Confirmation Bias and Dissonance in Project Decision Making

INTRODUCTION

How do we make decisions? Do we have free will? Scott Adams (2017), of Dilbert fame, social commentator, author and trained hypnotist, reported that "*if you watched the entire US election cycle and concluded that Donald Trump was a lucky clown, you missed one of the most important perceptual shifts in history, that Trump's extraordinary skill at persuasion would trigger massive cognitive dissonance and confirmation bias in the voters*, *leading to his election as president",* (and perhaps explaining to some extent his approach to extravagant 'thought bubble' public policy-making in general).[1]

In this essay I will examine the theoretical bases and impacts of confirmation bias and uncontrolled dissonance reduction, amongst other cognitive processes, and propose that consistently applied and well understood semi-rational decision-making processes are essential controlling mechanisms. I will refer to my own recent experience in assessing and recommending a project execution strategy for a major project.

DEFINITIONS

Confirmation Bias

The tendency to search for, interpret, favour or recall information in a way that confirms pre-existing beliefs or hypotheses. The effect is stronger for emotionally charged issues and for deeply entrenched beliefs. Confirmation biases contribute to overconfidence in the face of contrary evidence.[2]

Cognitive Dissonance

The mental discomfort or psychological stress experienced by a person who simultaneously holds two or more contradictory beliefs, ideas or values. The occurrence of cognitive dissonance is a consequence of doing something that contradicts personal beliefs, ideals or

[1] Adams, S. (2017). *Win Bigly*. USA: Penguin.

[2] Confirmation Bias. (2017). In *Wikipedia: The free encyclopedia*. Retrieved 28/10/2017, from http://en.wikipedia.org/wiki/.

values, and occurs when confronted with new contradicting information, to downplay the significance that new information.[3]

PERSUASION

According to Adams (2017), in the 2016 US presidential election, Trump triggered cognitive dissonance and confirmation bias on both sides of politics. Adams says, and I mostly agree, that we're hardwired to listen to emotion, not reason "*… if the right buttons are pushed, we decide we agree with the speaker and invent reasons to justify the decision after the fact*". Adams goes beyond politics to look at persuasion tools that can work in any setting, for instance:[4]

- *"If you need to convince people that something is important, make a claim that's directionally accurate, but has a big exaggeration in it. Everyone will spend endless hours talking about how wrong it is and will remember the issue as a high priority."*
- *"Stop wasting time on elaborate presentations."*
- *"Planting simple, sticky ideas is more powerful than stating facts. Just find a phrase … that grabs your audience at an emotional level."*

WHAT HAPPENS IN DECISION-MAKING

Restle (1961) suggested that:[5]

"The answer is very simple if the choice is merely between something the person likes and something he dislikes. Some doubt arises when the choice is more difficult, as when it is between two things which the individual likes and his preference is relatively slight. The question becomes difficult and interesting when the alternatives offered are complex, each involving some pleasant and some unpleasant aspects, or where the person chooses without being certain as to the outcome …."

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[3] Cognitive Dissonance. (2017). In *Wikipedia: The free encyclopedia*. Retrieved 28/10/2017, from http://en.wikipedia.org/wiki/.

[4] Adams, S. (2017). *Win Bigly*. USA: Penguin.

[5] Restle, F. (1961). *Psychology of Judgement and Choice*. USA: Wiley.

Clearly, decision making is not simply a process of making a rational choice between predictable and measurable outcomes based on the evaluation and comparison of the expected outcomes, although objective, numeric and statistical analysis all form essential parts of an effective semi-rational process.

Kepner and Tregoe (1981), on rational management, state that:[6]

Lacking commonly accepted, unbiased procedures, decision-making becomes a shoving contest among those with differing points of view. The individuals with the most power prevail. Others accept decisions in order to save face and avoid direct confrontation."

When people are provided with a common approach … the process of decision-making is less biased."

Elster (2015), on the nature of social behaviour, eventually turned away from rational choice however to say that:[7]

"I now believe that rational-choice theory has less explanatory power than I used to think. Do real people act on calculations …? I do not think so …. There is no general nonintentional mechanism that can simulate or mimic rationality."

ON SOUR GRAPES

As translated from the Latin, and attributed to Phaedrus:[8]

Driven by hunger, a fox tried to reach some grapes hanging high on the vine but was unable to, although he leaped with all his strength. As he went away, the fox remarked 'Oh, you aren't even ripe yet! I don't need any sour grapes.' People who speak disparagingly of things that they cannot attain would do well to apply this story to themselves."

This fable is said to be one of the earliest explanations of the cognitive process involved in the reduction of cognitive dissonance in easing pain or conflict. Elster (2015) calls this pattern of

6 Kepner, C. & Tregoe, B. (1981). *The New Rational Manager*. USA: Princeton Research Press.
7 Elster, J. (2015). *Explaining Social Behaviour*. UK: Cambridge University Press.
8 Sour Grapes. (2017). In *Wikipedia: The free encyclopedia*. Retrieved 28/10/2017, from http://en.wikipedia.org/wiki/.

thinking '*adaptive preference formation*', but I think that could possibly be rephrased as 'adaptive preference confirmation'.

DECISION MAKING & DISSONANCE

Festinger (1964) in reporting one of the earliest researchers of decision-making processes, Kurt Lewin, on the reason for the effectiveness of group decision-making in causing changes in behaviour, stated:[9]

… a process like decision-making which takes only a few minutes, is able to affect conduct for many months to come. The decision links motivation to action and, at the same time, seems to have a 'freezing' effect which is partly due to the individual's tendency to 'stick to his decision …'".

Lewin believed that the process of deciding (making a choice) altered an individual's cognitive processes such that information gathering, and appraisal, were subsequently biased in favour of the decision.

Festinger's theory of cognitive dissonance (1957) carries this idea further in a more generalised way. According to his theory:[10]

"The amount of dissonance that exists after a decision has been made is a direct function of the number of things the person knows that are inconsistent with the decision. The more difficult the decision-making process, the greater the conflict and therefore the tendency to justify the decision afterwards."

Two alternatives are postulated:

1. That prior to the act of making a choice the gathering of information is objective and rational, or;

2. That the choices are continually re-evaluated over the course of gathering information leading to divergence in attractiveness and the potential for bias.

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[9] Festinger, L. et al. (1964). *Conflict, Decision and Dissonance*. USA: Stanford University Press.
[10] Ibid.

The potential for bias in information gathering and evaluation is critical to our understanding of the decision-making process. It is important to know the stage of the process that a decision-making group is in at any time, and to understand and manage any inevitable biases. Members that have already decided will be subject to their own cognitive bias as they attempt to reduce the dissonance provoked by knowledge and evaluation (rating) of the alternatives. Controlling the time at which the choice is made seems fundamental. Perhaps the more it can be delayed or controlled (within a defined process), the more rational and consistent with evidence the decision is likely to be. The challenge to leaders is to define, explain and manage the process.

DECISION-MAKING FOR LEADERS

Klein (2017) defines a subjective cognitive framework (which she terms the WRAP process) to manage biases in decision-making:[11]

- **Widening** of options (to test framing and anchoring);
- **Reality** testing assumptions (to check overconfidence and confirmation bias);
- **Attaining** distance before deciding (to manage confirmation bias and recognise cognitive dissonance);
- **Preparing** to be wrong (to prevent self-serving bias, overconfidence and the effect of dissonance reduction).

Degraeve (2017) proposes a more objective decision-making process (to wit, ICACI) comprising of three key components supported by **Intuition** and **Information** gathering, and states that "*decision biases result from lack of information, from uncertainty*" (so I suggest, and will discuss further, that the uncertainty needs to be understood and managed):[12]

- Setting of **Criteria;**
- Definition of **Alternatives;**
- Understanding and rating of **Consequences.**

[11] Klein, J. (2017). *Decision Making for Leaders*. Victoria, Australia: Melbourne Business School.
[12] Degraeve, Z. (2017). *Decision Making for Leaders*. Victoria, Australia: Melbourne Business School.

In the next part of this essay, I will loosely examine a specific choice and propose an integrated semi-rational decision-making process in consideration of these theories.

DECISION MAKING IN PRACTICE

Introduction

The selection of a project execution strategy is used as a focussing tool in assessing the implication of confirmation bias and dissonance reduction in decision-making. Reference is made to a recent exercise involving the selection of a strategy for the delivery of a project in central Africa.[13] A semi-rational approach is suggested, considering likely biases and differing frames of reference.

Organisational Commitment & Culture

Organisational commitment and cultural alignment to the decision-making process are often overlooked contributors to success. The natural decision-making process (in this case) is based on selecting the highest net present value (NPV) option, however, non-monetary objectives, constraints and biases are present but not specifically addressed. Silos between decision-makers and stakeholders are often evident.

Framing & Setting the Criteria

Internal stakeholder requirements were established to guide the frame of reference, through a review of internal strategy papers and plans, such as:

- Development of a substantial business, optimising value of existing assets with life extension and expansion facilitated;
- A clear development pathway, with enhancement of reputation;
- Embedding safety and delivery culture;
- Maximising value.

In this recent exercise, external stakeholder requirements included:

- The United Nations Human Development Index (life expectancy, education and income per capita);[14]

[13] Westlund, M. (2017). *KPC Project Implementation Strategy*. Australia: MMG.
[14] UN Development Programme. (2016). *Human Development Report*. USA: United Nations.

- Minimisation of social and environmental impact;
- Local employment and sourcing of services;
- The application of ICMM standards.[15]

The different objectives imply a series of potentially competing analyses, adding complexity to the decision-making. The non-monetary impacts and benefits could also be modelled using decision trees with outcomes weighted, scored and compared through utility theory or a rational process such as that developed by Kepner and Tregoe (1981).[16]

Delivery Environment

Too often the effect of the external delivery environment is ignored in selecting a project execution strategy. The UK National Audit Office's Delivery Environment and Complexity Analytic (DECA) was used in the development of the strategic frame.[17]

"It is designed to help … shape the understanding of the challenges and opportunities faced in delivering objectives and outcomes, and the steps needed to address the complexities associated with these risks. The DECA provides a framework for describing and assessing the context in which outcomes are being delivered."

Rare Events

A key insight attributed to Duke Energy, and reported by PWC (2013) is informative:[18]

The most significant hurdle to keeping complex projects on track is establishing how to estimate and deliver them in the first place. Specifically, how to estimate the effect of low-probability, high-consequence events that can dramatically change the project schedule and cost. Both the project team and senior management must be aligned on the risk tolerance of the company. All too often, the risks associated with first-of-a-kind, complex projects are not well understood by all stakeholders. As a result, the estimates do not meaningfully inform senior management of the ultimate potential outcomes of the project."

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[15] International Council on Mining & Metals. (2016). *ICMM Principles*. UK: ICMM.
[16] Kepner, C. & Tregoe, B. (1981). *The New Rational Manager*. USA: Princeton Research Press.
[17] National Audit Office. (2013). *The DECA: Understanding challenges in delivering project objectives*. London, UK: NAO.
[18] Abadie, R. & Raymond, P. (2013). *Correcting the Course of Capital Projects*. USA: PWC.

Kahneman (2012), however, suggests that in making subjective judgements we tend to overestimate the likelihood of rare events, and then apply excessive weighting to such events in decision-making.[19] This can be proven by the application of simple statistics, and diversion of attention, confirmation bias and cognitive ease (laziness) are identified as contributors. Kahneman confirms that we need to invoke the systematic and thoughtful system to combat our initial responses. This implies at least a semi-rational approach to decision-making.

Kahneman also discusses the application of Bayes' theory, which specifies the way in which related beliefs and 'base-rates' should be changed when combined with specific evidence.[20] This approach can be used in constructing decision trees incorporating the possibility of bias. Knowledge and application of base-rate probabilities (which are readily available through benchmarking and industry data services) are essential but often overlooked elements (termed 'base-rate neglect'). The application of Bayes' theory in decision trees is demonstrated by Palisade (2017) in its PrecisionTree® software.[21]

Selection of Alternatives

Contracts allow the risks and opportunities associated with the construction of a major project to be transferred from the owner to various counterparties, for a price. In some cases, extensive risk transfer is appropriate despite the price. In other cases, it is not. Choosing the appropriate contractual strategy requires consideration of several factors, including the source and cost of funding, uncertainty in project definition, risk appetite, and so on. The options available, and their pros and cons, are described by Clayton Utz (2011) and are not repeated here.[22]

The point is that each strategy has a set of costs, benefits, and expected outcomes. The trick is to be able to predict the expected value of each option, and to use that in a rational decision-making process whilst accounting for bias and the individual preferences of the stakeholders. Confirmation bias is often seen in the period prior to making the decision, and dissonance reduction afterwards can lead to discounting of events and indicators that might

[19] Kahneman, D. (2012). *Thinking, Fast and Slow*. Australia: Penguin.
[20] Bayes' theorem. (2017). In *Wikipedia: The free encyclopedia*. Retrieved 11/11/2017, from http://en.m.wikipedia.org/wiki/.
[21] Palisade Corp. (2017). *Precision Tree Version 7.5.1*. Software provided by www.palisade.com.
[22] Clayton Utz. (2011). *Successful Delivery of Mining Projects*. Australia: Clayton Utz.

point to a change of strategy, particularly as the project progresses through various development phases.

Consequences and Outcomes

Outcomes are progressively defined, and uncertainty is reduced by following well known and documented project development processes including enhanced front-end loading, to allow the preparation of probability distributions or estimates of the ranges associated with key inputs and outputs. In the pre-commitment period, different patterns of thinking are required. Peterson, DeYoung and Flanders (2011) describe the early divergent (non-linear and associative) versus later convergent (analytic, linear and logical) thinking normally associated with the assessment and selection of project options.[23] They also introduce the role of insight in the ability to "break frame", to avoid perseverance with an incorrect problem formulation. This is an important source of decision-making clarity. The ability of leaders to recognise and deal with their own cognitive dissonance and biases is clearly important in being open to frame-breaking opportunities.

CONCLUSION

According to the research described in this essay, the cognitive process changes after a decision is made. Pre-decision, the data collection and assessment may be impartial however many biases are certainly present, including the desire to confirm already-held views (confirmation bias). Post-decision, the need to avoid internal conflict drives decision-makers to reduce dissonance in justifying their choices (cognitive dissonance). Rational approaches to decision-making, which generally incorporate weightings and rankings based on individual and group input, are subject to bias and in the writer's experience, have been difficult to impose. A semi-rational approach is suggested, rooted in an understanding of human cognition and the potential for bias, but based on scientific, statistical and stochastic analysis. The collection of data must include base-rates for similar situations, and any move away from the base-rate probabilities should be justified and modelled in the decision-making process. Bayes' approach can be incorporated into decision trees through products such as PrecisionTree® by Palisade. Decision trees can also incorporate chance nodes allowing for

[23] Peterson, J. et al. (2011). *The Path to Insight: Cognitive Abilities for Dealing with Ill-Structured Problems*. USA: Harvard Business Review.

bias. Of fundamental importance is initial alignment with organisational objectives, situational and environmental conditions, and the Delivery Environment and Complexity Analytic (DECA®) is recommended.