

## ***Advances in Project Management Series*** <sup>1</sup>

# **What you don't know may still bite you: Learning to deal with the unknown** <sup>2</sup>

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The most recent article in the series (Dalcher, 2021) recognised that agile and flexible approaches encourage experimentation-in-the-small, thereby supporting iterative and responsive exploration of new conditions in turbulent and unexplored settings. Sensing and responding are particularly useful when little is known about present conditions as they can be utilised as the basis for probing, making sense and setting new directions. Indeed, when we are lost in the fog, a repertoire of small moves to establish where we are and what kind of progress might be feasible is essential in making sense of our surroundings. But what of the bigger picture? Business agility implies recognition of purpose and strategic considerations. Yet, extreme uncertainty and ambiguity interfere with strategic planning and direction setting, challenging organisations and leaders to rethink, respond and react in the face of the uncertainty. How then, do we begin to come to terms with the unknown?

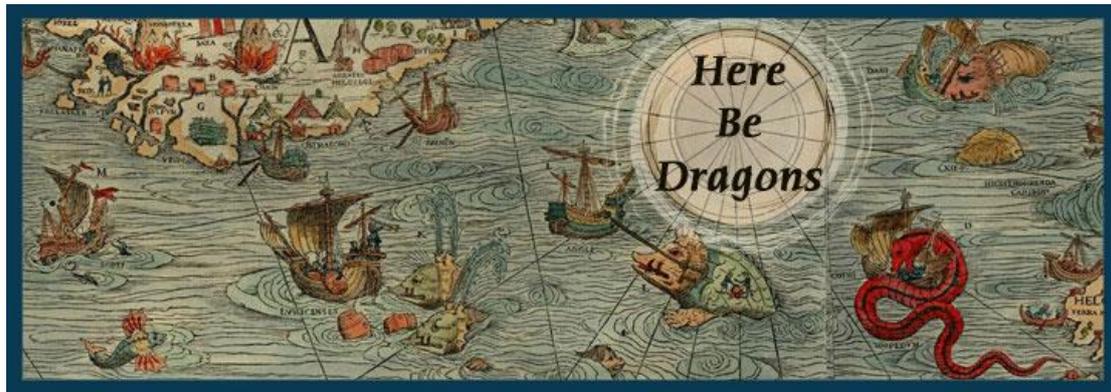
### **The quest to tame the unknown - The impact of uncertainty**

Medieval maps offer a fascinating glimpse into the mindset of that era. Dangerous and unexplored territories at the edge of the known universe are often demarcated by strange and imposing land and sea animals, including lions, elephants, dragons, serpents and other wild beasts and monsters. The Hunt-Lenox Globe of c. 1510, now housed in the New York Public Library, depicts the Latin phrase 'hic sunt dracones' translated as 'here be dragons' to capture the uncharted and unknown nature of such regions. The symbols betray the fear of the unexplored and the unknown, and the uncertain features that it may hold.

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<sup>1</sup>The PMWJ *Advances in Project Management* series includes articles by authors of program and project management books published by Routledge publishers worldwide. Each month an introduction to the current article is provided by series editor **Prof Darren Dalcher**, who is also the editor of the Routledge *Advances in Project Management* series of books on new and emerging concepts in PM. Prof Dalcher's article is an introduction to the invited paper this month in the PMWJ. See Darren's background and qualifications at the end of this article.

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The apparent distrust of the unknown stems from human preoccupation with knowledge and perfection. The quest for knowledge has played a major part in the intellectual development and evolution of individuals, societies and cultures over many generations and cultures. Socrates viewed knowledge as a virtue, a path to perfection. Prometheus was punished for bringing knowledge to the world, and Faust for wanting it too much.

Yet, knowledge has continued to feature as a defining commodity and a measure of progress. Aristotle, reflecting the height of Greek philosophy observed that ‘*all men by nature desire knowledge*’, while Socrates proclaimed that the only good is knowledge and the only evil is ignorance.

### **A life less certain**

According to the Oxford Dictionary, *certainty* implies conviction or perfect knowledge, free of doubt. The idea of attaining perfection without entertaining doubt is attractive. British-Canadian physicist F. David Peat (2002) asserts that early theorists believed that science delivered this promise of certainty: built on the foundation of fact and constructed with unbiased and trustworthy tools, science would ultimately produce objective and proven knowledge.

Such a deterministic mode of thinking is predicated on the assumption that every effect has a discernible cause, thereby enabling prediction, determinism and observation, and—above all—a high degree of certainty. French novelist, Victor Hugo ruminated about a time ushered in by science, which will feature an end to surprises, calamities, catastrophes, and also to disputes, illusions and parasitisms (Finkelkraut, 2005). Indeed, as recently as 1900, Lord Kelvin, the President of the Royal Society, claimed that everything that was to be known in science was already known. The combination of Newton’s and Maxwell’s theories were considered capable of explaining every phenomenon, thereby laying the ground for a unity of knowledge. Science could thus herald the arrival of an era of certainty, the ultimate prize in humanity’s continuing quest for knowledge.

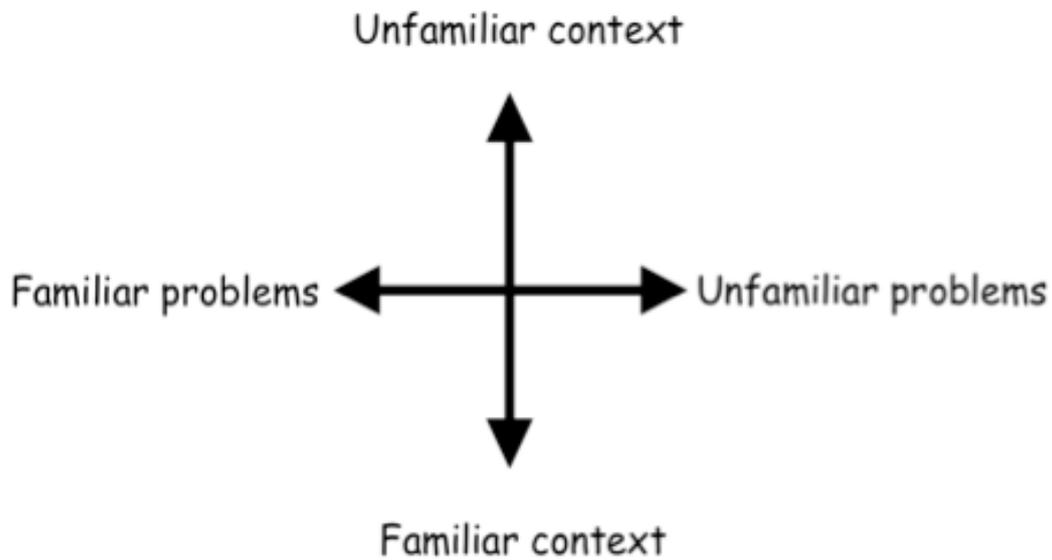
Paradoxically, the human pursuit of knowledge was meant to lead to a stable and well understood life, where the unity of knowledge would provide safety and predictability. Yet, despite this optimism, the grand amalgamation of ideas and knowledge would ultimately prove futile as economics, wars and advances in science—especially quantum physics, relativity and

complexity—were to challenge the notion of perfect knowledge and the proposed benefits that it might bring. The quest to tame the uncontrolled forces of nature through knowledge and understanding had never materialised. Indeed, British social theorist Professor Zygmunt Bauman describes society as moving from a solid state (where knowledge is fixed and available) to a constantly shifting liquid modernity. Liquid life cannot stay on course for long, as it is lived under conditions of constant uncertainty, with an ever-increasing fear of being left behind (Bauman, 2005). Devoid of certainties, liquid society struggles to keep its shape, confronting individuals with a series of challenges never before encountered (Bauman, 2007).

The business world is increasingly confronted by the realities of such liquidity, with Charles Handy (1995) heralding the arrival of a changing world of organisations that extends beyond certainty. Indeed, a 2010 survey of 1,541 CEOs conducted by IBM reveals that the key challenge facing global organisations is addressing complexity. The CEOs identify a world that is volatile, complex and increasingly uncertain, with 79% anticipating an upsurge in these features (Berman, 2010). The majority of respondents have serious reservations about the ability of their organisations to manage in such a future but would seek to build such capability. Intriguingly, the US Military has coined the acronym VUCA to account for the increasingly encountered features of volatility, uncertainty, complexity and ambiguity in its operating environment, which render traditional management approaches and past knowledge less useful in preparing for and addressing future challenges. Moreover, the recent experience of the pandemic has demonstrated the potential wider impacts of uncertainty and the unknown on every conceivable aspect of life, work and society (Dalcher, 2020).

### **The problem with uncertainty**

Much as in medieval times, knowledge and familiarity remain key to characterising and mapping the world around us. The certain world, where repetition offers a strategy for addressing similar problems using well-understood tools in well-understood contexts, resides in the bottom left quadrant of Figure 1. Former French President Charles de Gaulle noted that greatness was a road leading towards the unknown. Modern organisations, especially in post-pandemic times, increasingly find themselves operating in the new world of the top right quadrant, which is replete with uncertainty, where knowledge is scarce, and unfamiliarity breeds fear of the unknown.



**Figure 1: The world of action, adapted from Stephenson (1994)**

Uncertainty can be characterised as novel situations where perfect knowledge of the past offers little or no value to support decision-making in the future. However, people generally remain uncomfortable with uncertainty and most would therefore prefer (known) risk to uncertainty.

For a simple demonstration consider the following situation:

You have in front of you two urns, labelled Urn I and Urn II:

Urn I has 100 red and black balls, but you do not know in what proportion.  
Urn II contains exactly 50 red balls and 50 black balls.

I will now offer you three betting situations:

1. Without looking I will extract exactly one ball from each urn. Would you prefer to bet \$100 on getting a red ball in BOTH Urns, or on getting a black ball in BOTH urns?
2. This time you are allowed to take out just one ball (without looking) from either urn. Would you rather bet \$50 on finding a red ball in Urn I or finding a red ball in Urn II?
3. Once again, you are allowed to take out one ball (without looking) from either urn. Would you prefer to bet \$50 on getting a black ball in Urn I or a black ball in Urn II?

**Figure 2: The Ellsberg Paradox**

The experiment has been conducted with tens of thousands of subjects. It is known as the Ellsberg paradox (Ellsberg, 1961). The results are almost always the same. Most subjects are indifferent between betting \$100 on either red OR black balls in BOTH urns. This is hardly surprising, as there appears to be an equal chance of winning in either case.

Yet, most people prefer betting \$50 on red in Urn II over betting on red in Urn I. They ALSO prefer betting \$50 on black in Urn II over black in Urn I. The typical rationale that is given by subjects is that the precise proportions of red and black balls in Urn II are known and therefore this is a 'less risky' bet. The results suggest that people prefer situations of risk (where the proportions of balls of two different colours were determined at fifty-fifty) to those of true uncertainty (where the balls were taken out of a random mixture – thus implying a probability of a fifty-fifty mix). When betting on a particular colour, most respondents would choose the determined proportion for each colour suggesting that the probability of either colour is greater than fifty percent (whilst also showing no difference between the colours when asked to bet for one colour in both piles).

This pattern of preference is inconsistent with rational decision-making. The implication of what has been termed the Ellsberg Paradox is that decision makers are more comfortable with risk than they are with uncertainty. Interestingly, the amount of money on offer (i.e. the potential prize) does not alter the choice preference of participants so that the same results are obtained when the gamble offered is for \$50 and for \$500,000. Nor does the level of knowledge and expertise in decision making appear to change the preferences of subjects, with experts making similar choices to novices.

Other experiments reveal that decision makers will defer major decisions in the face of uncertainty. This applies even when the decisions are not directly linked, showing that uncertainty in one area can impact our performance in other areas. For example, when offered a special holiday package at a greatly reduced price, most students deferred their choice and elected to pay a non-refundable deposit until they found out if they passed their final year exam. Other groups were told their final result and the majority of those who passed and also of those who failed elected to buy the very same offer (presumably either as a treat or in order to feel better). I have tried experimenting with similar configurations with professionals who were waiting to hear the outcomes of a major decision regarding project funding or a promotion with almost identical results. The majority of those awaiting results elected to defer and pay a deposit, while the majority of those who were given their result, almost regardless of the outcome, elected to make the same positive decision. The rationale being that if you pass or win a bid, you deserve a celebration. Similarly, if you fail or lose, you merit a commiseration prize. However, while the result remains known it is impossible to make a definite decision (even though in either consequence, you are likely to opt for the same core action). The lack of knowledge thus appears to have a debilitating impact upon the decision maker. Nonetheless, it is worth noting that an incremental decision, with minimal investment, is still desirable when it appears to retain the ability to defer the decision to when the results are known with certainty...

## **Making sense of uncertainty**

*“We cope with uncertainty irrationally by ignoring it or by worrying”*

– Detlof Von Winterfeldt

Uncertainty is problematic. The Ellsberg paradox and our recent experiences with the Covid-19 pandemic underscore an inability to handle uncertainty. Most of us are uncomfortable in the presence of uncertainty and would prefer some partial knowledge to total ignorance regarding a given situation. As a result, the opportunities that are embedded in uncertain situations may often be sacrificed in an effort to opt for risk as opposed to uncertainty (additional potential benefits may also be lost in a further effort to reduce the level of risk).

The distinction between risk and uncertainty has traditionally been explained in terms of the available knowledge (Knight, 1921; Keynes, 1936; Dalcher, 2017). Whilst there have been multiple attempts to classify different types of uncertainty (cf. Dalcher 2010; 2016; Ward & Chapman, 2011), Kay and King (2020) offer a fundamental characterisation building on the work of Knight and Keynes. Firstly, they position uncertainty as *‘the result of our incomplete knowledge about the world, or about the connection between our present actions and their future outcome’* (p. 13). Secondly, they distinguish between resolvable uncertainty and radical uncertainty:

**Resolvable uncertainty** can be removed by looking something up, or which can be represented by a known distribution of outcomes (p. 14).

**Radical uncertainty** where there are no means for resolving the uncertainty as we simply do not know (ibid.).

Radical uncertainty therefore represents a complete lack of knowledge which may be represented by different dimensions such as lack of information, ambiguity, obscurity, ignorance and vagueness (ibid.). The lack of information may relate to not knowing what will happen, as well as to the kind of things that may happen ranging from the unimaginable to the unlikely. Radical uncertainty is increasingly utilised in economics to theorise the impossibility of foreseeing the outcomes of scientific and technological development work where preferences evolve as other agents act and respond (see for example, Roth, 2009; Ormerod, 2015; Feinstein, 2020). Kay & King are duly concerned that economists have failed to account for the fundamental properties of radical uncertainty, a belief that they maintain has further infected other disciplines such as sociology and psychology (2020: 15). In their view, the policies and strategies employed by banks and businesses, do not take the characteristics of radical uncertainty into account, using inadequate quantitative models that cannot account for the many different facets of radical uncertainty (p. 16). The troubling implications are that many potential options and possibilities are being naively ignored.

The existence of uncertainty and ambiguity are often viewed with discomfort. Uncertainty appears to act as a deterrent and determines where and how we engage with situations. Contemporary economists John Kay and Mervyn King (2020) conclude that people crave

certainties which cannot exist and invent knowledge they cannot have, eschewing long-evolved abilities to adapt to environments that are only imperfectly understood. Social scientists Mary Douglas and Aaron Wildavsky (1982) note that uncertainty prevents or inhibits risk taking, while Schoemaker (2002: 13) similarly suggests that managers tend to have myopic eyes and timid souls. Indeed, risk managers and project leaders, often do not manage risks or seek opportunities, but instead simply try to avoid uncertainties and ambiguities. Yet, unexpected events are unexpected, often leading to new opportunities (Lindkvist, 2011) and they open the potential to innovate and develop novel strategies in order to profit from ambiguity (Schoemaker, 2002).

Given the concerns expressed by CEOs about their ability to operate in the top right quadrant, how could we begin to organise our management and leadership actions to successfully deliver in an uncertain world? Moreover, given that exploring the unknown requires tolerating uncertainty, how do we develop these new capabilities, and even learn to embrace and explore such scenarios?

Lessons from the analysis of thousands of planning and execution failures over the last few decades indicate that in common with our medieval ancestors, individuals and organisations struggle to accommodate uncertainty. As seen in the choice of holiday example and the various national efforts for dealing with the impacts and consequences of the pandemic, the fear of the unknown and the lack of knowledge can have crippling effects that combine to stall effective decision-making and arrest progress. Learning to perform in the unfamiliar settings that typify the top right quadrant requires the development of new learning and adaptation skills for taming and handling uncertainty, leveraging emerging opportunities and addressing the unknown.

### **A way forward: Learning to play with dragons**

Danish physicist Niels Bohr opined that “*prediction is difficult, especially if it is about the future*”. Indeed, the holiday insurance scenario discussed above suggests that small decisions with smaller commitments are more acceptable. That might work well in incremental settings or in-the-small, but what can we do about the dragons and the other beasts of the unknown? How do we begin to tame them? How do we devise our strategies, and carry on to develop and implement them when so much remains unknown?

Playing the uncertainty game requires brand new skills for engaging with change, novelty and the unknown. The traditional tools and techniques devised for strategic analysis and management prove to be insufficient or inadequate in capturing and addressing the full remit of uncertainty. Given the limitations, there is a need for new ideas and inspiration. The authors of our guest article this month, Daniel Orišek and Jan Oliver Schwarz, rise to the occasion and offer fresh insights and perspectives, based on their recent book *Winning the uncertainty game: Turning strategic intent into results with wargaming* published by Routledge.

Orišek and Schwarz (2020) build on their long standing interest in wargaming to develop a viable approach for securing corporate value in uncertain settings. Orišek & Schwarz (2008) identify a corporate need for wrestling with novel, yet highly complex scenarios, proposing the use of wargaming as an effective tool for testing strategies, planning and preparing for

crises and managing change. More crucially, the approach enables organisations to imagine potential future scenarios, thereby enhancing their ability to anticipate, learn and adapt for an unknown future. While wargames may take place in an organised and controlled environment, allowing trials, experimentation and development, they offer sophisticated lessons about the viability of different approaches, whilst gaining essential practice in adapting, adjusting and improving in (simulated) real time as conditions and circumstances unfold. Rather than remain in the the military domain, Oriesek and Schwartz envisage wargaming as an indispensable development and preparation approach and an vital tool for accelerated learning in a realistic setting.

Their recent work (Oriesek & Schwarz, 2020) updates their earlier thinking, offering important new insights, reflecting the challenges that emerge for organisations operating in an ever faster and more unforgiving world. The authors recognise greater uncertainty emanating from the environment embedding organisations, and therefore consider strategy as the approach for dealing with the uncertainty. They look at lessons from military operational planning, where wargaming links together to the intent defining the strategic level, and the specific actions of the tactical level to unify the overall effort behind a common objective. The joint approach allows for local flexibility in dealing with emergent conditions and variations, whilst seeking to maximise the potential corporate value. Oriesek & Schwarz therefore offer an imported and well tried approach for harnessing the clarity of thinking obtained from the military used to combine the different levels of management and leadership required to produce a single aligned and focused response to outside opportunities and threats in real time.

Games, including wargames, provide a safe environment for experimenting and coming to grips with the important aspects of real life. The idea of using games as a way of engaging with uncertainty is appealing; they enable players to make sense of the rules, the participants, the end states, and to sample different starting positions, postures, strategies and responses. Costikyan (2013) observes that humans devote a significant effort to trying to manage and ameliorate uncertainty. Games therefore act upon this cultural construct by creating a non-threatening environment for interacting with the most intimidating aspects of uncertainty. Whilst the struggle to master uncertainty is central to their appeal (*ibid.*: p. 2), the compelling act of playing games thus leads to the development of an important new capability needed to come to terms with uncertainty. Indeed, uncertainty is not manifested in the outcomes of the game (p. 13), but in the unravelling path that emerges and the parameters that seem to apply.

Gamers learn, reflect and improve over time, developing skills that can be applied to their next session or level. Simple, or finite games prove less exciting because the goals are pre-defined, the rules are known and the boundaries clearly demarcated. Open-ended games, or infinite games (Carse, 1986) may not have articulated rules, boundaries, goals, or knowledge of the number of players and their priorities. Developing effective strategies therefore requires more elaborate and reflective engagement over time in order to fine-tune and hone skills and capabilities, and learn to play in the space where the rules and boundaries are vague, ambiguous or non-existent altogether.

Wargames are particularly useful in providing insights into human decision making in the face of uncertainty (Pournelle, 2017). Wargaming can affect strategic change when traditional command and control methods applicable in stable environments prove inadequate in complex and fast-evolving environments (Franken & Thomsett, 2013). Specifically, they provide an essential means of experimentation in complex environments where decisions are needed, the parameters are not clear, the problem domain is not well defined, and the factor of uncertainty is very high (Hodicky, 2017: 149), and when change is unexpected and irreversible (Franken & Thomsett, 2013) with multiple agents and conditions in constant interaction. Wargaming can also uncover future dynamics and support the deliberate exploration of how a future competitive landscape may evolve (Schwarz et al, 2019: 133), thereby introducing the potential for novelty and innovation. They thus provide an approach for buying information, trial-and-error learning, and exploring a repertoire of potential responses, opportunities and risks, whilst also honing and improving the expertise, skills and capability related to decision making, adaptation, responding to emergent conditions and overcoming biases. Ultimately, the notion of wargaming enables Orišek and Schwarz to offer an approach that can begin to tame the dragons of the unknown, with minimal risk, focusing instead on turning strategic intent into meaningful results and useful value, even under the most difficult and fast-changing conditions.

### **Mastering adaptive action as a way forward**

*“It would be profoundly reassuring to view the current economic crisis as simply another rough spell that we need to get through. Unfortunately, though, today’s mix of urgency, high stakes, and uncertainty will continue as the norm even after the recession ends. Economies cannot erect a firewall against intensifying global competition, energy constraints, climate change, and political instability. The immediate crisis—which we will get through, with the help of policy makers’ expert technical adjustments—merely sets the stage for a sustained or even permanent crisis of serious and unfamiliar challenges.”*

– Heifetz, Grashow & Linsky, 2009

The need for novel approaches is compelling. Hamel (2012) makes a convincing case for building organisations that are fit for the future. A fundamental aspect is the focus on the area of adaptability. Hamel recognises that deep change is ‘*almost always crisis-driven; it’s tardy, traumatic and expensive*’ (p. x). The world is changing at an increasingly rapid pace requiring strategic renewal exercised at an exponential rate (p. 86). Given that change often reflects a need to act in response to the unknown and unexpected, future challenges would require the ability to adapt in order to survive (p. 87) and continue to thrive. Negotiating an uncertain future requires a mix of anticipation, flexibility, variety and resilience. Acquiring such a range of skills is arduous and requires a way of developing, growing and learning.

Hopkins & Cameron (2019: 1) similarly observe that agile delivery and digital business no longer maintain the competitive advantage they once did due to their inherently reactive nature. Successful businesses have progressed beyond the need to predict the future years in advance, opting instead to become adaptive to unfolding events, by balancing features of preparing for the unexpected with thoughtfully rethinking the present and reconfiguring themselves (p. 2). Hopkins (2020) identifies three specific trends for organisations entering the 2020s:

1. The necessity to master uncertainty rather than manage risk
2. The recognition that resiliency (the ability to respond and recover from unpredictable events) is elemental to organisational value
3. The shift towards business-outcome based investments

With outcomes defined as meeting customer needs now or in the near future, and investing in order to achieve these outcomes, organisations will be able to adapt more easily to change, enabling future options (ibid.). Haeckel (1999) advocates for fast and even instantaneous response to emerging discontinuous change, which can be addressed as an adaptive system, allowing organisations the advantages of scale and scope through a *sense-and-respond* business model devised to cope with the unexpected. The implication is that organisations must be able to sense early and respond quickly without reverting to long term forecasts and thereby becoming an adaptive enterprise (p. 4). Organisations able to sense and respond will thus be able to adjust their mindset and skills and continuously innovate and create new products (Gothelf & Seiden, 2017) in order to gain and sustain competitive advantage. In doing so they become adaptive enterprises, open systems that can adapt, learn and respond to unpredictable change (Haeckel, 1999: 5).

Becoming adaptive necessitates significant shifts and adjustments to how organisations are perceived and constructed. It may also benefit from the provision of dual operating systems capable of operating efficiently, whilst also seeking to sense-and-respond in order to take advantage of emerging opportunities and changing conditions. The key to operating in such demanding environments relies on the development of deliberative and reflective action models. Action is the antithesis of analysis-paralysis, or the constant search for perfect information, and taking small samples and reacting accordingly can induce new insights and reflections as well as stimulating the adoption of novel approaches and strategies.

Determining and balancing action in highly uncertain contexts implies deep engagement and learning. It can also converge with an agile inclination to scan the context and move rapidly by probing, experimenting and making informed decisions. Eoyang & Holladay (2020) propose an adaptive action perspective constructed around three simple questions that need to be carefully reflected upon:

- What?
- So what?
- Now what?

The questions begin with a careful observation, followed by thoughtful consideration of consequences, outcomes and implications, before inviting meaningful action. The purpose of the questions is to engage with uncertainty in a dynamic and meaningful way and cultivate an approach that makes sense of interactions as we grapple with the unknown and foggy aspects of any situation one step at a time.

## **So, how do we organise for adaptive action?**

Uncertainty appears to be a permanent companion, especially in an increasingly uncertain world. Yet it also offers the potential for future benefit and novel innovation. Looking for answers in an uncertain world requires a different sort of questions, methods, and expectations. The approaches that work under conditions of certainty would need to be superseded by ones fit for a new world replete with disorder and turbulence (Dalcher, 2014). The requisite characteristics required for success in uncertain environments include strategic anticipation, organisational resilience, corporate agility, open collaboration, navigational leadership, predictive learning, and intelligent judgement. Ultimately, succeeding in taming the dragons depends on developing a new mindset open to making sense of the problems, contexts and methods that can be applied.

To be successful in a dynamic, volatile and uncertain environment, organisations need to align their capabilities with emerging opportunities and harness new sets of skills for dealing with the uncertain and unexpected. The theories and models that have worked in the past are no longer sufficient as organisations and their workforces must learn to adopt a more responsive stance that will enable them to react flexibly, regroup and act in more creative and open ways as they transition into action. We have learned to expect the future to be different and challenging, but are yet to learn how we can learn, grow and improve in that environment. To build organisations that can cope with the new challenges we need to begin with creating a workforce fit for that task and develop flexible and responsive organisations around them.

There is also a fundamental need to rethink management to enable a more informed mode of coping and adapting to the turbulence and upheaval of the unknown and the management overheads required to continuously engage with the hazards and potential that reside within uncertain settings. The steps required to address and harness radical uncertainty would encompass the following actions:

- **Prepare for uncertainty:** Be ready to let go of the known and familiar, support the development of nimble and rapid skills and capabilities, and develop a diverse repertoire of potential responses, an early warning system for detecting surprises and deviations, and a supportive environment for addressing them
- **Detect and assess changes in the environment:** Scan and search for the novel, the unexpected and the surprising
- **Take decisive action:** React in real time; be able to outmanoeuvre the competition through quick anticipation, rapid and nimble response, and flexible and disciplined action; support empowered and creative bursts of activity
- **Develop a strategic advantage:** Seize, shape and exploit opportunities, better defend against threats and adapt to emerging conditions
- **Compress learning cycles:** Be prepared to change the rules of engagement, rethink your position and potential advantages, bounce forward and reinvent your strategic approach
- **Maintain the momentum:** Continue to innovate, adapt, play the enduring long game and explore the emerging terrain and conditions by cycling through the activities

There are no magic bullets for slaying the mythical uncertainty dragons—we simply need to learn to adjust and live with them. We do however have a plethora of approaches for scanning, sensing, responding and reacting. Indian Philosopher, Jiddu Krishnamurti observed that “*One is never afraid of the unknown: one is afraid of the known coming to an end*”. That sentiment seems to reflect the fear of the medieval mapmakers. Learning to live with the beasts of uncertainty would require the humility and sensitivity to accept the boundaries and the good sense to resort to new ways of thinking, responding and coping with the unknown in informed, agile, flexible, nimble, diverse and resilient new ways. Armed with this new attitude, we can begin to journey, thrive and progress through the fog and mist that shroud uncertainty, recognise that we may be in charge but not in control, and endeavour to explore and gain from the bounty of potential, opportunity and novelty that the new position opens up. In time we may even learn to love and admire the features and highlights of the journey.

### References:

- Bauman, Z. (2005). *Liquid life*, 2005. Cambridge: Polity.
- Bauman, Z. (2007). *Liquid times*. Cambridge: Polity.
- Berman, S. (2010). *Capitalizing on complexity*. Somers: IBM Global Business Services.
- Carse, J. (2011). *Finite and infinite games*. New York: Free Press.
- Costikyan, G. (2013). *Uncertainty in games*. Cambridge, MA: MIT Press.
- Dalcher, D. (2010). The paradox of uncertainty: when less means more. *Upgrade: the European online magazine for the IT professional.*, 11(5), 72-78.
- Dalcher D. (2014). Beyond Knowledge: Growing Capability for an Uncertain Future, *Cutter IT Journal*, 27(3), 6-11.
- Dalcher, D. (2016). Rethinking project practice: emerging insights from a series of books for practitioners. *International Journal of Managing Projects in Business*. 9(4), 798-821.
- Dalcher, D. (2017). Coming to terms with the unknown: Re-invoking Knightian uncertainty. *PM World Journal*, 6(6), 1-7. <https://pmworldlibrary.net/wp-content/uploads/2017/06/pmwj59-Jun2017-Dalcher-coming-to-terms-with-unknown-article.pdf>
- Dalcher, D. (2020). Leadership in times of crisis: What's different now?. *PM World Journal*, 9(5), 1-18. <https://pmworldlibrary.net/wp-content/uploads/2020/05/pmwj93-May2020-Dalcher-leadership-in-times-of-crisis.pdf>

- Dalcher, D. (2021). Scaling up to business agility. *PM World Journal*, 10(5), 1-8.  
<https://pmworldlibrary.net/wp-content/uploads/2021/05/pmwj105-May2021-Dalcher-scaling-up-to-business-agile.pdf>
- Douglas, M. and Wildavsky, A. (1982). *Risk and Culture: An Essay of the Selection of Technological and Environmental Dangers*. Berkeley, CA.: California University Press.
- Ellsberg, D. (1961). "Risk, Ambiguity and the Savage Axioms", *Quarterly Journal of Economics*, 75(4), 643-669.
- Eoyang, G. H., & Holladay, R. J. (2020). *Adaptive action*. Palo Alto, CA: Stanford University Press.
- Feinstein, O. (2020). Development and radical uncertainty. *Development in Practice*, 30(8), 1105-1113.
- Finkelkraut, A. (2005). *Nous autres, modernes: quatre leçons*. Paris: Ecole Polytechnique.
- Franken, A., & Thomsett, H. (2013). When it takes a network: creating strategy and agility through wargaming. *California Management Review*, 55(3), 107-133.
- Gothelf, J., & Seiden, J. (2017). *Sense and respond: how successful organizations listen to customers and create new products continuously*. Boston: Harvard Business Review Press.
- Haeckel, S. H. (1999). *Adaptive enterprise: Creating and leading sense-and-respond organizations*. Boston: Harvard Business School Press.
- Handy, C., (1995). *Beyond Certainty: The Changing Worlds of Organizations*. London: Hutchinson.
- Heifetz, Ronald, Alexander Grashow, and Marty Linsky. (2009) "Leadership in a (permanent) crisis." *Harvard Business Review* 87, no. 7/8 , pp. 62-69.
- Hodicky, J. (2017). Wargaming and Challenges in the Experimentation Domain. In *International Conference The Knowledge-Based Organization*, 23(1), 144-49.
- Hopkins, B. & Cameron, B. (2019). *Beyond agility – Adaptive enterprises hold the winning hand*. Cambridge, MA: Forrester Research.
- Hopkins, B. (2020). Think adaptive for the 2020s. Blog. <https://go.forrester.com/blogs/think-adaptive-for-the-2020s/> Accessed: 5 August, 2020
- Kay, J. A., & King, M. A. (2020). *Radical uncertainty*. Decision-making beyond the numbers. London: Bridge Street Press.

Keynes, J. M. (1936). *The general theory of employment, interest, and money*. London: Macmillan.

Knight, F. H. (1921) *Risk, Uncertainty, and Profit*. Boston, MA: Hart, Schaffner & Marx; Houghton Mifflin Company.

Lindkvist, M. (2011). *The Attack of the Unexpected*. London: Marshall Cavendish.

Orišek, D. F. and Schwarz, J. O. (2008). *Business Wargaming: Securing Corporate Value*. Aldershot: Gower.

Orišek, D. F. & Schwarz, J. O. (2020). *Winning the uncertainty game: Turning strategic intent into results with wargaming*. Abingdon: Routledge.

Ormerod, P. (2015). The economics of radical uncertainty. *Economics*, 9(1), 1-20.

Peat, F.D. (2002). *From Certainty to Uncertainty: The Story of Science and Ideas in the Twentieth Century*. Washington, D. C.: Joseph Henry Press.

Pournelle, P. E. (2017). Designing wargames for the analytic purpose. *Phalanx*, 50(2), 48-53.

Roth, W. M. (2009). Radical uncertainty in scientific discovery work. *Science, Technology, & Human Values*, 34(3), 313-336.

Schoemaker, P. (2012). *Profiting from uncertainty: Strategies for succeeding no matter what the future brings*. New York: The Free Press.

Schwarz, J. O., Ram, C., & Rohrbeck, R. (2019). Combining scenario planning and business wargaming to better anticipate future competitive dynamics. *Futures*, 105, 133-142.

Stephenson, J. (1994). Capability and Competence: Are they the Same and Does it Matter? *Capability* 1(1), 3-4.

Ward, S., & Chapman, C. (2011). *How to manage project opportunity and risk: Why uncertainty management can be a much better approach than risk management*. Chichester: John Wiley & Sons.

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