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Should scenario planning abandon the use of narrative?

James Derbyshire

Abstract

This paper suggests that Intuitive Logics' employment of narrative, and the conflation of plausibility and probability this leads to, compounds its narrow focus onto a small number of futures, thus diminishing in the minds of participants the many alternative futures that could transpire. This reduces organisations' preparedness for a range of futures, including for those in which there are extreme or unprecedented events, rather than enhancing it as is alleged to be Intuitive Logics' main benefit. It is suggested that alternative forms of scenario planning are required that do not employ narratives to describe the unfolding of chains of causation and which reverse and broaden perspective by instead describing the underlying fragilities that make the organisation fragile to any form of unexpected event. However, a recently proposed alternative that has sought to take this reverse approach, the Backwards Logic Method, is still based on narrative. Since the problems associated with Intuitive Logics as described in this paper stem from its use of narrative, any alternative narrative-based approach will remain susceptible to the same problems. An alternative approach that is not based on narrative is briefly introduced in this paper.

Keywords: scenario planning; Intuitive Logics; causality; narrative; fragility; randomness

1. Introduction

Intuitive Logics is a form of scenario planning invented at RAND Corporation and popularised by Shell Global Business Networks [1] and, in particular, Peter Schwarz [2]. It is widely acknowledged as the most commonly-employed form of scenario

planning [3 p.9]. It focuses on constructing rich, textual descriptions, or 'pen-pictures' representing detailed narratives of the unfolding of future 'chains of causation' [4 p.363]. It is this employment of narrative by Intuitive Logics that is the main concern of this paper.

Wright et al [5] have recently shown that the Intuitive Logics scenario-planning method is employed by organisations with a number of objectives in mind. They categorise these objectives under the headings of 'enhancing understanding', 'challenging conventional thinking' and 'improving decision making'. This paper is mainly concerned with the third objective related to improving decision making as an input to strategy development. However, it is also concerned with the first objective related to enhancing understanding of the causal processes that lead to the unfolding of particular futures. It suggests that it is this focus on causal processes, as embedded in narratives, that is the source of a number of problems associated with Intuitive Logics.

A problem with any attempt to consider the future is that unprecedented events, which by their very nature can not be foreseen based on what has happened in the past, can have a high impact should they occur [6]. Assigning probabilities to such events is problematic - because they are unprecedented there is no reference class from which probabilities can be calculated [6 p.815].

A commonly-asserted advantage of Intuitive Logics is that it overcomes this problem by eschewing the attempt to predict or assign probabilities [6 p.814] and instead assumes that the best that can be done is to identify and focus on the most critical

future uncertainties, and to plan for a range of futures that could plausibly unfold [4 p.363]. This paper, however, questions whether Intuitive Logics is genuinely able to assist in this process of planning for a range of futures. It therefore builds on the recent work of Wright et al [5] who also question whether Intuitive Logics genuinely helps organisations to prepare for a broad range of futures, but this paper considers this more explicitly in relation to Intuitive Logics' use of narrative in particular.

The paper suggests that Intuitive Logics' employment of narrative, and the conflation of plausibility and probability this leads to, causes it to compound its inherent narrow-framing onto a small number of futures. This compounding of narrowness is problematic because the actual future that transpires is much more likely to come from the broader set of futures unconsidered in the scenario-planning exercise since it is much greater in breadth. This compounding of narrowness acts against a realisation of the need to build redundancies and contingencies which could enable the organisation to survive as broad a range of futures as possible.

The discussion is framed around two critiques of Intuitive Logics, the first of which is drawn from the work of perhaps the most prominent contemporary philosopher of uncertainty, Nassim Nicholas Taleb [8-10]. Taleb's work is highly relevant to scenario planning but has only recently begun to be considered in relation to it [5-7]. This first critique of Intuitive Logics enhances that already begun by Wright and Goodwin [6] by focusing more explicitly on Taleb's concept of 'narrative fallacy' [9].

It is argued that Intuitive Logics, because it is a narrative-based approach, overemphasises causation at the expense of randomness. This is the essence of

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Taleb's 'narrative fallacy'. The need to build contingencies and redundancies into strategy can only be fully realised by firstly understanding the extent to which events are random in nature. The narrative fallacy incorporated in Intuitive Logics acts against this realisation by making it appear that events are fully determined by causes.

It is further suggested that the use of narrative renders more prominent and memorable the scenarios considered as part of the scenario-planning process at the expense of diminishing the perceived possibility of those left unconsidered. This increases vulnerability to the unconsidered futures, thus acting against preparedness for a broad range of futures.

The second critique is drawn from the Nobel-prize winning work of cognitive psychologist and behavioural economist Daniel Kahneman [11-17, 24]. It is shown that Intuitive Logics' use of narrative also results in a conflation of plausibility and probability and that this conflation has considerable dangers. It is likely to result in participants imbuing the considered scenarios with greater probability than they have in reality, even if the scenario-planning process focuses on plausibility rather than probability. This reinforces the prominence of the considered scenarios in the minds of participants at the expense of those left unconsidered, and may result in participants investing the considered scenarios with a greater likelihood of occurrence than the unconsidered regardless of whether Intuitive Logics is couched as a non-predictive exercise. While this problem has been discussed previously in relation to scenario planning [5 p.4] it is here shown to be associated with Intuitive Logics' use of narrative and, therefore, a corollary of the 'narrative fallacy'.

Because these two problems of narrative fallacy and the conflation of plausibility and probability are shown to result from Intuitive Logics' use of narrative the paper argues that any new scenario-planning method that attempts to overcome them should not be based on narrative. While Wright and Cairns' [5 p.8, 7] augmentation of Intuitive Logics, the Backwards Logic Methods, clearly represents an advancement on the basic method, this new approach is still based on the construction of narratives that describe the unfolding of chains of causation, albeit with the reverse perspective starting from the future achievement, non-achievement, or over- or under-achievement, of an objective and working backwards through the events causing that future. This continued reliance on narrative and causation leaves it potentially vulnerable to the problems highlighted in this paper in relation to Intuitive Logics.

The alternative approach advocated in this paper is the adoption of Taleb's anti-fragility perspective. Focussing on anti-fragility would shift emphasis away from describing the unfolding of events or chains of causation – the triggers or catalysts of future discontinuities – and instead focus on describing the underlying organisational fragilities that would make unexpected events of any sort harmful. This approach is similar to the Backwards Logic Method but is potentially a further advance on it as it is not based on narrative so is less susceptible to the problems described in this paper in relation to Intuitive Logics. However, questions remain as to the extent to which this new concept of anti-fragility is genuinely different from those already existing in the literature, and also whether fragilities can be identified without the imagining of some sort of unfolding future that would make those fragilities important (in other words, without some sort of narrative describing causation).

The plan for this paper is as follows. Section 2 describes the Intuitive Logics method and shows how it narrows focus onto just a few 'critical' uncertainties, resulting in a two-dimensional scenario space from which four scenarios are usually created. Section 3 shows how Intuitive Logics' use of narrative compounds this narrowness through the 'narrative fallacy' and the associated 'conflation of plausibility and probability' it results in. Section 4 describes the 'Backwards Logic Method' which seeks to combat the narrowness that it is here suggested stems from the use of narrative, but suggests that this new approach may not be able to do so because it too is based on narrative, albeit narrative describing chains of causation running in the reverse direction from the future to the present. Section 4 also briefly describes Taleb's [8] most recent work on 'anti-fragility' and shows how a new approach based on this concept would achieve a similar reversal of perspective to that in the Backward Logics Method but without employing narrative. Section 5 makes some summarising remarks and suggests that further research is required to understand how Taleb's methods are distinct from standard approaches to organisational robustness and how they can be implemented.

2. The Intuitive Logics approach

Scenario planning exercises are increasingly common in the private sector and within academic research [1, 18 p.461, 19, 20 p.335]. As shown by Bishop et al [21] and Bradfield et al [1], this increased popularity has been accompanied by a proliferation of techniques and methods resulting in an increasingly confused and contradictory scenario-planning literature. However, despite this proliferation in the literature, it is

widely accepted that most organisations that employ scenario planning use an approach based on what is known as 'Intuitive Logics' [1, 3 p.9, 22 p.162].

Bradfield et al [1] have documented the development of this approach by employees at Shell – in particular, Pierre Wack, a planner at Shell Francaise – building on the work of Herman Kahn and others at RAND Corporation where scenario planning was originated. This approach was subsequently popularised still further by Peter Schwarz [2] in his seminal book 'The art of the long view: Planning for the future in an uncertain world'. As commented on by Postma and Liebl [22 p.162], this 'standard' approach has percolated out from Shell and been adopted by numerous other organizations.

Postma and Liebl [22] have provided a useful basic outline of the Intuitive Logics approach to scenario planning, as have Wright et al [5 p.4]. In the first part of the Intuitive Logics process the 'driving forces' or 'causal factors' assumed to be associated with change in the realm under consideration are classified into 'constant', 'predetermined' or 'uncertain'. As implied by the name, the 'constant' group of factors are characterised by their lack of change and represent a continuation of the present. For 'predetermined' factors of change, change is assumed to occur but the change is known and predictable. In other words, the probability of change is known and change can be forecasted with more-or-less accuracy. The third category of factors is for those which are 'uncertain'. It is this third category that is most important as it is these uncertainties that tend to distinguish the scenarios produced in the Intuitive Logics scenario-planning process.

These three groups of 'driving forces' or 'causal factors' are clustered based on the extent of their perceived uncertainty and impact. The two clusters considered to have the highest uncertainty and potential impact form the basis of the two-dimensional scenario space (Fig. 1) from which four scenarios are usually created, one for each quadrant comprising the space [23]. These four scenarios take the form of 'pen-pictures' [4 p.363] – rich, qualitative narratives in which a chain of causation is described resulting in an ultimate outcome. Through this process of categorising factors into 'constant', 'pre-determined' and 'uncertain', clustering, and then identifying and focusing on the two clusters considered most uncertain and potentially impactful, Intuitive Logics makes the process of considering the future much more tractable and digestible to the limited human cognitive capacity.

A final step of the process examines the robustness of the organisation's strategy in relation to the emergent scenarios [6 p.817]. Intuitive Logics, then, gives priority to firstly considering the unfolding of various futures and only secondly considers the organisation's strategy for surviving and thriving in relation to these futures. This is a crucial distinction between the Intuitive Logics approach described here and the new approach described in section 4 of this paper based on Taleb's [8] concept of anti-fragility. This proposed alternative approach would reverse this order of priority, or perhaps even eliminate the first part of it in order to focus solely on organisation fragilities, as will be seen subsequently.

The Intuitive Logics process can therefore be seen as one of abstraction from the multitude of possible futures and narrowing of focus onto a very small number of dimensions of uncertainty and impact, from which four alternative futures emerge.

This narrow-framing of the future is a fundamental feature of Intuitive Logics. It not only renders the scenario-planning process more tractable to limited human cognitive capacity as stated above, it also renders it more implementable from a practical point of view.

It can be argued that any scenario-planning exercise, or, indeed, any attempt to think about the future whatsoever, must inevitably engage in such a process of narrow-framing and abstraction, selecting what is to be considered at the expense of what is left unconsidered. However, as shown in the next section, the process by which scenarios are constructed under Intuitive Logics then compounds this narrow-framing, investing the considered futures with prominence and likelihood at the expense of rendering the unconsidered futures less prominent and likely in the minds of participants. This is an inevitable result of Intuitive Logics' use of narratives. Far from preparing organisations for a range of futures as is commonly asserted, it is argued that this actually diminishes preparation for as broad a range of futures as is possible.

INSERT FIGURE 1 ABOUT HERE

3. What's wrong with Intuitive Logics?

The discussion in this section is framed around two problems with the Intuitive Logics approach. These are referred to as 'Narrative fallacy' and 'Conflation of plausibility and probability'. The first is taken from the work of Taleb [8-10] which has recently come to prominence in relation to scenario planning [5-7]. The second is taken from the Nobel-prize winning work of Kahneman [11-17, 24].

The section ends by summarising the possible common effect of the two problems of 'narrative fallacy' and 'conflation of plausibility and probability'. The narrowing of focus that is an inherent part of Intuitive Logics is compounded through the narrative-based process of scenario creation. The result is those scenarios focussed on gaining in prominence at the expense of those left unconsidered, thus compromising Intuitive Logics' ability to assist organisations to prepare for a broad range of possible futures and to build redundancy and contingencies to cover as broad a range of these as possible.

The way in which Intuitive Logics can narrow focus onto the considered futures thus rendering them more prominent in the minds of participants than the multitude of unconsidered futures has been discussed previously [5-7]. Drawing on Tversky and Kahneman [24], it has been described as resulting from what is known as the 'simulation heuristic' [7 p.135]. The contribution here is to link this problem more explicitly to the use of narrative. This section also lays the foundations for section 4, then, in which it is argued that any alternative that seeks to avoid these problems should not be based on narrative. While the lack of randomness incorporated in Intuitive Logics has also been discussed previously [6], the description of the determinism of the Intuitive Logics approach this results in, as described below, advances the literature's current presentation of this problem.

3.1 Narrative fallacy

As described in section 2, the Intuitive Logics approach to scenario planning places the creation of narratives at the heart of the scenario-planning process. It requires participants to generate plausible-sounding, rich, qualitative and engaging stories of an unfolding of future events based on an assumed causal logic. The resulting narrative represents a 'sequence of interacting events needed to reach the scenario' [25 p.224, 26] or outcome. This narrative approach, then, places great emphasis on causation because as vant' Klooster and van Asselt [27 p.23] specifically state, the four scenario 'stories' resulting from an Intuitive Logics scenario-planning exercise are at their heart 'based on a cause and effect logic'. For this reason, Taleb's [9 p.62-84] concept of 'narrative fallacy' is of considerable relevance to Intuitive Logics.

'Narrative fallacy' can be characterised as the human tendency to over-emphasise the role of causal factors in any particular outcome. Taleb's [9] example of this is the way in which history is written. When living through an event and participating in it the event seems very complex and messy. Yet, when reading back through the history of the same event as later documented by the historian the causes appear much less messy, complex and unclear – they seem very much determined and specific. The historian attributes causes to particular events and, as described by the famous historian E.H.Carr [28 p.87-108], also attributes orders of magnitude (of importance) to those causes. The historian therefore provides a very clear narrative of the drivers of events and reinforces the impression of determinacy of outcome given the occurrence of the drivers.

However, in contrast to the neat categorisation and ranking of causes by the historian, outcomes are much less determined by causes than they appear in the history books

and there is considerably more randomness than portrayed in the post-hoc explanations provided by the chroniclers of history. The problem is not so much one of 'misplaced causality' or 'inappropriate attributions of causality' as referred to by Goodwin and Wright [4 p.357, 6 p.815]. Rather, in a highly complex world the very notion of cause is itself suspect [8 p.56]. This is the essence of 'narrative fallacy'.

As Taleb [9 p.63-64] comments, humans have a limited ability to look at sequences of facts without weaving an explanation into them, without forcing a logical link or arrow of relationship upon them. Explanations in the form of narratives bind facts together making them more easily remembered and prominent in the minds of readers, as well as making them easier to understand. The Intuitive Logics approach to scenario planning uses this innate human tendency towards narrative and the understanding of narrative to render scenarios that may have initially been thought implausible much more plausible in the minds of participants. In this way, Intuitive Logics can assist in 'minimising unpleasant surprises' [25 p.224]. This is a commonly asserted benefit of the narrative-based approach to scenario planning incorporated in Intuitive Logics. In this respect, the use of narrative is helpful.

However, there are two dangers associated with Intuitive Logics' reliance on narratives which describe causal chains. Firstly, because it excludes the randomness that is the predominant feature of reality there is the danger that participants are left with the impression that future events will be entirely, or even just mostly, determined by causes rather than by randomness. The misimpression may be given that the way to deal with uncertainty is simply to identify causes at as early a stage as possible, for example by identifying 'weak signals' [29], in order to put in place the contingencies

necessary to avoid an undesirable outcome. In reality, even if the relevant drivers of change occur the expected outcome (future) may not due to randomness.

Under Intuitive Logics there is a nod in the direction of uncertainty and non-determinism through an acknowledgement of several (four) possible futures, but each one of these is individually tied to a specific set of causes and effects and is determined by these causes and effects. Each scenario is deterministic in its own right, even if the overall process is non-deterministic because four scenarios emerge rather than one. This determinism at the level of the individual scenario, or assumption that outcomes are entirely determined by causes, is dangerous. The full extent of the uncertainty associated with the future can only be realised by incorporating randomness. Any approach emphasising cause over randomness will diminish this uncertainty and so mislead participants. Intuitive Logics doesn't just invent causal patterns for 'events best regarded as random' as Wright and Goodwin [6 p.816] imply. At the level of the individual scenario it eliminates randomness altogether.

The elimination of randomness and the resulting emphasis on causation is the first danger associated with Intuitive Logics' reliance on narrative then. The second is that narratives, because they are explanations that bind facts together making them more easily remembered and understood [9 p.63-64], render the considered scenarios more prominent in the minds of participants than those left unconsidered. For this reason, the very act of constructing scenarios can produce increased but undue confidence in participants' perceived ability to predict the future [5-7].

As a result, the focus of contingency planning may therefore be skewed towards those scenarios focussed on at the expense of those not focussed on even though those not focussed on are much larger in number and, therefore, are more likely to be the source of the actual future that transpires. This acts against preparedness for a broad range of futures. Furthermore, this effect of raising the prominence of the considered futures at the expense of the unconsidered is further compounded by the conflation of plausibility and probability that stems from and is related to this use of narrative as shown below.

3.2 Conflation of plausibility and probability

Under the Intuitive Logics approach to scenario planning, then, participants build detailed narratives of a scenario from the starting point of whichever quadrant of the two-axes in Figure 1 is the focus of that particular scenario. More-and-more qualitative detail is added to build up a rich text or 'pen-picture' [4 p.363] describing the unfolding of the scenario narrative and its cause-and-effect logic.

For many participants this can no doubt be a fun and engaging process since humans are biologically programmed to enjoy narratives [9 p.63-84] and, therefore, to enjoy constructing narratives. As more-and-more qualitative details are added the scenario becomes more-and-more convincing – the additional details add greater plausibility. In many ways it is this process of gradually realising that what was thought extreme may be less so, and may be more plausible than initially realised, that is the strength and main benefit of Intuitive Logics. It is the process through which Intuitive Logics can 'minimise unpleasant surprises' [25 p.224] by conjuring in the minds of the

participants the possibility of what previously seemed not very possible. Intuitive Logics can be very effective in this regard, and this effect stems directly from its use of narrative.

However, there is a further problem associated with this. As Kahneman [11 p.159-160] has shown through the famous experiments related to the 'Linda problem', richer and more detailed descriptions, because they sound more plausible, are automatically allocated higher probabilities. Increased plausibility is assumed to mean increased probability because of the human tendency to use plausibility as a heuristic for estimating probability, thus reducing cognitive effort. Therefore, whether or not the scenario planning exercise is couched in terms of, and emphasised as being, a non-predictive exercise (and Intuitive Logics usually is) human cognitive heuristics turn it into one anyway by conflating plausibility and probability.

The result is to invest the considered scenarios with increased probability at the expense of a diminished probability for unconsidered scenarios, some of which may actually have a greater probability of transpiring. The narrowing of focus that already occurs as part of Intuitive Logics is therefore further compounded by the now very plausible-sounding scenarios being assumed to have a greater likelihood than other unconsidered scenarios, or than they have in reality, and therefore an enhancing in prominence of these scenarios in the minds of participants at the expense of those left unconsidered.

Because of this effect resulting from the employment of narrative, Kahneman [11 p.159-160] states that the substitution of plausibility for probability has pernicious

effects on judgement when scenarios are used for forecasting. However, what has been argued here is that, even if the scenario-planning exercise is explicitly not one of forecasting as in Intuitive Logics, this problem of conflation may still result in the considered scenarios being invested subconsciously with greater probability than they have at the expense of the multitude of others left unconsidered, and among which there may be some that actually have greater likelihood in reality.

The issue here is that rich, detailed descriptions are automatically assumed to have greater probability than less detailed descriptions. Because participants in an Intuitive Logics scenario-planning exercise produce rich, detailed descriptions of the scenarios they consider as part of that exercise, but do not produce any description whatsoever of the unconsidered scenarios, they will inevitably (if subconsciously) imbue the considered futures with greater likelihood than the unconsidered whether or not they actually have greater likelihood in reality. This problem stems directly from Intuitive Logics' use of narrative. It is the employment of rich, qualitative descriptions that results in the conjunction fallacy stemming from the simulation heuristic as spoken of by Wright et al [5 p.4]. The probabilistic intersection of the occurrence of two independent events can only ever be lower than the occurrence of either one individually but is assumed to be higher when framed as part of a narrative, thus making a particular chain of causation (or narrative) seem more likely to occur than it is in reality.

The conflation of plausibility for probability is therefore a corollary of the narrative fallacy. It is for this reason that any approach designed to resolve this inherent weakness in scenario planning must abandon the use of narrative as described below.

3.3 The combined effect: Compounding Intuitive Logics' narrow-framing

As a result of Intuitive Logics' use of narrative and the conflation of plausibility and probability it results in, the scenarios considered as part of the scenario-planning process will loom large in the minds of participants, will be rendered much more plausible through the narrative-creation process, and may also therefore be considered more probable than they really are.

The combined effect is to compound the narrowing-framing of the future that is inevitably a feature of Intuitive Logics and any other attempt to consider the unfolding of future events (but not the reverse approach of focussing on what makes the organisation vulnerable to them, which broad-frames the future as shown in the next section). As a result, contingency planning may focus on addressing the considered scenarios, now rendered more probable in the minds of participants, at the expense of increased vulnerability to the unconsidered whose probability is now diminished.

Furthermore, there is a danger that, because Intuitive Logics focuses on narratives describing the unfolding of chains of events driven by causes, the future appears deterministic - any individual future that transpires is seen as entirely determined by events rather than randomness. This firstly gives the false impression that what matters are the events rather than the organisational fragilities that make those events harmful. And, secondly, it implies that all that is necessary is to identify the

appropriate drivers or causes as early as possible, perhaps by identifying 'weak signals' [29], in order to avert an outcome harmful to the organisation.

In this way, Intuitive Logics' employment of narrative, and the conflation of plausibility and probability which is related to it, acts against planning for a range of possible futures and instead focuses attention on the considered futures, and the causes of those futures. This in turn renders the organisation more susceptible to 'unpleasant surprises' rather than less so. It is detrimental to planning for a range of futures, which is claimed as one of the strengths of Intuitive Logics [4 p.363].

As shown in the next section, alternative methods have recently been proposed which attempt to address this problem of narrow-framing by reversing the perspective of the scenario-planning exercise. In particular, Wright and Cairns [5, 7] 'Backwards Logic Method' commendably seeks to broad-frame the future by instead focussing on plausible changes to the organization's achievement of its objectives. It therefore seeks to re-focus the emphasis of the scenario-planning exercise onto what may make the organisation vulnerable to (or able to benefit from) particular futures, rather than emphasising the construction of narratives about the future firstly and then considering the organisation's strategy in relation to those futures secondly. Ultimately, however, the Backwards Logic approach continues to be narrative-based and so remains susceptible to the problems highlighted in relation to Intuitive Logics in the previous section. The next section critiques the Backwards Logic Method and goes on to describe an alternative approach based on the work of Taleb [8-9] that similarly seeks to reverse the perspective in order to broad-frame the future but which, crucially, may be less reliant on the use of narrative.

4. Shifting the focus from events to the underlying fragility that would make those events harmful

Wright and Goodwin's 'Backwards Logic Method' is an augmentation of Intuitive Logics designed to broaden out the range of scenarios considered 'whilst, at the same time, *retaining the essential focus on causality within the process of scenario construction*' [7, p.136, emphasis added]. The focus is shifted onto understanding the causes of plausible changes to the organisation's achievement of its objectives. The description of what may bring about these changes becomes the centrepiece of the scenario-planning exercise rather than the description of the unfolding of particular events leading to particular futures as in Intuitive Logics.

Essentially, the Backwards Logic Method has three steps, with an iterative fourth step designed to consolidate the process and ensure that extreme events are fully taken account of. Step 1 identifies the organisation's key objectives, step 2 imagines a range of outcomes for those objectives and step 3 establishes the factors that could cause these changes (identified in step 2) to the achievement of objectives. Crucially, step 3 retains the focus on building narratives that result in a causal chain, albeit one that runs backwards from the future achievement or otherwise of organisational objectives to the events causing that variation in achievement.

Wright and Cairn's Backwards Logic Method, therefore, still imposes an arrow of causation but sees this arrow running backwards in time, identifying the causal chain that results in the over-achievement or under-achievement of objectives. As described

in section 2, such an arrow of causation, or unfolding causal chain, is the key feature of what Taleb describes as the 'narrative fallacy' that excludes randomness and makes the future appear determined. This is true regardless of in which direction (i.e. forwards or backwards) the arrow, or chain of causation, travels.

Because of this continued dependence on narratives describing causal chains the Backwards Logic Method may continue to be susceptible to the narrative fallacy and the conflation of plausibility and probability, resulting from the conjunction fallacy that is in turn part of the simulation heuristic, that is a feature of Intuitive Logics as shown previously. Under this approach it is events and causes that continue to lead to outcomes, even if the events are described using the opposite direction of causality. Because of the continued dependence on narratives describing chains of causation the considered narratives and chains of causation will still gain in prominence at the expense of those left unconsidered. The simulation heuristic and its resulting enhancement of prominence, which stems from the use of narrative, will continue to affect this approach. What is needed is an approach which does not use narratives to describe unfolding chains of causation regardless of whether they are based on forwards or backwards logic.

The anti-fragility that is the basis of Taleb's approach for thinking about the future can be most easily thought of as a convexity in terms of the 'payoff' from unexpected or rare events in which the downside is limited but the upside is potentially infinite. The idea is to take asymmetric risks in which the cost of being 'wrong', the cost if an unexpected discontinuity or 'Black Swan' occurs, has a cut off point [8 p.178]. This can be achieved by building into strategy 'optionality' as it is from this optionality

that upside risks are maximised and downside risks minimised [8 p.176]. It is the creation of this optionality and convexity that should be the focus of the scenario-planning process, rather than the events that make this convexity necessary. Rather than describing the unfolding of chains of causation, even in a Backwards Logic fashion, the emphasis is shifted to broadening out the available range of options and ensuring that the risks associated with the organisation's strategy are not skewed towards accelerating and potentially catastrophic losses from rare events (any rare event, the approach does not attempt to guess what the rare events may be).

Under Taleb's [8] approach for thinking about the future focus is therefore switched onto the fragilities that make the organisation vulnerable to harm and away from describing the unfolding of events or chains of causation. There is a similarity with the Backwards Logic Method because in that method emphasis is also put on the factors (or fragilities) that may effect the organisation's achievement of its objectives. However, because it is not based on describing chains of causation or the unfolding of events Taleb's approach is not based on narrative and does not depend on describing the unfolding of individually deterministic futures, even if in a backwards fashion. The problem of the 'simulation heuristic' whereby the very act of creating narratives, and the narrative fallacy and conflation of plausibility and probability this involves, results in the considered scenarios gaining in prominence at the expense of the unconsidered is diminished as the construction of narratives does not occur. Furthermore, the future is broadened out as each fragility and anti-fragile strategy identified is relevant to a whole range of futures in which that fragility would be harmful to the organisation.

The Talebian method for thinking about the future does not firstly identify a set of futures that could happen and then consider the contingencies that may counter these. Section 2 showed Intuitive Logics to be based on this order of priority, with the weaknesses of the organisation's strategy compared to each of the four scenarios after they have been created. Taleb's approach is to consider things from the reverse perspective of the vulnerability or fragility to unexpected events. And the focus is on vulnerabilities to any sort of unexpected event in general, rather than focussing on specific unexpected events as incorporated in scenarios and associated with those strategies.

When the focus is shifted to the fragilities that make future events, especially discontinuities, dangerous and away from the events themselves, redundancy (or what may also be referred to as 'strategic slack') also gains in significance at the expense of efficiency. This may require a whole new mindset among strategy-makers and planners as the tendency in the modern organisation is to chase out all forms of inefficiency, whereas efficiency and fragility (and, therefore, inefficiency, or at least redundancy, and anti-fragility) are essentially one and the same [8, 9]. This anti-fragile approach would protect the organisation from the worst effects of 'negatively-valenced' events whilst allowing it to benefit from 'positively-valenced' events, which Goodwin and Wright [4 p.367] have suggested may be the only solution to preparation for rare, high-impact events.

Wright and Goodwin [6] propose augmenting their Backwards Logic Method for example by considering the motivations of various stakeholders [6 p.821] in order to overcome the tendency to impose patterns of causality on random events, and they

also advocate the use of methods that frame the future in as general a way as possible to reduce the danger of enhancing the considered at the expense of the unconsidered as Intuitive Logics does – all of which bears similarity to Taleb's anti-fragility. They propose the focus on human motivations [6 p.821] as a way to bolster the process and ensure it is not one solely based on describing the unfolding of causal chains, albeit in a backwards fashion. In this way the augmented Backwards Logic Method they recommend is a further enhancement on the Intuitive Logics approach and is similar in many ways to Taleb's anti-fragility. It is argued here, though, that while the Backwards Logic Method is a considerable advance on the Intuitive Logics method for all of these reasons, an approach that truly broad-frames the future must not be based on narrative and the description of unfolding causal chains resulting in individually deterministic scenarios, albeit tempered by consideration of other factors such as human motivations.

However, a problem with Taleb's approach that requires further consideration is the extent to which fragilities can be considered without an imagining of events in which those fragilities become important - in other words, without some sort of narrative or unfolding of causal events being imposed. Taleb's broader corpus [30-38] of work does, however, include a series of methods for identifying and measuring fragility, so it is hoped that future research will show how this can be done. The extent to which Taleb's anti-fragile approach genuinely represents an advance on the techniques currently described in the organisational-robustness literature also demands consideration. Many of the factors Taleb sees as necessary to broaden out the consideration of the future and to make the organisation anti-fragile to it, such as optionality and flexibility, have already been discussed in some detail in the literature

and are to some extent incorporated in the augmented version of the Backwards Logic Method. The main distinction is that Taleb would be likely to eschew the use of narrative, but, as stated above, it is unclear the extent to which fragilities can be visualised without the imposition of some sort of narrative or chain of causation in which those fragilities become important.

5. Concluding remarks

It is commonly asserted that Intuitive Logics, because it does not attempt to predict or assign probabilities to future events, assists in preparing organisations for a range of possible futures. This view has been contested recently in the scenario-planning literature as it has been suggested that the very act of creating scenarios can result in the created scenarios gaining in prominence at the expense of the much greater number left unconsidered, some of which may be more important at least in probabilistic terms. [4, 6].

This paper has tied this compounding of Intuitive Logics' inherent narrow-framing specifically to its use of narrative. The use of narrative to render considered scenarios more possible in the minds of participants can also have the effect of rendering the perception of unconsidered scenarios as less possible, and even less probable, thereby harming preparation for a range of possible futures rather than improving it. This may have the effect of concentrating contingency planning on mitigating any potential harm from the considered scenarios at the expense of increasing vulnerability to the unconsidered through the absence of contingency planning for these.

Drawing on the work of Taleb [8-10] it has been suggested that Intuitive Logics engages in 'narrative fallacy' by seeing events as entirely determined by causes leaving little room for the randomness that is the predominant feature of reality. This may give the false impression that all that is needed to avoid a particular undesirable future is to identify its drivers as early as possible, perhaps by identifying 'weak signals' [29], in order to put in place the necessary contingencies to avoid it. Drawing on the work of Kahneman [11-17, 24] it has also been suggested that it is the employment of narrative that leads to the conjunction fallacy that is part of the simulation heuristic spoken of by Wright and Cairns [7 p.135] and which results in the considered scenarios being imbued with a greater probability than the unconsidered, or than they really have in reality, further compounding their prominence in the minds of participants and further diminishing preparedness for a range of futures.

Because these problems associated with Intuitive Logics stem from its reliance on narrative it is argued that any method seeking to overcome them must not itself also be based on narrative. Wright and Cairns' [7] Backwards Logic Method, especially in its augmented form which for example attempts to deal with over-reliance on causation by incorporating a consideration of human motivations, is a significant advance on Intuitive Logics as it re-focuses the emphasis of the scenario-planning exercise on the factors which may effect the organisation's achievement, non-achievement, or over- or under-achievement, of its objectives. However, it still relies on narratives describing the unfolding of chains of causation and so remains susceptibility to the problems of narrative fallacy and the gaining in prominence of the considered at the expense of the unconsidered evident in Intuitive Logics.

Taleb's [8-10] 'anti-fragile' approach bears many similarities to the Backwards Logic Method. It shifts emphasis onto the underlying fragilities that may cause future events of any sort to be harmful to the organisation and away from the attempt to second-guess what those events may be. However, the anti-fragile perspective on the future rejects the employment of narrative.

Further research is required, however, to understand the implications of this rejection of narrative and to ascertain the extent to which the resulting approaches, such as convexity, optionality and redundancy are genuinely different from what has already been described in the organisational-robustness literature. Furthermore, a question remains as to the extent to which organisational fragilities can be identified without visualising some sort of unfolding story, or chain of causation, which makes those fragilities important. Taleb's [8-10, 30-38] extended corpus of work provides methods for the identification of fragility and further work is needed to understand the usefulness of these methods in the context of strategy formation.

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Figure 1: Intuitive Logics' two-dimensional scenario space
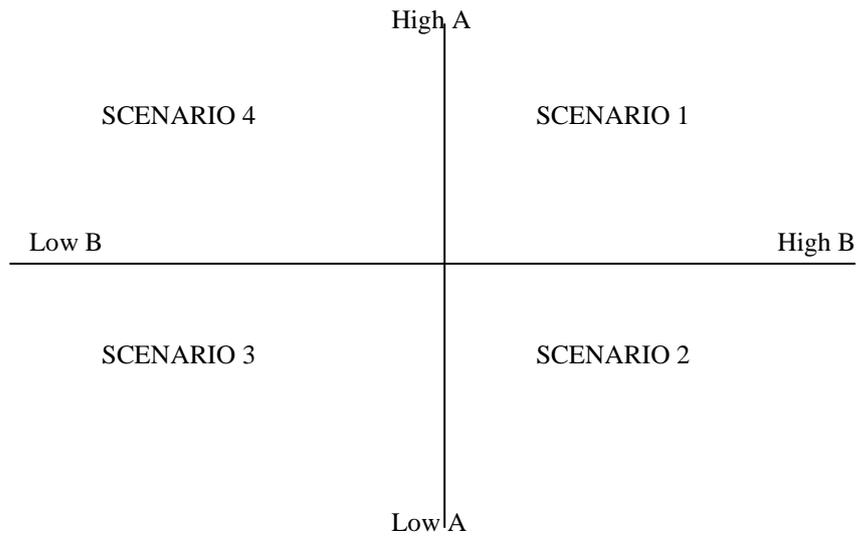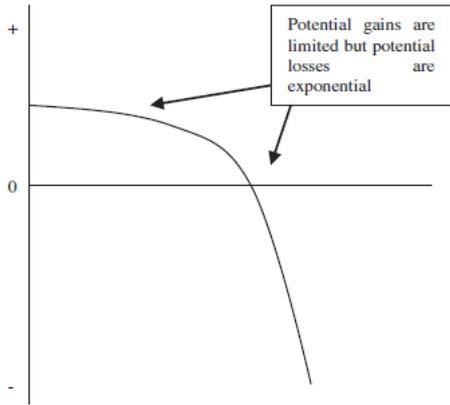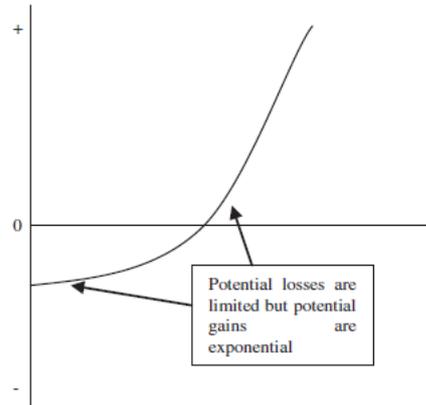
Fig. 3. Concave distribution of effects.

Fig. 4. Convex distribution of effects.