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HAPTER
2

Game Embedded Strategy

*“We are capable of continuing to believe things
that all the evidence shows not to be true, even
long after everyone has demonstrated
that they’re not true.”*
George Orwell

The neoclassical theory of the firm was developed on the assumption of perfect knowledge. That assumption has now been substantially modified, and its modification has allowed the development of sophisticated theories of decision making under conditions of uncertainty. But this uncertainty relates simply to the future outcome of alternative courses of action; and it is uncertainty of a probabilistic kind. But uncertainty extends much wider than this. Management are bounded rational — they do not have the information that traditional theory assumes they have. They are information-constrained, or the information may be flawed or out-of-date. Therefore, strategy needs to be defined within the contours of bounded rationality.

In addition, the market is a game, as rival competitors compete for market share. Each move by a company can be observed, and a sequence of moves constitutes a strategy. Type, for the purposes of this book, refers to the boundary of managerial behaviourism, that is, the study of management's covert behaviour. As applied to management in understanding strategy, there is a need to focus on the role of subjective value and methodological individualism, that is, management as individuals realising their wills despite the resistance of others. In other words, the CEO is an individual and management are individuals; and as individuals they have a type. Views on type and related topics have deep historical roots across many disciplines in an attempt to understand the behaviour of rational action (T. Jones, 2004; Mahoney, 2005; R. Hagstrom, 2005).

Companies are players in a game, and the game dimensions are defined in terms of geography and product. So we have some interesting observations: Nokia entering the US market in smartphones, or Dell entering the market for smartphones, or Apple evolving as a smartphone player. Each observation is defined in terms of the geography and the product in which the game will be played. The observations are transferred to a critical timeline (CTL) that allows the observer to find a pattern in the observed points. The game begins upon the action of one player — observed as a price decrease. A second player reacts in a match-match sequence of price movements over a time period. The strategy question is framed in terms of two related issues:

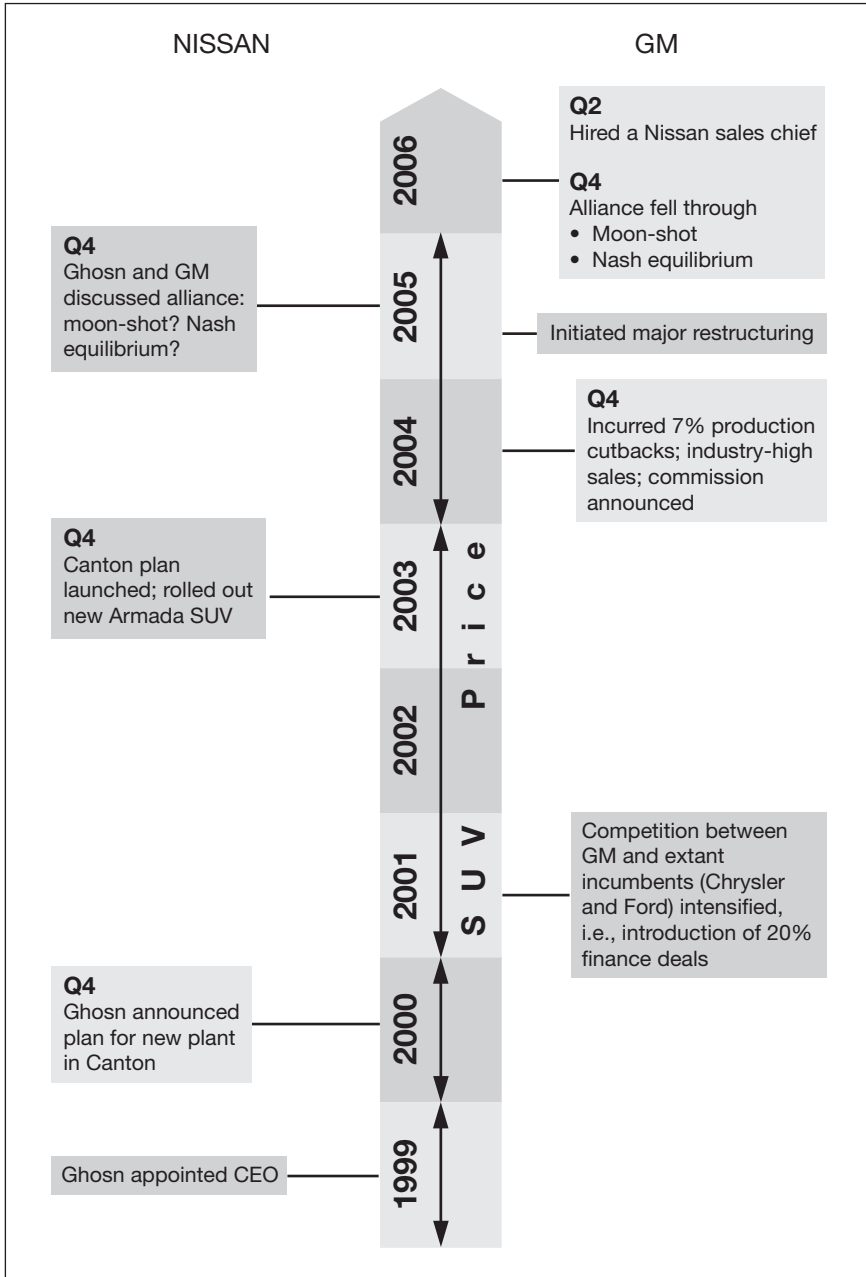
What did the player who initiated the price decrease believe about the likely reaction from the competitor? How long will both players, observed in a sequence of matching price moves, continue to match each other's price movements? The first question speaks to the belief system of each player, and the second speaks to the concept of a Nash equilibrium.

Critical Timeline, CTL

The key to understanding management type in Framework $T_n=3$ is to understand behaviour, and thus to infer from observed behaviour the likely actions and reactions of management in the business world. Management can suffer from a failure to understand competitor behaviour. Part of the explanation is that management are bounded rational; in other words, they do not factor in all the possible scenarios, nor do they put in the time and effort to analyse rival behaviour, clinging instead to a bunker silo approach. At the root of this failure is a misunderstanding of the importance of type. If management's decision to do x is in any way influenced by the type of rival management, then competitors do have an implicit belief system, thinking or believing what the other may do or how they may act.

It is one thing to believe or think about how another individual is more likely to behave; and in the absence of any signals, chat or communication, one has to rely on one's belief system. Alternatively, management can observe behaviour as signals and as patterns in the signals. The pattern can be difficult to determine and requires many years of observations. In the interim, we can read the signals of CEO type by listening to their views on cnbc.com or Bloomberg.com, at conferences or at company briefings to the equity markets. Each CEO has a type, a particular economic characteristic that can give a clue to strategy. It is imperative to observe the signals in order to understand type. Patterns do emerge in the observed behaviour, patterns on price movements or patterns to do with achieving growth through acquisition. The patterns create a critical timeline (CTL) of observed actions and as the CTL unfolds, it reveals a strategy. McNutt (2008) discusses the CTL for Microsoft and Sony during the period 2000 to

Figure 2.1
Critical Timeline – Nissan vs GM



2004 with the launch of PS2 and Xbox. Comparing CTLs for Nissan and General Motors can help in evaluating the strategy adopted at Nissan (Figure 2.1). Refer to the CTL for Apple and Nokia on page 110 (Figure 7.3).

Pattern Recognition: CTL

It is a good mental exercise to try to translate actions and reactions into a pattern and to observe how a defined pattern builds up, is repeated again and again, and thus becomes predictable. The selection of CTLs in the Appendix at the end of the book illustrates the scope and range of patterns across many different markets. The key to successful strategic planning is successful strategic thinking. To do CTL analysis, a company should ask itself five questions and reflect on the answers:

- (1) What market should I be in?
- (2) Who is my near-rival?
- (3) What is the near-rival's type?
- (4) Are my actions being observed?
- (5) What is my type as a player?

Game embedded strategies (GEMs) provide an innovative approach to our understanding of the economics of strategy. The focus is very much on the individual firm — the individual decision-maker — rather than on an industry *per se*. Companies are complex organisations, but the actions and reactions of companies are made of small things: for instance, a key executive decides to launch a new product, a team develops an entry plan for a new geographic market or a regional pricing manager opts to change price. Each decision is an action, and each action is a signal. Signals convey meaning about type and players tend to believe what is observed, as long as such belief is consistent with rationality and the incentives in the game.

Observe, Not Judge

The primary interest in GEMs is in the pattern of behaviour, represented by signals in the play of a game. Economic theory allows us to

calculate actions and reactions, but strategists are interested in calculating the probability that a particular action will lead to a reaction in time. The objective of the strategist is to define competition and rival behaviour, but also to widen the definition of competition. To imagine how a particular reaction will occur at a particular time is the strategist's challenge, as presented in this book. Numbers do follow Fermat patterns; if share prices and product prices are numbers, they must follow a pattern (unobserved).

In the efficient market hypothesis, available knowledge is already incorporated in the price of securities such as shares, bonds or currencies. However, the knowledge may neither be accurately nor completely incorporated as individuals have different beliefs and perceptions about an uncertain future. Patterns take away the cobwebs of uncertainty and afford strategists the opportunity to extract the value of information contained within a pattern of action and reaction. The approach as described falls within the genre of observational learning — we observe, but do not judge.

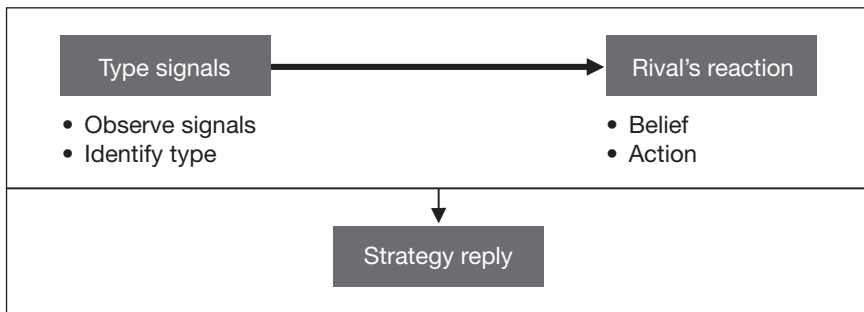
Zero-sum Constraint

In the competitive environment known as oligopoly, wherein there are five or fewer rival competitors, a degree of interdependence arises in the market. Interdependence creates a game dimension and transforms management into players. Therefore, it behoves us to look at both management type and player type, reserving the latter term to describe the behaviour of firms, that is, firms and companies as we have come to understand them in modern business. In the case of Intel versus AMD in microprocessors, the gain in market share by one competitor is at the expense of the other, as they both try to gain increasing market share or consolidate existing shares. In many markets a unilateral gain in market share can occur as a direct consequence of a loss accruing to a competitor.

The zero-sum constraint also acts as an external constraint. Once management realise that their pricing and output decisions depend as much on the likely reactions of competitors as they do on understanding their consumers, management may have to understand that there is a

price and quantity output that is the best they can achieve given the likely reactions of the competitors. It is not, however, the best they can achieve in terms of their own motives. This is the Nash premise (see Figure 2.2), to which we will return in a later chapter.

Figure 2.2
Nash Premise



The zero-sum constraint can easily arise in product markets where there are fickle preferences and changing demand for increasingly differentiated products amongst consumers. A player can lag behind in the market due to an inability to differentiate fast enough. This is contrary to the Model-T effect: Consumers will buy a Model-T — available only in the colour black — but over time, preferences will change and more consumers will buy different brands of coloured cars. Growth and discretionary theories such as Marris and Baumol formally start from the same point that management have power over an objective function. Included in a managerial objective function are the motives of management: a desire for sustainable long-term growth in the size of the company as measured by (say) assets, employees, output or market share. In managerial theories, the pursuit of managerial motives is subject to external shareholder constraint. The motives of management reveal their type.

Penrose Effect

The real-world competitive environment is different from the textbook model of the perfectly competitive economy. In a perfectly competitive

market, product markets are assumed to be supplied by a large number of small single-plant, single-product, owner-managed price-taking firms with limited, if any, capacity for growth. Economists began responding to this from the mid-1950s to the mid-1970s, responses that can now be placed into three distinct groups: discretionary theories (Baumol, 1959; Williamson, 1970); growth-oriented theories (Penrose, 1958; Marris, 1966; Mueller, 1972); and bureaucratic theories (Monsen and Downs, 1965). Today, in the 21st century, the focus is on the behavioural analysis of business decision making.

The modern company is a bureaucratic structure with an administrative system that could frustrate the achievement of sustainable growth. Consequently, there are unique internal constraints within each company. The management operate within this structure; problems may arise within the management team on information about opportunities for growth, or top management may not be capable of making a decision. In other words, management ability may act as a constraint on achieving a growth rate through time. This is referred to as the Penrose effect, and it represents a tangible cost of growth within the company. It is the failure to understand rival type and its implications that exacerbates the Penrose effect. It is imperative for management to realise that their respective actions are interdependent. Once management recognise their interdependence and act accordingly, then they are in what we label a game dimension. How to incorporate the rival's type into the decision on x will be guided by the rules of sequential non-cooperative games; how best to respond will ultimately depend on the underlying cost and production technology of the company as a player in a game.

Table 2.1
Typology on Type

Signal	Type	Observation
Price	Baumol	Low prices
Dividends	Marris	R&D increase
Costs	CL	Reduce costs

Trust

In the game, building trust is an important rule. It is called the Prisoners' Dilemma (PD). It is critical for management to understand the dilemma in order to avoid incurring a Penrose effect. In the original PD two prisoners are faced with a dilemma when caught by the police for burglaries: do they trust each other enough to cooperate to minimise total loss of liberty, or will one of them, trusting the other to cooperate, betray her so as to go free? Knowing that there is a bond of trust, the police interview each prisoner separately and tell each prisoner that the other has informed on them. So does each prisoner trust her friend, or does she betray the friend and take the deal from the police? Both prisoners betray in the absence of a strong bond of trust. The strategy of betrayal or confession is defined as a dominant strategy, the best (or worst), regardless of how the rival plays.

The winnings or pay-offs are determined by the components of the market-as-a-game. The game occurs once an action leads to a reaction. It is a measure of strategic advantage if management have anticipated the likely reaction, and thus are not surprised by the reaction. The key parameters in this game include rival management type, which can be observed by signals from senior management. Equally important is to deduce how one's type is perceived by one's competitors in the market-as-a-game.

The application of game theory in general to management and business is very important, particularly in a zero-sum market wherein two or three firms collectively have 100 per cent of the market share (Nalebuff, 2008; Baye, 2008). This is the classic oligopoly market structure, in which the players recognise their mutual independence. A strategy set is a sequence of moves. A sequence could be composed of a move either to cooperate or to compete. Competition policy and antitrust rules exist in many jurisdictions in order to dissuade firms from forming a credible cartel arrangement. Cartels are inherently unstable, because of an incentive to cheat. Modern companies do compete by cooperating through joint ventures, technology sharing and outsourcing. In an oligopoly market with five players, the presence of an acute zero-sum constraint and interdependence can act as a trigger for a merger

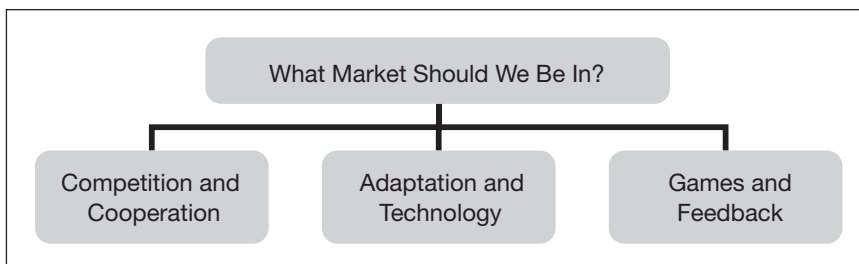
wave in the industry. In other words, once management realise that they are players and the market shapes the dimension of the game, an alternative to competing is simply to cooperate or merge. But there is always the element of trust.

If the players trust each other, then they can believe the signals in the market. However, there is still a preference for dishonesty amongst some players, and thus it becomes critical to understand the type of player in the game. Chandler's thesis is that structure follows strategy. In other words, it is the behaviour of management, observed in the CTL as strategy by competitors, that determines the market structure. If a firm's strategy is to be carried out, or implemented, individuals working within the firm must know about the strategy and its operational requirement for tasks and actions. How management respond to problems of information, innovation, coordination and commitment in a game will determine its long-term position in that game. How they respond to problems of information, innovation, coordination and commitment in a market-as-a-game will determine the firm's long-term position in an industry.

What Market Should We Be In?

It is critical for management to answer the question "What market should we be in?" (see Figure 2.3). A company should not be in a market-as-a-game unless they understand the dimensions of the game, that is, the number of players and the type of each of the players in the game.

Figure 2.3
Game Embedded Strategy

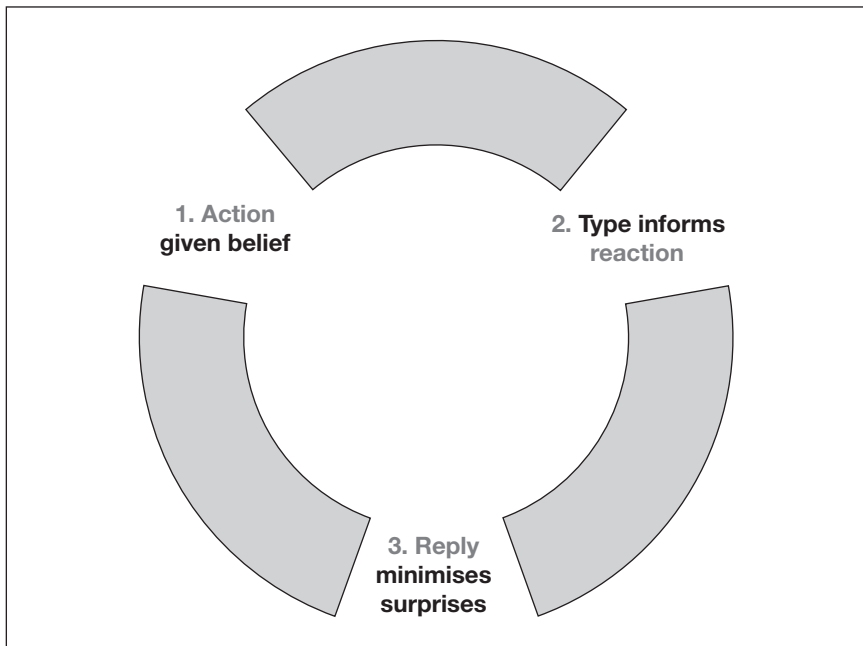


The decision-making process involves a choice between three possible scenarios:

- (1) competition and cooperation,
- (2) adaptation, and
- (3) technology and game and feedback.

Determining what market the company should be in is hard, as this will vary from one firm to another depending on the influence that management are able to exercise — on management type, on player type and on how responsive shareholders are to adjusting management expectations. The outcome will also be influenced by the decision-making process per se within the firm and the inherent willingness to follow the rules. Once management discount the likely reaction of a competitor to an impending price change, management are said to be in a ‘game’ wherein decisions and outcomes are interdependent. The

Figure 2.4
The Wheel of Belief



degree of interdependence is important: as the number of competitors falls below five (oligopoly) there is a mutual understanding driven by the innate structure of the market that each company in an oligopoly structure could do better in the absence of price competition. It is a different matter to announce that management proceed to cooperate: on the contrary, we begin from the premise of non-cooperation.

In a GEMS environment of non-cooperation with mutual interdependence, a decision by company A will lead to a reaction from company B. Therefore, A should expect a reaction from B and vice versa. If the management of company A have no contingency in terms of any reaction from B, then there is the possibility of misguided decision making by A. The expectation of a likely reaction and its computation is at the heart of the economics of strategy. The economics of strategy contains an emphasis on the use of non-cooperative game theory as a tool of analysis to understand management behaviour. Careful attention is given to management type and the identification of signals from the decisions, actions and commentary of management. Decisions on price and costs, for example, are taken in the context of likely reaction from competitors.

Camouflage + Surprise = Ambush Strategy

In Cross's book, *Jungle Warfare* (1989), there is an interesting discussion of military ambush strategy during World War II. According to Cross, ambushes can be of any shape, but basically they are linear and covers a geographical area. The critical timeline (CTL) is a linear concept and allows management to identify a pattern of observed behaviour. The geography and the product spaces define the dimensions of the game. The author continues to identify the parameters for success: "For success a few things not to be forgotten on the battlefield: surprise, silence, security, a rehearsal whenever possible and a reserve" (p. 211). Earlier in his book, he argues that an adverse reaction on being surprised can be minimised by well-trying and instinctive immediate action drills. But there are signals, as indicated in this passage on tracking discipline: "One successful alternative was leaving the track walking backwards into the jungle with some of the force continuing walking forwards

then leaving the track into the jungle on the opposite side... [sic]; this was risky as the footprint of those walking backwards (when the toe imprint is greater) and those walking forwards (when the heel imprint is greater) are patently obvious” (p. 87). The linearity is captured by the CTL, which tracks a range of observations, including price and product specifications.

The area dimension of ambush strategy is about geography. In China in late 2008, a company called Tencent emerged as a leading player in the instant text messaging (IM) market, ahead of MSN. Tencent’s QQ instant messaging success was linked to the demand for IM from the young, newly employed Chinese consumers. The threat from the new 3G cellular networks offering more Chinese consumers access to mobile email will appear on the horizon in 2009–2010 as 3G networks begin to roll out their services. How should Tencent react? One possibility is to adopt a ‘well-tried and instinctive immediate action drill’: QQ’s success is based on the social networking and online gaming services it provides. So it could ‘walk forward’ with a strategy that builds on these two aspects of ambush strategy with a range of functionalities that are better (camouflage) than those currently available on tried and tested 3G networks abroad, (surprise).

