

Scenario Thinking

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The range of what we think and do, is limited by what we fail to notice and because we fail to notice that we fail to notice, there is little we can do to change; until we notice how failing to notice shapes our thoughts and deeds.

R. D. Goleman (1996, p. 106), stylised after one of
 R. D. Laing's knots (1970)

1 Introduction

Contextual environments facing organisations are often referred to as ‘increasingly’ complex and dynamic.¹ But it was ever thus. At the macro level, over the past 500 years globally, through the agrarian to the industrial and digital revolutions, contexts have shifted in a perplexing manner. Humanity has struggled with the accompanying changes and, through adaptation, still survived and progressed. Within these periods, the type and nature of the complex and dynamic components alter. For example, within the digital revolution (or post-industrial society), communications transformations, détente in a nuclear age, genetic modification, the countercultural movement of the 1960s, the Vietnam and Cold Wars, the ‘white heat of technology’² and a series of high-profile political assassinations³ and their impact on government and governance were pressing issues facing the Commission of the Year 2000, as they challenged intellectual society to think through developments over the next thirty years (Bell & Graubard, 1967). Fast forward fifty years and today’s futurists ponder over issues that are arguably of equal puzzlement: diversity and equality, the rise of populism and nationalism, the impact of technology on work, mass migration, caliphates, terrorism, anaemic Western economies, biodiversity loss, climate change, the rollback of liberal democracies, rogue states and potential thermonuclear warfare. In between, each decade had its ingredients of pressing contextual issues which could be described as complex and dynamic, depending on the perceptions of those doing the seeing and thinking (Marcus, 2009). For instance, in the mid-1990s, Goleman asserted: ‘We live at a particularly perilous moment, one in which self-deception is a subject of increasing urgency. The planet itself faces a threat unknown in other times: its utter destruction’ (1998, p. 11).

The drama continued at the turn of the century, as Drucker reflected: ‘One thing is certain for developed countries – and probably for the entire world: we

¹ See, for instance, Ringland, Sparrow and Lustig (2010).

² An expression synthesised from a speech delivered by the UK Labour Party leader, Harold Wilson, to the Labour Party Congress in Scarborough in 1964. Wilson actually said: ‘The Britain that is going to be forged in the white heat of this revolution will be no place for restrictive practices or for outdated methods on either side of industry.’ Wilson went on to become the UK prime minister in 1964.

³ John Kennedy, Robert Kennedy and Martin Luther King Jr.

face long years of profound changes. The changes are not primarily economic changes. They are changes in demographics, in politics, in society, in philosophy and, above all, in world view' (1999, p. 92). After the global financial crises of the 2000s, drama and turbulence gripped the minds of even the most experienced futurists:

The uncertainty of the future offers us some near-certainties. Life in large organisations will become ever more complex, time and resource constrained. Competition will become more intense, and scrutiny will be unrelenting. At the same time, the world has seen a financial crisis and faces ongoing changes in the world balance and global systemic challenges. We seem to have reached a number of global tipping points. How can organisations thrive in this environment?

(Ringland et al., 2010, p. 1)

There is no evidence to prove that one generation perceives complexity and dynamism 'increasingly' more than any other. Each has a relative viewpoint that delivers different understandings and feelings. Yet there is little doubt that all contextual environments over time contain a complex mix of components that interact in a dynamic manner and deliver surprise after surprise to everyone, even the most prepared. As the generations pass, it will ever be the case.

Part of the reason for this lies in the vagaries of the human condition. Traditional ways of assisting organisations and governments to navigate the future have rested on the 'predict and prepare' approach of strategic planning (e.g. Ackoff, 1983; Brews & Hunt, 1999), and its use of sophisticated forecasting methods (Makridakis, 1990). Prediction in some areas – e.g. natural systems like climate change – has improved markedly (Ayres, 2000), but society is still surprised by low-probability, high-impact events (Bazerman & Watkins, 2004; Watkins & Bazerman, 2003). The reasons for surprise are likely rooted in the frailties of individual and group cognition and behaviour, which pose a major challenge for understanding the terrain ahead. For instance, at a micro level, these changing contexts are a social construction of individual or group reality⁴ and consequently, there are likely many contexts rather than one official one 'out there'.⁵ It is this difference in perception and perspective, and the assumptions that underpin them, which makes the future so difficult to predict.

⁴ Peter Doyle, a leading UK marketing professor in the 1980s–2000s, used to address his first MBA class of the academic year with the assertion that 'perceptions are just reality with a time lag'. Thus, he was throwing the emphasis away from official views of what the market looks like from the supply side, to how consumers think it to be on the demand side. If they see the world as complex and dynamic, then, put simply, it is.

⁵ For more explanation, see Lock and Strong (2010).

Even if a single context is assumed, some observers may see it as dynamic and complex while others may see it as relatively simple and stable, depending upon their experience, breadth and depth of vision and psychological make-up, *ceteris paribus*. A small contextual change to one observer is an indigestible change to another, and vice versa. Hence, environmental complexity and dynamism might be better understood in reference to the lens of the observer and, in organisational contexts, through executives and their composite group vision. Scholars (e.g. Douglas, 1986; Douglas & Wildavsky, 1982) have long posited that different societies, and groups embedded within them, perceive risk and its treatment in different ways, especially when it comes to assessing future dangers. Studying ancient Greek oracular history, Eidinow supports this claim:

Facing the uncharted future, with all its horrible possibilities, means contemplating the impermanence of stability and prosperity, the inextricable nature of misfortune – and different cultures map this unseen territory differently. Their choice of landmarks turns on their particular world view. The dangers they select as important depend ... on a culturally specific network of beliefs, for example, about the origins of misfortune, their relationships with unseen powers, mortal and supernatural, their understanding of their own capacity to act. (2007, p. 5)

However perceived and by whom, contextual survival and progression require adaptation. Ashby's (1956, 1958) Law of Requisite Variety in cybernetics explains that for an organism to survive change in its environment, it must possess more solutions than the problems it faces. Translating this from the biological to the management sciences, executives and organisations that are not used to change within themselves will struggle to cope when they confront change in their contextual domains. Clearly, any ossification of mental models, or of organisational strategy or structure becomes a harbinger of danger. If these elements become disconnected or 'non-adaptable' to changes in a prevailing context, organisations are said to lack strategic 'fit',⁶ and if this is not adjusted, they will embark on a journey of strategic 'drift', rendering future performance unacceptable (Johnson, 1987).

Consequently, executive strategists have to remain in tune with contextual changes and be able to spot the signs of impending future change. Such understanding of uncertainty, and the entrepreneurial ability to adapt strategies to these changing circumstances, are important sources of competitive

⁶ Whether organisations need to be 'fitted' to their context is a moot point amongst strategists. On the one hand, a perfect fit is impossible and on the other, any fit may lock organisations into a relatively stable platform that induces ossification and thereby restricts enterprise and innovation. Many breakthrough inventions come from the fringe, not these mainstream 'fits'.

advantage. When this does not happen, ‘drifting’, and possibly eventual demise, are likely to follow (Johnson, 1987; MacKay & Chia, 2013). Hence, non-predictive strategy approaches that embrace contextual uncertainty (e.g. Wiltbank et al., 2006), are likely to herald more success than traditional ‘predict and prepare’ ones in a world dominated by change and emergence. The most well-known and practised of these is scenario planning.

1.1 What Is Scenario Planning?

Definitions of scenario planning vary to the point of ‘rendering it slippery’ (Stout, 1998, p. 3). They range from that by Kahn and Wiener, who defined it as ‘a hypothetical sequence of events . . . for the purpose of focussing attention on causal processes and decision points’ (1967, p. 6), to those by Schoemaker – ‘a disciplined methodology for imagining possible futures in which organizational decisions may be played out’ (1995, p. 25) – and Godet – ‘simply a means to represent a future reality in order to shed light on current action in view of possible desirable futures’ (2001, p. 63). The term ‘scenario’ itself harkens back to the silent film era, when a film script was called a scenario because of its creative, literary and playful connotations (Kleiner, 1996). Building upon these earlier works, we employ the definition from the *International Encyclopedia of Organization Studies*:

Scenario planning is a process within strategic management that combines the creation of several stories of plausible futures with the practical strategic responses that are required to deal with them. The creation of stories maps the future terrain through a systematic analysis of the key drivers of contextual change.

(McKiernan, 2008, p. 1391)

Organisations adopt scenario planning for a wide range of reasons (Burt & van der Heijden, 2003). Wright et al. (2013) have identified three main purposes: (i) enhancing understanding of causal processes, connections and logical sequences of events that may play a role in shaping the future; (ii) improving strategic decision-making; and (iii) changing mindsets and reframing perceptions in organisations. In our practical work, we find scenario planning used, inter alia, to guide public policy (e.g. the future of regions when oil has run dry), to investigate market entry strategies (e.g. the potential for a new franchise in a foreign market), to enable contentious debate in a neutral space (e.g. between unions and management) and to imagine the outcome of mergers or acquisitions (e.g. on relative share prices and net worth).

While the roots of such scenario thinking can be traced back to the celestial science of the early Babylonians, as a tool for strategic management, scenario

planning has continued to increase in use in the private, public and non-for-profit sectors in recent years (Durance & Godet, 2010; Gunn & Williams, 2007; Wright et al., 2016). Finding its modern origins in the work of Herman Kahn and colleagues in the RAND Corporation in the United States in the 1940s, and the work of the French philosophers Gaston Berger and Bertrand de Jouvenel in the 1950s, it proliferated as a tool for planning through think tanks such as the Hudson Institute and the Stanford Research Institute in the United States, and the Association International Futuribles and *La Prospective* in France in the 1960s and 1970s. Early research into scenario planning as a tool for corporate strategy (Klein & Linneman, 1981; Linneman & Klein 1979, 1982 in the United States; and Malaska, 1985; Malaska et al., 1984; Malaska et al., 1985 in Europe) found that just over 22 per cent of large industrial firms in the United States were using the method by the end of the 1970s, and between a third and half of large industrial firms were using the method in Europe by the mid-1980s. Researchers concluded that the adoption of scenario methods was ‘associated with the increasing uncertainty and unpredictability of the corporate environment that took place in the 1970s’ (Malaska et al., 1984, p. 46). Further, in their annual survey of management tools and trends used by companies globally, Bain and Company documented the steady uptake of scenario planning since their survey began in 1993, gaining momentum after the 9/11 attacks in 2001. It appeared in their top twenty list of management tools and techniques and, by 2015, more than 13,000 respondents from some seventy countries surveyed projected that they would use the technique, making it the fastest-growing management tool (Rigby & Bilodeau, 2015).

With such longevity and widespread adoption, scenario planning has progressed as an essential accompaniment to any prospecting exercise. It has welcomed continuous change within itself; and, this internal dynamism has underpinned its endurance. Perhaps the most significant part of this inherent change is the subtle switch from scenario planning to scenario thinking. Here, the emphasis is placed on the quality of thinking about plausible future terrains and consequent shifts in executive perception, rather than on the more exact science of operational planning that facilitates the negotiation of those particular terrains.⁷ For many executives, the challenge is to avoid the blind spots of

⁷ Mintzberg and colleagues (2008), for example, placed scenarios in the ‘planning’ school of strategy, rather than the ‘learning’ school. In earlier work, Mintzberg had emphasised the difficulties that planners have in getting to grips with multiple futures (1994), downplaying notions reported by practitioners that their benefits are in the learning dimensions of challenging cognitive rigidities and helping strategic managers to come to new insights, rather than in planning per se (e.g. De Geus, 1997; Wack, 1985a, 1985b).

not seeing or thinking about potential opportunities or threats by maintaining adaptive cognitive models that keep the organisation in touch with changes in its contextual environment.

Indeed, advocates of scenario planning (MacKay & McKiernan, 2004; Schoemaker, 1995; van der Heijden, 1996; Wack, 1985a, 1985b; Wright et al., 2008) claim that the process of thinking actively about a future contextual state by developing and imagining different scenarios helps generate fresh perceptions, fine-tunes and conditions mental models and informs alternative strategic reactions and timely responses:

[S]ince the essence of scenario thinking is to examine a range of plausible, alternative futures, the process intervention facilitates ... dissenting opinion ... as to what the future may hold and challenges potentially inappropriate confidence in terms of a single point future and a single, tried and trusted strategy. Simple extrapolations of the past and ... best guesses about the evolving state of *the*⁸ external environment are thus attenuated and the degree of alignment between strategy and a range of futures becomes the focus of attention

(Wright et al., 2008, p. 221).

Scenario thinking is a pivotal element of scenario planning – a potent process for challenging mental models through sense making in the presence of confusing signals, through adaptive learning, through the rehearsal of potential crises and through the creation of a strategic conversation between alternate views.

1.2 Contributions and Structure

In sequence, the following sections of this Element are designed to make four main contributions to the Academy. First, we contextualise scenario thinking within the wider human endeavour of grappling with uncertain, unknown and unpredictable futures. Using a study of ancient civilisations, we show that scenario thinking is not new, but it has taken on different forms in different periods of history. Second, we link notions of celestial science with modern-day scenario thinking, demonstrating that the search for greater certainty and rigor in understanding the complexities and uncertainties in the world around us has evolved over time. Third, we decouple scenario thinking from scenario planning and attempt to elevate the role of the former as an essential management support. Fourth, we focus on scenario thinking as it has evolved since the 1940s, by way of the French and Anglo-American schools of thought using the

⁸ The use of the definite article suggests an environment ‘out there’ that is given to all and, that is not socially constructed by certain individuals or groups of individuals.

intuitive logics methodology. Based on archival research, we highlight early contributions in Britain around the development and use of scenario thinking in public policy, which has been overlooked in the many received histories in the domain. Finally, we address criticisms over the usefulness of scenario thinking for strategic management and refine the argument that scenario thinking is a heuristic device for overcoming cognitive biases and making better strategic decisions when navigating the complexities and uncertainties of an ever-emerging future. The next section explores this ancient history and illustrates the little-known building blocks of the science of future studies.

2 Ancient Civilisations and Celestial Science

Now, all foresight of phenomena, and power over them depend on knowledge of their sequences, and not upon any notion we may have formed respecting their origin or inmost nature. We foresee a fact or event by means of facts which are signs of it, because experience has shown them to be its antecedents.

J. S. Mill (1865, Part 1, p. 6)

Ancient civilisations have grappled with foresight and prediction to help secure their survival and, to optimise their position with regards to the legitimacy and accumulation of power and wealth of ruling sovereigns. The active pursuit of scenario-based foresight is an ancient practice, having underpinnings that run deep within the ascent of man. Active thinking, analysis and prediction of future-borne threats and opportunities that both endanger survival and promote prosperity, have constantly challenged the intellectual life of civilisations (Cazes, 2008). Because the past is inextricably linked cognitively to our imagining and understanding of potential futures, a study of history is often our sharpest ally during a scenario-thinking or -planning process.^{9 10}

In the East, for example, the Chinese I Ching (Book of Changes) was an important source of divination. Using a bundle of sticks, the diviner would

⁹ This version of history traces the specific legacy of scenario-based foresight. There are other close genres, e.g., science fiction and CLI-FI, that are not covered here because of word limitations, though their influence on scenario thinking is acknowledged. Additionally, many British and Irish authors experimented with future worlds a long time before scenario thinking became formalised in the twentieth century; e.g., Irish author Samuel Madden wrote his *Memoirs of the Twentieth Century* in 1733; English writer Herbert George Wells, who coined the phrase ‘foresight’ (1932), wrote about what the world would be like in the year 2000, way back in 1901. The anti-utopian writers followed. English philosopher Aldous Huxley wrote his dystopian future *Brave New World* in 1932; English novelist George Orwell wrote his tyrannical novel *Nineteen Eighty Four* in 1949; English sociologist Michael Young wrote the predictive *Rise of Meritocracy 1870–2033* in 1958, written as if it was published in 2034; and the Hungarian/British scientist and Nobel prize winner Dennis Gabor wrote his view of the future in *Mature Society* in 1972.

¹⁰ For a useful contextual, time-line companion to the perceived history interpreted in this section, see Loveridge (2009), chapter 8.

progress through a process of discarding and sorting, creating a hexagram of six unbroken or broken lines, or the Ding. The ‘judgement’ came first in the text, followed by the image, and comments on each of the lines, supplemented by extensive remarks (Jung, 1989). Also, Sun Tzu, author of the near-mystical treatise *The Art of War*, placed a premium on ‘foreknowledge’. Although, he emphasised more terrestrial use of intelligence to understand the enemy, and a careful study of the conditions from which a battle will take place, to develop scenarios for responding to them (Griffith, 1963). Indeed, notions of chaos, flux and uncertainty have long been embedded in Eastern culture (Chiang, 1936; Fang, 1986). For example, such notions are manifest in the two-player board game ‘Go’, invented more than 2,500 years ago. Where there are some 20 possible opening moves in chess, ‘Go’ (the name of which translates into the ‘encircling game’) contains some 361 opening moves, with considerably more possibilities for surprise (Shotwell, 2008).

The analysis of signs and of signals that trigger future events that are familiar to modern-day scenario players was central to generations of Mesopotamian ‘celestial scientists’, who developed sophisticated foresight technologies long before the arrival of Christendom (Koch-Westenholz, 1995). For example, in the first of all empires, with a history of prescience stemming from the eighth and seventh centuries BC, the Assyrians created an original scenario-thinking mindset, which involved the systematic institutional implementation of foresight for the management and maximisation of the future power and security of the state of Assyria (Rochberg, 2013, p. 1); and, established the importance of foresight as a central strategy for the conduct of imperial business (Rochberg, 2013, p. 3).

Though celestial divination can be traced back to Babylonia in the second millennium BC, the major contributions of Mesopotamian celestial studies have been ascribed two periods in history (Rochberg, 2004). In an early period (circa 2000–1000 BC), ‘astral science’ embraced celestial divination, horoscopy (not the contemporary form of natal prediction) and magic, in a scribal tradition that can be traced back to Sumero–Akkadian roots. By systematic observation and modelling of the codes of signs in the skies and of natural phenomena, a scholarly body of scientific knowledge was developed and etched into a collection of ‘omens’ e.g., as in the official compilation of celestial omens – the *Enuma Anu Enlil* (circa 7,000 omens on seventy stones). These were conscious attempts to advise the elites in society of the impact of the stars and the moon on tides, calendars, the planting needs of farmers and, inter alia, the arrival of floods and famines. The Mesopotamians saw star alignments as signs, rather than causes, of physical events: in such omen collections, prognostications, stated as cases in the form *if x occurs, then*

y will occur, correlated physical phenomena with events of political, economic or social significance (Rochberg, 2004, p. 3).

Common predictions in the *Enuma Anu Enlil* are at a general rather than a personal level and, focus on primary sector audits around societal survival (e.g. food production, rainfall, flooding) and political-governance issues (e.g. military campaigns, diplomatic relations, destruction of kingdoms). They read like short stories that would be common in contemporary institutional scenario planning e.g. from Tablet 6 (from Rochberg, 2004, p. 76):

The harvest of the irrigated land will prosper, the land will be happy.
 There will be a scarcity of barley and straw in the land.
 The arable land will prosper.
 There will be rains and floods, the harvest of the land will prosper.
 Downfall of a large army.
 Adad will bring his rains, Ea his floods, king will send messages of
 reconciliation to king. There will be hostilities in the land.

Linked to such divination texts, highly technical texts of astronomy were created that charted star movements and led to practical time-based calendars, and eventually to tide tables. These early heavenly diviners saw the world as a means of communication between man and the gods; where the skies were filled with patterns of divine writings and signals to be read and interpreted, so societal elites could be better informed what the gods had in store. This civilisation accepted ‘scientific’ observations and divine intervention (or religion) as complementary components of the same whole; for instance, in temple construction, prominent towers were built and used to scan the skies for codes: ‘Religion and the foretelling of the future came to be closely associated in men’s minds, hence, the large place assigned to prophets and prophecy in the religion of the ancient East’ (McClean, 1929, p. 66). Divination was a highly regarded and a legitimate way of predicting the pathway of future events.

The Babylonians made greater progress in mathematical astronomy (as well as the products of the earlier period of celestial divination) in a later period (circa 600–300 BC), exhibiting a technical prowess that the West would recognise now as true science – in design, in process and in outcome. Diaries of the observation of the celestial bodies, as seen in clear skies from the broad Mesopotamian plains, and diaries of political events were accumulated. Personal prognostication emerged through both natal omens (forecasts based upon birth dates under specific astronomical patterning) and horoscope narratives that were built in the absence of personal prediction, with scientific astronomy providing the evidence base. The flow of intellectual scholarship

between the Mesopotamian scribal traditions to the latter period of intense mathematical science in astronomy was strong, with evidence that the earlier celestial writings were consulted constantly through the time continuum. This rich Neo-Babylonian (or Chaldean) period was highly impactful, producing the 360-degree circle, the zodiac, the refinement of the sexagesimal system and the twenty-four-hour day.

Historians in the early to mid-twentieth century, consumed by their own definition of ‘science’, castigated the early period of Babylonian astral science as ‘pseudoscience’ and viewed the two periods as distinct. However, later historicism (e.g. Oppenheim & Reiner, 1977; Rochberg, 2004) has taken a multivariate interpretation and viewed the elements of the early period, including the role of the gods and magic, as inseparable parts of a coherent mix of a broader scientific approach, with Oppenheim and Reiner (1977) referring to a ‘cultural continuum’ between these two periods. For instance, in matters of ‘celestial science’, the Babylonians did not distinguish between ‘astrology’ and ‘astronomy’ in the writings of their scribes. Indeed, astrology was a major scholarly pursuit from these early Babylonians in 2000 BC through to the Renaissance in Europe, when it suffered diminution and humiliation at the hands of Newtonian science around the 1680s. Major civilisations (e.g. the Mayans, the Indians and the Chinese) practised the ‘science’, while it ranked alongside astronomy, meteorology and medicine as a major academic pursuit. From its heartland in Mesopotamia, its spread was accelerated and enriched culturally by the conquests of Alexander the Great; it was mathematically refined and given a personal focus that developed in Grecian foresight, as ‘Babylonian culture took possession of Greek thought’ (McClellan, 1929). Syria, Palestine and Egypt were all influenced profoundly by the Mesopotamian intellectual heritage and the moon zodiac of India and China found its prototype in the twenty-four moon stations found in cuneiform writings.

In Israel’s history, the Old Testament preserves a close acquaintance with this celestial science (e.g. Deuteronomy 33:26; Judges 5:20; Exodus 32:15; Psalms 89:11, 77:17ff.), as military advances helped propagate Babylonian culture through Palestine. Though the pantheon of Mesopotamian gods gained a place in the temple of Jerusalem alongside *Jahweh*, Jewish religious leaders remained sceptical of ‘the polytheism and formalism of the astrologers’ (McClellan, 1929).

Beyond the Middle East, the Roman emperors Tiberius and Augustus had court astrologers, as did the English Crown (Edward VI and Elizabeth I). Nostradamus and Galileo advised the Medici, while Kepler advised the Hapsburgs. Astrology is referenced frequently in the creative arts: in poetry