Note: This is a draft of an article of the same name published in *Futures and Foresight* Science in December, 2020. The electronic version of the final article is available at: http://dx.doi.org/10.1002/ffo2.58

**Scenarios as Narratives**

Lee Roy Beach

University of Arizona

Contact Info:

Lee Roy Beach, 7257 E. Chorro Circle, Tucson AZ 95715

(520) 733-3702 [leerbeach@aol.com](mailto:leerbeach@aol.com)

Running Head: Scenarios as Narratives

Acknowledgements: This is an expansion of my comments (Beach, 2020 ) on Schoemaker’s (2020) article on history in narrative planning. My thanks to my colleague, James A. Wise, for his continued help.

**Abstract**

Scenarios can be viewed as narratives about alternative futures. As such, they are a formalization of something everybody does naturally as they think about the future—imagine what might happen instead of what they expect to happen, and figure out how to make the alternative happen instead, if it is better than what is expected, or how to make sure it does not happen (or what to do if it does happen), if it is worse than what is expected.. On the assumption that understanding this natural form of think ahead may be useful to those involved in scenario planning, the structure and uses of narrative thought are discussed, particularly in regard to how they result in what are commonly referred to as cognitive biases and to problems of reaching consensus in groups.

In 1993, Paul Schoemaker introduced the basic concepts of scenario planning to behavioral scientists. Citing a history of war gaming during the Cold War and the adoption of strategic planning by industry in the 1970’s, he used his experience at a large international oil company to compile a set of procedures for generating plausible, causally coherent narratives about alternative possible futures—called scenarios. The procedures are designed to expand planners’ thinking about ways in which the future might unfold. Since Schoemaker’s initial article, scenario planning has developed in a variety of ways, but in all cases the focus is on expanding understanding in complex environments, such as government and industry. It usually is done by a group whose members represent different constituencies, different opinions, different priorities, and different requirements, which means that its final product requires negotiation. Fruitful negotiation is made easier when all members of the group clearly understand what is being negotiated. Scenario planning can help: Its plausible and coherent stories about possible futures makes it easily understood by users. Its consideration of multiple futures allows uncertainty to be represented by ambiguity, a familiar concept. And its focus on a spectrum of possibilities rather than a single path forward increases awareness of possible surprises.

Even with these advantages, planners are subject to cognitive constraints that limit their abilities to adequately expand their thinking about the future. Schoemaker (1993, 1995) identified these as the difficulty of overcoming the limiting influence of past experience on imagination, problems with conceiving of alternatives that are markedly different from existing expectations about the future, resistance to integrating information that conflicts with existing views, and obstacles to entertaining more than a small number of alternative futures simultaneously. He also cites difficulties from what in scenario planning have become known as cognitive barriers and are known in the larger literature, chiefly the decision making literature, as cognitive errors or biases (Tversky & Kahneman, 1974) Subsequently, Bradfield (2008) and Schirrmeister, Goring, & Warnke (2020) further examined the cognitive barriers encountered in scenario planning.

Over the years, it has become common to refer to scenarios as narratives (e.g., Schoemaker, 1993, 1995; Barry & Elmes, 1997; Holstein, et al, 2017). To some degree this merely means that they are stories. But, the word ‘narrative’ can mean more than this. My purpose here is to present a framework for thinking about narratives, called the Theory of Narrative Thought (Beach, 2009, 2010, 2018, 2019; Beach, Bissell, & Wise, 2016), and some of its implications for scenario planning. But the task is complicated by the fact that everybody already knows what narrative is. They know because the term covers such a familiar range of human activity, from private thoughts, to conversations, to novels, to TV and movies. They know because ‘narrative’ has become a fashionable word, an up-market synonym for ‘story’. The result, as usually happens when unfamiliar interpretations of familiar concepts are proposed, is that what everybody already knows gets in the way of a fresh look at the concept. So, to make this easier, please set aside what you know about narrative (you can reclaim it afterwards) and try for the moment to think of it solely as it is described.

**The Theory of Narrative Thought (TNT)**

In TNT, *narrative* refers to a dynamic, ever-evolving chronicle of your ongoing experience, linking memory of the past, perception of the present, and expectations about the future. Neurological research indicates that experience begins as a procession of sensations that the brain bundles into events (e. g., Huth, Nishimoto, et al., 2012; Mason & Just, 2020). Moreover, the brain retains the order in which these events are experienced and, reflecting the largely causal world in which it evolved, it equates order with causation (Lagnado, & Sloman, 2006).[[1]](#footnote-1) Because causation implies temporality, the result is that the events are ordered by time and causality. That is, although philosophers may not be sure that time is real (e. g., McTaggart, 1908; Thomas, 2020) and physicists may not be sure the world is deterministic (e. g., Musser, 2017), the brain has evolved to treat both as true (Cheng, 1997; Holyoak & Cheng, 2011; Lagnado, 2011; Sobel & Kirkham, 2006; Solman & Lagnado, 2015).

**Narrative and the Future**

Narrative is the formal name for a temporal/causal organization of events in a chain of caused events leading from the past to the present (Fisher, 1989). The usefulness of this organization lies in its ability to leverage causality to extend the narrative past and present into the future. Thus, the future is the events that will be caused by present events, which were themselves caused by past events. The extension may prove incorrect, but it at least provides a reasonable glimpse of the unknowable future; unknowable because it has yet to happen. Specifically, the glimpse allows detection of threats that might lie ahead.[[2]](#footnote-2) Detection allows action to be taken to escape or to mitigate the threats before the future arrives and damage is done.[[3]](#footnote-3)

**Coherence**

The more straightforward the causal chain from the past, through the present, and into the implied future, the more coherent the narrative is. The more coherent it is, the more plausible it is. And the more plausible it is, the more it is believed to be true. This is crucial because warranted or not, coherence lets us believe that we can rely upon our narrative as our bedrock reality—our basic understanding of what is going on, why, and what to expect next. If we did not have this, we would have no basis for anticipating the future and its attendant threats. The need for coherence manifests itself in resistance to anything which would decrease it and our certainty about the future.[[4]](#footnote-4) It also is evidenced by an openness to, even search for, experiences that increase coherence and certainty. Thus, for example, newly experienced events that would reduce coherence if integrated into the narrative are treated as erroneous, extraneous, or is distorted (Russo, et al, 2008) because their inclusion would reduce its believability thus erode our confidence that we understand what is going on and what will happen next .[[5]](#footnote-5)

Note that nothing has been said about intentionality. This is because the brain organizes events into a temporal/causal narrative of the past and present and extrapolates a plausible version of the future as a matter of course—automatically, if you will. The chronicle of experience this creates is called the *prime* *narrative*. It constitutes your store of intuitive knowledge, your bedrock understanding about what is happening to you and what to expect to happen. This is not an intentional action nor the result of outside forces, it is inherent in how the brain works.[[6]](#footnote-6)

**Language**

The prime narrative described thus far is sufficient for the survival of very simple creatures living in very stable environments. But, for creatures like us, complex creatures that move widely within ever-changing environments, it is not enough. In our case, evolution’s solution is the addition of language and the ability to use it for thinking and communication.[[7]](#footnote-7)

By the time you were able to speak in meaningful sentences, you had experienced a rich and varied world involving a large number of causally related events that could be used for predicting events in the future This experience was absorbed into your prime narrative, enriching and expanding your understanding about what is going on and what to expect. This private experience was expanded by what you were taught about how the world works by your parents and, later, by your schoolteachers. But, fundamental as it is, this information-packed prime narrative is inconveniently cumbersome for communication, which requires simpler, more adaptable stories that fit the context. Consequently, with the addition of language, the brain is able to create an abridged copy of the prime narrative that is relevant to the circumstance. That is, it produces a pared-down version of what is pertinent in your store of knowledge for communicating with others in the form of simplified storylines, omission of irrelevant detail, and contextualization. This abridged version of your prime narrative is even further abridged for communicating with yourself (thinking) in the form of sub-vocalization and mental and sensory imagery. Abridged versions of your prime narratives are themselves narratives; they retain the temporal/causal structure of your prime narrative but they are the events with the strongest causal links, relegating everything else to the background. They are called *derived* *narratives* because they derive from, but are not exactly the same as, your prime narrative, and, as we shall see below, they are the vehicle for creating alternatives to your prime narrative’s predicted future.

**Standards and Decisions**

With the acquisition of language comes the ability to receive and understand communications from significant others; to learn from them not only how the world works, what causes what, but also what is and is not acceptable, desirable, and otherwise complies with the norms of your family, social group, and culture.[[8]](#footnote-8) In addition, over time, you learned what you as an individual like and do not like. Collectively, these norms, likes, and dislikes are called *standards*. They prescribe how the world *should* work, including how you and others should behave. They define security, enduring values and beliefs, and transient preferences. Security includes physical and mental well-being, acceptance, affiliation, affection, and so on. Values and beliefs include morals, ethics, and ideals—equity, justice, solidarity, stewardship, truth, beauty, and goodness—together with civic and religious ideologies and the responsibilities you ideally should assume in the course of performing your daily duties and engaging in social interactions (e.g., Statler & Oliver, 2016). Preferences include wants and partialities and may vary over time and circumstance.

As you learned standards, you learned how stringently they apply in different situations. So, something that may fall far short of acceptable in your own behavior may be less (or more) harshly judged in someone else’s behavior. Something that would be wrong in private life may be less harshly judged in your, or others’, business life, politics, or when in Las Vegas.[[9]](#footnote-9)

While you were acquiring language and standards, you were learning what happens when those standards are *violated*. This allowed you to anticipate those consequences and work to avoid them. Violations are discrepancies between expectations about how things will be and standards for how they should be. The greater the *discrepancy*, the more intense the *threat* of negative consequences and the more intense its attendant negative emotions. (Violations resulting from exceeding standards can be as threatening as violations resulting from falling short of standards—too much of a good thing is a bad thing.)

**Decisions**

Narrative-based decisions are about discrepancies, usually between expectations and norms—between what you anticipate will happen and what should happen or what you want to happen, and how you will feel about it. When the violation is sufficiently large, action must be taken to avoid or mitigate the negative consequences (Beach, 2009). The best action is the one that fixes things, that offers the future that is least discrepant from standards, although under time pressure, the first option for action that offers significant reduction in the discrepancy often is chosen and implemented (i.e., satisficing; Simon, 1956 ).

Decisions about the truth of your own and others’ derived narratives also utilize discrepancies—this time they are between those narratives and your prime narrative, as well as between them and your standards. That is, when you think about something, say something, or read/hear something, you judge its truth by how well it conforms to your intuitive prime narrative and you judge its acceptability by how well as how well it conforms to your standards.

**Imagination and Alternative Futures**

Strictly speaking, because they have not yet happened, future events exist only in your imagination. That is, your past is real because it actually happened, your present is real because it actually is happening, but the expected future is merely informed imagination. ‘Informed’ in that it is not capricious invention, it is causally implied by your past and present.

Imagination is not well understood because it gets confused with fantasy, which is recreational imagination, as well as creativity and innovation, which are products of imagination, not the thing itself. And, there is a tendency to romanticize it as something mysterious and otherworldly. Instead, imagination is a fundamental everyday tool that is of considerable practical value because it allows you to entertain alternatives to your prime narrative’s implied future (Mullally & Maguire, 2013).

Your prime narrative is your bedrock, intuitive truth. In principle, it contains everything you know (including everything you know about the organizations and groups in which you are a participant—which is pertinent to scenario planning). As such, it is the referent for the working versions that derive from it. The more they differ from it, the less you believe them to be true. But, the fact that they can differ at all is informative. It suggests that you do not place blind faith in the truth of your prime narrative, especially in its implied future. Instead, derived narratives provide back-ups, using imagination to generate alternative futures. Indeed, it could be argued that the primary function of derived narratives, thinking and communication, is to explore alternative futures in case the predicted future turns out to be wrong; forewarned is forearmed. To this end, you discuss with yourself and with others what might happen if this or that condition holds instead of what is in your prime narrative. These counterfactuals (Ferguson, 1999; Hendrickson, 2008; Tetlock, et al., 2006) are coupled with conjectures about unexpected events that could happen, unexpected events that you imagine or others suggest. Together, counterfactuals and conjectures are called *provisionals*—“Provided this or that were true or will become true, then what?” That is, the derived narrative becomes a scenario about the implications of the provisional for the future.

Provisionals are feasible alternatives to known or expected events that, when temporarily incorporated into a derived narrative, change its implied future, making its implied future different from your prime narrative’s implied future. They are such things as the possible effects of your own actions, as well as of the actions of others and of external forces, such as the weather or the stock market, etc. Different provisionals result in different scenarios—all rooted in your prime narrative. Moreover, when these different scenarios are highly coherent and, therefore, convincing, they make you less certain about your prime narrative’s predicted future. Usually this prompts you to search for information to incorporate into your prime narrative to make its implied future more like the altered derived narrative’s.[[10]](#footnote-10) The derived narrative that is used as a surrogate for the prime narrative in thought and communication, the one that does not include a provisional, is called your *primary* *derived* *narrative*. One that includes a provisional is called a *provisionally derived narrative*. There usually is only one of the former but you often entertain more than one of the latter when thinking or discussing future possibilities.

**TNT and Scenario Planning**

One purpose of a theory is to tie together things we already know into a coherent story. This means that these known things should fit within it; the theory should be able to accommodate them, and newly discovered things should fit as well. In what follows, we will examine how TNT accommodates (accounts for, explains) some things we already know from the domain of scenario planning. The knowledge of interest is observed barriers to cognitive planning, both cognitive barriers and process barriers.

**Cognitive Barriers**

TNT accommodates these barriers as manifestations of the operating characteristics of narrative thinking (Wise, 2020). To explain this, in what follows the barriers listed by Bradfield (2008) and Schirrmeister, et al. (2020) are grouped under the operating characteristics of narrative thinking that might best account for them: the prime narrative, causality, the implied future, coherence, and standards. I will assume the reader is already familiar with these barriers.

**Prime Narrative**

* *Belief perseverance, and experience bias, and overconfidence bias*:

Your prime narrative is all you have to understand what is going on; it is your intuitive truth. As a result, it takes a good deal of counter-evidence (usually in the form of failed predictions of the future but also what you learn from other sources) to make you doubt its truth. It also means that when you have a good deal of experience in some area and your narrative surrounding this experience is coherent, you presume that your intuitions are valid.

‘Overconfidence’ is a judgment made by other people when their confidence in your expectations for the future is less than yours.

**Causality**

* *Causal information bias*:

Because causal information is congruent with the causal logic of narrative thought it is more easily integrated into your prime narrative and any derived narratives than non-causal information. This leads you to favor information in which causality is clear.

**The Implied Future**

* *Extrapolation bias*:

Because the future advances quickly, efficiency and speed recommend simple extrapolation of the prime narrative so threats can be promptly detected and mitigated before they materialize. To an outsider this may look like an undue preference for a simple story, but even at the price of oversimplification it is largely the most efficient way to operate.

**Coherence**

* *Belief bias*:

You tend to believe plausible propositions even when closer examination might reveal them to be incorrect. This reflects your dependency on the coherence and plausibility of your prime and derived narratives for determining your confidence in their truth and the accuracy of their implied futures. As above, the goal is efficiency rather than total accuracy.

* *Confirmation bias*:

Because confirming information usually increases, or has the potential to increase, your prime narrative’s coherence it is preferred to disconfirming information which usually does, or has the potential to do, the opposite. Moreover, confirming information is more easily reconciled with your prime narrative than disconfirming information because it requires no (or fewer) changes to accommodate it. Although disconfirming information always signals that there is a problem with your prime narrative and its implied future, it often fails to make clear precisely where the problem lies.

* *Hindsight bias*:

When the future becomes the present, it becomes part of your prime narrative. When it is different from what had been predicted, your prime narrative changes to accommodate it—although often with what might be described as reluctance. Insofar as its inclusion does not much alter your prime narrative’s coherence, a mis-predicted event fits the narrative, implying it could as well have been part of the prime narrative all along.

* *Ambiguity aversion*:

Inclusion of ambiguous information in your prime narrative decreases its coherence, which your resist. Moreover, you are less willing to believe another’s narrative when its coherence is low (Wolfe & Pennington, 2000).

**Standards**

* *Bias toward conformity to social hierarchy and/or to majority opinion; groupthink*:

Standards are about social norms as well as personal values and preferences. In most groups, failure to conform to the norms results in active or passive expulsion. People who have a high value for inclusion are particularly apt to conform because failure to do so is threatening.

* *Taboo*:

Standards based upon both social norms and personal values and preferences frequently make particular topics and words (events) threatening, with the accompanying emotional discomfort. Mitigation is provided by avoiding them.

**Unaccounted for**

* *Representativeness and availability*:

These are methods (heuristics) for assessing the probabilities of events, rather than biases. They are not accounted for by TNT because TNT is based on causality; probability is not a part of the theory. [Although certainty may be modeled well by Bayesian processes (e.g., Pearl, 2000), it is not part of TNT; not yet at least.] Representativeness and availability are assumed to be used by statistically untrained people (or trained people who do not access their training) when they are asked to estimate the probability of something: they must rely upon whatever means they have to supply their interrogator with an answer—representativeness, availability, etc. It has been argued that these are not just strategies for answering researchers’ questions, but real ways in which people assess probabilities and are an efficient use of cognitive resources (Leider, et al., 2018). Whether they are pertinent to scenario planning depends upon how certainty/probability is handled. In Schoemaker’s (1993, 1995) version, for example, probability is by-passed in favor of ambiguity in the form of multiple scenarios.

These attributions of biases to constructs in TNT are not ironclad. Closer examination might argue for revisions. But the point if the exercise is to suggest how TNT might provide a conceptual framework for understanding biases.

**Process Barriers**

Process barriers are beliefs and behaviors that impede smooth negotiation of a product that the planning group’s members can support and that serves the needs of the client who tasked them with developing it. It has been my observation, having served on innumerable planning committees, task forces, and the like, that everyone arrives with fairly fixed ideas about the threats the organization faces, how those threats came to be, and what to do about them. After all, they were selected to serve because they are knowledgeable. The typical result is that group meetings are about negotiating these prior views into a common story for the report that will go to the CEO, Dean, or whoever initiated the effort. Unless there is someone, usually an outsider or someone who outranks everyone else in the group, who can insist on a broader view, the negotiated story tends to fall within the range of the individual stories the participants brought with them, or not far outside. In some sense this *parochialism* is the most serious bias of all and the reason scenario planning, decision aiding, and such disciplines exist. Therefore, in what follows, the focus will be on how narrative thinking promotes this narrowness; i.e., how TNT accounts for it. To give the discussion structure, I will cast it within Schoemaker‘s (1995; in press) ten-step description of the scenario planning process; acknowledging, as he did, that many variations occur in practice.

The first two steps are about framing the task and setting boundaries. They are largely factual: identifying the client and the issues of interest to that client, defining the time frame, the scope, the pertinent parts of the future that are beyond the organization’s control, etc. All of these establish what is relevant to the scenario planning exercise and what is not. TNT accounts for this as specifying the aspects of the participants’ knowledge (their prime narratives) that are relevant to the task and defining the boundaries for imagination of alternative futures.

The third step invites participants to use their knowledge to identify trends that reflect the momentum of the past and its implications for the organization’s future, which necessarily includes how those trends shaped the organization’s present. It is here that negotiation begins, as each participant consults his or her prime narrative’s content about the organization and tells the other participants about the trends contained in it. In TNT, trends are strong causal chains within the individual’s prime narrative. The stronger the chains, the more easily they are identified. This suggests that more subtle trends, weaker chains, are easily overlooked. But it is just these less obvious trends that might produce unexpected future events; after all, the results of strong trends are more predictable. Indeed, knowledgeable participants are all likely to identify the same strong trends; the real insights may lie in the weak trends they either overlook or regard as unworthy of being disclosed to the group. So, from the TNT viewpoint, as all the trends suggested by the participants begin to be melded into a common narrative, care must be taken to ferret out the weak trends. Many may be too idiosyncratic to be of much value, but some hidden gems may emerge.

The fourth step requires identification of weak links within the identified trends. In TNT, weak links may simply result from not knowing enough or being uncertain about things that are known. If so, pertinent information (hopefully causal and narrative in form, for easy assimilation) can either weaken the links more, making the trend less a trend, or it can strengthen the links, making the trend more certain for predicting the future. If pertinent information does not exist, it may have to be created through research. If it exists and is not readily available, then, subject to costs, efforts should be made to obtain it.

The fifth step brings imagination to the forefront. It requires participants to use the results from steps one through four in imagining different combinations of ways in which the identified trends could lead to different futures and to refine the most reasonable of these combinations into coherent narratives—plausible scenarios. TNT views each of these combinations is a provisionally derived narrative; a conjectured scenario about the past, present, and future. The more deviant these scenarios are from a participant’s intuitive prime narrative and its predicted future, the less that participant will believe them—either their own or others’. The result is that the scenarios that are most widely believed within the group are likely to become part of the communally arrived-at scenarios. But, widely believed scenarios are pretty predictable, pretty pedestrian. Focusing on them may leave behind the less plausible, maybe even weird and exotic, but potentially more informative scenarios. After all, the goal is to anticipate the unexpected and the unexpected is unexpected precisely because, in foresight, it is implausible.

The sixth step is to factor the predictable actions of internal and external actors into the scenarios, where actors are other people or inanimate forces such as weather or economic trends. Arguably, this should be part of the fifth step; predicted actions are provisionals.

The seventh step, is to examine how the organization’s current strategy would fare if the future were to unfold as described in each of the negotiated scenarios and to identify where it would fail. TNT views failures as threats in the scenarios’ predicted futures that the current strategy would either fail to correct or would make worse.

The eighth step is to revise the current strategy to make it more flexible if its failures are minor. If they are major, the ninth step is to create a set of alternative versions of strategy, one for each scenario. These form a stockpile, if you will, from which an appropriate version can be drawn and implemented when early indications suggest that the future is in fact unfolding in the way described by one or the other of the scenarios. The tenth step is to identify those early indications for each scenario.

Lists, steps, and the like, make things seem clear, rational, and straightforward. In the event, of course, they seldom are so clear cut. To some degree, this is because, as was noted above, every member of the planning group arrives with a different version of the past—their own back-story about what led up to what they see as going on at the moment; what they believe to be the prelude to what will happen in the future.[[11]](#footnote-11) Even when considering the past from the organization’s viewpoint, the participant’s own experiences are mixed in. Even though they share a lot of knowledge about the organization and its past, everyone is starting from a different point and, left on their own, will end at different points. To mitigate this, veridical historical information should be introduced as a provisional that, together with negotiation, moves participants toward a common back-story for which there is sufficient agreement to get on with the task (Bradfield, Derbyshire, & Wright, 2005; Schoemaker, in press).

**Participation and Buy-in**

Even when a negotiated past can be developed, every participant knows it is a compromise and different from their own truth about the past, and, therefore, different from their truth about the present and future. TNT tells us that their intuitive truth is not easily compromised or abandoned. The best intention to cooperate and participate in the exercise falters when the group’s scenario differs greatly from what their own prime narrative is telling them. Big differences are threatening; they imply that what the participant believes to be true is either false or negotiable, which seldom is acceptable. The resulting resistance may be interpreted by others as stubbornness or uncooperativeness. Of course, it may be either or both, but most often it is genuine discomfort with what is being proposed. This makes negotiations about the present and future difficult, but it sometimes can be overcome by emphasizing the genuine commonalities among the competing alternatives and minimizing all but the crucial differences. Even then, it can be difficult to get buy-in from everybody because compromise is unlikely to produce highly coherent alternatives that are acceptably close to everybody’s intuitive truth.

**Communication**

Recall that in TNT, derived narratives are abridged, working versions of the prime narrative that are used for thinking and for communication with others. But, abridgment loses detail, with the result that participants often have difficulty in precisely expressing their underlying intuitive understanding—including precisely justifying their own and their constituents’ standards and priorities. Because every participant in the group has this difficulty, to one degree or other, there is bound to be a good deal of misunderstanding and conflict in negotiations to create scenarios that are agreed upon by everyone.

Part of this misunderstanding can be remedied by the introduction of solid information to both inform and to stimulate participants’ imaginations and to guide the process so everyone is on roughly the same page. This works because the information provides common provisionals for everyone to use in generating alternatives. The question is how to present that information in a way that it is useful. Both TNT and universal experience suggest that the answer is to present it in narrative form if at all possible—making clear how it fits, both temporally and causally, into a storyline about what happened in the past and how that led to the present and what it means for the future. As every teacher can testify, information introduced in the context of a story, in narrative form, is far more likely to be understood, retained, and used than when it is presented in some other way. Visual materials (graphs, diagrams, tables, etc.) help, but at best they augment rather than replace the story.

**Provisionals**

To be an effective provisional, presented information must be different enough from what participant’s already know to make a difference but not so different that it is difficult to integrate it into their narratives. Extremely foreign information simply does not make sense in light of existing intuitive truth. Integrating it would decrease the prime narrative’s coherence which is resisted. Repetition may eventually make it seem less foreign but that does not make it less likely to reduce coherence. Far better to identify temporal/causal links within the participants’ prime narratives to demonstrate that it makes sense even if it is very different. But these links must be real or resistance will be even greater because participants will feel like they are being lied to or manipulated.

**Decision Making**

Much of the above reflects the TNT description of decision making, but it is so important, so much else turns up on it, that it is worth a final review. TNT decisions are different from traditional descriptions of decisions; everything is based on comparisons and discrepancies rather than probabilities and utilities. Normally it proceeds in two steps; decisions about discrepancies between the prime narrative’s implied future and the decision maker’s standards, followed by decisions about which actions will eliminate those discrepancies. This is the case both for an individual’s private decisions and his or her decisions in the workplace, except in the workplace, the standards are a mix of his or her own and the organization’s standards; part of being a decision maker for an organization is a willingness to use its standards.[[12]](#footnote-12)

Every provisionally derived narrative (scenario), both the participant’s own and everyone else’s’, ends up being compared with the participant’s prime narrative. The comparisons are rapid, done on the fly as the conversation progresses, but in each case, discrepancies are detected and decisions are made. Any scenario that is significantly different from the participant’s prime narrative and its future sets off alarms because it clearly does not fit the facts as he or she knows them. Greater leniency may be tolerated in group tasks, such as planning, but even then, too much is still too much. The result can be genuine disagreement about the plausibility of proposed scenarios. But, this disagreement can be beneficial when it shows participants that other, presumably respected, participants legitimately hold differing views. In a sense, this is like a failed prediction, which is feedback that the prime narrative needs revision. Indeed, Phillips (1999) found that when confronted with alternative views about risk due to steel corrosion in radioactive waste containers, experts changed their views as a result of persuasive arguments raised in the course of the discussing differences.

**Summary**

TNT provides a framework for thinking about scenarios as narratives. The theory is itself a narrative about how narrative structure leads to expectations about the future, supports detection and mitigation of threats in that future, and uses imagination to entertain alternatives to that future.

Thinking about scenarios this way has two sets of implications for barriers to successful scenario planning. The first is that many of what have become known as cognitive biases may reasonably be attributed to the way in which narrative thinking works. Insofar as this is the case, they are not so much cognitive errors as they are the natural consequence of cognition’s operating characteristics. In this sense, they are givens and the task for scenario planning is to overcome, work around, or leverage them. The second set of implications is about process barriers that impede negotiation of common understandings and consensus scenarios. Because participants are bound by their own prime and derived narratives and their own standards (their own private truths), they have difficulty generating a broad range of alternative futures as well as accepting others’ alternatives. In their private lives this merely makes them more rigid and unimaginative than they might otherwise be but it does not matter as much as it does when they are tasked with thinking about their organization’s future. In either case, negative surprises are to be anticipated, but for organizations they impact more people and cost more money. This means that organizations are particularly in need of insights about the future and its threats. Scenario planning is designed to provide these insights by negotiating the differences among informed participants’ understandings and imaginings about the organization’s future. As I have said elsewhere (Beach, in press), the goal, quite literally, is to get them to think outside the box—the box of their own narrow narratives about the organization’s future.[[13]](#footnote-13)

**References**

Bartlett, F. C. (1932). *Remembering*. Cambridge, UK: Cambridge University.

Barry, D., & Elmes, M. (1997). Strategy retold: Towards a narrative view of strategic discourse. *Academy of Management Review, 22*, 2, 429-452.

Barron, C., Reeve, M., et al. (2020) Neuronal computation underlying inferential reasoning in humans and mice. *Cell, 183, 1*, 228-243.

Beach, L. R. (2009). Decision making: Linking narratives and action. *Narrative Inquiry, 19*, 3, 393-414

Beach, L. R. (2010). *The psychology of narrative thought: How the stories we tell ourselves shape our lives.* Bloomington, IN: Xlibris.

Beach, L. R. (2018). Narrative thought and management. *Organizational Dynamics, 47*, 63-69.

Beach, L. R. (2019). *The structure of conscious experience*. Newcastle upon Tyne, UK: Cambridge Scholars.

Beach, L. R. (2020). Scenarios as the narrative past and present. *Futures and Forecasting Science.*

Beach, L. R., Bissell, B. L., & Wise, J. A. (2016). *A new theory of mind: The theory of narrative thought*. Newcastle upon Tyne, UK: Cambridge Scholars.

Beach, L. R., Smith, B., Lundell, J., & Mitchell, T. R. (1988). Image theory: Descriptive sufficiency of a simple rule for the compatibility test. *Journal of Behavioral Decision Making, 1988, 1*, 17-28.

Bissell, B. L., & Beach, L. R. (1996) Satisfaction with job supervision. In L. R. Beach (Ed.), *Decision making in the workplace*. Hillsdale, NJ: Erlbaum.

Boje, D. M. (2001). *Narrative methods for organizational and communication research*. London: Sage.

Bradfield, R. M. (2008). Cognitive barriers in the scenario development process. *Advances in Developing Human Resources, 10*, 2, 198-2115.

Bradfield, R. M., Derbyshire, J., & Wright, G. (2016). The critical role of history in scenario thinking: Augmenting causal analysis within the intuitive logics scenario development methodology. *Futures, 77*, 56-66.

Cheng, P. W. (1997). From covariation to causation: A causal power theory. *Psychological Bulletin, 104*, 2, 367-405,

Danks, D. (2009). The psychology of causal perception and reasoning. In. H. Beebe, C. Hitchcock, & P. Menzies (Eds.), *Oxford handbook of causation*. Oxford, UK: Oxford University.

Einhorn, H. J., & Hogarth, R. M. (1985). Judging probable cause. *Psychological Bulletin, 99*, 1, 3-19.

Ferguson, N. (Ed.), (1999). *Virtual history: Alternatives and counterfactuals*. NY: Basic Books.

Fisher, W. R. (1989). *Human communication a narration: Toward a philosophy of reason, value, and action*. Columbia, SCC: University of South Carolina.

Fletcher, J. (1966). *Situation ethics: The new morality*. Philadelphia: Westminster.

Friston, K. (2017). *The mathematics of mind-time.* aeon.co/essays/consciousness -is-not-a-thing-but-a-process.

Harris, S., Sheth, S. A., & Cohen, M. S. (2008). Functional neuroimaging of belief, disbelief, and uncertainty. *Annals of Neurology, 63*, 2, 141-147.

Hendrickson, W. (2008). Counterfactual reasoning: A basic guide for analysts, strategists, and decision makers. *Proteus Monograph Series, 2*, 5.

Holstein, J., Langley, A., Vaara, E. et al. (2017). What’s the next chapter for strategy as narrative? Academy of Management Proceedings, 1. doi.org/10.5465/AMBPP.2017.15671symposium.

Holyoak, K. J., & Cheng, P. W. (2011). Causal learning and inference as a rational process: The new synthesis. *Annual Review of Psychology, 62*, 135-163.

Huth, A. G., Nishimoto, S., Vu, A. T., & Gallant, J. L. (2012). A continuous semantic space describes the representation of thousands of object and action categories across the human brain. *Neuron, 76*, 6, 1210-1224.

Kabadayi, C., & Osvath, M. (2017). Ravens parallel great apes in flexible planning for tool-use and bartering. *Science, 357*, 6347, 202-204.

Lagnado, D. A. (2011). Causal thinking. Oxford Scholarship Online: doi:10.1093/acprof:oso/9780199574131.001.0001

Lagnado, D. A., & Sloman, S. A. (2006). Time as a guide to cause. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. *32*, 3, 451–460.

Leider, F., Griffiths, T, Huys, Q. J. M., Goodman, N. D. (2018). The anchoring bias reflects rational use of cognitive resources. *Psychonomic Bulletin & Review, 25*, 1, 322-349.

Makie, J. L. (1974). *The cement of the universe: A study of causation*. Oxford: Clarendon.

Mar, R. A. (2004). The neuropsychology of narrative; story comprehension, story production, and their interrelation. *Neuropsychologia, 42*, 1414-1434.

Mason, R. A., & Just, M. A. (2020). Neural representations of procedural knowledge. *Psychological Science, 31*, 6, 729-740.

Meyniel, F., Sigman, M., & Mainen, Z. F. (2015). Confidence as Bayesian probability: From neural origins to behavior. *Neuron, 88*, 1, 78-92.

McTaggart, J. E. (1908). The unreality of time. *Mind, 17*, 68, 457-474

Mullally, S. L., & Maguire, E. A. (2013). Memory, imagination, and predicting the future: A common brain mechanism? *The Neuroscientist, 20*, 10, 1-5.

Musser, G. (2017). In defense of the reality of time. Quantum Magazine at[www.quantamagazine.org/a- defense-of-the-reality-of-time-20170516](http://www.quantamagazine.org/a-%09defense-of-the-reality-of-time-20170516).

**Pearl J. (2000).** *Causality: Models, Reasoning and Inference*. New York: Cambridge Univ. Press

47-61.

Phillips, L. D. (1999). Group elicitation of probability distributions: Are many heads better than one. In J. Shanteau, B. Mellors & D. Schum (Eds.), *Decision Science and Technology:*

*Reflections on the Contributions of Ward Edwards* (pp. 313-330). Norwell, MA:

Kluwer Academic Publishers.

Rottman, B. M. (2017). The acquisition and use of causal structure knowledge. In Waldmann, M. R. (Ed.), Oxford Handbook of Causal Reasoning. Oxford: Oxford University.

Russo, J. E., Carlson, K. A., Meloy, M. G., & Yong, K. (2008). The goal of consistency as a c ause of information distortion. *Journal of Experimental Psychology: General*, *137,*3*, 456– 470.*

Schirrmeister, E., Gohering, A-L., & Warnke, P. (2020). Psychological biases and heuristics in the context of foresight and scenario processes. *Futures Foresight Sci. e31*, doi.org.10.10021/ffo2.31.

Schoemaker, P. J. H. (1993). Multiple scenario development: Its conceptual and behavioral basis. *Strategic Management Journal, 14*, 193-213.

Schoemaker, P. J. H. (1995). “Scenario Planning: A Tool for Strategic Thinking,” *Sloan Management Review*, Winter, 25-40.

Scoemaker, P. J. H. (2020). How historical analysis can enrich scenario planning. *Futures and Forecasting Science.*

Shrestha, P., Shan, Z., Mamcarz, M. et al*.* (2020). Amygdala inhibitory neurons as loci for translation in emotional memories. *Nature*, doi.org/10.1038/sr1586-020-2793-8.

Simon, H. A. (1957). *Models of man*. New York: Wiley.

Sobel, D. M., & Kirkham, N. Z. (2006). Blickets and babies: The development of causal reasoning in toddlers and infants. *Developmental Psychology, 42*, 6, 1103-1115.

Solman, S. A., & Lagnado, D. A. (2015). Causality in thought. *Annual Review of Psychology, 66*, 223-247.

Statler, M., & Oliver, D. (2016). The moral of the story: Re-framing ethical codes of conduct as narrative processes. *Journal of Business Ethics, 136*, 1, 89-100.

Tetlock, P., Eyrikson, R., Lebow, N., & Parker, G. (eds.) (2006). *Unmaking the West; “what-if” scenarios that rewrite world history.* Ann Arbor: University of Michigan.

Thomas, E. (2020). Before, now, and next. *Aeon*, [aeon.co/essays/how-one-man-](https://aeon.co/essays/how-one-man-) changed-the-meaning-of-past-present-and-future.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 18*, 5, 1124-1131.

Wertheimer, M. (1923). Untersuchungen zur Lehre von del Gestalt II. *Psychologische Forschung, 4*, 301-350.

Wolfe, M. B. W., & Pennington, N. (2000). Memory and judgment: availability versus explanation-based accounts. *Memory and Cognition, 28*, 4, 624-634.

Zak, P. J. (2015). Why inspiring stories make us react: The neuroscience of narrative. *Cerebrum*, Jan-Feb, 2. www.ncbi.nlm.nih.gov/pmc/articles/PMC4445577/

1. There are different types of causality [sufficiency, necessity, contribution, proximation, etc. (e.g., Boje, 2001)], but for our purposes, they boil down to events being predictive of subsequent events. See Danks (2009) for a discussion of causal perception, causal reasoning, and causal inference; Mackie (1974) for philosophical issues related to causality; Pearl (2000) for statistical issues; Rottman (2017) for an examination of causal learning, and Einhorn & Hogarth (1985) for judgments of causality. [↑](#footnote-ref-1)
2. See Shrestha, et al*.* (2020) on the neurophysiology of threats. [↑](#footnote-ref-2)
3. Threats are the potential for bad things happening or good things not happening; they are accompanied by various versions of fear and disappointment, respectively. To avoid complicated sentences, I use the word ‘threat’ to cover both potential harm and potential loss of opportunity. [↑](#footnote-ref-3)
4. See Mayniel, Sigman, & Mainen (2015) for a discussion of Bayesian representation of certainty. [↑](#footnote-ref-4)
5. This ‘urge’ toward coherent structure has a long history in psychology—e.g., Wertheimer’s (1923) Law of Pragnänz and the Gestalt principles of perceptual organization, and Bartlett’s (1932) ‘effort after meaning’. Both describe the imposition of order, balance, unity, regularity and conciseness on disorder; in a word, coherence. [↑](#footnote-ref-5)
6. See Mar (2004), and Zak (2015) for introductions to the neuroscience of narrative; Harris, Sheth, & Cohen (2008) on the neurology of belief, disbelief, and uncertainty; Friston (2017) on the mathematics of ‘mind-time’ and prediction of the future, and Barron et al. (2020) on the neuronal underpinnings of inference. [↑](#footnote-ref-6)
7. Between very simple creatures with virtually no reflective and communicative abilities and human beings, there is an array of creatures of varying abilities (Kabadayi & Osvath, 2017), [↑](#footnote-ref-7)
8. The things other people tell you are received through your senses and thus become events in your prime narrative. They then are available for inclusion in your derived narratives, which become sensory experiences for those who receive your communications, and become part of their prime narratives and thus part of their derive narratives, and so on. Similarly for your thoughts, the derived narratives with which you communicate with yourself. The result is that both the things you are told by others and the things you think become events in your prime narrative and subsequent derived narratives. [↑](#footnote-ref-8)
9. This is often discussed, and often condemned, under the heading of situation ethics (Fletcher, 1966). [↑](#footnote-ref-9)
10. See Beach, Bissell, & Wise (2016) for a discussion of how the prime narrative is revised in light of either failed predictions or new information. [↑](#footnote-ref-10)
11. E.g., Bradfield, Derbyshire, & Wright (2016), Schoemaker (in press) for discussions about the role of the past in scenario planning. [↑](#footnote-ref-11)
12. An organization’s standards are contained in both its stated goals and policies and in its culture (Beach, et al., 1988). [↑](#footnote-ref-12)
13. You may now resume thinking about narrative in your customary way, although I hope it is not be quite the same as before. [↑](#footnote-ref-13)