Advances in Project Management Series[1]

Coming to terms with the unknown: Re-invoking Knightian uncertainty

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The topics of risk and uncertainty are often featured in the Advances of Project Management series of articles. Uncertainty is particularly prevalent: We grapple with uncertainty when dealing with the unknown; we acknowledge that we increasingly live in a VUCA world replete with limited knowledge and uncertain and unpredictable patterns; we endeavour to acquire resilient traits that allow us to adapt and adjust; and generally, we seek more agile approaches in order to respond to a world that seems to change faster than we are able to adapt, or learn. Looking through recent contributions, one might almost observe that the obviation of uncertainty is an increasing obsession of the human race; yet, uncertainty itself, which appears to be an abundant feature of our creative landscape, is scarcely addressed explicitly in our recipes, prescriptions and bodies of knowledge.

While contemporary writings often assert that uncertainty is a growing feature of modern endeavours, particularly massive ones ranging from mega- and giga-projects to transformational societal change efforts, there is ample evidence that our ancestors also grappled with the doubt and paradox of uncertainty.

Scottish poet and lyricist, Robert Burns wryly observed that '*there is no such uncertainty as a sure thing*'. Prussian general and renowned military strategist Carl von Clausewitz noted that '*although our intellect always longs for clarity and certainty, our nature often finds uncertainty fascina*ting.' French mathematician and inventor Blaise Pascal commented that '*we sail within a vast sphere, ever drifting in uncertainty driven from end to end.*'

English author and researcher, Rupert Sheldrake pointed out that '*there's a certain kind of scepticism that can't bear uncertainty*'. Indeed, the nature of the relationship with uncertainty was aptly captured by contemporary US scholar and public speaker Brene Brown who recapped that '*I spent a lot of years trying to outrun or outsmart vulnerability by making things certain and definite, black and white, good and bad. My inability to lean*

[1] *The PMWJ Advances in Project Management series includes articles by authors of program and project management books published by Gower in the UK and 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 Gower/Routledge Advances in Project Management series of books on new and emerging concepts in PM. To see project management books published by Gower and other Routledge publishers, click here. Prof Dalcher's article is an introduction to the invited paper this month in the PMWJ.*

into the discomfort of vulnerability limited the fullness of those important experiences that are wrought with uncertainty: Love, belonging, trust, joy, and creativity to name a few.'

Uncertainty thus encompasses a tentative balance between exposure, imperfection and vulnerability emerging from the unknown, weighed against a bias towards opportunity, progress, discovery, and potential for improvement, development or growth that come in its wake.

US theoretical physicist and researcher Richard P. Feynman captured the essence of the peculiar, yet critical relationship with uncertainty: '*I think that when we know that we actually do live in uncertainty, then we ought to admit it; it is of great value to realize that we do not know the answers to different questions. This attitude of mind - this attitude of uncertainty - is vital to the scientist, and it is this attitude of mind which the student must first acquire*.'

Re-visiting uncertainty

Knowing and admitting uncertainty implies recognition of the features and distinctions of such a state. Moreover, the emergence of new writing focused on unlikely occurrences, black swan events, fragility and general preparedness for addressing and mitigating the impact of the unknown, merit a reconsideration of some of the more established, but often neglected, sources in risk and uncertainty.

One of the early detailed sources on risk is provided by the work of US economist Frank Knight (1885-1972) familiarised through his timeless classic best selling book, *Risk, uncertainty and profit*. The book published in 1921 is based on his doctoral dissertation at Cornell University and has been selected by scholars as being culturally important, and is now recognised as part of the classical knowledge base of civilisation.

Knight's book represents a very early, organised attempt to make sense of the distinctions between risk and uncertainty:

"*Uncertainty must be taken in a sense radically distinct from the familiar notion of Risk, from which it has never been properly separated.... The essential fact is that 'risk' means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomena depending on which of the two is really present and operating.... It will appear that a measurable uncertainty, or 'risk' proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all*." (Knight, 1921; p. 19-20)

In Knight's formulation risk is taken as a measurable quantity, whilst uncertainty is regarded as true uncertainty 'of the non quantitative type'. Risky situations occur where the outcomes are unknown but are governed by probability distributions that are known at the outset (in other words, while we do not know which outcome will prevail, we can measure or determine the odds). Under such conditions agents endeavour to maximise economic gains through expected utility.

In uncertain setups, in contrast, both the outcomes and the probability models that govern them are unknown; so that we cannot know all the information needed to determine the odds. This is referred to as *Knightian uncertainty* or 'true uncertainty', as opposed to 'measurable risk', reflecting the general lack of knowledge, insight, rules, rationalisations or distributions that can account for potential behaviours. This position appears to chime with the view of information theorists, including US mathematician Claude Shannon who observed that: '*Information is the resolution of uncertainty*.'

Knight concluded that given its nature, uncertainty thus gives rise to potential economic gains and profit.

Uncertain distinctions

To fully understand Knight's position it is useful to consider the philosophical distinctions employed throughout his writing. Knight makes a clear distinction between mechanistic thinking with static features and machine-like entities, and organic or biological entities characterised by change, processual development and adaptation. Perfect knowledge in mechanistic systems and domains is thus contrasted with imperfection in organic systems.

Knight maintains that uncertainty arises out of agents' partial knowledge about the potential outcomes and their implications (i.e. the exhaustive classification of all potential states).

'*The essence of the situation is action according to opinion, of greater or less foundation and value, neither entire ignorance nor complete and perfect information, but partial knowledge.'* (p. 199)

Understanding of the potential outcomes is crucial to determining the presence of uncertainty. When talking about uncertainty Knight utilises the concept of '*an estimate of an estimate*', requiring two separate and distinct exercises of judgement: '*the formation of an estimate and the estimation of its value*' (p. 227).

This is illustrated through his example which addresses the two sets of judgemental steps required:

'*A manufacturer is considering the advisability of making a large commitment in increasing the capacity of his works. He 'figures' more or less on the proposition, taking account as well as possible of the various factors more or less susceptible of measurement, but the final result is an 'estimate' of the probable outcome of any proposed course of action*.' (p. 226).

The first step is concerned with gaining an intuitive understanding of potential outcomes and states, whilst the second is concerned with determining the ability to quantify or qualify the different states and their relative merit and desirability.

It is therefore the presence, or absence, of uncertainty that determines the actions, possibilities and responses as behaviour conforms to the type of situation faced:

"*With uncertainty absent, man's energies are devoted altogether to doing things; it is doubtful whether intelligence itself would exist in such a situation; in a world so built that perfect knowledge was theoretically possible, it seems likely that all organic readjustments would become mechanical, all organisms automata. With uncertainty present, doing things, the actual execution of activity, becomes in a real sense a secondary part of life; the primary problem or function is deciding what to do and how to do it."* (Knight 1921; p. 268)

Organising for uncertainty

The presence or absence of uncertainty plays a crucial part in shaping the processes and structures employed in the pursuit of action. In the absence of uncertainty organisations can pursue mechanistic structures focused on efficient execution, utilising a machine metaphor concerned with fine-tuning and improved efficiency. Planning and organising would thus endeavour to optimise results and reduce inefficiencies and waste.

However, the presence of *Knightian uncertainty* makes judgement and decision making critical to adaptation, improvement and survival in the organic or biological sense as advocated by Knight – which may also imply a financial survival imperative in a modern business context. Such environments reflect many of our experiences of new and innovative project and programme contexts replete with change and uncertainty that need to be addressed, where the delivery of expected benefits and meaningful value determine the perceived success and long-term perception of the undertaking.

So, where do we look beyond traditional risk management to secure the capability to deal with the unknown and the unexpected? Part of the answer is provided by this month's guest author, Professor Tony Bendell, who questions whether our projects are fragile, robust, or indeed, anti-fragile. The article is derived from Tony's book *Building anti-fragile organisations: Risk, opportunity and governance in a turbulent world* published by Gower and recently re-released by Routledge in paperback format.

Tony has built up an expertise in developing anti-fragile organisations and structures. Anti-fragility offers an alternative way to addressing risk, by fostering resilience that benefits from disturbances and fluctuations. The approach appears to chime with Knight's interest in organic or biological systems offering a mechanism for thriving under conditions of uncertainty. Indeed, anti-fragile organisations and structures that are able to grow and strengthen over time, offering an alternative paradigm for dealing with uncertainty, governance and organisation.

Tony employs a Darwinist perspective to immunise and strengthen organisations, systems and services developed as anti-fragile capability. Anti-fragile corporations and products are better able to survive the unexpected and thrive from the unknown, facilitating sustained survival in unpredictable and change-ridden environments.

Dealing with the unknown

Human society has long obsessed about avoiding the unknown and eschewing the uncertain.

Canadian philosopher of science, Ian Hacking lamented that '*every moral teacher or spiritual adviser gives injunctions about how to live wisely and well. But life is so complicated and full of uncertainty that rules seldom tell us quite what to do*.'

Yet, many critical endeavours depend on the ability to survive and thrive under such conditions. Indeed, for Polish mathematician, Jacob Bronowski '*knowledge is an unending adventure at the edge of uncertainty*'.

Consequently, the search for secure recipes and procedures only works in limited environments and contexts.

Reinterpreting Knight's distinctions in our modern terms would recall the need to distinguish between the known unknowns and the unknown unknowns and apply appropriate methods and frameworks that enable organisations and individuals to thrive under the relevant conditions.

Resilient systems thinking, emphasising adaptive, biological or organic metaphor and ways of thinking carries a promising potential. It can be viewed as akin to personal hygiene or sanitation; a way of improving human condition and enabling further growth and achievement over a protracted future, whilst facing challenges and threats.

The value of recognising uncertainty and embracing anti-fragility is in developing the mechanisms and capabilities needed to thrive and prosper. Indeed, Richard Feynman observed that '*it is in the admission of ignorance and the admission of uncertainty that there is a hope for the continuous motion of human beings in some direction that doesn't get confined, permanently blocked, as it has so many times before in various periods in the history of man*.'

While achievement, development and growth often depend on embracing uncertainty, selecting the right approaches is situated and contextual. British philosopher, Julian Baggini nonetheless sounds a much-needed note of caution:

'*The mark of a mature, psychologically healthy mind is indeed the ability to live with uncertainty and ambiguity, but only as much as there really is. Uncertainty is no virtue when the facts are clear, and ambiguity is mere obfuscation when more precise terms are applicable*.'

Ultimately, coming to terms with the unknown requires embracing the distinctions between risk and *Knightian uncertainty*; balancing anticipation and resilience strategies, as needed; and, adopting requisite resilience, flexibility, diversity and anti-fragility measures in order to thrive and proposer in situations of volatility, turbulence, uncertainty, and ambiguity.

References

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*Editor's note: Editor's note: **Prof Darren Dalcher** is the editor of the Gower/Routledge Advances in Project Management series of books on new and emerging concepts in PM. The PMWJ Advances in Project Management series includes articles authored by Routledge book authors; the above article is an introduction to the invited paper this month by another Routledge author. To see recent project management books published by Routledge, click here.*

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