

Developing Robust Strategy for Uncertain Times: Expanding our Concept of Management Control to Deal with Dynamic Markets

PART I: UNDERSTANDING THE BARRIERS TO STRATEGIC ADAPTATION

R. Murray Lindsay, FCPA, FCMA, PhD



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Dr. Lindsay's current research interests in management accounting lie in several areas. He believes the development of the field requires that academic research must not only remain rigorous, but must become more relevant to practice. To this end, he is developing a comprehensive methodology focused around the case study method. As an early follower of the Beyond Budgeting movement, Dr. Lindsay continues to critically examine this model of performance management and how management control systems must change to foster employee empowerment and innovation. His research in this area has earned him an award from the International Federation of Accountants. More recently, his research has begun to examine the role of management control systems in facilitating strategic adaptation and why transformational change must be socially constructed.

Dr. Lindsay was an early advocate of the quality and just-in-time (JIT) movements and has worked with numerous organizations to implement the principles of quality and employee empowerment in both the for-profit and not-for-profit sectors. Since 2003, Dr. Lindsay has been a perennial presenter in performance management in the Certified Management Accountants of Canada (CMA Canada) legacy Executive and CFO professional development programs. He was the President of the Management Accounting Section of the American Accounting Association in 2013-14 and is currently a member of the editorial board of *Contemporary Accounting Research*.

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Executive Summary

The empirical record indicates that the vast majority of companies, including large companies, survive relatively short periods, at least in their current forms. Yet, despite the fact that Joseph Schumpeter's forces of "creative destruction" make long-term survival difficult, there *are* some companies across many industries that manage to survive and even prosper by successfully adapting to their changed circumstances. This paper examines the role control systems play in the course of addressing the following management control challenge: how does a company adequately prepare *today* for an uncertain and often unknowable *tomorrow*, while continuing to deliver excellence today? This represents a formidable challenge for management teams, one the empirical record indicates is not generally well managed.

This two-part paper is intended to be a catalyst and useful starting point for management teams to engage in further discussion on this topic. Using BlackBerry as a running example, the first part examines three barriers or impediments that organizations must understand if they are to meet this challenge.

The first and most serious barrier is "cultural lock-in." Cultural lock-in represents the combination of cognitive, organizational, and political biases in decision making that prevent organizations from responding to clear market threats in a timely manner. Paradoxically, while cultural lock-in is the driving force underlying the successful execution of planned strategy, by serving to reinforce and maintain the status quo, it inhibits adaptation. The essence of the challenge above is that control systems must simultaneously harness the positive aspects of cultural lock-in while finding ways to circumvent its negative forces. This is no easy task.

The second barrier reflects the predominant conception of strategy in practice. In dynamic environments, strategy can no longer be viewed as unchanging. Instead, management must consider strategy in transient terms and adopt a shaping posture to strategy. This alternative view sees strategy as an

unending quest, one that reflects the need to develop new sources of temporary advantage (focused around creating and recreating value for the customer) while continuing to exploit present advantages. However, because the future is inherently unpredictable and strategic commitments must be made in advance of receiving unequivocal market signals, companies must embrace strategic uncertainty in their decision making and develop strategies that are “robust” — capable of performing well in a variety of possible future environments — without exposing themselves to excessive risk. This view of strategy, derived in part from the study of complex adaptive systems, provides numerous insights for control.

The final barrier to strategic adaptability is that it is sometimes considered in reactive terms, following a sense-and-respond orientation, that does not adequately reflect the complexity of the issues involved. Not only is this approach inadequate for successfully responding to disruptive change, it can also lead to management possessing a dangerous overconfidence in their company’s ability to successfully adapt.

Introduction

The forces of inertia in companies are strong. The legions of once successful firms that have fallen on hard times or gone out of business underscore how hard it is to break out of a rut, especially a comfortable, profitable rut.¹

Have you ever stopped to consider how a large, industry-leading company like BlackBerry (formerly called Research In Motion) can be at the top of the pack, having essentially invented the smartphone industry, and only a few years later be fighting for its very survival? Yet, BlackBerry is not an anomaly. Five years is all the average company can expect to enjoy as an innovator and leader within its industry.² Such are the forces of “creative destruction” that Joseph Schumpeter described as an essential fact about capitalism.³

Schumpeter’s thesis is supported by a large study by McKinsey & Company examining over 1,000 major companies across 15 industries during a 36-year period (1962-1998).⁴ The authors of the study, Richard Foster and Sarah Kaplan, found that only 160 of 1,008 companies survived in their existing form over this 36-year span. A full one-third of the *Fortune 500* companies in business in 1970 no longer existed in 1983. Nor could they find a single instance of a company that had continuously outperformed the overall market. Based on the results of their study, the authors concluded that the much sought after “sustainable competitive advantage,” as promulgated in Michael Porter’s writings, is a myth: corporate excellence does not last forever; it is *always* crushed by the forces of creative destruction. Porter’s ideas — in particular, the assumption that once achieved, a company’s competitive advantage is

1 Charles O’Reilly III and Michael Tushman, “The Ambidextrous Organization,” *Harvard Business Review* (April 2004).

2 Richard Foster and Sarah Kaplan, *Creative Destruction: Why Companies that are Built to Last Underperform the Market—and How to Successfully Transform Them* (New York: Doubleday), 2001.

3 Joseph Schumpeter, *Capitalism, Socialism and Democracy*. London: Routledge, 1942, pp. 82–83.

4 Richard Foster and Sarah Kaplan, *Creative Destruction: Why Companies that are Built to Last Underperform the Market—and How to Successfully Transform Them* (New York: Doubleday), 2001.

sustainable—have been the foundation of mainstream thinking in the field of strategy and immensely influential in practice.⁵ Thus there is more than a little irony in the bankruptcy of Porter’s strategic consulting company, the Monitor Group, in 2012.⁶

Foster and Kaplan’s findings are supported by a review of the empirical literature that finds “the VAST majority of firms, even large firms, survive relatively short periods.”⁷ These sobering statistics are at odds with the seemingly common sense view that large, well-established companies should be more—not less—successful given their vast resources and established core competencies. Yet, the difficulty of established companies coping with profound change has become so widely recognized, it is now conventional wisdom that attackers from the outside have an advantage when a new business model threatens an existing market or technological regime.⁸ And if all of this weren’t bad enough, the speed of such destruction is getting shorter as each new advance paves the way for the next.⁹

Yet, there *are* some companies across many industries that continue to survive and even prosper over the long term.¹⁰ Some are found in “old economy” industries like oil (e.g., Exxon), food (e.g., Kraft), tobacco (e.g., R.J. Reynolds) and soft drinks (e.g., Coke) where it seems that once established, it appears easier to preserve one’s competitive moat.¹¹ But, even here, an established company must accommodate change. For example, in the 1990s, Coke was late to catch the trend of fruit-flavored drinks, bottled water, and sports drinks because it continued to define itself in terms of a “brown fuzzy liquid.”¹² More recently, Coke is struggling with flat sales as consumers become more discriminating and health-conscious. Other examples include technology companies like Apple, IBM, and Xerox who have had to dramatically reinvent themselves to survive. “History shows,” Lou Gerstner writes, “that truly great

5 Rita Gunther McGrath, *The End of Competitive Advantage: How to Keep Your Strategy Moving As Fast As your Business* (Boston: Harvard Business School Publishing), 2013.

6 Steve Denning, “What Killed Michael Porter’s Monitor Group? The One Force that Really Matters,” *Forbes* (November 20, 2012).

7 Charles Stubbart and Michael Knight, “The Case of the Disappearing Firms: Empirical Evidence and Implications,” *Journal of Organizational Behavior* 27(1), p.79.

8 Paul Schoemaker, “The Future Challenges of Business: Rethinking Management Education.” *California Management Review* 50(3), p.122. See also Clayton M. Christensen and Michael E. Raynor, *The Innovator’s Solution*. Boston: Harvard Business School Press, 2003.

9 Robert R. Wiggins and Timothy W. Ruefli, “Schumpeter’s ghost: Is hypercompetition making the best of times shorter?” *Strategic Management Journal* 26(10), 2005.

10 Thomas Williams, Christopher Worley and Edward E. Lawler III, “The Agility Factor,” *Strategy + business* (April 2013). Christopher Worley, Thomas Williams and Edward E. Lawler III, *The Agility Factor: Building Adaptable Organizations for Superior Performance*. San Francisco: Jossey-Bass, 2014.

11 See Jeremy Siegel, *The Future For Investors: Why the Tried and the True Triumph Over the Bold and The New* (New York: Crown Business), 2005, p.12.

12 S. Bernhut, “In Conversation with Gary Hamel,” *Ivey Business Journal* (July-August 2001).

and successful companies go through constant and sometimes difficult self-renewal of the base business.”¹³ However, much remains to be learned about the reasons why some established companies continue to thrive (e.g., Fujifilm) and others do not (e.g., Kodak), even when the advent of fundamental industry change is “obvious,” such as with the digital revolution that replaced film.¹⁴

That more and more organizations need to evolve to be in sync with their competitive environments is hardly a controversial idea. Yet, it is striking that management education and training continue to revolve around a static concept of strategy and methods of analysis that rest on the increasingly questionable assumptions of stability and predictability.¹⁵ In management accounting, this has led to the view that strategy, at its core, is unchanging and therefore a given—with the result that management control continues to be defined largely in terms of the process a company uses to implement or execute its strategy.¹⁶ The unfortunate consequence is that insufficient consideration has been given to the other side of the strategy coin: the need for control systems to contribute to long-run survival by facilitating strategic adaptation. Strategic adaptation reflects the process of reconfiguring strategy by creating and recreating reasons for the company’s continued existence by adding new sources of value for customers through the timely detection and pursuit of opportunities.

While effective strategy execution remains a crucial consideration, the findings presented above demonstrate that, by itself, it is not enough. Particularly as markets become more dynamic, competition can no longer be envisioned solely in terms of the present. It must also include companies operating at, what Foster and Kaplan call, the “periphery of the market”—where the forces of disruption originate. The periphery is where new companies or existing companies are attempting to explore unmet customer needs and/or to develop new capabilities, new technologies or new ways of doing business. This perspective provided the leitmotif of Foster and Kaplan’s book:

13 Lou Gerstner, *Who Says Elephants Can't Dance?* New York: Harper Collins, 2002.

14 “The last Kodak moment?” *The Economist* (Jan 14, 2012). Accessed June 27, 2013 from www.economist.com/node/21542796.

15 Paul Schoemaker, “The Future Challenges of Business: Rethinking Management Education.” *California Management Review* 50(3); Cynthia Montgomery, “Putting Leadership Back Into Strategy,” *Harvard Business Review* (January 2008); Martin Reeves and Mike Deimler, “Adaptability: the New Competitive Advantage,” *Harvard Business Review* (July-August 2011).

16 See for example Kenneth A. Merchant and Wim A. Van der Stede, *Management Control Systems* (3rd ed.). Harlow, England: Financial Times Prentice Hall, 2012, p.8; Robert N. Anthony, *The Management Control Function*. Boston: Harvard Business School Press, 1988, p. 10; Robert N. Anthony and Vijay Govindarajan, *Management Control Systems* (12th ed.). New York: McGraw-Hill Irwin, 2007, Chapter 1.

Corporations are built on the assumption of continuity; their focus is on operations. Capital markets are built on the assumption of *discontinuity*; their focus is on creation and destruction.... Unless companies change at the pace and scale of the market, their performance will almost inevitably slide into mediocrity. The key for the corporation is to mimic the pace and scale of change in the markets—without losing control of the operations they oversee. The markets, of course, do not have to worry about operations. Blending the creative destruction of the markets with operating excellence is an extremely tall order. Nonetheless, it is essential...¹⁷

This discussion has profound implications for management control, resulting in the following challenge motivating this paper: how does a company adequately prepare *today* for an uncertain and often unknowable *tomorrow*, while continuing to deliver excellence today? This challenge has been called the “essence of strategic management”¹⁸ and one of the toughest of all managerial challenges too few companies adequately address.¹⁹ Yet, other than Robert Simons’ theory on interactive control systems, which provides a valuable starting point, the management control literature has all but ignored it, including the further refinement and extension of Simons’ work, published in 1995.²⁰ This challenge is an issue requiring the involvement of accountants because it reflects the intersection of the disciplines of strategy, management and accounting.

The objective of this paper is to bring attention to this critical challenge and to serve as a starting point and catalyst for further discussion, particularly among management teams, as well as for future research. The literature on this topic is vast and continually evolving, so, by necessity, this paper must be selective in its coverage of topics, panoramic in nature, and tentative in its conclusions because additional research is required.

This analysis is structured into two parts. Part I examines three barriers impeding organizations’ efforts at strategic adaptation that must be understood if progress in meeting this challenge is going to be possible.

17 Richard Foster and Sarah Kaplan, *Creative Destruction: Why Companies that are Built to Last Underperform the Market—and How to Successfully Transform Them*, 2001, pp. 10, 60.

18 Henry Mintzberg, “Crafting Strategy,” *Harvard Business Review* (July-August 1987).

19 Charles O’Reilly III and Michael Tushman, “The Ambidextrous Organization,” *Harvard Business Review* (April 2004); see also, Jim Collins and Morten Hansen, *Great by Choice: Uncertainty, Chaos, and Luck—Why Some Thrive Despite Them All* (New York: Harper Collins Publishers), 2011.

20 Robert Simons, *Levers of Control: How Managers use Innovative Control systems to Drive Strategic Renewal* (Boston: Harvard Business School Press), 1995.

The first barrier is the combination of cognitive, organizational, and political biases in decision making that lead to what Foster and Kaplan have called “cultural lock-in.” Cultural lock-in prevents organizations from responding in a timely manner to clear market threats. Paradoxically, while cultural lock-in is the driving force underlying the successful execution of planned strategy, by serving to reinforce and maintain the status quo, it inhibits adaptation. The essence of the challenge is that control systems must simultaneously harness the positive aspects of cultural lock-in while finding ways to circumvent its negative forces.

The second barrier reflects how management teams continue to think about strategy. Rather than viewing strategy predominantly as static, for an increasing number of companies it is best considered in dynamic or transient terms. This view of strategy represents an unending quest reflecting the need to develop new sources of temporary advantage focused around creating and recreating value for the customer while continuing to exploit present advantages. However, because the future is inherently unpredictable and strategic commitments must be made in advance of receiving unequivocal market signals, companies must embrace strategic uncertainty in their decision making and be proactive in developing strategies that are “robust”—capable of performing well in a variety of possible future environments. This view of strategy, derived in part from the study of complex adaptive systems, provides numerous insights for control.

The final barrier to strategic adaptability is that it is sometimes considered in reactive terms, following a sense-and-respond orientation, that does not adequately reflect the complexity of the issues involved. Not only is this approach inadequate for successfully responding to disruptive change, it can also lead to management possessing a dangerous overconfidence in their company’s ability to successfully adapt.

Barriers Impeding Strategic Adaptation

1. Cultural Lock-In

One explanation for the declining competitiveness of companies may be found in the natural evolution of the corporation. The early years of a corporation's life are characterized by an entrepreneurial mindset. There is a passion to make things work, with the founder's vision often taking precedence over market information and analysis. People are free to innovate and experiment because they are working within the context of faith and hope in the vision. Communication is open and exchanges are frequent and easy. However, as the business grows, managers take over, which leads to logic and analysis being instilled in the corporate mindset. In place of the entrepreneur's attention to the nuances occurring on the ground, abstraction and mechanical rules start to prevail in response to the growth in staff, customers, products, and business locations. This leads to an emphasis on measurement and reliance on (aggregate) financial reports. As the organization grows still larger, bureaucracy settles in, along with structure, hierarchy, formality, and "rational" decision-making methods. Living off the capital of its hard work and accumulated success, the company feels confident in treating the long run as a series of short runs. This approach appears to work—until the day it doesn't.²¹

As the organization matures, it begins to rely on a host of defensive routines for self-preservation and maintenance of the status quo that stem from a process Foster and Kaplan have called "cultural lock-in." Cultural

21 David Hurst, *The New Ecology of Leadership*. New York: Columbia Business School Press, 2012. See also Richard Foster and Sarah Kaplan, *Creative Destruction: Why Companies that are Built to Last Underperform the Market—and How to Successfully Transform Them*, 2001 (Chapter 3).

lock-in derives from the gradual stiffening of mental models reflecting core values and beliefs such as the nature of cause-and-effect relationships, “correct” decision-making approaches, and how people get ahead in the company. Similarly, views on what customers value, how customers use a company’s products, and the nature of key trade-offs are all rooted in mental models. Once constructed, these models become self-reinforcing and self-sustaining because of a number of cognitive, organizational and political biases working in concert with one another.²² The consequences are organizational rigidity, emotional barriers, and traps of denial that make change to the status quo extremely difficult, even in the face of clear threats.

As Roger Martin explains, humans are wired to form stable mental models for just about everything. These models serve to simplify a complex world and help redress our cognitive limitations in dealing with the deluge of information and stimuli that would otherwise overwhelm us. Without them, we would have to tackle every issue or problem from scratch.²³ Teaching a teenager how to drive illustrates the role of mental models in our lives.

When learning a new complex skill like driving a car, every aspect (e.g., steering, signalling, braking, checking mirrors) is subject to concerted thought and attention which can overload cognitive capacity. So, while the parent tries to teach defensive driving or the need to plan the next move well in advance, the youth struggles with trying to keep the car in the middle of the lane, drive at a consistent speed, signal before a lane change, and brake for a red light. These are all things the experienced driver doesn’t need to think about—even for a moment—because these normal driving considerations are now operating in the background, below the level of conscious awareness.

However, there is a dark side to the use of mental models that is generally not well understood. Our perceptions of the world are based on subjective constructions of sensory experiences. These constructions stem from an unconscious process which adds layer upon layer of causal interpretations based on the mental models (or theory) in use that emanate from such factors as a person’s training, functional orientation, and experiences. Our “factory preset” is to assume these models are identical

22 See Max H. Bazerman and Michael D. Watkins, *Predictable Surprises*. Boston, Harvard Business Press, 2008. See also Rita Gunther McGrath and Ian Macmillan, *Discovery-Driven Growth: A Breakthrough Process to Reduce Risk and Seize Opportunity* (Boston: Harvard Business School Publishing), 2009, p.7.

23 Roger L. Martin, *The Opposable Mind: Winning through Integrative Thinking*. Boston: Harvard Business Press, 2009.

to reality, making them extremely difficult to change. Moreover, models operate in conjunction with a number of systematic cognitive biases that are hardwired into the manner people process information. These biases serve to reaffirm our mental models, and therefore the status quo, by making us see the world as we'd like to see it rather than as it truly is (see Exhibit 1).

The highly-influential research on disruptive innovation by Harvard professor Clayton Christensen is consistent with the operation of cultural lock-in.²⁴ According to Christensen, when innovations are incremental (in the sense of improving the basic product), the established companies in an industry are likely to reinforce their dominance. Conversely, with breakthrough or disruptive innovations, involving new product categories, Christensen found that leading companies tend to be conservative and ineffective in exploiting new opportunities, preferring to flee rather than fight because of their focus on maintaining and growing profits, thus paving the way for their own demise. This occurs because the profits from these new product categories are typically small early on and considerable uncertainty exists about their future success. The box on the following page “Why companies have a difficult time dealing with disruptive innovations” explains the key reasons underlying Christensen’s findings on disruption. Several relate to the forces of cultural lock-in.

24 Clayton M. Christensen, *The Innovator's Dilemma*. New York: Harper Business Essentials, 1997/2002. See also Clayton M. Christensen and Michael Raynor, *The Innovator's Solution*. Boston: Harvard Business School Press, 2003.

*Why companies have a difficult time dealing with disruptive innovations*²⁵

1. **Control system inadequacies that lead to companies missing the warning signs:**
 - The challenge of running day-to-day operations is so great that little time is left to look outside.
 - No one has responsibility for understanding the environment.
 - Useful information is scarce—information is mainly historical and largely financial.

2. **The difficulty of getting management teams to change their mental models of their markets and competitors and then taking unified action:**
 - Success tends to breed risk aversion and the desire to protect the status quo (stability biases).
 - People see the market in self-limiting ways, while true innovation focuses on the white spaces between markets.
 - The practice of listening to your “best” customers. This practice leads to potentially new ideas being recast into attempts at making existing customers happier.
 - The operation of estimating and forecasting biases (e.g., overconfidence and excessive optimism) and pattern recognition biases (e.g., confirmation and biased evaluation).

3. **Accounting and control practices that reinforce the status quo:**
 - Short-term reward systems and promotion considerations.
 - Low tolerance for failure in organizations (i.e., the need to deliver results).
 - Capital budgeting processes that shape ideas to resemble those that have been approved and were successful in the past.
 - Accounting theory that teaches us to ignore sunk costs for investments connected with the status quo while using full costs for competing alternatives in concert with the untested assumption that the future prospects for existing products will resemble the past.
 - Initially, margins in a new market appear small and are not considered large enough to cover big company costs and the growth in profits that are required.

²⁵ Clayton Christensen and Michael Raynor. *The Innovator's Solution*. Boston: Harvard Business School Press, 2003.

Exhibit 1: Cognitive Biases Impacting Decision-making²⁶

1. **Estimating and forecasting biases** that distort valid probability assessments of events:
 - Overconfidence: overestimating our skill level relative to objective evidence, leading us to overestimate our ability to affect future outcomes as well as taking credit for past successes and neglecting the role of chance in influencing outcomes.
 - Excessive optimism: the tendency for people to be overoptimistic about the outcomes of planned actions, to overestimate the likelihood of positive events, and to underestimate the likelihood of negative developments occurring. For example, we tend to underestimate the time, costs, and risks of a future action while overestimating its benefits.
 - Competitor neglect: the tendency to plan without factoring in competitor responses.
 - Dramatic events: our predictions of future events are overly influenced by dramatic events—those leaving a strong impression in our memories—more than their actual probability of occurrence would suggest.
2. **Stability biases** preserving the status quo:
 - Loss aversion: the tendency to feel losses much more acutely than equivalent gains, making us more risk-averse than a rational calculation would suggest. This can lead to avoiding the introduction of new approaches because taking action implies accepting responsibility.
 - Anchoring: giving disproportionate weight to initial estimates, events, or trends.
 - Choice paralysis: too many choices may lead to information overload and decision paralysis.
 - Escalation bias (or sunk cost fallacy): throwing good money after bad because it is hard to admit making a mistake. This bias leads people to focus on historical costs that are not recoverable when considering future courses of action.
3. **Pattern recognition** biases leading to the perception of patterns even when none exist:
 - Confirmation bias: coming to a conclusion initially and then subconsciously seeking out opinions and facts that support our beliefs and giving too little weight to conflicting information.
 - Biased evaluation: giving quick acceptance to evidence that supports our hypotheses while rigorously evaluating evidence that contradicts our views.
 - The narrative fallacy: looking back retrospectively and creating a pattern to fit events and constructing a story that explains what happened and why it happened.
 - Recency bias: the tendency to overweight recent or highly-memorable events and extrapolate them into the future indefinitely rather than taking a longer historical perspective.
 - Champion bias: the tendency to place greater weight on the track record of the person presenting the proposal rather than on the facts supporting it.
4. **Social biases** arising from the preference of harmony over conflict:
 - The herding instinct: the desire to conform or to follow the behaviour and opinion of others.
 - Groupthink: striving for consensus at the cost of performing a realistic appraisal of an idea.
 - Sunflower management: the tendency for groups to align with the views of their leaders.
5. **Bias blind-spot** reflecting our inability to recognize that we also suffer from the same cognitive biases that plague other people.

²⁶ There is a voluminous literature on the operation of cognitive biases distorting decision-making. Good overviews are provided in John Hammond, III, Ralph Keeney and Howard Raiffa, "The Hidden Traps in Decision Making," *Harvard Business Review* (September-October 1998); Charles Roxburgh, "Hidden Flaws in Strategy," *The McKinsey Quarterly* 2, 2003; and Dan Lovallo and Olivier Sibony, "The Case for Behavioral Strategy," *McKinsey Quarterly* (March 2010). For in-depth treatment see the following: Daniel Kahneman, *Thinking Fast and Thinking Slow*. New York: Farrar, Straus and Giroux, 2011; Max Bazerman and Don Moore, *Judgment in Managerial Decision Making* (7th ed.). Hoboken, New Jersey: John Wiley & Sons, 2009.

Let's turn to BlackBerry to illustrate the effects of cultural lock-in and cognitive bias. In the final quarter of 2011, after only being in the market for less than four years, Apple sold 37 million iPhones, representing *half* of BlackBerry's 75 million *total* subscribers. However, the warning signs for BlackBerry were present well before this time. Figure 1 reports market shares within the industry during the 2009-10 period. Despite the paradigm shifts occurring in the marketplace, the company continued to define its market in terms of the corporate segment and the resulting importance attached to email and messaging functions.²⁷ This "filtering" led BlackBerry to continue emphasizing the importance of typing, battery life, and data security, causing the company to miss the following:

- that the smartphone marketplace was expanding beyond business people, which made information security a less important decision criterion (unfortunately, the BlackBerry brand did not stand for anything in the eyes of the important and growing consumer market);²⁸
- that the world was moving beyond email and messaging. Instead, the availability of application software (i.e., "apps") was becoming very important for customers (the problem here was, from the perspective of application developers, making BlackBerry applications was cumbersome and less appealing because of the increased security attached to BlackBerry devices, the need for unique software to run on each of BlackBerry's many devices, and the lack of developer tools provided by the company to facilitate the process);²⁹ and
- that the advantages and popularity of touchscreen smartphones were perceived by the consumer market to more than offset the downside of any reduced battery life (yet the company remained obsessed with stopping non-essential software from draining the BlackBerry's battery life).³⁰

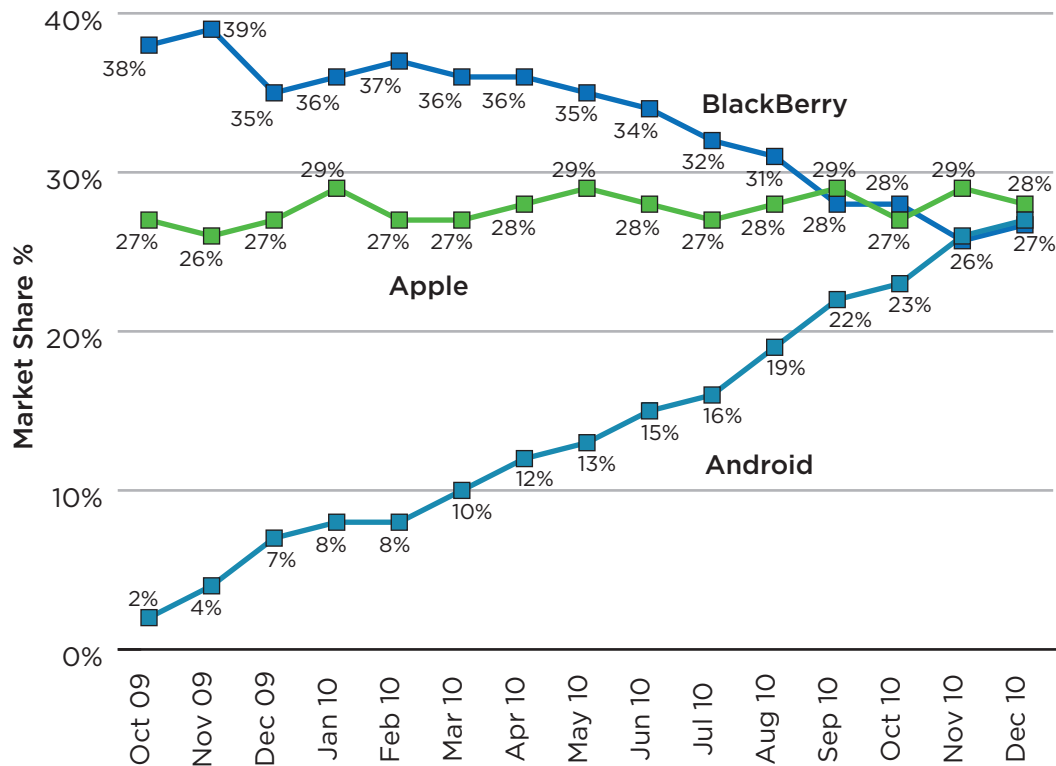
27 Iain Marlow, "Lunch with RIM CEO Thorsten Heins: Time for a bite, and little else," *The Globe and Mail* (August 24, 2012), www.theglobeandmail.com/report-on-business/careers/careers-leadership/lunch-with-rim-ceo-thorsten-heins-time-for-a-bite-and-little-else/article4498453/?page=all#dashboard/follows, accessed April 30, 2013.

28 Matt Hartley, "RIM results disappoint but Balsillie still bullish," *The Globe and Mail* (September 26, 2008), www.theglobeandmail.com/report-on-business/rim-results-disappoint-but-balsillie-still-bullish/article1350118/ accessed April 30, 2013; Simon Avery, "RIM rocks to a new tune," *The Globe and Mail* (April 4, 2009), www.theglobeandmail.com/globe-investor/rim-rocks-a-new-tune/article20447178, accessed April 30, 2013; Iain Marlow, "100 days later," *The Globe and Mail* (May 25, 2012), http://advisor1.dynamic.ca/servlet/ArticleNews/story/gam/20120525/ROBMAG_JUNE2012_P42_43_44_45_46_47, accessed April 30, 2013; Jonathan Geller, "Open letter from anonymous RIM official blasting company surfaces online," *Boy Genius Report* (June 30, 2011), <http://bgr.com/2011/06/30/open-letter-to-blackberry-bosses-senior-rim-exec-tells-all-as-company-crumbles-around-him>, accessed April 30, 2013.

29 Iain Marlow, "How RIM is trying to win the app war," *The Globe and Mail* (January 22, 2013), www.theglobeandmail.com/technology/how-rim-is-trying-to-win-the-app-war/article7623754/#dashboard/follows, accessed April 30, 2013; Iain Marlow, "100 days later," *The Globe and Mail* (May 25, 2012), http://advisor1.dynamic.ca/servlet/ArticleNews/story/gam/20120525/ROBMAG_JUNE2012_P42_43_44_45_46_47, accessed April 30, 2013.

30 Iain Marlow, "How RIM is trying to win the app war," *The Globe and Mail* (January 22, 2013), www.theglobeandmail.com/technology/how-rim-is-trying-to-win-the-app-war/article7623754/#dashboard/follows, accessed April 30, 2013; Iain Marlow, "Lunch with RIM CEO Thorsten Heins: Time for a bite, and little else,"

Figure 1: US Smartphone Operating System Market Share



Source: Christina Warren, "Android, BlackBerry & IOS Tied for U.S. Market Share," Mashable (February 1, 2011). <http://mashable.com/2011/02/01/nielsen-smartphone-marketshare> Accessed April 30, 2013.

The passage below illustrates the operation of cultural lock-in. It is taken from an anonymous letter written by a senior BlackBerry executive in 2011 for the purpose of making an honest and passionate plea to the co-CEOs at the time, Jim Balsillie and Mike Lazaridis, for what the company had to do:

... overconfidence clouds decision-making. We missed not boldly reacting to the threat of iPhone when we saw it in January over four years ago. We laughed and said they are trying to put a computer on a phone, that it won't work. We should have made

The Globe and Mail (August 24, 2012), www.theglobeandmail.com/report-on-business/careers/careers-leadership/lunch-with-rim-ceo-thorsten-heins-time-for-a-bite-and-little-else/article4498453/?page=all#dashboard/follows, accessed April 30, 2013; Omar El Akkad, "RIM's big play for its future," *The Globe and Mail* (April 16, 2011), www.theglobeandmail.com/globe-investor/rim-makes-a-play-for-its-future/article576633/?page=all#dashboard/follows, accessed April 30, 2013.

the QNX-like [operating system] transition then. We are now 3-4 years too late. That is the painful truth... it was a major strategic oversight³¹

Thus cultural lock-in represents a double-edged sword that underlies the management control challenge. On the one hand, it provides a powerful stabilizing device fostering predictable goal achievement and control because it helps to focus, align, and motivate people around executing the company's intended strategy. The smoothly running, synchronized machine is an apt metaphor facilitated by cultural lock-in. The problem is that if such models become disconnected from reality, the company loses its early-warning system, which leads to flawed forecasting and poor decision making. New entrants gain their advantage precisely because they are not so constrained.

31 Jonathan Geller, "Open letter from anonymous RIM official blasting company surfaces online," *Boy Genius Report* (June 30, 2011), <http://bgr.com/2011/06/30/open-letter-to-blackberry-bosses-senior-rim-exec-tells-all-as-company-crumbles-around-him>, accessed April 30, 2013.

2. Conceptions of Strategy

The Classical View of Strategy

Popular portrayals of the classical view describe the process of strategy development as requiring a careful period of formulation, whereby senior management and a team of consultants use high-powered analytical methods to appropriately position the company within its industry so as to provide it with an enduring competitive advantage (e.g., to achieve dominant scale, occupy an attractive niche, and/or exploit and develop certain internal capabilities or resources). With the basic strategy (i.e., competitive advantage) in place, periodic strategic planning sessions serve to implement and fine-tune the strategy by taking steps to defend the company's established position based on an analysis of the industry and a forecast of how it will evolve.

This classical view of strategy, originating from early 20th century economics, is rooted in the following three key assumptions reflecting stability and predictability: (i) continuity, based on high barriers to entry and the difficulty of new entrants changing the basis of competition; (ii) a linear (additive) and reductionist view of causality; and (iii) the industry's structural forces determined company profitability.³² These assumptions led to the development of standard business tools such as Porter's Five Forces Framework, discounted cash flow models of capital budgeting, SWOT, and core-competency analyses.

The discussion surrounding Foster and Kaplan's sobering statistics presented earlier, along with even a casual observation of the increasing dynamism of the marketplace, suggest the classical view is not applicable to all companies.³³ Yet, it continues to have a stranglehold on what we teach and how executives think.³⁴

32 Richard Foster and Sarah Kaplan, *Creative Destruction: Why Companies that are Built to Last Underperform the Market—and How to Successfully Transform Them* (New York: Doubleday), 2001, Chapter 1. See also Eric Beinhocker, "Strategy at the Edge of Chaos," *The McKinsey Quarterly*, (1) 1997; Kevin Coyne and Somu Subramaniam, "Bringing Discipline to Strategy," *The McKinsey Quarterly* 1996 (4); and Paul Schoemaker, "The Future Challenges of Business: Rethinking Management Education," *California Management Review* 50(3), 122.

33 Hugh Courtney, Jane Kirkland and Patrick Viguier. "Strategy Under Uncertainty." *Harvard Business Review* (November-December 1997).

34 Cynthia Montgomery, "Putting Leadership Back Into Strategy," *Harvard Business Review* (January 2008); Paul Schoemaker, "The Future Challenges of Business: Rethinking Management Education," *California Management Review* (Spring 2008); Martin Reeves and Mike Deimler, "Adaptability: the New Competitive Advantage," *Harvard Business Review* (July-August 2011); Rita Gunther McGrath, *The End of Competitive Advantage: How to Keep Your Strategy Moving As Fast As your Business* (Boston: Harvard Business School Publishing), 2013.

An article written by consultants of the Boston Consultant Group (BCG) is useful for the purpose of examining this issue.³⁵ The authors present a typology identifying four strategic styles—classical, adaptive, shaping, and visionary—that stem from two key factors: predictability (i.e., how far and accurately one can confidently forecast demand, corporate performance, competitive dynamics, and market expectations) and malleability (i.e., the extent to which a company or its competition can influence these factors). Figure 2 presents a two-by-two framework explaining the four styles along with industry examples of each.

Figure 2: Strategic Styles for Different Environments



Martin Reeves, Claire Love and Philipp Tillmans, “Your Strategy Needs a Strategy,” *Harvard Business Review* (September 2012).

Consistent with its historical assumptions, this framework reveals that the classical style is most appropriate in environments where malleability is low and predictability is high, resulting in the lowest level of strategic uncertainty among the four quadrants appearing in Figure 2. On the other hand, the other styles are better suited to environments characterized by higher levels of strategic uncertainty. Strategic uncertainty refers to the known and unknown uncertainties and contingencies that could threaten or invalidate a company’s current strategy and/or management’s

³⁵ Martin Reeves, Claire Love and Philipp Tillmans, “Your Strategy Needs a Strategy,” *Harvard Business Review* (September 2012).

strategic vision for the future.³⁶ It stems from such things as fundamental shifts in customer preferences, technologies, competitors' actions, lifestyles, social attitudes, demographics, or the possible introduction of substitute products. Strategic uncertainty is highest when the environment is both unpredictable and malleable, what this paper refers to as "dynamic markets."

Additionally, the BCG authors conducted a survey of executives and found 75 per cent of respondents reported using a strategic style best suited to predictable environments (i.e., classical and visionary)—even when their environments were known to be unpredictable (i.e., when an adaptive or shaping style is more appropriate). According to the authors, this occurred because executives appear to overestimate both the predictability and malleability of their environments, a finding which is consistent with the earlier discussion on cognitive biases.

A Dynamic View of Strategy

i) The business environment as a complex adaptive system

The appropriateness of the classical view has been increasingly challenged by strategy scholars and consultants over the last 20 years.³⁷ Markets in more and more industries are now being compared to the non-linear, complex adaptive systems found in the biological sciences. In such systems, forecasting the future is extremely difficult, if not impossible, because the components within the system interact with each other in seemingly random or unplanned ways. These interactions lead to the *emergence* of new regularities or patterns (i.e., ripple effects) as a consequence of the perpetual state of learning and adapting occurring within the system (or subsystems). The invention of the automobile provides a good example of the emergence of such second order effects: it resulted in the development of the oil industry, the explosion of the hospitality industry, and the growth of suburbs.

36 Robert Simons, *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal* (Boston: Harvard Business School Press), 1995, p.94-95.

37 Courtney, Hugh, Jane Kirkland and Patrick Viguerie. "Strategy Under Uncertainty." *Harvard Business Review* (November-December 1997); Cynthia Montgomery, "Putting Leadership Back Into Strategy," *Harvard Business Review* (January 2008); Martin Reeves and Mike Deimler, "Adaptability: the New Competitive Advantage," *Harvard Business Review* (July-August 2011); Rita Gunther McGrath, *The End of Competitive Advantage: How to Keep Your Strategy Moving As Fast As your Business* (Boston: Harvard Business School Publishing), 2013.

The inherent unpredictability of complex adaptive systems stems from the operation of random disturbances, which can impact the system (or subsystems) in three basic ways. First, new interactions may occur between subsystems, for example, when a technology developed in one industry can be deployed in another. Such a union can have ripple effects in other areas that generate infinite variety, including game-changing products resulting from the confluence of developments. The smartphone revolution is a good example, with the ultimate second order effect being the emergence of a changed mode of communication and interaction within society. Second, small changes in initial conditions can have a dramatic impact on outcomes. For example, one could argue that the deposition of Egyptian President Mubarek during the “Arab Spring” in 2011 might not have occurred so peacefully if President G.W. Bush rather than Obama was in the White House. Participant free will is the third random effect. Humans learn from prior interactions and change their behavior, often in unpredictable ways. This leads to the rules of the game evolving.³⁸ For example, amidst all the talk about “peak oil” in 2009, who would have thought that by the end of 2014 the world would be awash in oil, prices would be cut in half, America would be approaching self-sufficiency in oil and North Dakota would become the engine for global energy growth—all because of the development of a new drilling technology.

The upshot is that Foster and Kaplan’s findings (discussed in the introduction of this paper) are no accident. Markets continually evolve over time in ways that often cannot be anticipated. This is because randomness creates not one but many possible futures, making it impossible to see the end from the beginning.³⁹ This key result explains why the holy grail of seeking a long-term sustainable competitive advantage is often chimerical: if the market is evolving and adapting, so too must the strategies of organizations within it. Similar to the example in philosophy of the turkey losing his head after coming out one morning expecting, once again, to be fed, a company’s strategy (and its associated capabilities) may no longer be relevant when, following from Schumpeter’s forces of creative destruction, the inevitable environmental restructuring occurs, thereby threatening long-term survival.

38 Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007.

39 Richard Pascale, “Surfing the Edge of Chaos,” *Sloan Management Review* (Spring 1999).

ii) Ability to forecast or predict

Prediction is inherently difficult in a complex adaptive system and the forecasting track record for all types of experts is consistent with this fact. Regardless of whether they deal with the economy, stock market, weather, or new technologies—forecasts routinely fail to predict major events that shape our world, or even the major turning points.⁴⁰ An article by the journalist Dan Tynan presents several examples of major tech company blunders (involving Microsoft, Yahoo, Xerox, Sony, and Toshiba) in which the company let their newly acquired technology slip through their fingers because they were unable to accurately predict how the future would evolve.⁴¹ Or consider Henry Mintzberg’s review of the research examining the accuracy of forecasts companies use as the basis for strategy formulation. He concluded that “long range forecasting (two years or longer) is notoriously inaccurate.”⁴²

Given such evidence, one might wonder why forecasting remains such a respectable activity in many circles. One reason is that complex adaptive systems are tricky: they are characterized by periods of relative calm, whose length varies from industry to industry, which are then punctuated by violent restructuring due to exogenous shocks—what Nassim Taleb coined as “black swans”⁴³—or by the normal evolution of the system. Such periods of stability lull people into accepting that the future will resemble the past.

A second reason forecasting remains legitimate is that we encounter predictions on a daily basis. Chance factors ensure that at least some of them will prove to be correct even if the basis (or theory) underlying the prediction is false.⁴⁴ What we fail to consider is the percentage of correct predictions to total predictions that are made. Such a calculation would show a much different reality regarding the accuracy of predictions.

40 William A. Sherden. *The Fortune Sellers* (New York: John Wiley & Sons), 1998, p.5.

41 Dan Tynan, “The 10 Stupidest Tech Company Blunders,” www.techhive.com/article/170337/missed_tech_opportunities.html. Accessed July 17, 2013.

42 Henry Mintzberg, *The Rise and Fall of Strategic Planning* (New York: The Free Press), 1994, p.229. Both this quotation and the one from Sherden are quoted in Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007, pp.91-92.

43 Nassim N. Taleb, *Foiled by Randomness: The Hidden Role of Chance in Life and in the Markets* (New York: Random House), 2004. Nassim N. Taleb, *The Black Swan* (New York: Random House), 2007.

44 Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007.

Human hardwiring provides a third reason. It is human nature to seek causal understandings of our environment, as the philosopher David Hume explained several centuries ago. However, such causal understandings are impacted by the cognitive biases discussed earlier in this paper. For example, pattern recognition biases, what Taleb calls the “narrative fallacy,” result in the tendency to posit, retrospectively, simplistic, narrative explanations for rare or unpredictable events. These explanations, cast in our mental models, leave us with the impression that we understand more than we actually do.⁴⁵ The “planning fallacy” is another way we are lulled into a false sense of security about the future. This bias causes people to be more positive about future events than is warranted because they overestimate their ability to shape the future and/or to underestimate the possibility of negative events (e.g., competitor reactions or the role of chance factors).⁴⁶ The BCG survey results referred to earlier are consistent with the operation of this bias.

iii) Implications for strategy

Obtaining a company-specific competitive advantage reflects making a costly and often irreversible commitment of organizational resources.⁴⁷ However, the need to make such commitments often occurs in a world that is inherently and deeply unpredictable, thereby exposing a business to strategic risk. This situation leads to what the academic consultant Michael Raynor calls the “strategy paradox,” whereby strategies with the greatest possibility of success also entail the greatest probability of failure because of the irreducible uncertainty of the future and the need to make a costly, often irreversible commitment of resources.⁴⁸ This paradox is explained by the notion that, when skill and luck are involved in determining outcomes, as skill improves (i.e., when competitors become more able), luck becomes more important.⁴⁹ Raynor’s paradox goes largely unappreciated because most studies focus on successes rather than on failures. He illustrates this paradox using case studies based on Sony’s attempts to create new customer electronic for-

45 Nassim N. Taleb, *The Black Swan* (New York: Random House), 2007.

46 Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux), 2011.

47 Pankaj Ghemawat and Patricio del Sol, Commitment versus Flexibility? *California Management Review* 40(4), 1998.

48 Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007.

49 Michael Maubossin, *The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing*. Boston: Harvard Business School Publishing, 2012.

mats—Betamax in video and MiniDisc in audio. Despite the fact that these strategies were brilliantly conceived, carefully planned, and flawlessly executed, they ultimately failed because of the antinomy of commitment and uncertainty.⁵⁰

What, then, is a strategist to do? The key insight is that creating strategies based on narrow predictions about the future is the wrong mindset for an inherently uncertain world⁵¹ (see the box on the following page “Is managing strategy in dynamic markets similar to investing in the stock market? Part A”). Paradoxically, we gain power over the future by embracing uncertainty in our decision-making processes and abandoning the illusion that we can control or predict it.⁵² In this connection, Peter Drucker writes that the role of strategic planning is not to determine what the company should do tomorrow, but rather to answer the question “What do we have to do today to be ready for an uncertain tomorrow?”⁵³ Specifically, companies need to take steps today to protect against possible negative future events or to exploit potential opportunities for tomorrow.⁵⁴ Equally important, however, is that companies must find a way to pursue breakthrough returns without having to accept the increased risk that has historically accompanied such boldness. This, Raynor argues, is the new frontier in value creation.⁵⁵

50 Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007, Chapter 2.

51 Eric Beinhocker, “Robust Adaptive Strategies,” *Sloan Management Review* (Spring 1999).

52 See Spyros Makridakis, Robin Hogarth and Anil Gaba, *Dance With Chance*. Oxford: Oneworld Publications, 2010 and Hugh Courtney, Jane Kirkland and Patrick Viguerie, “Strategy Under Uncertainty,” *Harvard Business Review* (November-December 1997).

53 Peter Drucker, *Management: Tasks, Responsibilities, Practices* (New York: Harper & Row Publishers), 1973.

54 Nassim N. Taleb, *The Black Swan* (New York: Random House), 2007.

55 Michael Raynor, “Solving the strategy paradox: how to reach for the fruit without going on a limb,” *Strategy & Leadership* 35(4), 2007.

Is managing strategy in dynamic markets similar to investing in the stock market?

Part A

Oil markets have fallen precipitously in recent months. As of February 2015, prices are half of what they were last summer. This stunning price move is akin to throwing a rock into a pond: there are bound to be ripple effects.

But the rapid fall in prices doesn't call for a hasty response. Oil markets are complex, adaptive systems, with prices that are notoriously difficult to forecast, and there are many divergent paths that prices could take.

Canadians are now facing the oil equivalent of Schrödinger's cat.

Schrödinger's cat is a thought experiment in quantum mechanics in which a hypothetical cat is placed in a box, along with a flask of poison, a Geiger counter and a radioactive source. If the Geiger counter detects radioactivity, the flask shatters, the poison is released and the cat dies. If the Geiger detects no radioactivity, the cat lives. Yet according to quantum mechanics, without lifting the lid and taking a look inside, *the cat is both dead and alive at the same time*. This is based on the Copenhagen interpretation of quantum mechanics, which states that a particle exists in all states until observed.

Schrödinger's cat is a metaphor for the unpredictable: the radioactive particles have either decayed or they haven't, the cat is either alive or dead, but there is no way to know the outcome until the box is opened.

This is analogous to the current state of oil markets—the outcome is unknown. Many oil producers argue that the recent fall in prices was due to a supply shock—a significant increase in oil production, which forced lower prices. They contend that the marginal oil producers with the highest cost assets will not be able to compete at these levels and will go bankrupt, thereby lowering the total supply of oil and forcing prices to rebound.

Yet this prediction relies on assumptions that may not prove to be true. If the industry adapts to a lower cost structure, where most players survive and OPEC maintains current levels of production, then it is conceivable that oil prices will stay low for longer than expected. Investors need only look to the North American natural gas market for an example of a long-lasting supply glut. But, just like the fate of Schrödinger's cat, no one knows for certain how this will all play out.

Part B

Thankfully, investors don't have to predict the future, as resilient portfolios can be built to endure most "inclement weather." Investors can develop such resilience by investing in "boring," wealth-creating companies, run by excellent management teams, that are purchased at an attractive price. They can also ensure adequate diversification in their portfolios by not only looking beyond energy markets, but also outside of Canada, for opportunities.

The paradox of Schrödinger's cat often manifests in investing—it is frequently impossible to know for certain which outcomes will unfold. Rather than anxiously attempting to predict the future, investors are better off putting the odds in their favor by adopting a systematic, common-sense investment approach. It may be boring, but it works.

The complexity science that underlies the study of complex adaptive systems provides considerable guidance for developing and managing strategy based on this insight.⁵⁶ First, stasis is a precursor to death. In dynamic markets, strategy should no longer be thought of as a one-shot affair based on creating a “good” strategy and subsequently taking steps to defend one’s turf. As Harvard strategist Cynthia Montgomery warns:

Holding too strongly to one competitive advantage or one purpose may result in the firm’s [sic] being controlled by a perception of value long after that value has diminished in significance. It encourages managers to see their strategies as set in concrete and, when spotting trouble ahead, to go into defensive mode, hunkering down and protecting the status quo.⁵⁷

Instead, strategy must be viewed as an unending process, reflecting the mindset that one’s competitive advantage will likely be, to use strategist Rita Gunther McGrath’s term, “transient,” because the forces of creative destruction are continuously at work in the background.⁵⁸ Strategy must be recast from a focus on seeking and maintaining a sustainable competitive advantage to positioning the company to be a strong competitor in the current marketplace *and* a smart evolver. This requires management teams to put the customer at the heart of strategy and to think in terms of creating and recreating value for them. BlackBerry’s downfall can be seen in exactly these terms and so can Apple’s transformation from a niche computer maker into a technology trendsetter with distinctive products across new businesses (e.g., digital audio players, cell phones, tablets, and retailing).

Second, nature constantly runs millions of individual experiments (through mutation and sexual reproduction) to increase species’ “fitness levels.” Similarly, to increase the odds of survival and obtaining future success, companies must develop strategies that are “robust”—capable of performing well in a variety of states of nature—to deal with the inherent uncertainty of the business world.

56 Eric Beinhocker, “Strategy at the Edge of Chaos,” *The McKinsey Quarterly*, (1) 1997; Richard Pascale, “Surfing the Edge of Chaos,” *Sloan Management Review* (Spring 1999).

57 Cynthia Montgomery, “Putting Leadership Back Into Strategy,” *Harvard Business Review* (January 2008), p.5.

58 Rita Gunther McGrath, *The End of Competitive Advantage: How to Keep Your Strategy Moving As Fast As your Business* (Boston: Harvard Business School Publishing), 2013.

Strategic robustness occurs from taking proactive steps today to achieve a higher level of fitness for tomorrow based on developing and managing a population or portfolio of new initiatives.⁵⁹ These can vary from incremental extensions of the current business to much riskier initiatives involving potentially disruptive technologies, products, or business models that have the potential to create significant future opportunity.

Third, companies should not automatically treat new strategic commitments as all-or-nothing affairs that ignore the inherent uncertainty involved. Instead, like the venture capitalist, consideration should be given to experimenting and staging capital commitments, where, over time, commitments are built up or abandoned based on the learning that occurs or on how the future unfolds and uncertainties become known. This approach increases flexibility and negates having to “bet the farm,” which helps to avoid Raynor’s paradox.

This discussion has important implications for how we should conceptualize and think about strategy. The classical view depicts strategy as the outcome of a planning process, leading to the creation of a fully-fledged strategy. “First we think, then we act,” Mintzberg writes.⁶⁰ But the reality is that making our way into the future is often obscured with only partial glimpses of what lies ahead. Consequently, our conception of strategy should reflect this reality because it is largely impossible to know in advance if a new strategy will succeed. For example, in 90 per cent of all successful new businesses, Amar Bhide found that the strategy ultimately leading to success was not the founder’s original, intended strategy. Instead, the successful strategy emerged from learning what worked.⁶¹

The reality is that when strategic uncertainty exists we should act first (i.e., experiment) and think second (i.e., formalize strategy), based on refining what looks promising, discarding what does not, and, most importantly, continuing to attend to the salient

59 Eric Beinhocker, “Strategy at the Edge of Chaos,” *The McKinsey Quarterly*, (1) 1997; Eric Beinhocker, “Robust Adaptive Strategies,” *Sloan Management Review* (Spring 1999); and Richard Pascale, “Surfing the Edge of Chaos,” *Sloan Management Review* (Spring 1999).

60 Henry Mintzberg, “Crafting Strategy,” *Harvard Business Review* (July-August 1987), p.68.

61 Amar Bhide, *The Origin and Evolution of New Business* (New York: Oxford University Press), 2000.

uncertainties that remain.⁶² This reflects how a promising idea emerges into a deliberate strategy without having to encounter the strategy paradox. Jim Collins and Morten Hansen capture this idea in arguing that innovation, by itself, is not the trump card many people believe it to be. Instead, successful companies blend creativity with the discipline to subject budding ideas to low risk, low cost, and relatively low distraction pilot tests *before* concentrating large amounts of resources on them. Thus their colourful maxim: “fire bullets, then cannonballs.”⁶³ This emphasis on experimentation is a theme that is now beginning to permeate business literature.⁶⁴

The upshot is that companies must view strategy not only as a deliberate act, but also as something that is allowed to emerge through a process of discovery. Deliberate and emergent strategies simply represent the endpoints of a continuum in which real-world strategies operate.⁶⁵ Our control systems must reflect this reality and facilitate both types of activities.

Finally, this guidance from complexity science makes it clear that a company’s objective cannot be focused around short-run profit maximization because developing robust strategy is inefficient relative to a strategy based on the classical view. Instead, management must be prepared to sacrifice short-run profit maximization in the interest of long-run survival.⁶⁶ The stock market’s insatiable demand for continuously increasing profits may therefore represent the most formidable barrier of all, and certainly helps to explain Christensen’s findings on disruption described earlier.

In concluding, we return the reader’s attention to the box entitled “Is managing strategy in dynamic markets similar to investing in the stock market? Part B” Notice the parallels between the two activities in terms of the need to: (i) embrace uncertainty in decision

62 William Duggan, *Strategic Intuition: The Creative Spark in Human Achievement* (New York: Columbia University Press), 2007.

63 Jim Collins and Morten Hansen, *Great by Choice: Uncertainty, Chaos, and Luck—Why Some Thrive Despite Them All* (New York: Harper Collins Publishers), 2011.

64 See, for example, Peter Sims, *Little Bets: How Breakthrough Ideas Emerge From Small Discoveries* (New York: Free Press), 2011; Tim Harford, *Adapt: Why Success Always Starts With Failure* (Bond Street Books), 2011; Eric Ries, *The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* (New York: Crown Business), 2011.

65 Henry Mintzberg and James Waters, “Of Strategies, Deliberate and Emergent,” *Strategic Management Journal* 6(3), 1985. See also Clayton Christensen and Michael Raynor, *The Innovator’s Solution* (Boston: Harvard Business School Press), 2003.

66 See Arie de Geus, *The Living Company: Habits for Survival in a Turbulent Business Environment* (Boston: Harvard Business School Press), 1997; Jim Collins and Morten Hansen, *Great by Choice: Uncertainty, Chaos, and Luck – Why Some Thrive Despite Them All* (New York: Harper Collins Publishers), 2011.

making rather than attempting to predict the future; (ii) construct resilient (robust) portfolios through diversification; (iii) avoid placing big, risky bets; and (iv) focus on the “right” things that will lead to long run success. The parallels in managing these two activities is no accident: they are both dealing with the equivalent of Schrödinger’s cat, where the future is frequently unknown and unknowable.

3. Placing Too Much Confidence in Our Ability to React Swiftly to Change

Continuous (or frequent) planning, along with devolving decision making to lower levels, is an approach recommended for the purpose of increasing an organization’s ability to adapt swiftly to a changing business environment.⁶⁷ However, “sense-and-respond,” based on becoming more agile, is not a panacea and it is important to understand the conditions under which it does and does not work well.

On the one hand, sense-and-respond is undoubtedly useful for making operational changes or shifting resources (e.g., changing production volumes in response to actual demand) and fine-tuning tactics underlying a deliberate strategy (e.g., changing prices or product features in response to competitive forces or customer responses). Provided that no new strategic commitments are necessary, sense-and-respond assists companies facing forecasting challenges. Using the framework presented in Figure 2, this reactive approach works well for companies operating in unpredictable environments providing that malleability remains low. On the other hand, sense-and-respond has severe limitations in facilitating strategic adaptability during times of disruptive or discontinuous change (where, in terms of Figure 2, a shaping strategy is most appropriate). There are three arguments underlying this contention.

First, a sense-and-respond view assumes managers receive unequivocal signals from the environment that can be immediately acted upon. However, the reality is that signals from the periphery of the marketplace—where breakthrough ideas often originate—are frequently ambiguous. For example, at the time Apple introduced the iPhone in 2007, it certainly was not obvious that sending and receiving secure emails in the corporate environment would not remain the primary (and

67 See, for example, Jeremy Hope and Robin Fraser, *Beyond Budgeting* (Boston: Harvard Business School Press), 2003. See also: The Society of Management Accountants of Canada. *Agile Competition: The Emergence of a New Industrial Order*, 1999.

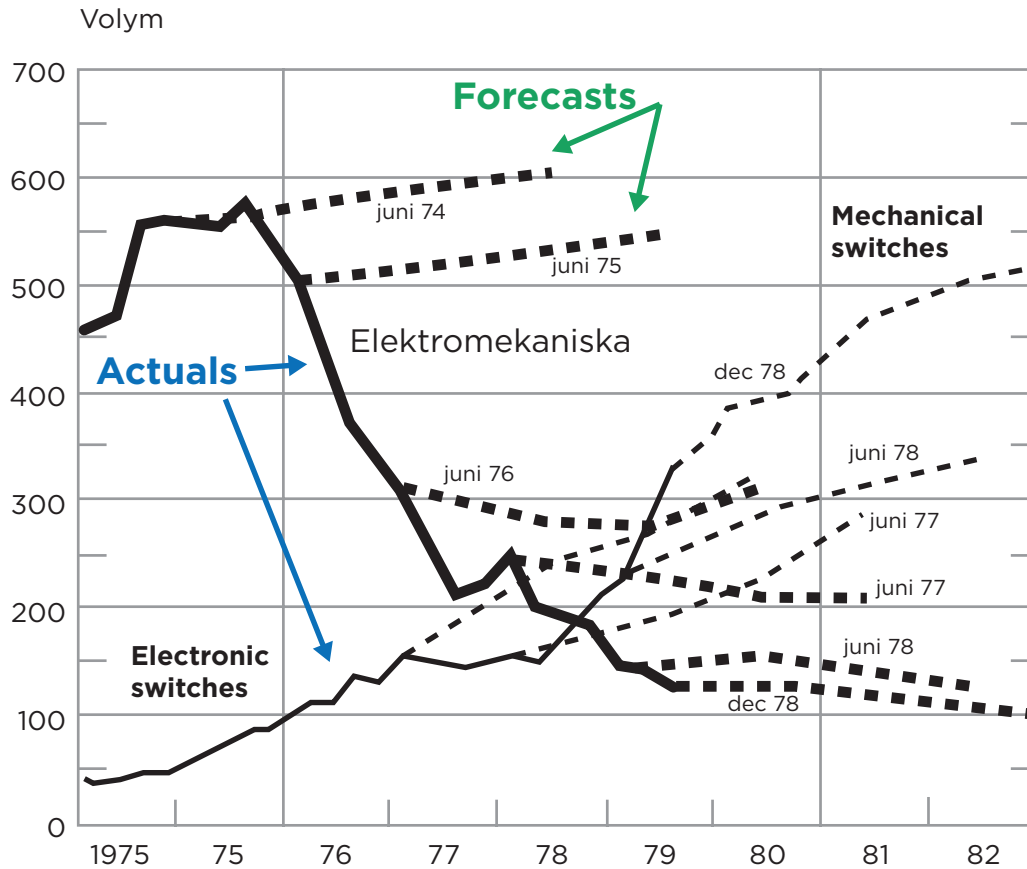
profitable) function of smartphones. Without the benefit of hindsight, who could have predicted that future advances in individual technologies, and their convergence, along with the popularity of social media (e.g., Facebook and Twitter) and the emergence of an industry developing thousands of applications would completely change the role and use of smartphones in society?

However, not only may market signals be ambiguous, they can also be misinterpreted because of cultural lock-in. Consider Figure 3, which depicts electrical switches supplanting mechanical ones in a Swedish company in the 1970s. The solid lines represent actual results while the dashed lines reflect management's budgeted forecasts. The first observation to note is the repeated inaccuracy of the forecasts for both products. Second, despite repeated (annual) feedback indicating the market for mechanical switches was in serious decline, management, for several years, continued to believe the decline was only temporary and that sales would recover, or at least stabilize. This example illustrates that the human mind has an infinite capacity for after-the-fact rationalizations, making it difficult for a person to convince others of the need for change. Jan Wallander, a professional economist and former CEO of the Swedish bank Svenska Handelsbanken, explains this result in the following way:

We all have a built-in psychological filter that prevents us from realizing what is really happening. Unpleasant facts are filtered away. We will say of some revolutionary technical innovation that it will be of no interest on the market, will be of only minor importance, will meet with unsurpassable technical obstacles, etc.... We will say to ourselves that the small signs we have observed that something new is developing are only ripples on the surface and everything will certainly return to normal.... To believe in something that deviates from common opinion is not only difficult but also risky. If the whole flock of sheep is running in one direction it is very trying to be the single little sheep that runs in quite another direction.⁶⁸

68 Jan Wallander, "Budgeting—an unnecessary evil." *Scandinavian Journal of Management* 15, 1999.

Figure 3: The Ambiguity of Signals and Their Interpretation



Source: J. Wallander, *Budgeten—Ett onödigt ont*, Stockholm, SNS-Förlag, 1994 (Budgeting—An Unnecessary Evil).

Second, even in situations where the need for change is widely known and accepted, cultural lock-in makes it hard for organizations to act on this knowledge. For example, the following narrative speaks to the difficulty IBM experienced in adapting even though the decline of the company's primary product, the 360 mainframe computer, was well recognized by insiders:

In 1993, [an IBM senior executive, Jim] Cannavino was asked by IBM's new CEO, Lou Gerstner, to take a hard look at the strategic planning process. Why had IBM so badly missed the mark? Cannavino dutifully examined the work product—library shelves filled with blue binders containing twenty years of forecasts, trends, and strategic analysis. "It all could be distilled down to one sentence," he recounts, "We saw it coming—PC open architecture, networking intelligence in microprocessors, higher margins in software

and services than hardware; it was all there. So I looked at the operating plans. How did they reflect the shifts the strategists had projected? These blue volumes (three times as voluminous as the strategic plans) could also be summarized in one sentence: ‘Nothing changed.’ ... [F]acing these fundamental trends would have precipitated a great deal of turmoil and instability. Instead, year after year, a few of our most senior leaders went behind closed doors and raised prices.”⁶⁹

BlackBerry followed a similar path. Like IBM, the problems BlackBerry faced as well the initial steps to overcome these problems were known to insiders. Yet, it took the departure of co-CEOs, Jim Balsillie and Mike Lazaridis, to permit a drastic change in strategy because “truth could not speak to power.”⁷⁰ Such are the effects of cultural lock-in.

The third limitation of sense-and-respond is that strategic adaptation needs to be considered in proactive rather than in reactive terms when an unpredictable and malleable environment exists (i.e., when a shaping strategy is appropriate). Reacting swiftly to a competitor’s breakthrough advantage requires a company to already have made strategic investments in advance of knowing how the marketplace will actually evolve.⁷¹ This point is simply a corollary to the fact that company-flexible resources, which can be purchased on the open market and quickly implemented, cannot confer a unique competitive advantage because they are available to all companies.⁷² For example, the “quality imperative” was well recognized in the automobile industry by the mid- to late-1980s, yet it took North American companies more than a decade, millions of dollars in investment and training, and a reconsideration of management philosophy to begin closing the gap with Japanese companies.

Or consider, once again, BlackBerry. At the beginning of 2010 the company was in the early stages of developing a tablet that would represent a souped-up BlackBerry: users would be able to view documents on a larger screen, but it would run the same software and perform the same

69 Richard Pascale, “Surfing the Edge of Chaos,” *Sloan Management Review* (Spring 1999), p.86.

70 Iain Marlow and Tara Perkins, “RIM resets,” *The Globe and Mail* (January 23, 2012), <https://advisor1.dynamic.ca/servlet/ArticleNews/story/gam/20120123/RBRIMTICKTOCKGTA0123GTA>, accessed April 30, 2013. See also Jonathan Geller, “Open letter from anonymous RIM official blasting company surfaces online,” *Boy Genius Report* (June 30, 2011), <http://bgr.com/2011/06/30/open-letter-to-blackberry-bosses-senior-rim-exec-tells-all-as-company-crumbles-around-him>, accessed April 30, 2013.

71 Michael Raynor, *The Strategy Paradox* (New York: Doubleday), 2007.

72 Pankaj Ghemawat and Patricio del Sol, “Commitment versus Flexibility?,” *California Management Review* 40(4), 1998.

tasks as existing BlackBerry smartphones. However, everything changed in April 2010 when Apple introduced the iPad. At this point, BlackBerry had to think much more ambitiously and play catch-up. The bottleneck was that BlackBerry's operating system was well past its prime. It had originally been designed to handle text-based communications (e.g., email) and the market was moving to video and web graphics. At about the same time that Apple introduced the iPad, BlackBerry purchased QNX Software Systems with the intention of entering the automobile segment. In recognizing the problems with its current operating system, BlackBerry decided to use the highly-touted QNX operating system as the platform underlying a more ambitious tablet that would be capable of responding to the iPad. The QNX system, however, did not integrate easily with existing software and applications, which were based on BlackBerry's original operating system. So even though BlackBerry was in possession of a potential solution, its Playbook tablet, launched one year later in April 2011, was horrendously incomplete in terms of features because the company felt it necessary to rush a product to market. This resulted in a subsequent inventory write down of massive proportions.

Moreover, the same impediment resurfaced with the development of BlackBerry's next smartphone. Specifically, despite the massive amount of resources directed to the project and the urgency of needing to launch a competitive product in 2011 as a matter of *survival*, BlackBerry's Z10 smartphone could not be launched until January 2013 because it was also based on the QNX operating system and similar integration issues presented themselves.

The moral of this story is that companies cannot, strategically speaking, turn on a dime. Unlike incumbents, newcomers can be more flexible because they face fewer or no trade-offs within their existing set of tightly linked, complimentary activities. Apple and Google launched their platforms much later than BlackBerry. This delay allowed them to possess increased knowledge of how the market was evolving (or a more concrete idea of where they wanted to take the market). By then, BlackBerry was already locked into an existing operating system, reflecting their strategic position of serving the corporate marketplace. Ultimately, it took the near failure of the company and a new team of senior managers, along with considerable time, to permit BlackBerry to pursue a new strategic position reflecting the realities of the market. Sense-and-respond is no panacea and companies ignore its limitations at their peril.

Summary

There are powerful forces that reinforce the status quo and inhibit strategic adaptation. Specifically, as a company grows and expands, it deals with the increased complexity of its operations by developing processes, increasing formality, and establishing a structure that best fits its chosen strategy. These decisions are optimized for the existing market in the sense they reflect the current strategy and mental models of senior management. Over time, the value system inherent in these decisions becomes self-reinforcing and self-sustaining because of the cognitive, organizational, and political biases underlying cultural lock-in. The consequence is that, while cultural lock-in facilitates implementation of a company's deliberate or planned strategy, it makes adaptation to significant market shifts difficult.

Thus the first step in arriving at a workable solution to the management control challenge (introduced at the start of this paper) is for senior management teams to acknowledge the issue of cultural lock-in and to begin developing a process that makes it possible and legitimate to periodically challenge the dominant mental models underlying current strategy, particularly in situations where a shaping or visionary strategic style is appropriate.

Nonetheless, this initial step will fall short if the company continues to approach strategy solely in classical terms, based on the assumptions of stability and predictability. Globalization, high innovation rates, decreasing barriers to entry, and greater transparency of activities contribute to the generalization that the business world is becoming more unpredictable, not less.⁷³ In dynamic markets, the design of control systems must reflect an alternative conception of strategy, one based on a shaping strategy.

73 Martin Reeves and Mike Deimler, "Adaptability: the New Competitive Advantage," *Harvard Business Review* (July-August 2011); Martin Reeves, Claire Love and Philipp Tillmans, "Your Strategy Needs a Strategy," *Harvard Business Review* (September 2012).

Strategy under a shaping posture calls for developing new sources of temporary advantage based on placing customers at the heart of strategy and creating and recreating value for them. However, this process occurs within a system where the future is inherently unpredictable and strategic commitments need to be made well in advance of receiving unequivocal market signals. Consequently, companies must embrace strategic uncertainty by developing strategies that are robust—capable of performing well in a variety of possible future environments—without exposing themselves to excessive risk. This is accomplished by developing a portfolio of strategies that blend creativity with the discipline to subject new ideas to low-cost, pilot tests and basing further commitments on the learning that occurs or on how the future unfolds.

In Part II we will turn to the design of control systems to meet the challenge.



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