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MISINFORMATION***

Reprint of article:

The Future of Risk, the Rise of AI and the Role of Human Capability

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THE FUTURE OF RISK, THE RISE OF AI AND THE ROLE OF HUMAN CAPABILITY

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Summary

Organisations, employees, contractors, including risk professionals, face a turbulent future impacted by new digital technologies such as artificial intelligence, global connectivity, big data and robotics. This future is here now. It brings change at a continuously accelerating pace and presents many risks and challenges, but also affords great opportunities. The authors present a model for describing this risk and challenge in the form of a 'turbulent environment heat map' and a strategy to manage it. They introduce a model of capability and show how it can be used to develop a response that involves 'magnifying the impact of human brains' as an essential component for working successfully with AI. They consider the impact of current trends on the 'future of risk', its main characteristics and discuss its impact on the risk function.

Part 1

THE RISE OF AI CREATES A TURBULENT ENVIRONMENT

TRENDS AND DISRUPTION

It is difficult to grasp fully the speed, depth, and overall impact of the digital and fourth industrial revolutions with, as a major component, the rise of intelligent machines. The challenges and opportunities are unprecedented, and organisations and employee lives are at the frontline. How to start thinking about risk and its future in this new environment? An image might help, that of a river.

Up until recently, this river was flowing reasonably predictably; there were sections with eddies and rapids of course but, from a risk viewpoint, emphasis could be on navigating the parts between the rapids as effectively and productively as possible. When turbulence rocked the boat, it was a matter of pulling through somehow to the next section of more peaceful flow.

Now, the river is in flood and rapids are everywhere. From a risk viewpoint, they can't be neglected, and management focus and policies need to address them. After all, rapids, if not now, will soon make up most of the river, with peaceful flow being the exception.

In this paper we'll consider the impact of turbulence and disruption on risk and its future. How risk must look, not only at one section of the rapids, but prepare and be ready for a succession of rapids and eddies. We'll look at the role that capability and culture must play in a successful response.

Figure 1: Turbulent waters



The rise of artificial intelligence

We are all familiar with the words: intelligent machines, robotics, global connectivity, sensors everywhere, virtual reality, augmented reality. We are also familiar with the early applications of these technologies: personal agents, analytics, robots, autonomous vehicles to name but a few. We can also read in the press the impact of these technologies on jobs and organisations. What is more difficult to grasp is what the future has in store in the medium to long term. A simple extrapolation won't do. The reason is that the human mind tends to extrapolate linearly; it has difficulty with a fundamental aspect of all these technologies: exponential growth. In a sense we are used to it, with Moore's law being well known. Moore's law is used to describe the doubling of transistors on a computer chip every eighteen months and the growth in bandwidth of communication networks. Computing power, memory and connectivity are increasing exponentially and their cost is also reducing exponentially. Up until recently, the benefits could be described as benign from a human perspective; that is, mostly beneficial with few apparent disadvantages. Who would object to cheaper laptops, cheaper smart phones, cheaper phone plans, video streaming, etc. Exponential growth seems to bring convenience and material advantages that are easy to grasp.

It is a different matter when we start to think of intelligence. Let's take a child, your child perhaps. Let's imagine that she is growing in intelligence in front of your eyes. Initially, as you would expect the child will grow and it is rewarding, and you're pleased. But then, as she reaches her teenage years her intellectual capacity keeps doubling every eighteen months, in speed of thinking, breadth and depth of knowledge, and sophistication of analysis. By sixteen, say, she is at your level. By the age of thirty-two, her memory and knowledge would be approximately one thousand times yours and she would also think one thousand times faster. What does it mean and what would the impact be on you and society? And

what if all children were to become like your daughter? We think it is safe to say that we have no idea. You might say that artificial intelligence is not like human intelligence or that it may not grow quite as fast. True, but it does not change the outcome, we still have no idea. We have trouble understanding exponential growth and its implications. What we can say, thinking back to the river is that we are entering turbulent waters, they will be fast, and we will be in eddies and water falls most of the time. There will be disruptions, in technology, the economy and society. Change will happen to us and we will have to change, transform and adapt. There are great opportunities but there are also great risks.

Two perspectives for risk

The image of the river, supported by the rise of AI, presents us with two types of risk. The first one deals with a 'normal' river, where a reasonably predictable flow dominates and there are isolated unforeseen events. The second one relates to turbulent flow, where rapids and eddies rule.

Risk management, broadly speaking, has up to now been mostly and justifiably concerned with the first type of risk. However, we believe that it is reasonable to postulate that the second risk perspective is the one that will likely dominate in the future. It follows that the 'future of risk' will be linked to developing models and strategies for dealing with the dynamism, unpredictability and relentlessness of turbulent flow. This, we believe, is a major challenge that will rapidly migrate closer to the C-suite.

Let's look at a way to map this second risk to gain a better understanding of some of its main features.

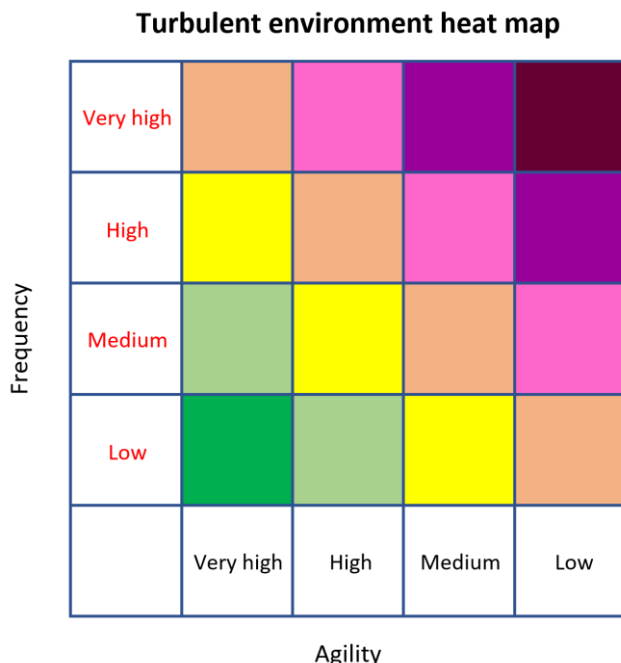
TURBULENT ENVIRONMENT HEAT MAP

Unlike the classical risk matrix (or heat map) which typically deals with a single event, we would like a diagram that describes the 'pressure' put upon organisations by rapid change and disruption. With reference to the river model, the classical risk map corresponds to describing the risk of a single event disrupting the regular flow. For example, a single rock just under the surface that, if not seen, could puncture a hole in the canoe. In contrast, in turbulent flow, or the rapids, emergencies happen nearly simultaneously and without interruption: from one eddy to the next, from one waterfall to the next, from one challenge to the next. There is hardly time to catch one's breath. Simultaneous emergencies can easily overwhelm a crew and boat that is not prepared for the challenge.

Below is a diagram we use to describe the impact of turbulence on risk, considering two factors: the frequency of change or disrupting events and the 'preparation', or capability, of the boat and crew to deal with multiple events successfully.

The horizontal axis describes the capability of the organisation and its people to deal with multiple change or disruptive events. This is normally labelled organisational agility. The vertical axis represents the frequency of change or disruptive events. The heat map shows that the most favourable situation is to have high agility and not be engaged in many simultaneous challenging activities. Conversely, the less the agility and the higher the frequency the more heat is being applied. Such situations can cause an existential threat to organisations. It is no exaggeration to say that turbulent environments will dominate in the future with a lot of heat being applied.

Figure 2: Heat map



Resilience in turbulent environments

Resilience is defined as “The ability to respond quickly, decisively and effectively to unforeseen and unpredictable forces” (Gartner, 2002) or “the ability of an organization to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions in order to survive and prosper” (Denyer, 2017).

These two definitions do not explicitly consider the impact of the frequency of unforeseen events or disruptions. It may be that a definition that includes frequency would be more adapted to the age of intelligent machines, for example: ***‘the ability of an organisation to deal decisively and effectively with multiple change or disruptions, whether planned or unplanned, that are either overlapping or take place in quick succession.’***

With reference to Figure 2, the definition of resilience we propose – called enduring resilience – describes the capability of an organisation to deal with the heat generated in turbulent environments. As these environments are expected to dominate in the future with their associated heat, it is reasonable to expect them to contribute most to the risk faced by organisations.

HOW TO MANAGE RISK IN TURBULENT ENVIRONMENTS

Impact of culture and capability

If surviving in turbulent environments requires resilience, then the organisation faces a fresh risk challenge. Dealing with it will require many of the tried and tested skills that have proved useful in times

of the relatively smooth waters. However, this new disruptive environment will also require two new elements.

Firstly, a culture that embraces change, fosters innovation and enables transformation combined with a laser-like focus on execution. The ability of the organisation to stretch, bend, change and reform in a different configuration in response to multiple challenges will require new found flexibility of ideas, customs and behaviours.

Secondly, risk leaders will no longer be able to satisfy themselves with having identified, analysed and prioritised risks to the organisation. Future risk managers will also have to consider whether the capability exists within the organisation to deal with the identified threats and opportunities.

Figure 3: Capability, culture and change

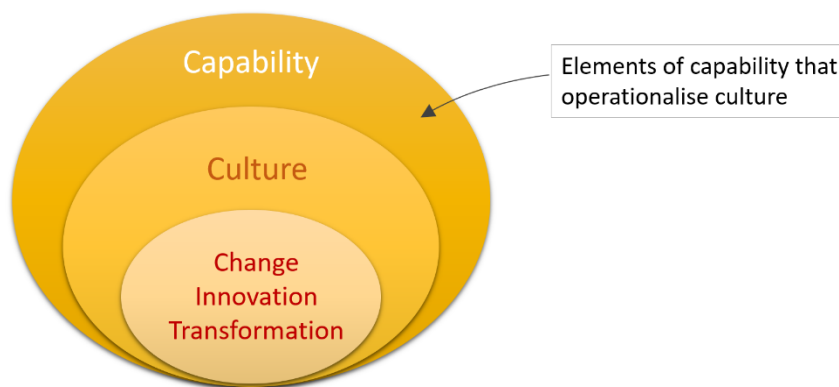


Figure 3 illustrates the relationship between capability, culture and what's needed to operate in turbulent environments. Culture is a subset of capability. Or, to put it another way, the elements of capability that are not culture are these elements that operationalise culture. They give culture effectiveness in day to day operations. It is where the 'rubber touches the road'. For example, organisational model, clarity of objectives, infrastructure, processes and resources are important elements of capability that play a determining role in dealing with change and transformation, without being part of culture.

An important message of Figure 3 is that dealing with change projects on an ad hoc basis, treating one change project independently of its relationship with culture and capability is very unlikely to bring the desired outcome. It is very 'risky', as evidenced by the high failure rate of change initiatives across organisations and industries.

The message is clear, dealing with the challenge and risk of turbulent environments necessitates developing, nurturing and leveraging the correct culture and associated strong operational capability.

Ability to work with, and leverage, intelligent machines

Dell, in conjunction with the Institute for the Future, have recently published the Realizing 2030: A Divided Vision of the Future report in which they interviewed 3,800 business leaders globally on their predictions and preparedness for the future. Whilst there were divergent opinions on the impacts and benefits of new machine capabilities, all agreed the change will be 'immense'.

The study found that “More than eight in ten (82%) of leaders expect humans and machines will work as integrated teams within their organisations inside of five years (26% say their workforce and machines are already successfully working this way)”(Dell, www.delltechnologies.com).

If you accept the findings of the study, it becomes clear that organisations need to be addressing the associated threats and opportunities of AI now – that is, to consider the potential impacts and what capabilities will be required to deal with these threats and develop them now. Not to do so is to accept a very high risk indeed.

This could be an uncomfortable situation for many – particularly in organisations that don’t identify themselves as primarily being affected by AI and intelligent machines. This ‘head in the sand’ approach will render the organisation particularly vulnerable – especially if more agile competitors, not burdened by legacy systems and technology, enter the market.

Other organisations may recognise the potential opportunities and threats but not grasp the speed at which the disruption will occur. Trying to make up lost ground will then be the only priority but once advantage is lost, the organisation may never catch up.

On the talent side, success in the era of digital transformation will “require new skills sets and resources, but finding the right people for this work is a major hurdle” (McKinsey survey 2018, www.mckinsey.com). Organisations will not only need to leverage existing internal skill sets, but investment in upskilling current resources and procuring external expertise will be a major determinant of success.

The Asia Business Council takes a similar view.

“Companies and governments around Asia must act on a number of key priorities to become more prepared for and resilient to AI-led changes. They must train new workers and retrain existing ones to work alongside machines, unleashing new productivity that can benefit consumers and societies. (Asia Business Council, 2017).”

The Boston Consulting Group identified three sources of competitive advantage that leverage ‘man and machine’ (Gerbert P & al, 2017). They are:

Table 1: Human competitive advantages

| Source | Human component |
|------------------------------------|---|
| Act where others can’t | <ul style="list-style-type: none"> • Talented workforce • Business ecosystems |
| Merge exploitation and exploration | <ul style="list-style-type: none"> • Agile form or working |
| Embrace continuous change | <ul style="list-style-type: none"> • Adaptive organizations • AI-driven job adaptation and training |

Machines are not humans

And it is going to remain so for ever or a very long time indeed. The best outcomes will result from using the best of humans and machines. These human skills, attributes and areas that can most contribute to overall success, and therefore need to be further developed and leveraged include those listed below.

Table 2: Human attributes not shared by machines

| |
|--|
| <ul style="list-style-type: none"> • Leadership / empathy / social skills • Imagination / creativity / purpose / vision • Extrapolation / judgement • Strategy • Flexibility • Communication, emotions, stories • Global view • Psychology / sociology / emotional intelligence / persuasion • Collaboration – multidisciplinary teams • Values and ethic • Willingness to adapt and acquire new skills, agility • Curiosity |
|--|

From a business viewpoint, employees, working alongside intelligent machines and deploying AI to help solve business problems, will be better equipped to respond to customer demand, regulatory requirements and competitor actions.

The importance of creating a ‘capability and culture ecosystem’

It behoves risk management then to take an active role in creating the right conditions for the organisation to anticipate, evaluate and respond to these emerging risks. With reference to our river analogy, the overall mission (destination of our canoe) will likely be relatively stable but there will need to be course adjustments made to get us there. Changes in direction, manoeuvring around immovable objects, and occasionally abandoning projects that are not meeting expectations will become the norm. Trying, failing fast and then trying again will need to be part of the organisational mantra.

New business models, tailored to the turbulent environment, will emerge to create the transformative organisation of the future. In our view, these models will be bespoke to each organisation incorporating its risk maturity, cultural settings and its various capabilities.

But an ecosystem is a complex network of interconnected resources – people, machines, data & software, suppliers, and customers to name a few. For organisations to have the capability, and therefore the agility, to cope with the expected turbulence, these elements will need to work in harmony.

Here we consider the ‘capability and culture ecosystem’ which is a subset of the total ecosystem organisations need to develop. The importance of the capability and culture ecosystem is that it determines, to a very large extent, the resilience of the organisation to turbulent environments, that is to change, innovation and transformation pressures. A strong capability and culture ecosystem is associated with high competitiveness and risk maturity and, conversely, a weak ecosystem corresponds to a low competitiveness and risk maturity.

Capability and culture ecosystem

The values, models, methodology and infrastructure put in place by the organisation to develop, nurture and leverage its ability for change, innovation, transformation and execution.

The elements of the capability and culture ecosystem are:

1. A capability model that describes the enablers of successful change, innovation, transformation and execution. The implementation of this capability is an expression of values and culture.
2. A methodology for leveraging this capability at the personal, team and organisational levels.
3. An infrastructure that supports communication, knowledge sharing and learning, and the definition, implementation and tracking of execution plans for change, innovation and transformation.

These three elements can be viewed as magnifiers of human capability. Having them working in harmony 'magnifies the impact of human brains'. This statement recognises that dealing successfully with the turbulent environments created by new technology and AI requires developing and implementing strong human capability, including the systems that support it.

Part 2

THE IMPORTANCE OF HUMAN CAPABILITY, IMPACT ON THE RISK FUNCTION AND THE FUTURE OF RISK

THE IMPACT OF HUMAN CAPABILITY

As discussed earlier, human capability, along with its supporting systems, will be a key differentiator between those firms wanting to create their own future and those that will be shaped by the turbulent environment engulfing them.

But what is human capability? In their HBR article (HBR 2004, <https://hbr.org>), Smallwood and Ulrich acknowledge that whilst there is no "magic list of capabilities appropriate for every organisation" they do identify 11 capabilities that well-managed companies tend to have:

1. Talent – attracting, motivating and retaining competent and committed people
2. Speed – good at making important changes rapidly
3. Shared Mindset and Coherent Brand identity – positive and consistent experiences of the organisation by employees and customers
4. Accountability – able to obtain high performance from employees
5. Collaboration – Work across boundaries to ensure efficiency and leverage
6. Learning – Generate and generalise ideas with impact
7. Leading – embedding leaders throughout the organisation
8. Customer Connectivity – build enduring relationships of trust with targeted customers
9. Strategic Unity – articulate and share a strategic point of view
10. Innovation – good at doing something new in both content and process
11. Efficiency – good at managing costs

Interestingly, a 2010 McKinsey survey (McKinsey, www.mckinsey.com) found that "only a third of companies actually focus their training programs on building the capability that adds the most value to their companies' business performance".

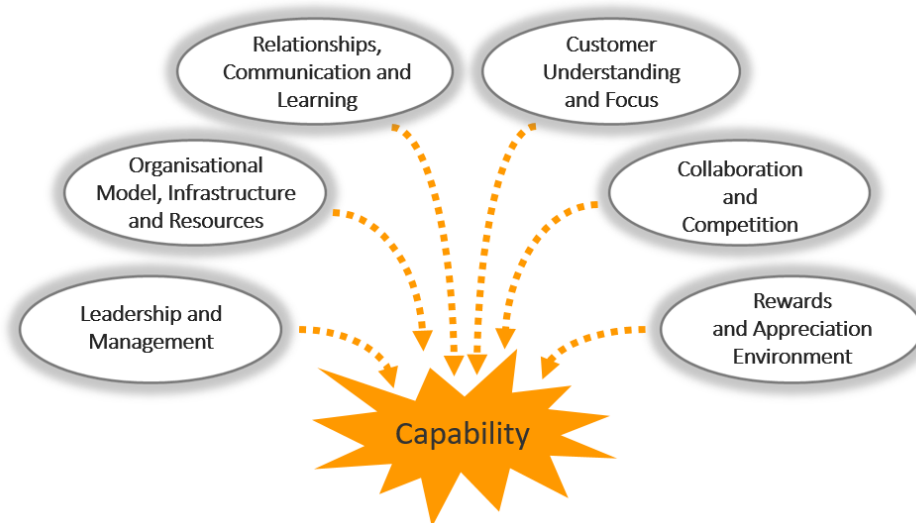
This dichotomy will be further exacerbated by the additional turbulence created by AI, intelligent machines and the 4th Industrial Revolution more broadly.

The determinants of human capability

Human capability is multi-dimensional. Multiple perspectives or views are required to get a true measure of capability and of the opportunities to improve it.

In working with organisations, the writers use a six-dimension model for measuring and considering organisational capability developed by the Capability Institute (Figure4). The model expresses the different dimensions embodied in competitive markets with a view to achieving enhanced flexibility, dynamism, innovation and performance in organisations.

Figure 4: Capability model



Each dimension contains several sub-dimensions which together provide a fine-grained understanding of the situation inside the organisation and its teams. When considered in terms of the performance of the organisation and in the context of the threats and opportunities (collectively, the risks), the model provides an insight into the areas where capabilities might be lacking within the firm.

Magnifiers of personal capability

The effectiveness of personal capability is determined by the way it is leveraged in teams and in the organisation. It is well known that some teams create environments that thwart personal effort and, similarly, that organisations can have environments that thwart team effort; this is destructive. High effectiveness depends on the three perspectives interacting synergistically towards agreed and shared objectives. Personal capability, team capability and organisational capability need to work together and magnify their respective capabilities.

Figure 5: Magnifiers of personal capability



Team capability

A team capability assessment, whilst using the same six dimensions, is an exercise to understand the capability of a particular business unit or function to be an invaluable part of the organisation. It also assesses the interaction of team members within the team and how that either enhances or stymies individual performance. Which way this falls depends on a multitude of drivers that include the leadership of the team manager, how the team is remunerated, the team dynamic and personalities of the individual members and the access the team and its members have to resources.

Team dynamics can be complex, but a capability assessment helps the team understand their effectiveness and how improving capability is a ‘force-multiplier’ in this regard.

Organisational capability

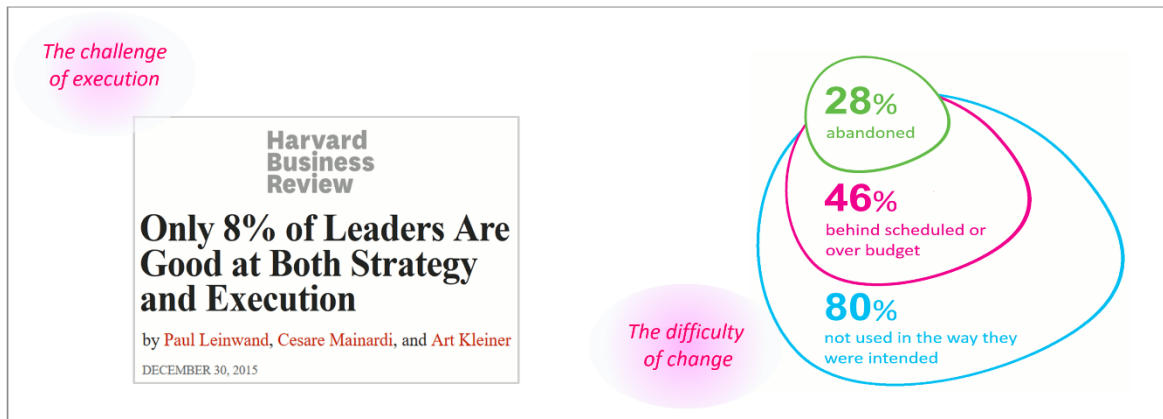
Similarly, organisational capability has a big bearing on the performance of the teams and individuals within it. As we can see from the six dimensions, part of the organisational capability revolves around things like structure and resources, processes and systems and tools.

But a large component of it is in the culture, attitudes and behaviours sponsored and promoted by senior management and the Board of Directors. It is this visible statement of expectations that set the starting point for what the organisation is capable of – at company, team and individual level.

Do organisations need to improve their capability? Decidedly, yes! Here is ample evidence for it.

In 2003, HBR reported a success rate below 50% for initiatives (HBR 2003, <https://hbr.org>). And it isn’t getting any better – last year, Scott Kirsner stated ‘When a CEO announces a major initiative to foster innovation, mark your calendar. Three years later, many of these ambitious ventures will have quietly expired without an obituary.’ (HBR 2017, <https://hbr.org>). This is corroborated by the Boston Consulting Group: “The evidence, including self-reported CEO data, indicates that 50% of change programs fail to achieve their objectives; the failure rate rises to 75% for more complex and ambitious programs. These rates have remained much the same for the past few years” (BCG-Getting-Smart-About-Change-Management-Jan-2017). According to ChangeFirst, 28% of change initiatives are abandoned, 46% end up behind schedule or over budget and a whopping 80% are not used in the way they were intended (ChangeFirst, 2015).

Figure 6: Execution and change are difficult



The unsatisfactory statistics quoted above clearly illustrate the interplay of personal, team and organisational capability. Change is required at the three levels if better results are to be obtained and some starting considerations are listed below.

What role will senior leaders play in this project, are the objectives and strategy clear, is ownership of the project distributed or is it 'pushed down', how much initiative will managers be able to exercise, have we resourced the project with sufficient and the right resources, what does our planned communication program look like and are status updates going out frequently to all staff, which teams will need to work with the project group and what impact will this have on their 'business as usual' expectations?

These questions, and others related to capability, must be asked before the project is initiated. Projects that are under pressure and show signs of failing can benefit from an analysis using the six dimensions model to determine what needs to change to get the project back on track. No matter when the analysis is performed, as pointed out earlier, the appropriate culture and capability must exist, ready to be leveraged to the emerging challenges.

At present it is senior managers who design and run teams and organisations, and hire, mentor and develop people. Their capability is critical; personal capability is the foundation of success upon which teams and organisations thrive or fail.

The use of AI

The use of AI and robotics falls in two major categories. As replacement of humans for an ever-increasing variety of semi-routine and administrative tasks and those where big data, and analytics coupled with deep learning can generate new insights. The second category relates to assisting humans in what they do best, see Table 2 (shown on page 7). It is this second role we consider here.

The attributes above, although human and not likely to be taken over by machines in the foreseeable future, could nevertheless benefit from AI.

A practical example of this man-machine interface has emerged from work done by researchers at Stanford University. The Machine Learning Group, combined with an assistant professor of radiology, used a public dataset of over 112,000 chest x-rays with up to 14 possible pneumonia pathologies. After about a month of iteration, the algorithm outperformed four individual radiologists in diagnosing pneumonias. (Stanford 2017, <https://news.stanford.edu>)

And do the team see the algorithm replacing radiologists? ‘This tool could help reduce the amount of missed cases of pneumonia and significantly accelerate radiologist workflow by showing them where to look first, leading to faster diagnosis for the sickest patients’. More generally, in a clinical environment, human attributes of empathy and social skills are likely to keep playing a major role, whatever help is provided by AI in diagnosis and treatment planning. This role may even become dominant as clinicians are relieved of some other tasks by AI.

Other examples not restricted to medicine, could see AI help diagnose gaps or shortcomings in communication, flexibility, collaboration and present options to humans to help them make better decisions. Similarly, case studies related to values and ethics could significantly help humans make better decisions in these areas. This is likely to become an important area for future development (x.ai blog 2017 <https://x.ai/blog/>)

IMPACT ON THE RISK FUNCTION

The issues highlighted in the previous section and earlier parts of this document make it clear that the risk function needs to adapt; it needs to prepare and equip itself for new, rapidly emerging risks.

Like individuals, teams and the organisation itself, the risk function should also perform a capability health check on itself, not only on what it does, but what it will need to do in the ‘turbulent’ future.

Like most business functions today, risk teams have access to a plethora of data. Making use of it in an effective and efficient way is essential. As already mentioned, this is one area where AI and machine learning will magnify the impact of the risk team’s efforts.

How will it lead, what resources will it need, what relationships will be key and how will it collaborate with them, who will it be competing with for resources and how will its efforts be rewarded? These are just a few of the questions risk leaders of the future need to be asking – today!

THE FUTURE OF RISK

The considerations above give a sense of the enormous magnitude and challenge of the risk environment of the future. Despite its unpredictability, it’s possible to draw some preliminary outlines for the future of risk and how to control it.

Deal with turbulent environments

Risk will no longer be dominated by individual events that can be handled one at a time. Instead, the major risks will arise from continuous change and challenges associated with turbulent environments. Using the river analogy, the ‘future of risk’ will be linked with developing models and strategies for dealing with the dynamism, unpredictability and relentlessness of turbulent flow, mainly created by new digital technology. This means models and strategies for dealing with relentless change, innovation and transformation.

This will require agility on the part of organisations, their teams and employees and the pressure on organisations will be linked to the frequency of the change events. A ‘turbulent environment heat map’ is a convenient way to visualise the overall pressure put on an organisation. It shows that the highest risk is

associated with high frequency and low agility. Being agile and able to deal with frequent change will determine the resilience of organisations to cope with the future.

Develop a capability and culture for change, innovation and transformation

The ability to deal with change, innovation and transformation is then closely associated with the risk level in organisations. This in turn depends strongly on whether a capability and culture for change and transformation exist. This is because, unless dealing with change is set in the DNA of the organisation (that is, in its structure and systems, and in its teams and employees), then the pace of change will overrun the organisation. More than in the past, managing risk will mean managing capability and culture.

Magnify human capability

Unsurprisingly, organisational resilience, capability and culture all depend on the interplay of personal capability with team capability and organisational capability. The objective is to create an environment where culture and capability at these three levels create a positive synergy – a virtuous cycle – that magnifies each contribution. Unless this is created, the organisation may face serious difficulties. A simple way to apprehend this situation is to view teams and organisations as magnifiers of human capability. The capability model we propose deals with these three levels and makes it possible to manage them constructively. As capability contains culture, the above implies that culture needs are also be addressed by this approach.

Develop a ‘capability and culture ecosystem’

Developing an organisation-wide ‘capability and culture ecosystem’ is an effective way to magnify human capability. Such an ecosystem comprises three elements. A versatile and effective capability model supported by the appropriate methodology for its engagement, and an infrastructure for communication, knowledge sharing, learning and for managing change projects.

Work with intelligent machines

Intelligent machines are the great disruptors and the great enablers. Organisations need to seize the opportunities created by new technology. In addition, AI has the potential to magnify these human attributes that machines do not possess, such as emotional intelligence, creativity, cognitive flexibility, collaboration, ethics and the selection of purpose and missions. These attributes will continue to play a determining role in the success or otherwise of organisations. Working with intelligent machines then has two faces and managing risk effectively means leveraging the potential of AI towards enhancing human attributes.

The profession of Risk Management needs to evolve

There is no avoiding it – the risk management profession will also be impacted by the turbulent environment facing organisations. And like organisations, the profession itself and its practitioners, will have to change.

What will all this look like? There will be no 'one size fits all' outcome for organisations – indeed, like a good risk management program, the approach should be tailored for each different organisation.

To remain relevant, the risk profession need to take on board the challenges mentioned above. That is, it needs to take an active role in detecting shortcomings in the capability and culture for dealing with change, innovation and transformation. In our view, it also needs to look at human capability and concern itself with its impact on team and organisational risk. Finally, it needs to consider the impact of intelligent machines on risk and their potential contributions towards increasing these attributes of human capability that machines do not possess.

There is little doubt in the authors' view that risk managers need to take the lead in addressing the challenges discussed in this paper. It is both an opportunity and a threat. The opportunity is to play a more central role in the life and success of organisations. The threat, if no initiative is undertaken, is one of relevance. To remain relevant, risk managers need to engage forcefully.

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Paul has over 25 years' experience in research, development, consulting and management. He has a Ph.D. from the University of Melbourne and was head of the Knowledge-based Systems laboratory for CSIRO. He has published academic papers and holds several patents.

Paul is fascinated by technology and its relation to human beings. He founded the Capability Institute with the objective of helping every organisation reach the potential latent in its people, and has been researching and developing the concept of capability for the past ten years.

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Anthony has spent over 30 years in senior management roles including 10 years as General Manager Risk & Safety and Chief Audit Executive at Woolworths Group. He holds a Masters degree in Management (MGSM) and a Masters in Risk Management (UNSW) and is a graduate of the Australian Institute of Company Directors.

Anthony is also a non-executive Director of an industry Credit Union and is Chair of its Board Governance and Remuneration Committee. Anthony is committed to assisting organisations realise their true potential through great risk management – which both protects and creates value.