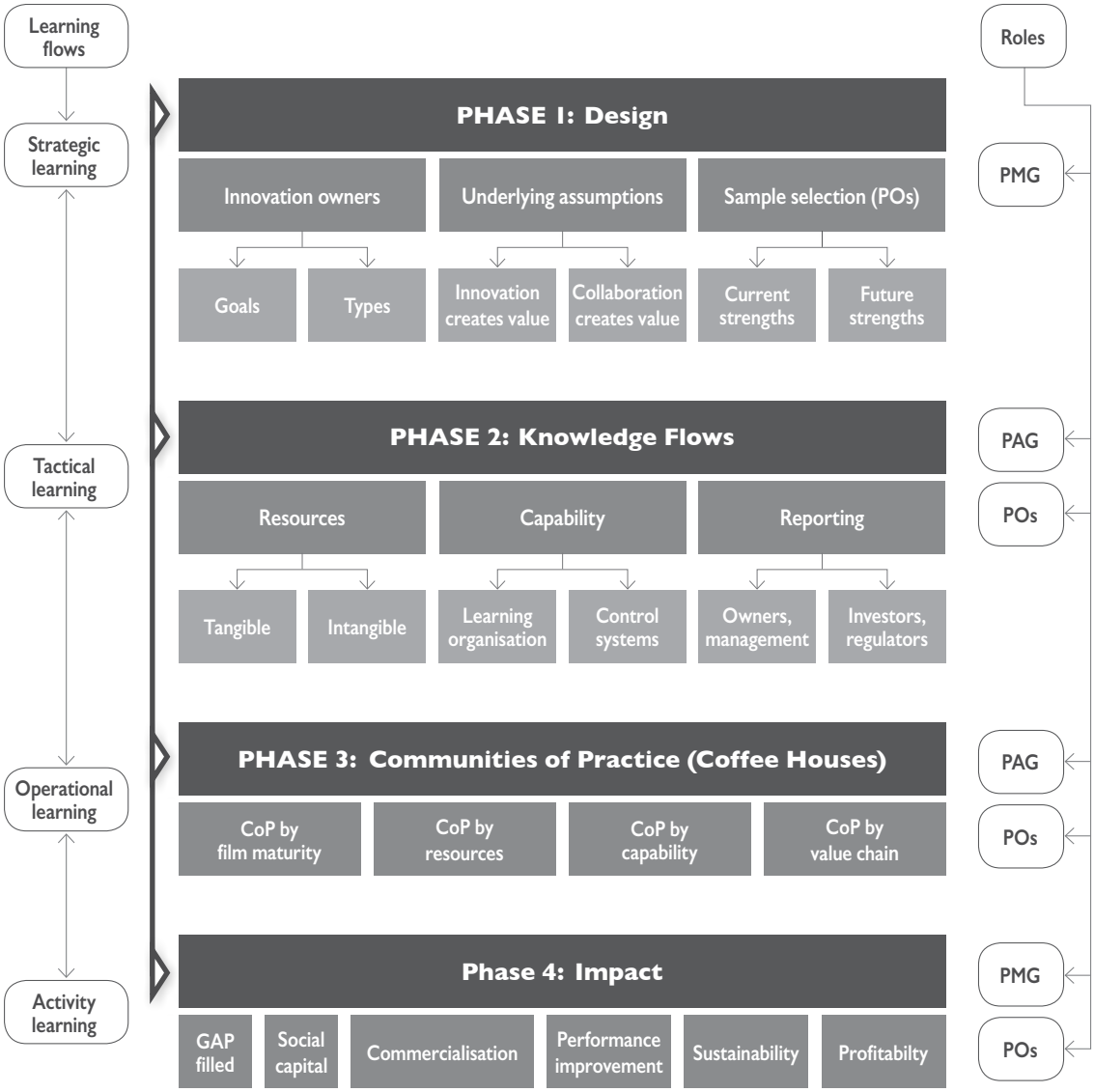
The model represents how a participant's learning journey interacts within the broader social system of Sydney's business, academic and consulting communities. This takes place through a series of four Action Research (AR) levels, and learning flows within each of these levels.

How the model works

Each of the four AR levels represents both a horizontal and vertical knowledge flow. Knowledge can become stuck in either direction. The challenge is to ensure that the knowledge flows smoothly horizontally and vertically within the CoP. The aim

38. M. Easterby-Smith, A. Lyles and E. Tsang, Inter-organizational knowledge transfer: current themes and future prospects, *Journal of Management Studies*, vol. 45, no. 4, 2008, pp. 677-90

FIGURE 2: Innovation Collaboration: Implementating the Coffee House Model



is to move down the levels – from Phase 1 design to Phase 4 impact – as quickly as possible. Each phase represents a gate that must be opened before progress to the next phase. The gate opens as the activities in each phase are completed. To progress to the next phase, the knowledge flow must satisfy the CoP members in each of the phase's criteria. For example, in Phase 1, the CoP must be designed in a way that ensures that the members, e.g., industry and universities, agree on the CoP goals and the type of innovation desired. This point is where knowledge flows often become stuck in potential research projects. In Australian Research Council (ARC) Linkage Projects, for example, there is no requirement for the university partner to produce any practical outcomes at all. This clause is designed to separate academic research from consulting. Whereas consultants provide knowledge solutions to business clients in exchange for financial reward, the ARC does not want academics to conduct research under these conditions. The idea is that financial incentives might introduce pressure to bias results or produce research outcomes desired by the sponsor rather than truth. While this might preserve the integrity of academic research, it does not address business concerns that this research has limited practical outcomes or value.

The model tracks knowledge flows within the CoP. These knowledge flows begin at the top of Figure 2. Knowledge can become stuck. These sticking points cause the CoP to become dysfunctional, and the innovation collaboration fails. This may explain why Australia rates so poorly in industry-university collaboration compared to other OECD countries. Systemic factors exist which prevent effective professional practice external CoP from focusing on innovation collaboration in Australia. It may be that the process gets stuck in Phase 1, strategic learning, when potential partners cannot see that collaboration creates value (see underlying assumptions). Until this perception is addressed, there is little chance that potential partners will progress to Phase 2 and scope a collaborative agreement. However, these systemic factors may exist anywhere in the model where activities are ineffective and knowledge flow slows or stops altogether.

On the right-hand side of Figure 2 are roles. These represent the CoP corporate governance. The Project Management Group (PMG) should include the key stakeholders, e.g., business and academics. The Project Advisory Group (PAG) are experts who volunteer to share some of their knowledge with users in the innovation CoP. They should be selected in terms of whether their experience, skills, and knowledge matches the CoP goals and the end users' needs. The Participating Organisations (POs) are the users of the PAG's knowledge. These are individuals, groups or organisations, e.g., entrepreneurs, start-ups, or intrapreneurs who want to innovate but lack some key knowledge and seek help.

Vertical knowledge flows

On the left-hand side of figure 2, there are four AR levels:

1. Strategic: what are we doing?
2. Tactical: why are we doing it?
3. Operational: how do we do it?
4. Activity: how do we improve what we are doing?[39]

Each of the four AR levels represents a gate that must be opened before progressing to the next phase. If the CoP moves to another phase before satisfying the criteria above, the CoP will not function effectively and knowledge flows will become stuck in an activity.

39. Massingham, 2014a, Change Agent

Horizontal knowledge flows

PHASE 1: Design. This paper's blueprint for innovation collaboration begins by ensuring an understanding of the problem, before jumping to a solution. The design phase starts with the goals and types of innovation sought by the CoP. It is necessary to challenge the PMGs' expectations about the CoP and its underlying assumptions about whether innovation and collaboration actually create value and, if so, how. Finally, it is necessary to build on these activities to ensure that the PMG selects the types of POs that will benefit from the CoP and its outcomes, and contribute to improving the city's innovation performance.

PHASE 2: Knowledge Flows. The blueprint process continues by identifying the knowledge resources and capabilities which will be shared in the CoP. At the 2016 GAP Annual Economic Summit on 'Spaces for Australian Innovation', innovators were described as 'weeds' in the sense of creative people being different or difficult. Organisations have been guilty of 'pulling out the weeds' to ensure compliance.[40] The following extract from the Global Access Partners 2016 Summit illustrates this point:

> **Despite all the schemes to encourage it, innovation cannot be institutionalised. Innovation and the institutional mindset are diametrically opposed, and so, rather than discuss ways in which bureaucrats can foster it, innovation should be allowed to grow like a 'weed', sprouting wherever it finds a crack of space or hint of nourishment. Most genuine innovators are individualists, rather than collaborators, and will always chafe under the restraints and assumptions which government and society might place upon them. Australia should therefore embrace innovation as a wild, self-seeding 'weed', and, rather than smother it in attempts to codify and order its growth, allow it to flourish away from more cultivated processes.**[41]

The blueprint encourages creativity by developing opportunities for creative people as 'weed hothouses' that facilitate knowledge sharing about innovation. Phase 2 begins with benchmarking to establish gaps in resources and capability within POs. Resources are typically classified as tangible and intangible. Tangible resources include: physical resources, financial resources, technology assets, and organisational resources; while intangible assets include: human assets and intellectual assets; brands, company image, and reputational assets; relationships: alliances, joint ventures, or partnerships; and company culture and incentive systems.[42] Innovation requires tangible and intangible resources. Phase 2 identifies what POs need to know to improve their innovation performance. Financial resources, for example, are critical, particularly for start-up firms. How to access these resources is valuable knowledge. Similarly, commercialisation is valuable knowledge. The project will connect people who need to know,e.g., finance or commercialisation (POs), with people who have successfully done this (PAG). Capabilities are included to capture the change and cultural components considered essential at the 2016 GAP Summit. While the CoP will improve the knowledge transfer necessary to improve the POs' innovation, the role of the firm is fundamental too.[43] Dynamic capabilities are the firm's ability to integrate, build and reconfigure internal and external resources and competences

40. https://www.globalaccesspartners.org/A_Vision_for_Australia_2016_Summit_Report.pdf, p. 35
41. GAP 2016 Summit, p. 35
42. A. Thompson, M. Peteraf, J. Gamble, & A. Strickland, *Crafting & Executing Strategy. The Quest for Competitive Advantage: Concepts & Cases*, (20th edition), McGraw-Hill Irwin, NY., USA, 2016
43. A. de Felice, Measuring the social capabilities and the implication on innovation: Evidence from a special industrial cluster, *Journal of Economic Studies*, vol. 41, no. 6, 2014, pp. 907-928

to address and shape rapidly changing business environments.[44] They create value in the way they combine resources to 'determine the speed at, and degree to which, the firm's idiosyncratic resources and competences can be aligned and realigned to match the opportunities and requirements of the business environment'.[45] The outcomes are the capacity to outperform competition. Specific examples of dynamic capabilities include change routines, such as product development, and strategic analysis e.g., of investment choices or market timing decisions. However, they are more commonly found in creative managerial and entrepreneurial acts,[46] e.g., product, process or market innovation. This blueprint measures dynamic capabilities in terms of Learning Organisation Capacity (LOC). LOC defines an organisation that effectively manages its knowledge resources,[47] responds to forces for change,[48] and learns from its experiences.[49] At the individual and group levels, LOC enables innovation and creativity suitable for knowledge workers.[50] The final part of Phase 2 is reporting. Accounting for innovation is about identifying the factors that drive successful and unsuccessful innovations. This activity provides a basis from which innovation performance can be measured, success rates increased, and high performance achieved. Measurement of innovation and effective governance are critical to balancing strategy, resources and risk, ultimately identifying conditions in which innovation can thrive.

PHASE 3: Communities of Practice. My blueprint's main focus is to use CoP to facilitate the flow of knowledge identified as necessary by Phase 2. Professional practice CoP must be managed. However, this may create problems of power, conflict, and internal dynamics which could threaten democracy and participation that are considered essential to knowledge sharing within CoP. This blueprint develops solutions to these issues by embedding best-practice knowledge management into the CoP.[51] Innovation is contextual in the sense that each CoP will have different goals and outcomes. For example, the knowledge of the PAG and the knowledge needed by the POs will vary. The gap between what the PAG knows and what the POs know will vary. Therefore, the knowledge management interventions need to also vary according to the unique needs of each CoP. To address these contextual variations, this blueprint recommends introducing four types of CoP within a city (see Figure 2). These will organise members by:

- **firm maturity:** CoP 1.1: start-ups, CoP 1.2: growth, CoP 1.3: mature;
- **resources:** CoP 2.1: tangible, CoP 2.2: intangible;
- **capability:** (e.g., these will emerge from phase 2): CoP 3.1: commercialisation, CoP 3.2: sales; and
- **value chain:** CoP 4.1: upstream (e.g., supply chain), CoP 4.2 downstream (e.g., distribution channel).

The variety in the CoP will ensure each type of innovation context will be covered. This coverage

44. D. Teece, Explicating Dynamic Capabilities: The nature and microfoundations of sustainable enterprise performance, *Strategic Management Journal*, vol. 28, no. 13, 2007, pp. 1319-1350
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46. D. Teece and A. Al-Aali
47. R. Grant, Toward a Knowledge-based Theory of the Firm, *Strategic Management Journal*, no. 17, 1996, pp. 109-122
48. P. Senge, *The Fifth Discipline: The art and practice of the learning organization*, New York, Doubleday Currency, 1990
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50. P. Massingham and K. Diment, Organizational Commitment, Knowledge Management Interventions, and Learning Organization Capacity? *The Learning Organization*, vol. 16, no. 2, 2009, pp. 122-142
51. P. Massingham, An Evaluation of Knowledge Management Tools Part 1: Managing Knowledge Resources, *Journal of Knowledge Management*, vol. 18, no. 6, 2014, pp. 1075-100; P. Massingham, An Evaluation of Knowledge Management Tools Part 2: Managing Knowledge Flows and Enablers, *Journal of Knowledge Management*, vol. 18, no. 6, 2014, pp. 1101-1126

will capture the multiple social systems involved in innovation in the city, and provide a place for every type of 'weed hothouse' to grow.

PHASE 4: Impact. This evaluates the results of the CoP to measure changes in innovation performance as a result of the knowledge management interventions (Phase 3). The impact measures will focus on the direct outcomes of gap analysis and social network analysis to compare the success of the four CoP models in Phase 3. Accounting for innovation will then report on the indirect measures of performance improvement, sustainability and profitability to track whether the direct outcomes contributed to change in these areas. These results should then be reported along with policy and practical guidelines. This enables lessons learned to be captured about effective innovation collaboration which may be shared with other cities and regional centres.

CONCLUSION

This paper has provided a blueprint for innovation collaboration at a city level. Adopting the idea of the London Coffee House model of the 17th and 18th centuries (see preamble), the paper develops ideas about how to build professional Communities of Practice (CoP) which connect those that seek innovation knowledge with those that have innovation knowledge. The paper address two key questions: (1) how can collaboration improve a city's innovation performance? and (2) how can external CoP improve innovation collaboration? This blueprint answers the first question by identifying the knowledge resources, both tangible and intangible, necessary for innovation. It answers the second question by identifying and facilitating the knowledge flows necessary to improve access to these resources. The blueprint also includes performance measurement and reporting.

The adoption of innovation outputs, including those sourced from external social systems, delivers important practical outcomes, such as improved productivity, longer life expectancies and a more resilient Australian Innovation, Science and Research System.[52] This paper's blueprint has provided a mechanism to improve the system's networks enabler. Implementing the blueprint will improve knowledge transfer between business and universities. It will connect those that know with those that need to know and, in doing so, genuinely create innovation of benefit both to the organisation and Australia more generally.

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RESEARCH NOTE

COURAGE AND FREEDOM TO FAIL: INNOVATION, RISK AND OUTCOMES IN PUBLIC LIFE

Olga Bodrova

Australia needs new institutions and techniques to reduce the risks of courageous decision-making in politics and the public service and encourage progress and reform. Global Access Partners' director of research Olga Bodrova recaps the ideas of one of GAP's most forward-thinking taskforces.

The GAP Taskforce on Courage in Public Life began work in June 2017, almost two years after the GAP Summit on the Future of Jobs[1] called for a more courageous approach to policy, reform and leadership in Australia. Summit speakers agreed that Australian society has become more risk-averse at a time when the nation needs a more dynamic approach from politicians, public servants and the community to make the most of new opportunities and succeed in a fast-changing technological and economic environment.

Using its Second Track process, GAP invited a cross-sectoral group of participants to discuss the nature of courage and find ways to reduce the risk individuals face when promoting radical alternatives to the status quo. Over the course of the following year, the group considered proposals on how to increase the national appetite for courageous decision-making and have greater tolerance for failure when well-intentioned plans go awry. Its proceedings were informed by GAP's 'Freedom to Fail' advisory and earlier work on complex project management.[2]

1. Global Access Partners, *A Vision for Australia*: GAP 6th Annual Economic Summit on the Future of Jobs, NSW Parliament House, September 2015; http://www.globalaccesspartners.org/national-economic-review-2015-report.pdf
2. GAP/ICCPM, 'Complex Project Management – Global Perspectives and the Strategic Agenda to 2025', Taskforce Report, 2011, https://www.globalaccesspartners.org/think-tanks/complex-project-management

The Taskforce was co-funded by GAP and the Department of Employment, while meetings were hosted by GAP in Sydney and the Department of Human Services in Canberra.

COURAGE IN PUBLIC LIFE

'Success is never final, failure is never fatal. It's courage that counts.' – John Wooden

Courage, like innovation, is an overused word. Men and women in our armed and emergency services show true hallmarks of courage every day in facing the nation's enemies or rescuing people from imminent harm. Courage is shown by the single mother working to give her children a better life, by the passer-by intervening to defend a stranger, or the victim of circumstance standing and changing their life around. Courage is action in the face of fear, and is found in times of stress, confrontation and turmoil.

Courage usually stands on firm moral and ethical foundations and is a major mark of character. It is manifested in acts as well as resolution; it must be done in the face of adversity or the prospect of loss. Like going to the moon, it is worth doing not because it is easy, but because it is hard.[3] Acting courageously means mastering fear and turning it into positive action, rather than an excuse for inaction or surrender. Courage, in its broadest sense, is doing the 'right' thing, regardless of consequences.

What is courage in public life and why should it be encouraged? Policy reforms can improve the lives of millions of people, and we need our politicians and senior public servants to show courage in the pursuit of visionary policies. Courage is more than a willingness to take risks, but without it nothing will change, and when tempered by a sound sense of purpose, it is perhaps the most important character trait a leader can have.

While the public service is often criticised for its conservative approach, the fear of failure inhibits elected politicians, businesses and other organisations in equal measure. Public and media criticisms of missteps are harsh, and electoral sanctions and career rebuffs can punish politicians and public servants who offer radical but unpopular alternatives to 'business as usual'.

Ways must therefore be found to help policy makers contemplate and implement potentially more effective, but undoubtedly riskier, policy options and encourage a more forgiving public attitude to change. The development of new support systems and a more open national and public service culture would encourage broader debate and decisive action to improve service delivery and tackle 'wicked' problems.[4]

Many senior politicians and public servants recognise the need for change, just as countless public employees have knowledge and ideas which could improve service delivery. Reducing the risk which individuals face to their careers for suggesting alternatives, adopting fresh policies and, on occasion, experiencing failure is the key to encouraging reform. A culture which encourages more imaginative policy-making will reduce the need for individual courage itself and create an environment in which innovation is the norm, rather than the exception.

HONESTY IN POLITICS

It takes courage to tell the truth, and maintaining honesty can be difficult in private as well as public life. Politicians are increasingly unwilling to admit that any policy will affect anyone adversely, less they lose a vote or campaign contribution. The public want greater candour from their politicians but must also be willing to face reality. A higher standard of public debate would not only reveal more common ground, but allow participants to change their minds

3. https://www.youtube.com/watch?v=g25G1M4EXrQ
4. https://www.wickedproblems.com/1_wicked_problems.php

in the face of new evidence or arguments, rather than cling harder to outdated beliefs.

While small and subtle incentives can 'nudge' the public towards positive behaviour,[5] the electorate's lack of faith in their leaders means that radical options are viewed as a threat and fall flat at the ballot box. Politicians can begin to rebuild trust by acknowledging difficulties, admitting mistakes and accepting good ideas from any quarter. They should also acknowledge that long-term policy goals will inevitably shift during implementation, and so ingrain the ability to evolve in plans from their inception. A more agile process of testing and adjustment[6] would offer greater tactical freedom to achieve strategic goals.

Honest appraisals of policy proposals from the public service should be encouraged, as the early identification of proposals which are flawed or impractical is as important as progressing new approaches. The principles of integrity, honesty, objectivity and political impartiality required of public servants were outlined in the 1854 Northcote-Trevelyan report[7] which led to the establishment of an independent civil service in the UK and remain as pertinent today.

IMPLEMENTATION IS THE ISSUE

There is no shortage of good ideas to improve society, save the environment or boost economic growth in Australia or the wider world. The need is less for new ideas than for the courage from our decision makers to contemplate a wider range of options and adopt them where they can.

The public is wary of the future, not least because they fear for their jobs – and those of their children – in an age of artificial intelligence (AI) and automation. A recent Oxfam report[8] calculates that 82% of the world's wealth accrued to just 1% of its population in 2017, and in an era where some multinationals appear to pay almost no tax, there is little sign of economic growth benefiting the people who need it most.

It will take visionary leaders and effective implementation of new policies to convince the public that reforms are designed to benefit them, rather than reduce still further their slice of the pie, and that technology will remain their servant rather than become their master.

Even when good ideas are adopted, they must be put into practice effectively. Dr Peter Shergold's 2015 review *'Learning from failure'*[9] notes that 'policy is only as good as the manner in which it is implemented'. Implementation should always be integral to policy design,[10] but it is often implementation where large-scale transformational efforts fail.

In May 2018, McKinsey released a report on *Delivering for citizens: How to triple the success rate of government transformations*. The work was based on responses from 2,900 public servants in 18 countries, including Australia, 80 detailed case studies and 30 interviews with senior public sector leaders. The report estimated that 80% of large-scale public service reforms fail at the implementation stage and asserts that $US3.5 trillion could be gained across the OECD[11] if more service delivery projects met

5. https://www.behavioraleconomics.com/nudge/
6. https://qacomplete.com/resources/articles/what-is-agile-testing/
7. https://www.litencyc.com/php/stopics.php?rec=true&UID=5488
8. https://www.oxfam.org/en/pressroom/pressreleases/2018-01-22/richest-1-percent-bagged-82-percent-wealth-created-last-year
9. http://www.apsc.gov.au/publications-and-media/current-publications/learning-from-failure
10. Shergold, P. et al., 'Learning from Failure: Why large government policy initiatives have gone so badly wrong in the past and how the chances of success in the future can be improved', 2015, https://www.apsc.gov.au/learning-failure-why-large-government-policy-initiatives-have-gone-so-badly-wrong-past-and-how
11. Organisation for Economic Cooperation and Development

their targets.[12] McKinsey argued that traditional expertise and skillsets are failing to address emerging challenges, and a more agile, adaptive and creative approach is required.

The intrinsic complexity of large-scale projects is driven, in part, by political, social, technological and environmental issues as well as consumer expectations which may change dramatically over a project's lifecycle. GAP's earlier research found that the implementation of mega projects can be complicated by hierarchical, siloed and unnecessarily competitive organisational arrangements wherein communication and trust can break down. The 2011 International Complex Project Management Taskforce therefore championed the creation of a culture in which employees feel secure enough to voice their concerns at an early stage and management are willing to listen and adopt timely corrective measures. Open, timely and truthful communication is key.

COURAGE AND LEADERSHIP IN THE PUBLIC AND PRIVATE SECTORS

The government sector is often urged to learn from the commercial sphere, but large companies can be as hidebound as public departments. Established companies want to protect their position and minimise risk where possible. Start-ups are more risk-taking because it is in their interest to be so and over time become as conservative and controlling as the companies they replace. Senior executives of large corporations usually come to rely on arbitrage, rather than enterprise, and mitigate risk rather than embrace it.

Public servants and politicians have a wider constituency to satisfy, and the consequences of a poorly thought out or implemented change may adversely affect the public as a whole. Change is usually unpopular with both a public which fears cuts to their services, and professional bodies, unions and industry groups which can feel their power threatened.[13]

While the public sector cannot go bankrupt and lacks the existential threat which can spur innovation in the private sector, vast swathes of once public provision have been privatised in Australia[14] and across the developed world to cut costs and deliver more choice and better services. Those public agencies which have failed to offer good service and value for money have been abolished, sold off or replaced by the private sector since the 1980s.

Public departments can learn more specific organisational approaches from private organisations, not least the need to prioritise and focus on smaller number of achievable goals. The setting of interim targets allows progress to be quantified and activities adjusted as required. But ultimately, while public bodies are often criticised for being 'conservative' and the private sector lauded for vigour and innovation, the problem is more of large organisations of any kind being weighed down by legacy infrastructure and the natural human unwillingness to abandon the tried and true approaches which brought them success in the past.[15]

It could be argued that the public sector has every reason to be risk-averse when one reviews the long list of major reform and technology projects which were supposed to transform them but underperformed at significant expense before they were completely abandoned. The history of new technology in government – and often large enterprises – is one of delay, disappointment and

12. Allas T. et al., Delivering for citizens: How to triple the success rate of government transformations, Report, McKinsey Centre for Government, May 2018; https://www.mckinsey.com/industries/public-sector/our-insights/delivering-for-citizens-how-to-triple-the-success-rate-of-government-transformations
13. http://www.afr.com/news/politics/national/capitalist-democracy-has-fallen-on-hard-times-in-the-early-21st-century-20160523-gp1d46
14. https://bitre.gov.au/publications/2017/is_093.aspx
15. https://www.collectivecampus.com.au/blog/10-companies-that-were-too-slow-to-respond-to-change

cost overruns,[16] and so it is little wonder that politicians and public servants are now cautious.

Senior managers in the private and public sector may tend to view their jobs differently, and so have different appetites for risk, given their different rewards and job security. Private sector executives are well rewarded but will also quickly lose their jobs if results are poor and the board decides it needs another direction. Public servants receive modest salaries in comparison, albeit with more generous pension provisions, but can still expect to have a job for life. This security may invite conservatism, rather than independence of mind.

Efforts to track progress and incentivise change are not panaceas, and can have unintended adverse consequences. Governments often provide initial funding for a project but make ongoing support conditional on hitting particular KPIs. While this can encourage effort and weed out underperforming programmes, it can also force projects to focus on arbitrary goals they know are obsolete to secure their continued existence. Such projects become derailed over time, as they succeed in hitting short-term financial targets but become ever more ineffective in reality.

Private sector boards will also set interim targets, but they tend to be more likely to revisit their trajectory. Businesses must provide goods and services to customers, and feedback from sales is immediate and irrefutable. Outcomes in public services can be more nebulous to define and record, although this may change in the future as big data analytics and AI allow real time monitoring of progress.

Major software projects, such as Windows, used to have long planning phases, but programmes are now released online and continually updated and revised. Rather than 'a marathon performance', such projects are now a succession of short 'sprints'. As consumers use both private and public services, Australians may be willing to accept a similar approach from the public sector.

However, an agile process of constant testing and adjustment will have much greater consequences when things go wrong if they are dealing with pension claims or welfare payments, rather than a misfiring phone app. Although many routine administrative services which once required a lengthy wait at a physical office can now be completed at any time online, the government's drive for digital transformation remains more an aspiration than reality.

An agile approach cannot save every project, but governments are often reluctant to admit that flagship policies have failed and that a fresh approach is now required. Framing policies in terms of aspirations and outcomes rather than means would offer more freedom of action.

RAISING THE QUALITY OF PUBLIC DEBATE

There is a case for bringing together traditional media and universities to find synergies and reframe public dialogue. As traditional bastions of evidence-based debate, universities could play a vital role as facilitators of public discourse, but the isolation of academia's 'ivory towers' limits their influence. Academic research, published in specialist journals, tends to be either ignored or misrepresented by the popular press when removed from its original context, while the best thought-provoking debates occur in classrooms and hallways, away from the public.

Ways must be found to improve media reporting of complex policies and scientific research and public discussion of complex facts and ideas. Media involvement should be sought, perhaps through the Second Track process, in developing potential solutions, rather than only being a critical external voice.

16. https://yourprojectmanager.com.au/4-massive-australian-project-failures-failed/

SOLUTIONS

Having discussed the issues at length, the GAP Taskforce on Courage in Public Life suggested that a more courageous and action-oriented approach to policy, reform and leadership in Australia would require:

- **Public support** to allow government to innovate and occasionally risk failure;
- **Political support** for courage across all three functions of the public service – provision of advice, implementation of decisions, and on occasion, the taking of decisions; and
- **Employee support** through incentives and training to encourage courageous decision-making.

Whatever solutions are tried, they should encourage learning by doing, courage to act as well as debate, a mandate to solve both short- and long-term problems as well as emerging issues, sponsorship from the top level of government, i.e., Prime Minister's Office, bi-partisan political support, and implementation of design thinking and agile methodology and approach.

The Taskforce identified a number of specific challenges and offered a range of potential solutions.

CHALLENGE:

The public service lacks mechanisms to encourage risk-taking and new ideas in safer ways

RECOMMENDATIONS:

- Promote an action-oriented approach to policy, reform and leadership
- Embed an appetite for courageous thinking in the whole-of-government culture – courage should be seen as a positive, rather than negative, trait
- Encourage employees to challenge traditional approaches and seek fresh alternatives through both new reward systems and normal performance management
- Adopt new individual staff performance measures which emphasise a 'growth' rather than a 'fixed mindset', backed by new reward and recognition systems
- Continually assess each department and agency's purpose and the innovation required to achieve it

CHALLENGE:

The lack of system/infrastructure to support innovative policy-making

RECOMMENDATIONS:

- Develop processes and structures that reduce the need for individual courage to achieve radical outcomes
- Encourage new ways of thinking used in other spheres
- Facilitate greater engagement throughout the public service and more partnerships with private stakeholders
- Use the Second Track model to promote stakeholder engagement in policy development

CHALLENGE:

Goals inevitably shift over time, but polices are not designed to evolve to keep pace

RECOMMENDATIONS:

- Frame policies in terms of desired outcomes, rather than inputs and outputs, to allow a range of flexible approaches to achieve agreed goals
- Recognise the need for an agile process of ongoing testing and adjustment
- Revisit the trajectory of long-term goals and interim targets on an ongoing basis
- Adopt agile design and delivery methods and borrow lessons from IT and private enterprise where appropriate

CHALLENGE:

Reducing the risk of failure in the pursuit of change

RECOMMENDATIONS:

- View individual 'failures' as learning opportunities and steps towards collective success
- Adopt a portfolio of *'low risk, low reward'* and *'high risk, high return'* policies across government to spread potential risks and rewards, acknowledging that the quest for the quest for improved outcomes does not imply the abandonment of prudence
- Provide better risk assessment and training on how to handle risk for politicians, their advisors and public servants

CHALLENGE:

Governments need more freedom to use a variety of tactics to achieve their overall strategy

RECOMMENDATIONS:

- Facilitate open and ongoing conversations about courage in public life with stakeholders and the community, particularly with younger generations
- Begin a broader debate with the public about their expectations of leaders in public life
- Create better platforms for open policy design and public feedback on polices in early stages of development
- Frame public expectations in more flexible ways.
- Employ insights from behavioural economics to encourage public adoption of policy reforms

CHALLENGE:

Many employees have 'bottled-up' knowledge but do not realise they can improve organisational operations

RECOMMENDATIONS:

- Encourage a free flow of new ideas regardless of hierarchical boundaries
- Give more flexibility to public servants to share knowledge where appropriate
- Establish a 'safe place to innovate' for young people with aspirations to become ministerial advisors or politicians

CHALLENGE:

Understanding the different risks faced by the public and private sector

RECOMMENDATIONS:

- Draw on the similarities between public and private organisations – such as the need to prioritise and focus on smaller number of achievable goals – rather than adopt private sector approaches wholesale

OPPORTUNITIES AND PROJECTS

In January 2018, Innovation and Science Australia released a comprehensive vision for innovative public and private sector reform. *The Australia 2030 Prosperity Through Innovation*[17] called for a review of the Australian Public Service to encourage innovation in policy development, implementation and service delivery.

The GAP Taskforce welcomed these proposals and offered several concrete projects to achieve these aims. These included **a new training institute** for young political advisors and prospective politicians, **a national lab** within and perhaps beyond government to test radical options and train public officials in new approaches to design, and the appointment of **an independent board** to select secretaries and statutory officials in the Australian Public Service, based on the New Zealand model.

These reforms and institutions could facilitate the safe discussion of new options and inculcate tomorrow's leaders and officials in a more open-minded and free-thinking approach. They would encourage the free flow of new ideas within and between public and private organisations, and

17. https://industry.gov.au/Innovation-and-Science-Australia/Documents/Australia-2030-Prosperity-through-Innovation-Full-Report.pdf

reduce hierarchical, jurisdictional and stakeholder boundaries. They would afford more flexibility to public servants to share knowledge, create better platforms for open policy design, and encourage wider adoption of the Second Track.

The Taskforce also called for greater engagement by the public sector with non-government initiatives and entities, such as The Australian National University's Public Policy and Societal Impact Hub, to encourage evidence-based approaches. It acknowledged that embedding more courageous thinking in public life and the public sector requires broad cultural change which is less easy to legislate. However, enablers such as the proposed national lab need to be backed by a wider culture of support and leadership to succeed.

IN CONCLUSION

Australia must innovate to maintain its prosperity in a fast-changing world. Some new projects will cost more, take longer or achieve less than planned, but they should be seen in the context of other projects which over-perform.

Understanding how people's minds work, how they think and make decisions is as important as better training and institutional support. Efforts to educate the public should be accompanied by the acceptance by all parties that inaction is not an option and that change will produce some losers in the pursuit of national gain.

To be truly effective, society as a whole must rediscover its courageous side. The qualities demanded of public servants must be shared by Australians in every walk of life, if the nation as a whole is to accept change in national policy and personal lives. We all face a lifetime of constant learning and shifting work in the future.

There must be more room for politicians and public servants to learn from failure and come back stronger. At the same time, more open disclosure of failure and acceptance of fault is required to help regain public trust and understanding, if second chances are to be allowed.

CASE STUDIES IN COURAGE AND 'SPEAKING TRUTH TO POWER'

Ken Henry's White Paper on 'Australia in the Asian Century'[18]

This white paper, published in 2012, argued that fundamental shifts in Australian policy and attitudes were required for Australia to make the most of rapid Asian economic growth. It called for investments in national capability, closer business, social and cultural relationships with Asian partners and support for regional security.

Martin Parkinson examines gender equity[19]

Balancing the Future: the Australian Public Service Gender Equality Strategy for 2016-19 offers a programme for boosting productivity in the Australian Public Service by harnessing the best talent regardless of gender or background, changing cultures, and challenging negative assumptions.

18. http://www.defence.gov.au/whitepaper/2013/docs/australia_in_the_asian_century_white_paper.pdf
19. http://www.apsc.gov.au/publications-and-media/current-publications/gender-equality-strategy

Australia's Future Tax System Review[20]

This 2009 review took a 'root and branch' approach to examine Australian and State Government taxes and made a suite of recommendations to help Australia to deal with ongoing demographic, social, economic and environmental challenges.

Sally Yates defies Donald Trump[21]

Sally Yates, the acting US Attorney General, refused to defend an executive order by Donald Trump banning travellers from seven Muslim-majority countries, saying that she was not convinced that it was lawful.

Julia Gillard condemns political sexism[22]

Former Australian Prime Minister, Julia Gillard's attack on sexism in politics was seen by many women as a defining moment for feminism in the country.

Peter Fox questions police inaction on child abuse[23]

Detective Chief Inspector Peter Fox criticised police inaction over allegations of widespread, long-term child sex abuse in the Catholic Church in a 2012 TV interview. His public stance prompted a Royal Commission, but also threatened his 36-year career.

Sergei Magnitsky is murdered by Russian authorities[24]

Sergei Magnitsky was a Russian lawyer who specialised in anti-corruption activities. His arrest in 2008 and 'mysterious' death after eleven months in police custody in abject conditions generated international media attention and triggered both official and unofficial inquiries into fraud, theft, and human rights violations in Russia.

Malala Yousafzai stands up for female education[25]

As a young girl, Malala Yousafzai defied the Pakistan Taliban to demand that girls receive an education. She was shot in the head by a Taliban gunman in 2012, but survived and went on to win the Nobel Peace Prize.

Boris Yeltsin defies a communist coup[26]

Boris Yeltsin defied a hard-line communist coup against Mikhail Gorbachev's reforms in 1991, leading a three-day armed protest to protect Moscow's 'White House' Parliament building until the coup – and communism itself – collapsed.

Zhou Zixi dares to remember Tiananmen Square[27]

This Chinese artist urges remembrance of the Tiananmen Square massacre in the face of blanket government censorship and brutal intimidation.

Dmitry Shostakovich survives Stalin's terror[28]

The great composer walked a fine line between remaining true to his art and remaining alive during Joseph Stalin's murderous terror of the 1930s.

20. http://taxreview.treasury.gov.au/content/downloads/final_report_part_1/00_afts_final_report_consolidated.pdf
21. http://www.newyorker.com/magazine/2017/05/29/why-sally-yates-stood-up-to-trump
22. https://www.theguardian.com/world/2012/oct/12/julia-gillard-sexism-australian-women
23. http://www.theherald.com.au/story/2708686/peter-fox-quits-the-force/
24. http://russian-untouchables.com/eng/
25. https://www.biography.com/people/malala-yousafzai-21362253
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27. http://www.whiterabbitcollection.org/artists/zhou-zixi-%E5%91%A8%E5%AD%90%E6%9B%A6/
28. http://www.pbs.org/keepingscore/shostakovich-symphony-5.html; http://www.imdb.com/title/tt0218711/

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BOOK REVIEW

'HOW CHANGE HAPPENS': A POLICYMAKER'S GUIDEBOOK

by Ian McAuley

To what extent do subtle policy 'nudges' impinge on people's freedom of choice? How do social movements such as #MeToo suddenly gain momentum? Policy commentator Ian McAuley reflects on the insights and arguments offered in Cass Sunstein's most recent book.

Most systems analysts would be familiar with the way in which systems or sub-systems can rapidly flip from one state to another. Sales of electric cars, for example may spend years in a pattern of slow growth, but at some stage there will almost certainly be a rapid market uptake, before they achieve a degree of saturation. Similarly, in the opposite direction, facsimile machines suddenly went out of fashion.

In the physical world of interacting technical and economic systems such phenomena are explained by externalities: my ownership of an electric car is likely to support industries providing charging stations and services, making it more attractive for you to have an electric car. The switching from one state to another will generally be consistent with the mathematical model embodied in the familiar 'S' shaped logistic curve. It's difficult for the analyst to predict when a system will flip, but he or she can have a reasonably robust model of how the flip will occur.

Social systems are more difficult to analyse. Why do certain patterns of social behaviour suddenly change? Why do phenomena such as the #MeToo movement suddenly arise? Why was it that Rosa Parks' act of defiance in December 1955, when she refused to move her seat in a bus to make way for 'white' passengers, set off a massive civil rights movement in the USA?

Such phenomena are often simply described as 'emergent', as if the systems in which they are manifest are black boxes with too much interactive complexity to allow for explanation or analysis. But systems scholars have looked inside the black box and have developed explanatory models, most notably Thomas Schelling's 'tipping' model, which helps explain how the racial composition of residential neighbourhoods could rapidly switch: a harmonious multiracial neighbourhood could become mono-racial in a short time, with the change triggered by the decisions of just a few individuals.[1] Schelling pioneered agent-based modelling, showing how the dynamics of complex systems may be explained by seeing how individual cells (households, individuals) interact with their 'neighbours', and through repeated iterations how the decisions by a few individuals can lead to system-wide effects if the system is near its tipping point.

The behavioural economist Cass Sunstein, co-author of *Nudge*,[2] in his most recent work *How Change Happens*, takes us into the black box from another perspective. He analyses 'social cascades' – small perturbations that can produce huge shifts. His approach is from the perspective of social norms. Some cascades can be triggered by people who feel free to break from assumed norms. His proposition is that:

> … when norms start to collapse people are unleashed, in the sense that **they feel free to reveal what they believe and prefer, to disclose their experiences, and talk and act as they wish.** (emphasis Sunstein's)

The #MeToo movement is one such phenomenon he analyses. It is aptly named, for the unleashing is, indeed, a 'me too' phenomenon. It suddenly becomes permissible for others to follow the example of those who break the taboo, and as Sunstein explains, new norms become established in a short time.

An illustration Sunstein might have chosen is Hannah Arendt's description of the short-lived 1956 Hungarian uprising, when a small student demonstration grew into a major social movement that, within a few days, managed to form an entirely new government, with very little violence.[3] Arendt's account of the uprising is that the students realised that the Hungarian people were 'living amid lies' of the authoritarian communist regime. They were unleashed from having to pretend that the Soviet model of communism, which guided their puppet government, actually embodied the values Marx had championed. Although the new Hungarian order lasted less than three weeks before it was suppressed by a Soviet invasion, Arendt's point was that the revolution clearly illustrated the fragility of norms that have been waiting for someone to question them. Had she lived to 1989 she would have observed the collapse of the Soviet Union, a collapse which was triggered by some minor

1. Thomas Schelling, 'Dynamic Models of Segregation', *The Journal of Mathematical Sociology*, 1:2, 1971, 143-186.
2. Richard Thaler and Cass Sunstein, *Nudge: Improving decisions about health, wealth and happiness*, Yale University Press, New Haven, 2008
3. Hannah Arendt, 'The Hungarian Revolution and Totalitarian Imperialism', in Hannah Arendt, *Thinking without a banister: Essays in understanding 1953-1975*, edited by Jerome Kohn, Schocken Books, New York, 2018

developments in the Soviet empire periphery, and which caught most observers by surprise.

Sunstein points out that it's hard or perhaps impossible to predict when such shifts will occur, because, as in Hungary before the unleashing, people don't know what others are thinking, and hide or falsify their own preferences. As the old army joke goes, the officers have not given their underlings 'permission to think', and even when they do another level of permission is needed to allow them to express their thoughts.

He points to a survey that reveals that most young men in Saudi Arabia believe that women should be given more freedom from the harsh guardianship laws, but because they falsely believe that most others support the guardianship laws, they don't feel they have permission to speak their own views.

The challenge for those seeking change is to develop a critical mass of people willing to be 'norm entrepreneurs' – the people who are the first to poke their heads above the parapets of self-censorship and to do so with confidence and a feeling of safety. In his emphasis on such small groups his analysis comes close to that of Schelling's, but strangely he does not mention Schelling's work, even though they have both been professors at Harvard's Kennedy School.

Although *How Change Happens* starts with insights about how social change happens, it shifts from a descriptive work to a discussion about how policymakers should promote change, unsurprisingly re-visiting the ground covered in *Nudge*, known by behavioural economists as the design of 'choice architecture'. To what extent do nudges – mechanisms that reduce the search and transaction costs of following a policymaker's preferred decisions – interfere with people's freedom of choice? There is no clear answer: where there are clear positive externalities such as is the case with vaccinations the ethical case for a nudge to do the right thing is easy (providing free vaccinations is a typical nudge), but at the other extreme, when the policymakers are captured by those seeking privileges for a particular industry, a nudge favouring the industry in question would be unethical by most people's standards.

Sunstein moves on to address some of the most difficult ethical questions in public policy, the conflicting value frameworks of consequentialist and deontologist morality, consequentialists being more concerned with the ethics of ends, while deontologists are concerned also with means. To take a topical Australian issue, the indefinite detention of asylum-seekers arriving by boat, a consequentialist may argue that the policy is justified because the benefits (saving lives of those who might drown on the risky voyage) outweigh the costs (the misery of the detainees), while a deontologist may take the firm moral view that it is never right to use people as exploited objects to achieve other ends, no matter how worthy those ends may be.

He draws on Daniel Kahneman's System 1 (fast) and System 2 (slow) thinking frameworks to distinguish the way ethical choices are made, tentatively suggesting that 'deontological thinking often emerges from automatic processing and that consequential thinking is often more calculative and deliberative', and that deontological thinking may be a 'mere heuristic' to ease System 1 thinking.[4] But he does not fall into the normative trap of concluding that a deontological moral framework inevitably leads to poorer outcomes. A simple summary of his advice to policymakers is that the deontologist should go through a rigorous System 2 consequentialist examination of any policy proposal, even if he or she is committed to rely on a hard deontological

4. Daniel Kahneman, *Thinking Fast and Slow*, Farrar, Straus and Giroux, 2011.

moral rule as a final decision guide. To illustrate with the asylum-seeker case, application of Sunstein's principle would suggest that the deontologist, even if he or she remains absolutely opposed to detention of asylum-seekers, should think through to the consequences of such a stance.

His arguments for consequentialist thinking are most strongly asserted in a chapter on rights, where he argues for a dispassionate cost-effectiveness approach to rights and to dealing with crime. Consequentialists, he argues 'favor theories of punishment that are based on deterrence, and they firmly reject retributivism'. He draws on behavioural and neuroscientific research which finds that 'deontological judgements are rooted in automatic, emotional processing'. In economic terms it may be a waste of resources to inflict any more punishment on a wrongdoer than is necessary to ensure compliance.

In many cases individuals may incur net personal costs to punish a wrongdoer. Believing that a local garage is overcharging for gasoline, for example, someone who believes in retribution drive a long distance to fill up at a cheaper garage, incurring a net cost when time and vehicle costs are considered. That's the cost of retribution.

As Kahneman and Tversky point out, our tendency to such behaviour is based on our perception of the extent that the merchant is taking advantage of his or her market power, rather than a simple calculation of the cost of time.[5] By any utilitarian (consequentialist) calculation such behaviour is irrational. But economic philosophers taking a wider systems view, such as Robert Axelrod, argue that from a social perspective such behaviour, although costly to the individual, may be of net benefit to the society: the costly punishment inflicted by the individual is a positive externality that accrues to the whole society.[6] Sunstein, like most behavioural economists (his first discipline is actually law) acknowledges that certain firm moral rules may be hard-wired into the way our thinking has evolved, leading to a System 1 way of acting, and while he acknowledges that they may have certain advantages in terms of social evolution, he does not explore these advantages.

Like *Nudge*, this work is really one for the policymaker. *Nudge* itself was a valuable contribution to the art of policymaking, even if many policymakers tended to see 'libertarian paternalism' as the sole contribution of behavioural economics to public policy, while overlooking all the other possible policy-related contributions the discipline can contribute. In *How Change Happens* Sunstein makes another valuable contribution in filling a gap between economics and moral philosophy. It should be a handbook for all those engaged in shaping public policy.

Cass Sunstein **How Change Happens**, MIT Press, New Haven 2019. 344 pages.

5. Amos Tversky and Daniel Kahneman. 'The framing of decisions and the psychology of choice', *Science*, 211, 1981, 543-463.
6. Robert Axelrod, *The evolution of cooperation*, Basic Books, 1984.

LIST OF CONTRIBUTORS

OLGA BODROVA is the Chief Operating Officer and Director of Research at Global Access Partners. She has been working for GAP since its inception and is responsible for developing and coordinating GAP's research programmes and the production of reports and publications. Olga is also co-founder of Writing Partners and, prior to coming to Australia in 2001 and joining GAP, had a professional career in the media and arts industry. She holds a Masters Degree in Musicology from the Moscow State Tchaikovsky Conservatoire and a postgraduate degree in Media Arts and Production from the University of Technology, Sydney.

PETER FRITZ AM is Chairman of GAP, and Group Managing Director of TCG – a diverse group of companies that over the last forty-eight years has produced many breakthrough discoveries in computer and communication technologies. Peter's innovative management style and corporate structuring has led to the creation of a business model that is being copied by many successful entrepreneurs and has become part of university undergraduate and masters programs in business management in Australia and around the world. Peter chairs a number of influential government and private enterprise boards and is active in the international arena, having represented Australia on the OECD Small and Medium Size Enterprise Committee. He is the holder of six degrees and professional qualifications, is a recipient of the Order of Australia, and has received many other honours.

CATHERINE FRITZ-KALISH is Co-founder and Managing Director of Global Access Partners, a proactive and influential public policy and implementation institute with over 700 active members and a 4,000-strong broader network. Catherine is also Director of the International Centre for Democratic Partnerships (ICDP), an independent non-profit organisation established by GAP in 2017 to forge stronger relations between Australia and the Pacific. Catherine's broader business experience includes coordination of a number of global initiatives for the OECD in Paris; marketing and brand management at the George Weston Foods Group; and start-up incubator establishment at TCG. Catherine chairs the board of social justice charity *Stand Up*; has co-founded *Thread Together* that redistributes excess clothing from fashion retailers to help vulnerable communities; is a member of the Board of the Fritz

Family Office; and is part of a significant giving circle that engages whole families in the act of giving to those in need. She holds a Bachelor of Science degree from UNSW and a Masters of Business in International Marketing from UTS.

PROF JAMES GUTHRIE AM is a Distinguished Professor at the Macquarie Business School. James has held positions at various Australian and Italian universities, in a career in accounting education that spans more than 35 years. He is editor of the highly regarded interdisciplinary accounting journal, Accounting, Auditing and Accountability, and has published 180 articles, 20 books and 45 chapters in books. He was Head of Academic Relations at Chartered Accountants Australia and New Zealand from 2008 to 2017, engaging with accounting academics and other stakeholders in the Australian and New Zealand higher education systems and providing thought leadership to benefit the wider accounting profession. In the international arena on his research topic areas, James has been actively involved with the OECD, European and wider academic communities, with his advisory work for the OECD dating back to 1998.

DR PETER MASSINGHAM is an academic and consultant. He was a Director of a Research Centre for Knowledge Management from 2002-2014. Before joining academia in 1998, he was a management consultant, most recently with KPMG. He works with a range of Australian organisations on their business strategy, particularly focusing on knowledge management. He has published more than 50 peer reviewed papers in academic journals and international conferences. He has won several outstanding paper awards in his field's top journals. He was the Chief Investigator on an Australian Research Council Linkage Project grant with the Australian Department of Defence (2008-2013). Peter has completed a textbook on knowledge management which is due for release in late 2019. He is currently working with a social service not-for-profit organisation (SSNFPO), a major consultancy firm, and the Department of Defence on a range of new projects. Peter is *BESS*'s Editor-in-Chief.

IAN MCAULEY is an independent public policy professional and lecturer, and a fellow of the Centre for Policy Development. He graduated from the University of Adelaide with qualifications in engineering and business management, following which he worked in a large manufacturing firm. Ian has worked in the Commonwealth Government's Industry and Trade Departments, including a posting to the Middle East for the Trade Commissioner Service. Following completion of an MPA at Harvard's Kennedy School, Ian became a permanent part-time lecturer at the University of Canberra, with his other work including consulting for Australian government agencies and international agencies, and pro-bono work for consumer and welfare organisations.

DR SHANN TURNBULL is the Principal of the Sydney-based International Institute for Self-governance and a co-founding member of the Sustainable Money Working Group in the UK. He is a founding Life Fellow of the Australian Institute of Company Directors, Senior Fellow of the Financial Services Institute of Australasia, Fellow of the Governance Institute of Australia, and Fellow of the Institute of Managers and Leaders. In in 1975, Shann co-authored the world-first course to provide company directors an educational qualification and wrote *Democratising the Wealth of Nations*. Shann is a prolific author on reforming the theories and practices of capitalism based on biomimicry. He obtained an MBA from Harvard in 1963 and became a serial entrepreneur, establishing a number of enterprises including two mutual funds and three firms that became publicly traded. His 2001 PhD from Macquarie University built on his 1957 Electrical Engineering Diploma from Hobart and his 1960 science degree from Melbourne University to ground social analysis including corporate governance in the natural sciences.

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Postal address	PO Box 978 Strawberry Hills NSW 2010 Australia
Telephone	+61 2 8303 2420
Facsimile	+61 2 9319 5754
Email	editor@globalaccesspartners.org

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