

Improving the utility of tourism scenario analysis: A spoonful of theory helps the medicine go down.

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Abstract.

Tourism can generally be relied upon to make a significant contribution to the GDP of both developed and developing nations. The impact and complexity of tourism elevates the need for its future pathways to be sustainable and theoretically underpinned. A popular mechanism that might address this need is scenario analysis, but it relies upon broadly based praxis rather than theory. Praxis-based techniques struggle to distinguish between the effective and ineffective efforts of their practitioners. The risks attending such techniques lessen the appeal of their outputs to tourism's significant policy and corporate decision makers. This paper discusses a theoretical platform for scenario analysis based upon the theories of cause and inference articulated by American natural philosopher and mathematician Charles Sanders Peirce (1839-1914).

The outcome is a set of theoretical tests or benchmarks that improve the reliability and utility of scenarios to tourism's planners and policymakers.

Keywords: Scenario Analysis, Tourism Futures, Theorizing

Introduction.

The recent earthquakes in Christchurch, New Zealand, severely damaged its central business district but one of the sad images of the *Christchurch Press* building was particularly poignant. Still standing above the rubble was its coat of arms and motto - call it their vision statement - that 'nothing is useful that is not honest' (*nihil utile quod non honestum*). This prompted consideration of how such words might motivate improvements to scenario analysis: a praxis-based technique that seeks to serve tourism's corporate and political decision-makers by engaging them in hypothetical and plausible constructions of future states of affairs with the objective of improved planning and future performance.

Unfortunately praxis-based approaches seeking to construct plausible and hypothetical future states of affairs are risky as they can easily jeopardise the credibility of the participants.

The issue under consideration, and the purpose of this paper, is how to minimise the risks associated with applying scenario analysis to Tourism Operators, Policymakers and decision-makers in capital intensive sectors.

The root cause of corporate and policymaker scepticism towards praxis-based methods lies in their historical indistinction between effective and ineffective practitioner efforts. For example, Wolfram Cox et al (1997) and Francis et al. (2007) directed this criticism at organisational benchmarking practices prior to Moriarty's (2011) theory of benchmarking'. Martelli (2001) remains unrefuted in declaring scenario methodologies to be in a "chaotic" state: lacking cohesion in definitions, praxis and provenance. Long-term forecasting using scenarios has also had its disappointments: the end of the Cold War exemplifies social and political avalanches that can humiliate the practice of foresight. Such criticisms matter as the consequences of these ineffective efforts may threaten organisational or political viability through the establishment of critical dissatisfactions arising from ridicule or mistrust (Arrow, Dasgupta, Goulder, Daily, Ehrlich, Heal, Levin, Maler, Schneider, Starrett, & Walker, 2004; Ghoshal, 2005; Pfeffer & Salancik, 2003). Tourism organisations are particularly vulnerable: visitor expenditure is highly discretionary and behaviours are susceptible to global and local phenomena. So, in the light of these difficulties, what approach should tourism's future studies take to improve the utility of scenario analysis to its corporate and policy-making stakeholders?

Praxis-based improvement techniques are not without value and their failure to engage substantial stakeholders are opportunities lost. Having experienced many praxis-based techniques (benchmarking, scenario analysis & quality management), conversion to the premise that organisational decision-making could be improved with a few spoonfuls of guiding theory requires little coercion.

This paper will be guided by the criticisms levelled at the scenario approach, briefly examine the principal techniques used by tourism practitioners, reflect upon the nature of inferential processes and advance some rules and intermediate outputs that improve the utility of scenarios to corporate and policy-making stakeholders.

Criticisms of the Scenario Approach.

In the academic world, organisational studies literature portrays critical views of scenario practices that might best be assuaged by the doctrine: rigorous is righteous! The rigorous includes the class of statistical (Godet, 1986) or system-based approaches where relationships portend future impacts. Examples include the historical IPCC scenarios (Girod, Wiek, Mieg, & Hulme, 2009) , the RAND Wonderland "LXMR" approach

(Lempert, Popper, & Bankes, 2003), system dynamics models (Maani & Cavana, 2000; Sterman, 2000) and complexity/chaos models of behaviour (Smith, 2002). Qualitative factors may also be incorporated into this scenario class – e.g. Moss *et al's* (2010) new IPCC scenarios integrate behavioural adaptation, climatic, radiative and human systems usage factors. Also deemed rigorous, and currently more common, are cogent and causally coherent interpretive approaches where future impacts portend relationships. Examples include the “Extreme Worlds” and “Driving Forces” methods applied nationally or globally where impacts are sourced from the views of a broad group of prescient people (Goodwin & Wright, 2004). Of lesser rigour and replicability are substantially interpretive or artful scenario processes reliant on experienced practitioners (such as van der Heijden (1997)) having "skills behind the curtain" or special competence in future studies. Fortunately such reliance has been tempered, even if only recently, by recognition of the need for better causal textures in such processes (Emery & Trist, 1965; Selsky, van der Heijden, & Ramirez, 2010; van de Ven & Poole, 1995). Table 1 illustrates the principal criticisms levelled at the scenario approach to future studies and also provides the counterfactual for improvements.

Critical Factor:	Criticisms of the Scenario Approach	Citation:
Naïve realism	Accepting current social realities as simple extant structures complete with dysfunctions and inequities	(Beck, 1999; Slaughter, 2002)
Solely empirically driven	Non-empirical factors precluded. An extension of naïve realism.	(Beck, 1999; Slaughter, 2002)
Silo-based/Consultant Capture	Practitioners seldom venture beyond their chosen framework or deem “experience” to be a necessary condition for methodological acceptability	(Bishop, Hines, & Collins, 2007; Bradfield, Wright, Burt, Cairns, & Van Der Heijden, 2005; Martelli, 2001; Selsky et al., 2010)
Definitional Variation	The interchangeable use of terms such as “Scenario [Analysis, Planning, Building, Thinking]” and “Alternative Future”. Conflation of terms, methods and techniques.	(Bishop et al., 2007; Bradfield et al., 2005; Varum & Melo, 2010)
Misattributions of Causality	Inappropriate attribution of causality limits scope. Causal properties may be numerous with a poorly understood relational framework.	(Tversky & Kahneman, 1983; Wright & Goodwin, 2009)
Cognitive/Motivational Bias	Incrementalism, optimism, judgemental vacuum, hindsight driven foresight.	(Fischhoff, 2003; Wright & Goodwin, 2009)
Entertainment or “Pop futurism”	Relevance, coherence, likelihood and transparency are all claimed as necessary conditions for the scenario method	(Godet & Roubelat, 1996; Slaughter, 2002)
Lack of Standardised Process	Basic structures exhibit some commonality, but there is no cohesive rationale for these structures	(Postma & Liebl, 2005)

Table 1. Criticisms of the Scenario Approach to Future Studies

Scenario usage within Tourism is diverse, and the meaning and methods of the technique vary widely. Even so, they may be grouped in to three broad classes, two of which were discussed above. The IPCC’s climate models, essentially quantitative and systems-based, structurally inform many tourism future studies. Equally, the success of Shell Oil’s “driving forces” based method ((van der Heijden, 1997, 2005) is a popular interpretive approach used for tourism future planning. Finally, generic tourism planning and community participation methods (Getz, 1986; Gunn & Var, 2002; Simmons, 1994) are also evident, but to a lesser extent than other approaches. Where the method of scenario analysis is uncited there is often evidence of one of these.

Examples of Scenario Studies in Tourism	
Topic	Examples & [Approach]
Tourism and Climate Change	Amelung & Viner (2006), [IPCC scenarios - no formal method]; Dubois & Ceron (2007), [IPCC]; Müller & Weber (2008), [No formal method cited, but their model emphasises driving forces]
Tourism resource management	Daconto & Sherpa (2010) [Cites Evans et al (2006) using the driving forces model of Goodwin & Wright (2004)]
Tourism destination planning	Yeoman & Lederer (2005) [nominally Shell]; Taylor & McGlynn (2009) [No formal method cited, a driving forces approach is evident]; Formica & Kothari (2008) [driving forces approach]
Tourism planning	Haywood (1988), [Draws on numerous tourism planning & community participation frameworks; also cites Shell]; Badr et al (2009) [Systems dynamic model based on extremes]; Forum for the Future (Draper, Goodman, Hardyment, & Murray, 2009) [Driving forces model for UK outbound travel]; Future Maker (Yeoman, Moriarty, & Davies, 2010) [Driving forces model based on Shell]
Long-term tourism forecasting	van Doorn, 1986, [Normative and descriptive approaches contrasted, cites Godet (1983) “not one method, but many techniques”]; Prideaux, Laws, & Faulkner (2003) [generic use of the term “scenario”, cites examples of a learning-based approach (Senge, 1990) and Shell (van der Heijden, 1997)]
Tourist Behaviours	Yeoman, 2008, [nominally Shell]

Table 2. Examples of Scenario usage in Tourism

An obvious barrier to the acceptance of tourism scenario analysis in its corporate or political sectors is whether there is any risk in doing so. “Extreme Worlds” scenario analysis is a well-known example of such risk as its proponents can face ridicule if media, directors, politicians or shareholders disavow its patently extreme narratives. Even the less controversial “Driving Forces” technique faces the same obstacle if conservative stakeholders believe its narratives to be implausible. Another risk for scenario developers is potential trivialisation of specialist complexity that corporate and political decision makers often claim fundamental to current and future progress. For example, Airlines claim expertise and insight in matters

aeronautical and policymakers claim insight into the 'art of the possible' and both are unlikely to embrace generic scenario narratives trivialising such details.

This begs the question as to whether there is a basis for encompassing scenario analysis within a theoretical framework. The objective of such a framework would be satisfaction of myriad criticisms attending the use of scenarios, offer corporate scenario users a sounder basis for including them in their repertoire, apply intellectual rigour to outcomes and still retain the quality of richness within this future-planning method.

Developing a theoretical framework.

Two pieces of a framework that would improve the approach to future studies arise from the contributions of Charles Peirce (1839-1914): causation and abductive inference.

The nature of Peircean causation is that all action is subordinate to purpose and that action is always moderated by chance (Hulswit, 2002; Peirce, 1935, VI, 101.f). In living states of affairs, survival is the prime purpose: pursued without assurance of attainment through the mechanism of continuously satisfying all dependencies relied upon for the supply and maintenance of resources (Peirce, 1935, VI, 144ff, 156; Pfeffer, 1997; Pfeffer & Salancik, 2003; Trout, 2010). Nature's states of affairs also appear to demonstrate purpose – the observed tendency of all natural processes to "wind-down", or, as Peirce noted, to be '*finious*' – a term he coined to describe the quasi-teleological behaviour expressed in the second law of thermodynamics (1935, VII.471). Peirce's chance is a natural characteristic, 'acting always and everywhere, restrained within narrow bounds by natural laws that produce infinitesimal departures from law always and great departures with infinite infrequency' (1893/1998, VI, 308). This was Peirce's metaphysical underpinning of modern chaos theory. Peircean chaos is purposeful, provided it is subject to nature's '*finiousness*' as the term is otherwise utterly without meaning (1935, I, 220).

Peirce also held that the processes of deduction (logic supporting truth) and induction (logic supporting cogency) were complemented by abduction (also called hypothecation) – a basis of knowledge extension where cogency supports cogency (1935, VI, 469-473). We all engage in abductive inference when things go wrong. We ask ourselves what (non-exclusive) precursor(s) might plausibly have contributed to a present or perhaps future faulty state of affairs (e.g. the TV does not/might not work, perhaps there is/might be no power, perhaps a setting is/might be wrong, etc, etc). Abductive inference is particularly relevant to future studies where some plausible hypothesis (e.g. what if there was a decline in international travel at some future time) is supported by a (non-exclusive) cogent reason (future costs of transportation might have risen significantly). Peirce also added the condition that where reasons might be numerous, the simplest and most economical should be preferred (Ockham's Razor).

We may apply rules that test the strength of any form of inference by having regard to the rules and properties relied upon to describe the states of affairs under consideration. Peirce(1935, VI, 469 & 556) and Popper (1987) advance a pragmatic definition of an “acceptable” inference or theory: outcomes must be acceptable to those who are dependent upon them. Acceptability may be further strengthened by two logical tests: entailment and supervenience. Entailment tests the inference “A involves B” by examining whether the properties of “A” entail (are a subset of) the properties of “B”. The concept of supervenience refers to a type of relationship where phenomena depend on properties and changes in properties result in changes in phenomena (Kim, 1984). Both entailment and supervenience have formal definitions that can be applied generally. Supervenience may also be expressed as strong or weak, depending upon the extent of the domain in which it applies (Blackburn, 2007; Kim, 1984). By way of example, we may hold that the world’s financial system (or tourism) supervenes or depends on environmental properties as changes in these properties (e.g. climate, resources, etc) certainly result in changes to financial and economic (or visitor) phenomena. However, the rules associated with environmental properties (principally those of physics) are not necessarily appropriate for financial (or visitor) analysis. Moreover, the reverse may or may not be the case. Changes in financial phenomena might not change environmental properties, but changes in visitor properties might do so. More familiarly, force supervenes upon mass and acceleration, as force could not otherwise change. However mass and acceleration do not supervene upon force as changes to these can leave force unchanged. The properties of mass and acceleration also entail those of force. Deduction and induction are still relevant to future studies - but applied as entailment and supervenience relationships that support an abductive representation of a future state of affairs. Abductive inference leads to the following tests or benchmarks that guide the cogency and coherence of scenarios.

1. A supervenient relationship extends from the present into to the future (cogency),
2. The future entails the present (coherency),
3. Actions that extend from the present into the future are subordinate to purpose and subject to chance. The nature of ‘Purpose’ is the pursuit of continuance (sustainability or survival) in organisational states of affairs and ‘*finiousness*’ in natural states of affairs (causality),
4. Ockham’s principles of economy should apply (pragmatism).

These tests apply to any outputs arising from future studies. This paper also suggests that they address a fundamental criticism of purely praxis-based future studies – indistinction between successful and unsuccessful efforts - because they introduce the qualities of rationality and replicability at every stage of scenario development. These necessary but insufficient qualities improve sensemaking and the basis for prescience. Early application of these tests in any future study also help to address the risks of implausibility and utility that deter engagement from corporate and political stakeholders.

Applying the Framework to Tourism Future Studies.

The “Driving Forces” technique is a popular choice for future tourism studies (Table 2). This technique requires a lengthy and progressive chain of abductive inference. Practitioners abduce possible future trends, abduce how such trends might be clustered, abduce their clustering into the two dimensions of ‘impact and predictability’, abduce the underlying driving forces behind major clusters, abduce a final selection of two orthogonal driving forces, abduce future behaviours and finally, abduce possible future worlds and express them in narratives.

Figure 1 shows the intermediate point of the Driving Forces technique that leads to the output phase of scenario analysis – creation of narratives describing plausible future worlds.

A Typical Orthogonal Scenario Analysis Framework

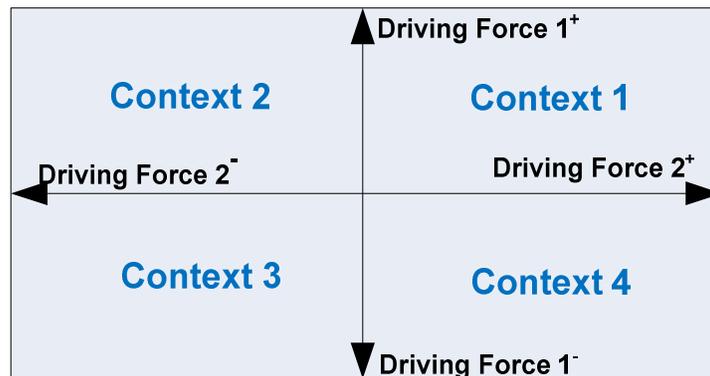


Figure 1. The Driving Forces Scenario Framework

Although this process is popular, ensuring that rewards outweigh risks is challenging. Rewarding scenarios initiate strategic conversations (van der Heijden, 1997) and foil linear thinking: “the future may not be a rational extension of the present”. Narratives describing future states of affairs are key outputs from scenario studies but they pose the risk of relevance if they are not audience-specific. Narratives are also highly susceptible to the earlier, more general, criticisms of silo thinking, consultant capture, incoherence and implausibility. There is a final risk: the implication that each context’s myriad possibilities can be compressed into a single interpretation (the narrative) of a possible future. These risks are best recognised and addressed if participation and utility is expected to accrue to corporate and public-policy users. A good starting point for risk mitigation is the scenario framework.

Each of the four contexts in Figure 1, encompass a broad set of behaviours (rules and properties) having an abductive relationship with their respective driving forces. Until these behaviours are established, there is

little chance of a cogent representation of any one of myriad narratives that could describe possible states of affairs in any of the four contexts. The value in focussing on behaviours rather than narratives is that the risk to corporate and political decision makers is reduced. With abduced behaviours already established, scenario analysis becomes “their story” rather than “your story”. Moreover, the earlier tests or benchmarks may be applied to each of the behaviours within each context to establish a coherent and cogent platform or reservoir for specialist corporate or policy-maker narratives (strategies or policy options) that illustrate these behaviours “in-use” at some future time (Figure 2).

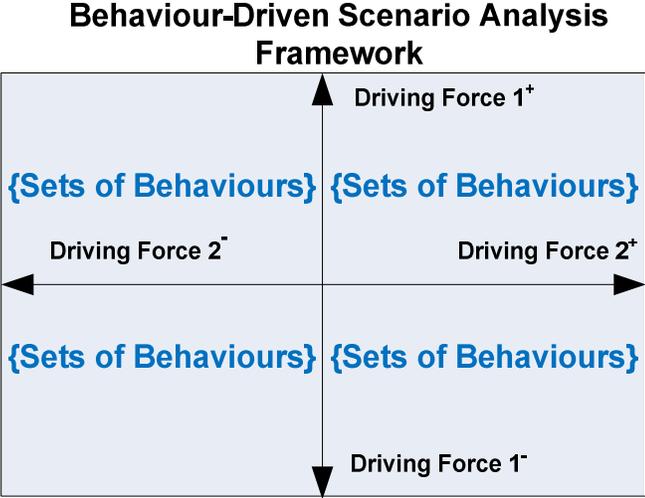


Figure 2: Reservoir of Future Behaviours

But how might tourism practitioners develop appropriate coherent and cogent behaviours? The so-called “trilemma” is an approach that has been used to both develop and explain behaviours in particular contexts. A trilemma formally encompasses a context with three desirable criteria – the pursuit of which involves the sacrifice of one of them. For example, an economic trilemma exists where the criteria of exchange-rate stability, monetary independence and capital market openness are all equally desirable, but attainment of any two is at the expense of the third (Obstfeld, Shambaugh, & Taylor, 2005). A further example is a political trilemma where globalisation, political democracy and independence of the nation-state are all mutually desirable (Rodrik, 2000), but unattainable. Shell Oil Limited (Van der Veer, 2005) used two trilemmas to both form and evaluate scenarios for 2025. Shell’s criteria were {Community, Market incentives and Regulation} and {Efficiency, Security and Social cohesion}. Trilemma criteria also address the earlier benchmark tests by applying a rules and properties framework to a context thereby permitting entailment and supervenience tests to be applied.

For tourism studies, {Society, Individuals and Resources} is an example of trilemma criteria encompassing the roles of visitors, hosts and their requisite resources, as shown in Figure 3.

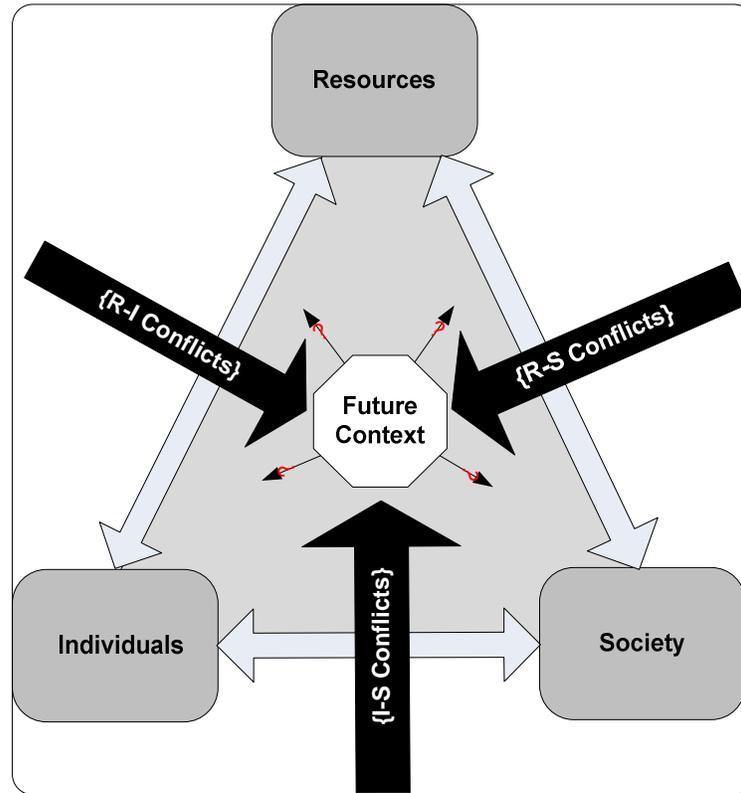


Figure 3. A Trilemma for Tourism Behaviours

In practice, each Context in Figure 2 is subjected to consideration of the conflicting satisfactions between Society and Individuals together with the resources depended upon for their continuance or sustainability. Behaviours contributing to a context's set may each be tested against the coherence and cogency benchmarks in satisfaction of the context's driving forces. The pragmatic test also applies if there are numerous or incommensurate behaviours that arise for the same conflict.

Discussion

The objective of future studies in tourism planning is prescience that can usefully inform decisions affecting the continuance of communities, organisations, products or policies. Properly constructed systems-based techniques have the inherent theoretical advantage of coherence because the model's function should entail its design. This does not imply that such techniques are cogent, evidently so if they cannot account for the present – i.e. reality supervenes upon the model. Interpretive techniques have no such inherent

theoretical advantages by virtue of their design and each element of their implementation process is an opportunity for departure from each of the four tests earlier described. The risks associated with either technique are compelling enough to warrant attention to the inference and causality tests if they are to be embraced as contributors to the strategic planning processes of tourism's corporate and policymaker organisations.

Undue focus on the highly interpreted final outputs of scenario analysis techniques understates the value to specialist audiences that might more readily arise from focus on the less interpreted intermediate stages of this process. Specialist knowledge further improves the likelihood of cogency, particularly where the starting points for abductive inference are more reliable.

Since the purpose of scenario analysis is neither forecasting nor prediction, but critical thinking, strategic conversation and reflection, each process step offers opportunity for stakeholder engagement. A particular advantage of earlier engagement arises from the nature of any organisational improvement: all improvement lies in the future but commences from current states of affairs. Posing "what if" questions to stakeholders is rather pointless if the scenario's environment giving rise to such questions does not exist or is infeasible from their current states of affairs. This observation does not apply to nature's chance-like events (floods, earthquakes, tsunamis, etc) as they are independent of (do not supervene upon) organisational status.

Conclusion.

Praxis-based tools can serve tourism's processes of improvement well, provided the risks attending their application are well understood. The 'spoonful of theory' prescribed in the objectives of this paper is a mechanism for extracting value from scenario analysis that otherwise lies untapped. Theory also addresses the principal deficiency and source of risk attending any praxis-based mechanism: distinction between effective and ineffective efforts. When viewed theoretically, the reliability and value of any scenario analysis is more likely to decrease than increase as the inference chain lengthens. The counterfactual infers that potential value to stakeholders increases if their engagement is earlier in the process and likely more so if their specialist skills and experience can also be deployed.

Peirce's theories of inference and causality provide four benchmarks for improving value extraction from scenario analysis and particularly so to tourism's corporate and political decision makers whose capacity for risk and engagement in unsuccessful praxis is limited.

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