NOTES

Introduction: What to Expect

1. Cowen (The Great Stagnation).

2. See, for example, the cover story, "Welcome to the Anthropocene," of the *Economist* (May 28–June 3, 2011).

3. Eliot (1944:28).

4. For more on the benefit of discovering one's special powers see Robinson (2009).

5. Gigerenzer (2008) has identified a number of mental heuristics, or rules of thumb, that we use. These thinking "biases," as they have been called, deviate from a logical ideal, but they often perform as well as or better than pure logical methods in the circumstances they were designed to handle. In general, they are adapted for use in unstable, unpredictable environments, where fast, "good-enough" decisions will produce better outcomes than slower, optimized ones. The essence of ecological rationality is that our minds are adapted to extracting cues to guide our actions from the statistical regularities of the environment, not from abstract, context-free reasoning. The concept of ecological rationality stems directly from Herbert Simon's contention that a system's behavior is as much a function of its environment as it is of its internal constitution:

> Human rational behavior (and the rational behavior of all physical symbol systems) is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor. (Simon 1990:7; see also Simon 1969)

In an article titled "Context and Thought" John Dewey wrote that "the most pervasive fallacy of philosophic thinking goes back to the neglect of context . . . (which is) too readily converted into a virtual denial" (1960:92). Thinking without context, he concluded, "is in the end but a beating of wings in the void" (110).

6. This supports the multiple intelligences view, a theory first comprehensively presented by psychologist Howard Gardner (1983). For an extensive theory of the embodied mind and its connections to our ability to create and use metaphors, see the work of Lakoff and Johnson (1999, 1980).

7. The word "analogy" is derived from the Greek words *ana* (up) and *legein* (to gather, say), so the literal meaning is a "gathering up" or "integration." As such I like to think of analogical reasoning as complementary to analytic reasoning: the word "analysis" is from the Greek *ana* (up) + *luein* (to loosen), so the literal meaning is a "loosening up" or "disintegration" (Partridge 1983).

8. The role of analogy in thought is not to substitute for arguments but to remind one of arguments. This is how I use analogy throughout the book—to remind us of frameworks and mental models that fit the arguments suggested by the analogy. The uses of analogy are from Holyoak and Thagard (1995).

9. McKee (1997:25).

10. The management academy's terms for scientific and narrative truths are *rigor* and *relevance.* The growing concern for the relevance of much management research has led to a burgeoning literature on the topic and intense debate on whether and how the two can be reconciled. See Kieser and Leiner (2009) for one provocative perspective using systems theoretical concepts.

11. Poet John Keats uses this criterion in his discussion of Wordsworth in a letter to J. H. Reynolds. http://englishhistory.net/keats/letters/reynolds3May1818.html (accessed May 14, 2011).

12. I like historian John Lewis Gaddis's definition of "context" as "the dependency of sufficient causes upon necessary causes." As he points out, causes always have contexts, and to know the former we must understand the latter (Gaddis 2002:97). Context is used in three main senses in the book:

1. A broad one that includes the totality of the systems in which the organization is embedded, including technology, industry, political economy, society, geology, ecology, and so on.
2. A narrower one that is closer to the sense in which academics in the field have used it. Here organizational context has been described as the systems, processes, and beliefs that shape individual behaviors in an organization, and it has much in common with other concepts, like structural context, organizational climate, and organizational culture (Gibson and Birkinshaw 2004). When I talk of an organization's internal contexts of trust, logic, and power, I am using this narrower sense. Ghoshal and Bartlett (1997) define the dimensions of these internal contexts as stretch, discipline, support, and trust, with stretch and discipline being the "harder" elements

designed to help exploit existing resources, while support and trust are the "softer" components that aid exploration.

3. As minicontexts or settings over which individual actors have control. I always call these settings. Initially I call the second meaning of context "internal contexts," but after that the context (used in a fourth sense!) should make the meaning clear.

13. Kenneth Boulding's critique of neoclassical economics is relevant here:

Prediction of the future is possible only in systems that have stable parameters like celestial mechanics. The only reason why prediction is so successful in celestial mechanics is that the evolution of the solar system has ground to a halt in what is essentially a dynamic equilibrium with stable parameters. Evolutionary systems, however, by their very nature have unstable parameters. They are disequilibrium systems and in such systems our power of prediction, though not zero, is very limited because of the unpredictability of the parameters themselves. If, of course, it were possible to predict the change in the parameters, then there would be other parameters which were unchanged, but the search for ultimately stable parameters in evolutionary systems is futile, for they probably do not exist. (Boulding 1981:44)

14. Princeton psychologist Philip Johnson-Laird contends that mental models are the result of perception. He traces the origins of the concept back to the work of American philosopher Charles Sanders Pierce; see P. N. Johnson-Laird, "The History of Mental Models," http://mentalmodels.princeton.edu/papers/2005HistoryMentalModels.pdf (accessed August 6, 2011). Economist Kenneth Boulding developed the concept of the *image*, a conservative mental filter built up as the result of personal experience through which all information received passes. This knowledge structure or pattern, which is heavily influenced by our value structure, determines how we interpret and whether we accept the information from the outside (Boulding 1956). Penrose (1959) made extensive use of this concept of the image. Philosopher Karl Popper, a follower of Pierce, used *expectations* to describe our ability to look ahead and manipulate possibilities in situations we encountered. See his appendix essay, "The Bucket and the Searchlight: Two Theories of Knowledge" in Popper (1972). Thomas Kuhn's concept of a *paradigm* has much in common with that of a mental model; see Kuhn (1962), although there is real doubt as to whether social sciences can be seen as paradigmatic in the same sense as the natural sciences. See Flyvbjerg (2001). Psychologist George Kelly's concept of personal constructs is very similar to that of a mental model:

Man looks at his world through transparent patterns or templates which he creates and then attempts to fit over the realities of which the world is composed. The fit is not always very good. Yet without such patterns the world appears to be such an undifferentiated homogeneity that man is unable to make any sense out of it. Even a poor fit is more helpful to him than nothing at all. (Kelly 1963:8–9)

Ulric Neisser's concept of schemata and higher-level cognitive maps views perception as a sequential process happening simultaneously at multiple levels as schemas direct exploration, which samples the environment, which then modifies the schema (Neisser 1976:112). Mental maps and expectations are part of Karl Weick's broader concept of "sensemaking":

> Sensemaking edits continuity into discrete categories, observations into interpretations, experience into bounded events, and perceptions into preexisting plans and frameworks. To edit continuity is to render the world less unique, more typical, more repetitive, more stable, more enduring. However, the world of continuous flows has not thereby become any less unique or transient simply because people choose to see it that way. Thus there remains a chronic disjunction between the discrete products of sensemaking and the continuities they map. (Weick 1995:108)

Donald Norman (1988) makes extensive use of mental models in his theories of design.

15. If the context is not what we expect it to be, however, then we can get confused. Our vulnerability to visual illusions of all kinds is the most dramatic example of this. There is a built-in resistance to change in our models because there is usually no way of knowing whether they are right or not. It's easy to attribute occasional failures to other causes, which allows us to preserve our model. Only if the failure is severe or repeated are we likely to search for a new one. But we can't do without them. Mental models allow us to assess a situation and try out alternative courses of action in our heads before we actually do anything—a huge advantage during the course of our evolution as a species. The benefits of our ability to construct and test theories so that they can "die" instead of us are discussed at length in Popper and Eccles (1977).

16. Koontz (1961).

17. Boyd (2009).

18. Dennett (1991). For an essay on the topic "The Self as a Center of Narrative Gravity," see Kessel, Cole, and Johnson (1992). http://ase.tufts.edu/cogstud/papers/selfctr.htm (accessed August 6, 2011).

19. For an excellent discussion of the role of concepts (categories) in the teaching and learning process see Elbow (1986).

20. The term "contextual intelligence" was coined by Mayo and Nohria (2005). It can be thought of as practical wisdom, what Aristotle called *phronesis*, which was one of three intellectual virtues, the other two being *episteme* (science) and *techne* (craft or art). Bent Flyvbjerg has suggested that *phronesis*, with its concerns for ethics in practice and what is good or bad for humankind is the most important of the intellectual virtues and the real strength of the social sciences. See Flyvbjerg (2001), especially 56–65. He sees the key questions to be addressed by a "phronetic social science" as the following:

1. Where are we going?
2. Who gains and who loses and by which mechanisms of power?

3. Is this development desirable?
4. What should we do about it?

1. Lost in Management Thought

1. Most influential has been the application to organizations of organizational economics. This has two components: agency theory, which deals with the relationship between a principal (owner) and an agent (manager), and transaction cost economics. See Barney and Ouchi (1986).

2. Jensen and Meckling (1994).

3. Khurana (2007:161). A similar change took place in sociology, with the dwindling in influence of the Chicago School and its "contextualist paradigm" and the rise of the "variables paradigm," which ignored the influence of context. See Abbott (1997).

4. Evolutionary economist Kenneth Boulding (1981:27) argued that economics' famous factors of production—land, labor, and capital—were actually factors of distribution of the proceeds of production. The true productive factors were knowledge (know-how), energy, and materials.

5. For a critique of the use of *ceteris paribus* and the need for more "chaotic" theories of management to understand entrepreneurship in particular, see Stevenson and Harmeling (1990). They summarize the contrast between theories of equilibrium and change as follows:

Theory of Change	Theory of Equilibrium
Change is normal.	Equilibrium is normal.
Longitudinal studies are necessary.	Time slices provide valid insights.
Understanding the sequence of events is critical.	Sequence is immaterial.
Reciprocal causality is normal.	Unidirectional causality separates independent from dependent variables.
Idiosyncratic phenomena are all important.	Repetitive phenomena are the objects of study.
Small-N studies give insight.	Only large-N studies are valid.
Functional relationships change over time.	Functional relationships are stable.
Key relationships are nonlinear.	Linear relationships can explain most observations.
Multiple noncommensurable measures are required for understanding.	Measures must be commensurable.
Observers are biased.	Observers are objective.
Observation impacts the outcomes.	Observers have no impact.
Valid observations may not be replicable.	An observation must be replicable to be valid.
Data collection is highly valued and requires great skill.	Data collection is relatively mundane and should not be rewarded.

Management theories based on neoclassical economics follow the assumptions in the right-hand column; those based on ecology and evolution follow those in the left but embrace those on the right as special cases.

6. For a sharp contrast between the assumptions of economics and sociology see Hirsch, Michaels, and Friedman (1987).

7. Quoted in Kuttner (1985), although, to be fair to George Stigler, the comment was probably not malicious, just a reflection of his wicked sense of humor.

8. Khurana (2007).

9. For AACSB-accredited business schools see Khurana (2007:138).

10. Khurana (2007:271).

11. Khurana (2007:306).

12. Hayes and Abernathy (1980).

13. Ghoshal (2005); Khurana (2007).

14. Khurana (2007:326).

15. Hammer (1990).

16. Mintzberg, Simons, and Basu (2002); Ghoshal (2005); Stewart (2009).

17. Gioia and Corley (2002).

18. Khurana (2007:364–66).

19. Mintzberg (2004:92–94).

2. Economics, Evolution, and Ecology

1. For a discussion on why economics is not an evolutionary science, see Boulding (1981). For a perspective on how sciences are becoming more historical, see Gaddis (2002).

2. Schumpeter (1962). After being regarded as heterodox and a maverick for many years, Schumpeter's fortunes are undergoing a revival. Witness the decision by *The Economist* in 2009 to name a column after him.

3. Douglass North (1990), Oliver Williamson (1996), and, at the firm level, Edith Penrose (1959).

4. The word "ecology" was first coined in 1866 by Ernst Haeckel, a German disciple of Darwin; the concept of an ecosystem was advanced in 1935 by botanist Arthur Tansley. See Golley (1993). The metaphor of the ecological "theater" was introduced by Hutchinson (1965).

5. Neoclassical economics has little to say about where markets come from and how they evolve. Markets are usually treated as a "given" with their origins in and dependence upon human relationships and mutual trust largely ignored. Even as sophisticated an economist as Friedrich Hayek, who recognized what he called the two "orders" of rules, the one applying to small groups, the other to markets, believed that they had to be separated:

Part of our present difficulty is that we must constantly adjust our lives, our thoughts and our emotions, in order to live simultaneously within different

kinds of orders according to different kinds of rules. If we were to apply the unmodified, uncurbed rules of the . . . small band or troop, or . . . our families . . . to . . . our wider civilization [the extended order of markets], as our instincts and sentimental yearnings often make us wish to do, *we would destroy it*. Yet if we were to always apply the rules of the extended order to our more intimate groupings, *we would crush them*. (Hayek 1988:18; italics in the original)

The separation of Hayek's two orders is reflected in the current gap between economics and the rest of the social sciences. Recently this rift in theory has been blamed for encouraging numerous bad management practices by relegating ethics to the periphery of management thought. Unlike those about the physical world, our theories about human nature have a self-fulfilling quality to them. If we see people as inherently opportunistic and selfish, requiring constant close supervision and instruction, then they will likely behave that way. Economics tends to encourage such a gloomy view of human nature.

6. Wilson and Wilson (2007).

7. The clearest statement of the assumptions underlying this perspective is probably in Jensen and Meckling (1994). For a criticism of this point of view see Mintzberg, Simons, and Basu (2002).

8. The dysfunctional side effects of performance-based goals have frequently been noted, but there is fierce controversy over what the issues are. The problem from an ecological perspective is that of context. When a task is complex and the strategies and processes required to produce desirable outcomes remain to be discovered, the problem is one of knowledge and learning rather than motivation and performance. In performance situations, outcome-based "stretch goals" can lead to dysfunctional and unethical behavior and poor performance because feedback tends to be interpreted as reflecting on personal ability and thus threatening. If learning goals are set in such situations, feedback and failure are interpreted as valuable learning opportunities and helpful. See Seijts and Latham (2005).

9. There is a well-known phenomenon in central banking known as Goodhart's law, after the chief economic adviser to the Bank of England, Charles Goodhart. It states that when any social or economic indicator is used as a target, it becomes useless as a measure. See K. Alec Chrystal and Paul D. Mizen (2001), "Goodhart's Law: Its Origins, Meaning and Implications for Monetary Policy), http://cyberlibris.typepad.com/blog/files/Goodharts_Law.pdf (accessed August 6, 2011).

The less tangible the product and the further away you are from the final consumer, the easier it is to "game the system." The prospective buyer of a cell phone can tell pretty easily whether the quality is up to standard. The buyer of a parcel of repackaged mortgages has a much harder time. See Norris (2009), from which this segment is taken:

"Simply put," said Richard Bookstaber, one of the pioneers of financial engineering on Wall Street, "derivatives are the weapon of choice for gaming the system." Mr. Bookstaber wrote one of the best books about the causes of the

financial crisis, *A Demon of Our Own Design*, and did so before the crisis erupted. This month, his testimony to a Senate subcommittee provided a stark lesson in the uses to which derivatives have been put. "Derivatives," he testified, "provide a means for obtaining a leveraged position without explicit financing or capital outlay and for taking risk off-balance sheet, where it is not as readily observed and monitored." They let institutions dodge taxes and accounting rules. "Viewed in an uncharitable light," he added, "derivatives and swaps can be thought of as vehicles for gambling; they are, after all, side bets on the market."

There is a serious question as to whether the economic mechanisms that can create equilibrium in the supply and demand for consumer and industrial goods can be applied to the supply and demand for financial assets. See Cooper (2008) and his criticism that distinguished economist Paul Samuelson asserted that the laws of supply and demand apply to financial assets without offering proof of any kind.

10. Martin (2003).

11. Liker (2004); Womack, Jones, and Roos (1990).

12. Shinto, the traditional Japanese religion, is embedded in nature and as such emphasizes the importance of processes over structures. This is best illustrated by the different attitudes toward religious buildings in the West and in Japan. In the West cathedrals are built to last a very long time, and it is their structures that endure. In Japan the Shinto temples are torn down and rebuilt every twenty years using traditional materials and methods; what survives is the process. See Sanger (1993) and William (1968).

13. Ghoshal (2005).

3. Scale in Space and Time

1. The heading of this section is taken from chapter 5 of Mandelbrot (1983). The CIA World Handbook lists the length of the coastline of Britain at 7,723 miles, with no scale given (https://www.cia.gov/library/publications/the-world-factbook/geos/uk.html). The UK Ordnance Survey lists it at 11,073 miles (scale 1:10,000), measured at the mean high-water mark (http://www.cartography.org.uk/default.asp?contentID=749; accessed August 7, 2011).

2. Korzybski (1958).

3. More generally, scientist Gregory Bateson has suggested that this problem of abstraction lies at the root of the difference between logic and cause and effect:

In a computer, which works by cause and effect, with one transistor triggering another, the sequences of cause and effect are used to *simulate* logic. Thirty years ago we used to ask: Can a computer simulate all the processes of logic? The answer was yes, but the question was surely wrong. We should have asked: Can

logic simulate all sequences of cause and effect? And the answer would have been no. When the sequences of cause and effect become circular (or more complex than circular), then the description or mapping of those sequences onto timeless logic become self-contradictory. Paradoxes are generated that pure logic cannot tolerate. (Bateson 1980:64–65; italics in the original)

This asymmetry between logic and cause and effect when systems become complex is closely connected to the asymmetry between explanation and prediction in such systems. In the physical sciences the logics of explanation and prediction are considered symmetrical: if you can explain, you can predict, and vice versa. However, when systems become complex, you can have prediction without explanation (a falling barometer predicts but does not explain a storm) and explanation without the ability to predict (a pedestrian was killed by a car, but the accident itself was not predictable except perhaps in a probabilistic way). See Scriven (1959) and Mayr (1961).

4. As we will see, this is identical to the problems encountered in trying to transfer social innovations from the contexts in which they were developed to different situations. See Dees, Anderson, and Wei-Skillern (2004).

5. The distinction between know-how and know-what is from English philosopher Gilbert Ryle (1949).

6. This was the central theme of my book *Learning from the Links* (Hurst 2002).

7. *Gemba* is shorthand for the Japanese phrase *genchi genbutsu shugi*, which means "the principle of the real place and the real thing." See Shook (2008).

8. Langer (1997).

9. Kelley (2005).

10. An ecological niche has been conceptualized as a position in an *n*-dimensional space. See Hutchinson (1957). This immensely complex issue has no simple rules that explain why a given ecology has a certain number of species.

4. Why Wal-Mart's Growth Is like a Forest's

1. The statistics are from Wal-Mart's annual reports and 10-K filings.

2. This is true only of temperate forests, where the volatility of the seasons encourages the development of generalist organizations; specialist niches tend to get wiped out. In tropical forests the stability of the ecology encourages the development of niche specialists.

3. For a more detailed examination of the threat the dollar stores pose to Wal-Mart see Raynor (2011). He concludes that the dollar stores do not represent a truly disruptive innovation and thus do not pose the same threat that the fledgling Wal-Mart presented to Sears and K-Mart.

4. Christensen (1997). For a more technical, detailed discussion of the nature of disruptive innovation see Raynor (2011).

5. See Cowen (2011) for a discussion of this issue.

5. The Ecocycle: Life, Death, and Renewal

1. The original concept of the infinity loop in ecology was developed by C. S. Holling (1986) and developed further, most recently in Gunderson and Holling (2002). A colleague and I have named it the "ecocycle" (Hurst and Zimmerman 1994) to distinguish it from the more familiar life cycle. I have elaborated on the ecocycle concept in Hurst (1995). The ecocycle, as a pattern that represents the trajectory of an ecosystem in dynamic equilibrium, may represent what is known in complexity theory as a "chaotic" or "strange" attractor. In dynamic systems, attractors are the patterns of a system's trajectories that seem to act as basins to which the system continually returns, although never in a predictable way. The Lorenz attractor (Lorenz 1963), one of the best known, has a distinctive "butterfly" shape not dissimilar to that of the ecocycle.

2. The concept of "Flammy" is due to ecologist Stephen Pyne (2003), although I have changed the sex of Smokey Bear's twin to female.

This division of skills between bearers of opposite powers is common in Eastern religions. In China the equivalents of Smokey and Flammy are the Taoist concepts of Yang and Yin, the male and female principles, although the division of powers between them is rather different from those outlined here. In India the forces of creation and destruction are found in the forms of various Hindu deities, with Brahma as the creator and Shiva as the destroyer, although sometimes they are found in representations of the single Hindu god Shiva, who holds in his hands both the fire of destruction and the drum of creation.

3. Entrepreneur Richard Branson gives an excellent description of such markets when he describes those in which Virgin operates: "They are typically markets where the customer has been ripped off or under-served, where there is confusion and/or where the competition is complacent" (quoted in Andersen, Froholdt, and Poulfelt 2010:72).

6. The Ecocycle in Human Organizations

1. Triadic concepts are found throughout organizational literature and seem to have strong conceptual ties to each other once the differences in levels of analysis are taken into account. The following table lists some of the better-known triads:

Triadic Concepts from Various Fields of Organizational Study

Writer	Classification	I	II	III
Dewey (1922)	components of human behavior	impulse	intelligence	habit
Weber (1947)	types of authority	traditional	rational (routine)/ charismatic (revolutionary)	bureaucratic

Writer	Classification	I	II	III
McClelland (1961)	human motives	affiliation	achievement	power
Etzioni (1975)	compliance structures	normative	utilitarian	coercive
Allison (1971)	analytical lenses	organizational behavior	rational actor	government politics
Campbell (1974)	processes of evolution	variation	selection	retention
Boulding (1978)	social organizers	integration	exchange	threat
Ouchi (1980)	control mechanisms	clan	market	bureaucracy
Pfeffer (1982)	perspectives on action	emergent	rational	constrained

2. Barnard described this faith as follows:

faith in common understanding, faith in the probability of success, faith in the ultimate satisfaction of personal motives, faith in the integrity of objective authority, faith in the superiority of common purpose as a personal aim of those who partake in it. (Barnard 1968:259)

3. Research suggests that humans have two forms of memory: a fast-acting but slow-forming associative memory and a fast-forming but slow-to-use, rules-based memory. For a review of the evidence see Smith and DeCoster (2000). It has also been suggested that we have two visual systems (ventral and dorsal) (Neisser 1976) and two systems of perception (constructivist and ecological) (J. Norman 2002). Nobel Laureate economist Vernon Smith (2003) used Neisser's terminology to introduce the duality of "Cartesian constructivism" and "ecological rationality" into economics.

This general duality in modes of thinking is widely recognized in the social sciences. Jerome Bruner (1986) distinguishes between two ways of knowing, the narrative and the paradigmatic. Sociologist Max Weber has suggested the existence of two forms of rationality: values-based *Wertrational* and the instrumental *Zweckrational*; see Brubaker (1984).

4. Cosmides and Tooby (1994).

5. The distinction between productive hierarchies, which create wealth, and consumption hierarchies, which distribute it, is from Rubin (2002). When a *productive* hierarchy becomes a *dominance* hierarchy, the meaning of "exploitation" changes from its ecological concept of the use of resources with ever-increasing efficiency to the Marxist concept of the appropriation of value. See Adler et al. (2009).

7. Communities of Trust

1. See Hargadon (2003) for an extensive examination of the innovation process.

2. Amabile (1996).

3. The perspective on the front loop taken here is highly compatible with that used by Edith Penrose in her seminal book, *The Theory of the Growth of the Firm* (Penrose 1959), although it was not explicitly based on it. Livingstone (2007) documents the early histories of thirty-two successful ventures in the software industry and their erratic beginnings.

4. Quoted in Nayak and Ketteringham (1986:57–58).

5. Polanyi (1963:1013), quoted in Sarasvathy (2001).

6. March and Olsen (1976). Dyer, Gregersen, and Christensen (2008) suggest that the skills required for what they call disruptive innovators are questioning, observing, experimenting, and idea networking, coupled with a motivation to change the status quo.

7. Markides and Geroski (2003).

8. Dunbar (1998) argues that the upper size restriction reflects the largest number of people that an individual can have a face-to-face relationship with. Social and business communities provide many examples of this scale. Mennonite communities are traditionally maintained at a maximum of 150 inhabitants. Steve Jobs never allowed the Macintosh group to exceed 100, believing that too many people would make the group ineffective. Hewlett-Packard, while it was in the instrumentation business, had a policy of splitting divisions once they reached 300 people to keep them at about 150 each. Once it began selling systems, which is an inherently large-scale business, this was no longer feasible.

9. For a more detailed discussion of hunting dynamics see Hurst (1995/2002), especially chapter 1, "The Wisdom of the Hunters."

10. Hurst (1995/2002).

11. Windsor (1980).

12. Lamb (1956).

13. Stephen Wozniak, "Homebrew and How the Apple Came to Be," http://www.atariarchives.org/deli/homebrew_and_how_the_apple.php (accessed August 8, 2011).

14. Sarasvathy (2001) attributes this concept of firms and markets as residuals of networks to Burt (1992).

15. Gendron and Burlingham (1989:116).

16. *Wall Street Journal* (Feb. 1, 1982): 15.

8. Logic and Power

1. About this stage Langlois says the following:

Not only do imitators rush in once the entrepreneur has blazed the trail, but also the problem of succession within the entrepreneurial organization leads (if the organization is to continue) to bureaucratization, i.e. to the substitution of rules for personal authority, to the creation of abstract offices divorced from their individual holders; and to the increasing pre-eminence of specialized knowledge and spheres of competence. (Langlois 1998:201, paraphrasing Weber 1947:330–34)

2. Porter (1985).

3. Another clue to the fact that Porter's work applies only to the later stages of a corporation's life is the absence of the human factor in his work on strategy. See Kiechel (2010:136–37).

4. Chandler (1962:14). The ecological perspective suggests that Chandler (in common with many other researchers and commentators in the United States) may have mistaken ecological succession for evolutionary development and implied that the rise of the large corporation was a permanent phenomenon instead of a cyclical one. As a result the family firm was often derided as an early, primitive form of development, whose day had passed. This view is now changing; see Gordon and Nicholson (2008).

More generally, the ecological perspective supports Henry Mintzberg's view that strategy follows structure "as the left foot follows the right" and that strategy is an emergent property of most organizations, a rationalization of things that work. Once articulated, such a formal strategy may be used to create a formal structure, which was the process that Chandler documented.

5. Khurana (2007).

6. See, for example, Koontz and O'Donnel (1968). At the time their book was published, the voices of early critics like Douglas McGregor and William H. White were just starting to be heard, but their effect on the academy was slight.

7. Khurana (2007).

8. Penrose (1964:155).

9. Penrose (1964:155).

10. Technically this is known as "goal displacement," and while it can help individuals advance in their careers, it can be disastrous for an organization as a whole. This echoes the fundamental paradox of capitalism and evolution, which is that competitive individuals win their contests and groups that cooperate win theirs. The goal displacement concept was formalized by sociologist Robert Merton, who writes:

> Adherence to the rules, originally conceived as a means, becomes transformed into an end-in-itself; there occurs the familiar process of *displacement of goals* whereby "an instrumental value becomes a terminal value." Discipline, readily interpreted as conformance with regulations, whatever the situation, is seen not as a measure designed for specific purposes but becomes an immediate value in the life-organization of the bureaucrat. This emphasis, resulting from the displacement of the original goals, develops into rigidities and an inability to adjust readily. (Merton 1957:198)

9. Climbing the Ladder of Abstraction

1. The concept of the ladder of abstraction comes from Korzybski (1958) and Hayakawa (1978).

2. Zuboff (1988:69).

3. See Jespersen (1960), from which the illustrations are taken.

4. Hope and Fraser (2003). For evidence that such incentive schemes do lead to financial misrepresentation, see Harris and Bromiley (2007).

5. The plethora of terms for them suggests how ubiquitous they are.

6. Orwell (1949:171). It is not well known that Orwell's inspiration for *Nineteen Eighty-Four* came in part from his deep antipathy to the central message of James Burnham's massive wartime bestseller, *The Managerial Revolution: What Is Happening in the World Today*, published in 1941. Burnham did not agree that capitalism was turning into socialism, as was widely believed at the time. He contended that both dynamics were changing into what he called "managerialism"—the de facto control of the factors of production and the exercise of power by managers rather than shareholders or workers. Thus, although the rhetorical justifications for the use of this power might have differed across societies, the result was always the same: the managers won. Orwell concluded that Burnham rather approved of this development and accused him of both cowardice and power worship, charges that seemed bolstered by Burnham's next book, *The Machiavellians*, published in 1943. In it, Burnham argued that, when one looked at the evidence through the eyes of Machiavelli and his "followers," like sociologists Robert Michels and Vilfredo Pareto, democratic self-government was an unattainable ideal: all societies and social movements were inherently stratified, and all power was of necessity based on force and fraud. Although the masses might need to believe in the myths, their leaders and other members of the elite, who studied the evidence scientifically, could not believe them, although they had to pretend that they did. "The leaders must profess, indeed foster, belief in the myths or the fabric of society will crack and they will be overthrown," wrote Burnham. "The leaders, if they themselves are scientific, must lie" (1943:269). It is but a short step from this chilling thought to Orwell's notion of *doublethink*. Indeed, the whole of *Nineteen Eighty-Four* can be read as a cautionary tale about what organizations look like if managerial power is unchecked. The subtitle of *The Machiavellians* is *Defenders of Freedom*, and Burnham's lack of concern for the ethical issues distressed not only Orwell but also Peter Drucker, who had begun his American writing career at about the same time as Burnham.

7. See http://www.pbs.org/now/politics/wallstreet.html for examples (accessed January 30, 2011).

10. The Product Life Cycle Meets the Ecocycle

1. Norman Katzman, president, Russel Trading (personal communication).

2. The concept of the product life cycle and its usefulness to managers has been the subject of debate over the years (see Day 1981). This formulation is derived from Clayton Christensen's book *The Innovator's Dilemma* (Christensen 1997), in which he attributes it to the consulting firm Windermere Associates. The product life cycle tells us that something is likely to happen, but it cannot tell us when. See Raynor (2011).

3. The characterization is from Geroski (2003).

4. Functionality, as D. A. Norman (2004:37) points out, is one part of the experience of using a product, which can be thought of as consisting of three parts:

1. function: what it is meant to do
2. performance: how well it performs its function
3. usability: how easy it is for the user to understand the product and to get it to perform

5. According to Geroski (2003), a dominant design is a "consensus" good, a compromise among consumer needs that is the result of a process of standardization. It permits firms that come up with the design to start to travel down the learning curve that leads to economies of scale, allows the development of complementary inputs by defining their interfaces, and facilitates the growth of network effects. Analysis using concepts drawn from neoclassical economics actually becomes possible only after the emergence of a dominant design. Everything to the left of that point in the ecocycle is described as "market failure." See Markides and Geroski (2004).

6. With the advent of network effects, both physical and virtual in the so-called hardware/software paradigm, firms can make their product/service offerings "sticky" in other, more complex ways. With products like smartphones, competition takes place among product/service platforms and whole ecosystems rather than between "naked" products. The purchase of a smartphone introduces the user to a complete ecology of product offerings. For a technical discussion of the basic considerations here see Katz and Shapiro (1994).

7. Xerox references include Ellis (2006), Jacobson and Hillkirk (1986), Kearns and Nadler (1992), Owen (2004), and Smith and Alexander (1988).

8. For other strategies to promote scale see Markides and Geroski (2004).

9. Our minds are not built like computers in which culture and language perform as software. We are not blank slates on which nurture and culture write their messages. We are complex systems crafted by evolution to handle the challenges of survival. Exploring the human mind is like going on an archeological dig, with the more recent layers on top and the more ancient ones far below. However, the layers are not made of earth and artifacts but of living tissue and dynamic processes. They are constantly active and help us function every day. Our mind can be thought of as three systems that interact at different levels, each of which processes information in distinctly different ways:

1. A base, visceral level that assigns values to things and events and makes fast, reactive judgments about what is good or bad, safe or dangerous. This is the level that evaluates situations and decides whether we should approach or avoid them.
2. An intermediate, unconscious behavioral level, where all our evolved and learned routines and habits reside. This contains our behavioral repertoire, much of which is based on ready reckoning via rules of thumb

that allow fast decisions in the kinds of dangerous, uncertain environ-ments in which we evolved. Given the brain's fast and frugal use of re-sources, this level gives us an inherent conservative bias toward the sta-tus quo.

3. An upper, conscious, reflective level, where we can think about our ac-tions. This upper level has neither direct access to the senses nor control over behavior, but it can access and bias behavior by, for example, con-centrated training with timely, specific, visceral feedback that affects the base, visceral level of the brain. Even so, this upper level is not unbiased. Indeed, it is the seat of our capacity to rationalize our behavior, to supply plausible explanations for behavior that is in fact driven by the emotional systems in the first level and the habit systems in the second level. Three-layer views of the mind and human nature have been conceptualized in different ways. Neuroscientist Paul D. MacLean built on the work of James W. Papez to suggest that three stages in the evolution of the brain had pro-duced three biological computers: an ancient, basic reptilian brain he called "the crocodile," a mammalian brain he called "the horse," and fi-nally the neocortex, or "new brain," of which homo sapiens has by far the largest. One of the best-known psychological formulations is that of Freud. He proposed an unconscious *id* (it) in charge of the "pleasure principle," the partly conscious *ego* (I), the agent of the "reality principle," and the high-level *superego*, which acts as an inner conscience and is the seat of the ego ideal to which a person aspires (MacLean 1989). See Hampden-Turner (1981) for an extremely helpful summary of these and other approaches. The particular three-level formulation used here is from Norman (2004).

10. The recent work of researchers Gad Saad and John Vongas suggests a chemi-cal cause for these feelings. They compared the testosterone levels of students who were allowed to drive both an expensive new Porsche (a Carrera 4S Cabriolet) and a dilapidated family sedan (a 1990 Toyota Camry wagon). They found that the Porsche session elevated their testosterone levels, while driving the family sedan had the op-posite effect (Saad and Vongas 2009).

11. My focus here is on the product/service life cycle because I am writing at the level of the firm. At larger scales, a technology life cycle might be a more appropriate focus. Freeman and Louçã (2001) identify the following generic stages of a technologi-cal life cycle:

1. the laboratory-invention phase, with early prototypes, patents, small-scale demonstrations and early applications;
2. decisive demonstrations of technical and commercial feasibility, with widespread potential applications;
3. explosive take-off and growth during a turbulent phase of structural cri-sis in the economy and a political crisis of coordination as a new regime of regulation is established;

4. continued high growth, with the system now accepted as common sense and as the dominant technical regime in the leading countries of the world economy; application in a still wider range of industries and services;

5. slow-down and erosion of profitability as the system matures and is challenged by newer technologies, leading to a new crisis of structural adjustment;

6. maturity, with some "renaissance" effects possible from fruitful coexistence with newer technologies but also the possibility of slow disappearance. (quoted directly from Freeman and Louçã 2001:146)

12. For a more detailed discussion of this process see chapter 2 of *Crisis & Renewal*, Hurst (2002).

11. The Pathologies of Power

1. Maccoby (2004).
2. Dramatic, emotional, or erratic disorders:

- Antisocial personality disorder: a pervasive disregard for the law and the rights of others.
- Borderline personality disorder: extreme "black and white" thinking, instability in relationships, self-image, identity, and behavior. . . .
- Histrionic personality disorder: pervasive attention-seeking behavior, including inappropriately seductive behavior and shallow or exaggerated emotions.
- Narcissistic personality disorder: a pervasive pattern of grandiosity, need for admiration, and a lack of empathy. (quoted from Wikipedia, s.v. "Personality Disorder," Cluster B, http://en.wikipedia.org/wiki/Personality _disorder, accessed July 19, 2010)

3. See Kramer (2003) and Maccoby (2004).
4. Kleiner (2003).
5. Kleiner (2003:41). The romantic language seems curiously apposite: if members of the Roman Catholic priestly orders are said to take the church as their "bride," it seems entirely reasonable to similarly think of executives in the core group as being married to their corporations.
6. Veblen (1899).
7. Janis (1972) suggests that the primary, necessary, but not sufficient condition for groupthink is a heightened esprit de corps, a condition that is often associated with high performance. To this he adds structural faults in the organization, such as the insulation of the group from the outside world, homogeneity of the members' backgrounds, and provocative situational contexts such as high stress, task complexity, and lack of apparent alternatives.

8. Bebchuk and Fried (2004) outline the conventional wisdom of how executive compensation is set: that boards of directors bargain with executives at arm's length, and market forces determine the levels of compensation reached. They contrast this view with their own contention: that executives, particularly CEOs, tend to use their managerial power to extract excessive compensation from corporations. They meticulously strip away the camouflage and deception that conceal the myriad ways in which executives are paid. At every stage, from the golden "hellos" to the golden "good-byes," they analyze which worldview—arm's length or managerial power—a particular behavior is consistent with. The overall picture is devastating to the "arm's length" view of the world. "Market-based compensation" seems to be merely a convenient fiction that CEOs and boards of directors use to justify the status quo.

9. For an excellent discussion of the corrupting influence of the shareholder value model, stock-based compensation, and the investment community, see Martin (2011).

10. Pareto (1968) and Mills (2000).

11. See Bebchuk and Fried (2004) for an outline of these.

12. Van Maanen and Kunda put it well:

The point here is that control systems of any sort seem to decay in effectiveness over time. Bureaucratic controls provide the exemplary case. . . . The argument is essentially one of function giving way to form. Thus, in well-defined bureaucratic organizations, employees may carry out their duties, but they do so with little zest or care for what they are doing. Recalcitrance to bureaucratic control is perhaps expressed most often in passive and clandestine ways. Bureaucracy, in its most virulent forms, creates self-regarding organizations wherein employees maintain a lively interest in only their own welfare and have little sense (or concern) for how their own ends complement those of others or complement those of the organization as a whole. (1990:250n37)

13. Quoted in Nagl (2005:172).

14. Thus, for example, high-speed F-4 Phantom jets were used for ground-attack missions even though the slower, propeller-driven Douglas A1E Skyraider, with its ability to loiter over a battlefield for up to ten hours, was better suited and much cheaper to fly. However, with an eye to their conventional mission, the navy and the air force both believed that they needed general-purpose Phantoms in their inventories, not special-purpose Skyraiders. Of course, the Skyraiders were obsolete and would have been quite useless against a Soviet threat in Europe, but they were ideal to help ground troops counter an elusive enemy in the jungles and rice paddies of Vietnam. See *Bureaucracy Does Its Thing* (Komer 1972). More than 90 percent of the sorties in Vietnam were flown by jet aircraft; see Krepinevich (1986:303n31).

15. Krepinevich (1986:206).

16. Hackworth and Sherman (1989:615). Apparently David Hackworth was not exaggerating. Writer Neil Sheehan, who covered the war as a journalist from its very beginning, summed up the general situation this way:

By the second decade after World War II, the dominant characteristics of the senior leadership of the American armed forces had become professional arrogance, lack of imagination, and moral and intellectual insensitivity. . . . The attributes were symptoms of an institutional illness that might most appropriately be called the disease of victory, for it arose out of the victorious response to the challenge of Nazi Germany and imperial Japan. . . . The attitudes had spread as well to the greater part of the political, academic, and business leadership of the United States. World War II had been such a triumph of American resources, technology, and industrial and military genius, and the prosperity that the war and the postwar dominance abroad had brought had been so satisfying after the long hunger of the Depression, that American society had become a victim of its own achievement. The elite of America had become stupefied by too much money, too many material resources, too much power, and too much success. (Sheehan 1988:285).

17. Quoted in Halberstam (1986:610).

12. The Onset of Crisis

1. Estimates are from news reports and *Wikipedia*, s.v. "October 2007 California Wildfires," http://en.wikipedia.org/wiki/California_wildfires_of_October_2007 (accessed January 30, 2011).

2. For a description of chaparral see http://www.californiachaparral.com/ (accessed January 30, 2011).

3. For a report on the "Cedar" fire in *Wikipedia* see http://en.wikipedia.org/wiki/Cedar_Fire (accessed January 30, 2011).

4. For a firsthand, insider perspective on what went wrong at GM see Lutz (2011). Lutz was a passionate "car guy" with extensive experience both in North America and internationally. He argues that the U.S. government, by embracing regulation via the Corporate Average Fuel Economy (CAFE) targets, turned its back on a market-based solution to the oil crises. If gas prices had been allowed to rise, he contends, consumers would have adjusted their energy use automatically. As vice chairman of GM from 2001 to 2010 he was responsible for changing the design process for GM cars to produce vehicles that excited the customers' passions. In his book he explains how the creative design process was subordinated by and shackled to GM's version of scientific management run by "number-crunching, alternate-scenario-loving, spreadsheet-addicted idiots-savants" (202).

13. Wisdom from the Scriptures

1. This is the change from the "I-Thou" relationship to the "I-It" relationship observed by Martin Buber (1970).

2. Hillel (2006:21).

3. For a tour-de-force exploration of these themes and the ecological context of the Bible with detailed support and argument, see Hillel (2006).

4. Northrop Frye (1982) contends that the story of the Exodus is the only thing that really happens mythically in the Old Testament.

14. Into the Wilderness

1. Perhaps the best expression of this phenomenon and the risks society runs in this phase of the ecocycle is William Butler Yeats's poem "The Second Coming" (Ellman and O'Clair, 1973:131).

15. Climbing the Mountain

1. For contrasting reports just twenty-eight months apart see T. A. Stewart (1989) and Nulty (1991).

2. Sources: Steve Massey, *Pittsburgh Post-Gazette*, http://www.post-gazette.com/westinghouse/prologue.asp; Tom Imerito, Pittsburgh Technology Council, available at http://www.pghtech.org/news-and-publications/teq/article.aspx?Article=1759; Pittsburgh Technology Council, http://www.pghtech.org/news-and-publications/teq/article.aspx?Article=229 (all accessed July 19, 2010).

3. Follett (1923:229–30).

4. Steve Jobs fitted Max Weber's description of charismatic authority perfectly:

The genuine prophet, like the genuine military leader and every true leader in this sense, preaches, creates, or demands *new* obligations . . . Charismatic authority is thus outside the realm of everyday routine and the profane sphere. In this respect it is sharply opposed both to rational, and particularly bureaucratic, authority . . . both rational and traditional authority are specifically forms of everyday routine control of action; while the charismatic type is the direct antithesis of this. Bureaucratic authority is specifically rational in the sense of being bound to intellectually analyzable rules; while charismatic authority is specifically irrational in the sense of being foreign to all rules. Traditional authority is bound to the precedents handed down from the past and to this extent is oriented to rules. Within its sphere of claims, charismatic authority repudiates the past, and is in this sense a specifically revolutionary force. (Weber 1947:361–62, quoted in Langlois 1998)

5. Sculley (1987:90).

6. Stross (2010).

7. "Steve Jobs and Bill Gates Together," part 3, http://www.youtube.com/watch?v =_5Z7eal4uXI (accessed July 19, 2010).

8. More technically, by doing this Jobs realized the difference between *articulated* consumer demand, when customers know what they want, and *inchoate* demand, when customers know what they want only when they see what they can get. See Geroski (2003) for this distinction. Retail store expert Arthur Rubinfeld makes the same point in his discussion of compelling retail formats: "*Most retailers meet a need that customers don't know they have until they see your store*" (emphasis in the original). See Rubinfeld and Hemingway (2005:255).

16. The Logic of Leadership

1. For a summary of contemporary views of human nature see Brooks (2011).

2. This book's perspective on human nature and its evolution is derived from many sources, but those of anthropologist Robert Boyd and environmental scientist Peter Richerson have been particularly helpful. See Richerson and Boyd (1999) and Richerson, Boyd, and Henrich (2003).

3. March and Olsen (1976) and Bruner (1986).

4. Mercier and Sperber (2009). The view that rationality is context dependent and that the context for rationality is often power is well explained and illustrated by Bent Flyvbjerg (1998) in the context of city planning in the Danish city of Aalborg. He suggests that rationality as rationalization is a central theme of the work of French philosopher Michel Foucault, who in turn was a follower of Nietzsche.

5. Conger (1991).

6. Gandhi and his political student Martin Luther King Jr. both used marches to raise political awareness and demonstrate their followers' solidarity on issues.

7. McNeill (1995).

8. For a discussion of strategy as wayfinding, as well as further references, see Chia and Holt (2009), especially chapter 6, 159–85.

9. Gendron and Burlingham (1989:117).

10. This is the system used by GE among other effective companies; see Welch (2005). This also implies a different role for the CFO; see Hope (2005).

11. After a hectic acquisition spree, John Roth, CEO of Nortel until 2001, cashed in stock options valued at $135 million before the dot-com bubble burst and Nortel's market valuation fell from $398 billion to $5 billion. In 2009, when the company filed for bankruptcy, it went to zero. According to insiders, although John Roth had a strong technical background as a radio engineer, when he became CEO during the 1990s telecom boom, he became convinced that he had the magic touch. He was seduced by an unholy alliance of leading management consultancies and investment

bankers, who presented him with large acquisitions and touted strategic synergies that never materialized. Within a few months, many of the acquisitions turned out to be worth a fraction of what had been paid for them, but by then Roth had cashed in all his options. After the sale of its remaining operating units Nortel will disappear.

12. The primary reference on the two forms of time is Jaques (1982), where the contrast between *chronos* and *kairos* is well developed. *Kairos* receives special attention in the New Testament, where it is seen as the "right time." See also Kelman (1969).

13. According to Northrop Frye, *kairos* originally referred to the notch in an arrow. See Frye (1982:7).

14. Gardner (1997).

15. Follett (1941:263).

16. Langer (2000:220).

17. Langer (1989:33).

18. Polkinghorne (1988) writes:

> Augustine's suggestion, which was later accepted by Heidegger, was that the present is not a singular notion; it is a threefold notion that includes a present about the future—expectation; a present about the past—memory; and a present about the present—attention. Time is constituted not by the movement of objects but by the multiple structure of the threefold present, a structure of human experience. (129)

T. S. Eliot's poem *Four Quartets* is an extended meditation on these three forms of time. See Eliot (1944).

19. Schlender (1998:104).

20. Psychologist Ellen Langer's (1989) experiments with residents of homes for elderly people show that the provision of options and opportunities extends life itself.

17. The Complete Ecocycle

1. The modern distinction between *exploration* and *exploitation* comes from March (1991):

> Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution. Adaptive systems that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of its benefits. They exhibit too many undeveloped new ideas and too little distinctive competence. Conversely, systems that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria. (71)

See also Abernathy (1978), who first pointed out the tension between efficiency and innovation.

2. The concept of a zone or sweet spot ties in nicely with the "intermediate disturbance hypothesis," one of the best-established principles of ecology. It suggests that continual intermediate-scale disturbances maintain the maximum diversity of species in an ecosystem. For a brief history of the hypothesis see Wilkinson (1999).

3. Nonaka and Toyama (2002:1001). *Ba* is often represented as a sphere, a geometric object with minimum surface area and maximum volume. *Basho* is the "space of spaces" in which all the different *ba* are connected. *Ba* is a complex notion and difficult to grasp when explained in prose. In Western thought, it is better expressed by poets, who focus on the intensity of experience in space and time; Walt Whitman and T. S. Eliot, in particular, come to mind.

4. The inspiration for this discussion of the twin traps comes from Homer's *Odyssey*. According to the Greek historian Homer, the warrior Odysseus on his voyage back from the battle of Troy to his home in Ithaca came to a place where he had to pass between two hazards. On the one side lay the whirlpool called Charybdis, which swallowed vessels whole. On the other side lurked Scylla, a horrible six-headed devourer of men that lurked in a rocky lair. Odysseus, fearful that his ship could not survive the whirlpool, steered toward Scylla and sacrificed six of his ablest men to gain safe passage for himself and the ship. Later Odysseus is sucked back into the vortex of Charybdis, and when he emerges, he is alone on a raft, ready to resume his journey home (Rieu 1946).

5. Levitt and March (1988).

6. March (1994).

7. James March describes the twin traps in more conceptual terms:

Exploration can become a trap for failing organizations. If failure usually leads to exploration and exploration usually leads to failure, an adaptive unit can be trapped in a cycle of exploration, trying one new thing after another without spending enough time exploiting any innovation to secure gains from experience that are necessary to make it fruitful. When adaptive processes lead to a string of inadequately exploited experiments, they are likely to be improved by interventions that inhibit exploration. Exploitation can also become a trap. The returns to exploitation tend to be more certain, more immediate in time, and more proximate organizationally than are those to exploration. Consequently, strategies of exploitation that lead to locally positive outcomes are likely to come to dominate exploratory strategies that are globally better. In this way, adaptive processes can easily tip the balance in favor of exploitation, toward excessive stability of organizational practices, forms and technologies. In such cases adaptive processes are likely to be improved by interventions that protect or stimulate exploration. (1994:47)

8. Andy Grove, former CEO of Intel, put it this way, using exactly the same sailing metaphor:

You know something has changed, something big, something significant, even if it's not entirely clear what the something is. It's like sailing a boat when the wind shifts on you but for some reason, maybe because you are down below, you don't even sense that the wind has changed until the boat suddenly heels over. What worked before doesn't work anymore; you need to steer the boat in a different direction quickly before you are in trouble, yet you have to get a feel of the new direction and the strength of the wind before you can hope to right the boat and set a new course. And the tough part is that it is exactly at times like this that hard and definitive actions are required. (1996:20)

18. Vice and Virtue

1. In Hurst (2002) I pursue the implications (for golfers and managers) of the emerging consensus that our minds are embodied, not just "embrained." This means that we "think" in just as many ways as we experience the world. For the philosophical foundations of this view see Lakoff and Johnson (1999).

2. The evidence from psychology is that negative events have much more impact on individual feelings and behavior than positive ones of the same strength. That is, bad events have a more intense and longer-lasting impact than good ones—an effect known as "negativity dominance." This does not mean that bad will triumph over good, only that good offsets bad by the much greater frequency with which good things happen rather than by their strength. Bad events signal a need to change; good events do not, which is why we learn a lot more from failures than we do from successes. See Baumeister, Bratslavsky, and Finkenauer (2001) and Rozin and Royzman (2001). The widespread finding of negativity dominance seems to underpin a variety of phenomena. In our language, for example, we have far more words for pain and negative events than for pleasure and positive ones. When we scan a crowd of people, our reaction times to angry faces are much faster than to happy ones. Casual evidence suggests that in performance appraisals it takes multiple "atta boys" to offset one "gotcha" and that when one has a "bad day" at work, its impact seems contagious, while that of a "good day" is not. Similarly, spouses' satisfaction with their marriages depends much more heavily on the negative interactions they experience than the positive ones. Children derive much more harm from negative events and bad parenting than the benefit they gain from having good parents. Individual reputations are much more damaged by revelations of bad things that people have done than their good works, as witnessed by the recent revelations of Tiger Woods's marital infidelities and the severe impact of the news on his hitherto squeaky-clean reputation. In the political field incumbent political parties are hurt much more severely by negative events such as scandals and economic downturns than the benefits they gain from presiding over economic booms. This evidence that bad is stronger than good also seems to lie at the core of prospect theory and one of the best-documented findings of behavioral

economics—that we are averse to loss and feel financial losses much more keenly than the satisfaction we garner from the equivalent gains.

3. For some of the early thinking on traps and their dynamics see Cross and Guyer (1980) and Platt (1973). This topic is now handled within a systems framework; see Sterman (2000).

4. Janis (1972).

5. Augar (2005).

6. Morgenson (2008).

7. Jos, Tomkins, and Hays (1989).

8. Oldenburg (1989).

9. Starbucks confirmed the memo as authentic; see http://starbucksgossip.typepad .com/_/2007/02/starbucks_chair_2.html (accessed January 30, 2011).

10. Coffee drinkers in the Sunbelt prefer cold drinks; those in the Northeast like drip coffee; and those in the Northwest drink more espresso. A time zone–based structure cuts across these regions (Miller 2010).

11. Starbucks Annual Reports, http://investor.starbucks.com/phoenix.zhtml? c=99518&p=irol-reportsAnnual (accessed January 30, 2011).

12. For example, he writes the following:

But as our coffee becomes more widely available, the inherent contradictions between increasing sales and preserving brand integrity have intensified. Ideally, we want everyone to have access to Starbucks coffee. But every time we sign another big account, we face the same worry we faced with United [Airlines]: Will we lose control of quality? And will the increased exposure help or hurt our retail stores? (Schultz and Yang 1997:273)

13. This is related to Clayton Christensen's (1997) argument that firms can get into trouble by always listening to its existing customers. The technical name for slippery slopes, as well as their virtuous counterparts is "path dependence," the tendency of a series of actions, once started, to become self-reinforcing through positive feedback. The commoditization of the Starbucks experience is an excellent example of this process in action. Path dependence and the increasing returns it implies is anathema to neoclassical economics because it threatens its assumption of market equilibrium. It implies that markets are not necessarily efficient because they have a single equilibrium point but that multiple equilibria may exist. Brian J. Loasby explains that the decision to exclude path dependence from neoclassical economics was a critical one. He describes how Walras, in his attempts to develop a theory of general equilibrium, did not ask why and how highly organized markets developed:

by removing the threat of path dependency, which he knew he could not handle, from his model, at the cost of removing his model from the world. In place of a real world process of trial-and-error . . . Walras introduced an exchange of pledges between producers and prospective purchasers, which could be renegotiated without cost, and production would not begin until

the quantities that producers promised to make was [*sic*] precisely matched to the demand at the prices they promised to charge . . . this theoretical choice by Walras might be seen as the single defining act of twentieth century economics. (Loasby, in Pitelis 2002:49)

14. Several reasons have been advanced to explain this. Paraphrasing from Sydow, Schreyögg, and Koch (2009), some of these are the following:

1. Coordination effects: one of the best known of these is the institutional decision to have people drive on either the left or right side of the road. Once introduced, the pattern is self-reinforcing. Large, fixed set-up costs lead to economies of scale as volume grows and to the lock-in of products and processes.
2. Complementary effects: learning effects whereby people become more comfortable with technology as they use it, so-called network effects, when advantages grow as others use the same technology and adaptive expectations.
3. Learning effects: the more often an operation is performed, the more efficiently it is executed. As a result, exploitation activities can drive out exploratory ones; formulas for success become pathways to failure.
4. Adaptive expectation effects: individual preferences are not fixed but change in response to the expectations of others, which can create self-reinforcing spirals.

19. Tools and Settings in the Sweet Zone

1. This implies the existence of both "good" growth and "bad" growth. For a helpful perspective on so-called smart growth see Hess (2010).

2. The navigation metaphor offers a helpful hierarchy of roles and images:

Role	Function
discoverer	finds new worlds
explorer	maps new worlds
captain	chooses destination
navigator	plots the course
steerer	steers the course
crew	works the ship
ship	supporting technology

3. The four navigation tools shown in figure 17 come from a standard 2×2 matrix; see Stevenson (1998). They are dropped into the ecocycle and rotated slightly counterclockwise. This matrix can also be mapped onto the four control systems or levers developed in

Simons (1995). The classic 2×2 matrix, so popular in management thought, is what Elliott Jaques would have called a "frozen Cartesian dualism," which leaves the opposing concepts running in parallel with no way to resolve them; managers can only trade each one off against the other. By dropping them into the ecocycle they become dynamic dualities, dialectics, dilemmas. Here, as Jaques suggests, they have to be seen as properties of experiencing rather than as properties of the world. One has "to alternate between the two sides, but without putting either side right out of the picture" (1982:199–200).

4. Management, broadly defined, has always been about getting things done—the right things done, where "right" implies both worthy (socially desirable) ends and efficient means. We often think of ends and means as being separate entities and that, given one's ends, the only problem is to select the means. This is true in low-level, physical situations, where one's goals are clear: to drive a nail, one needs a hammer (although other objects might do in a pinch). However, it is not true at higher levels in human organizations, where our means (what we are, what we know, and whom we know) are intimately connected with our choices of ends (Sarasvathy 2001). The relationship between the two is reciprocal: our capabilities (what we *can* do) affect what we can *aspire* to—our ends. Moreover, the link between what we *want to do* and what we *can do* is *experimentation, practice,* and *learning. Means are ends in the making and vice versa. Strategies emerge from competencies, and strategies pursued may develop new competencies* (Johnson and Bröms 2000). There is no better example of this than the close connection between product innovation and production process innovation: discoveries made on the factory floor can lead to new competencies and thence new strategies. Western manufacturers often believe that they can outsource low value–added activities and retain the key technologies, but often the outsourced activities prove to be a springboard for their suppliers to climb the "food chain" and to compete with them. (Pisano and Shih 2009). As Toyota has shown us, a manufacturer's ecosystem of suppliers can be a rich source of innovation. The implication of this is that constancy of purpose in an organization demands a continual, practical dialog, a dialectic (some might say) between ends and means. Conversely, it is the separation of ends from means that is at the root of the problem with that ever-popular approach—managing by the numbers. The separation of ends and means often leads to management by fear and manipulation (Deming 1986). In consultancies and business schools this separation can lead to the servants-of-power stance: "given your ends, whatever they may be . . . [w]e offer you tools" (Selznick 1957:82).

5. The use of "left" and "right" in this context maps rather neatly onto their political counterparts, which originated in revolutionary France. In the legislative assembly just after the Revolution of 1789, while the king was still head of state, those who supported the king and the noble elite sat on the right and those who opposed him sat on the left. Today in France the Right is called the "party of order," while the Left is called the "party of movement" (*Wikipedia*, s.v. "Left–Right Politics," http://en .wikipedia.org/wiki/Left-Right_politics, accessed Jan. 30, 2011).

Also helpful is an analogy between the ecocycle dynamic and the structure and functioning of the human brain, with its separation into two distinct halves joined by

a thick bundle of fibers called the *corpus callosum*. Extensive research on the functions of each half of the brain, especially studies in which the two separated halves revealed that they perform quite different functions, with the right brain closely associated with creativity and art (Springer and Deutsch 1989). Helpful to a nonexpert's understanding of this is the work of Betty Edwards, an artist whose book *Drawing on the Right Side of the Brain* (1989) has revolutionized the teaching of art.

Edwards contends that, when it comes to perception, artists use a more right-brained mode of looking than do less artistic people. This helps them see the *unique aspects* of what is there. If people allow the left-brained mode of seeing to dominate, that ability is hampered, for the left brain is adept at classifying objects into categories. *If the left brain is too dominant, we, as artists, lose the real-time feedback between what we do and what is*. Instead we end up drawing internally generated generic objects that do not have the unique qualities of *this* object: we draw what we *know* rather than what we *see*.

Edwards dubbed these two ways of grasping the visual world the "L-mode" and the "R-mode," respectively. In healthy individuals different functions are not clearly localized in the brain, so these descriptions must be seen as metaphorical rather than anatomical. Nevertheless, the two modes do seem to be distinct states of consciousness that we can switch between, although neither one can ever be completely suppressed. Edwards describes the characteristics of the two modes as follows:

L-Mode	R-Mode
Verbal: using words to name, describe, and define	*Nonverbal*: awareness of things but minimal connection with words
Analytic: figuring things out step-by-step and part-by-part	*Synthetic*: putting things together to form wholes
Symbolic: using a symbol to *stand for* something (e.g., + for "plus")	*Analogic*: seeing likenesses between things; understanding metaphoric relationships
Temporal: keeping track of time, sequencing one thing after another	*Nontemporal*: without a sense of time
Rational: drawing conclusions based on *reason* and *facts*	*Nonrational*: not requiring a basis of reason or facts; willingness to suspend judgments
Digital: using numbers, as in counting	*Spatial*: seeing where things are in relation to other things and how parts go together to form a whole
Logical: drawing conclusions based on logic: one thing following another in logical order	*Intuitive*: making leaps of insight, often based on incomplete patterns, hunches, feelings, or visual images
Linear: thinking in terms of linked ideas, one thought directly following another, often leading to a convergent conclusion	*Holistic*: seeing whole things all at once, perceiving the overall patterns and structures, often leading to divergent conclusions

Adapted from Edwards (1989:40)

Clearly the two modes ought to be complementary—the relationship should be "both . . . and" rather than "either . . . or."

20. Power Tools and Settings

1. Notable exceptions to this are the work of Charles Perrow and Jeffrey Pfeffer, who both see power as pervasive in organizations, although Perrow is more critical of the ends to which it is put, suggesting, for example, that the oligopolies prevalent in so many industries are not due to efficiency, as Chandler (1962) suggests, but to the exercise of economic power; see Perrow (1986) and Pfeffer (1992).

2. Hoopes (2003) and Leflaive (1986).

3. Stewart (2009).

4. This perspective dates back to Descartes and was formalized by Weber; see Leflaive (1986). By excluding both power and values from its vocabulary, neoclassical economics has accomplished what Newspeak, the language of the Party in George Orwell's book *Nineteen Eighty-Four*, was designed to do. Its objective was "not only to provide a medium of expression for the world-view and mental habits proper to the devotees of [the Party], but to make all other modes of thought impossible . . . at least so far as thought is dependent on words" (Orwell 1949:241).

5. Perrow (1986).

6. See Flyvbjerg (1998).

7. Gardner (1990:55–57), quoted in Pfeffer (1992:12).

8. Follett (1924:9–14).

9. Follett (1924:186–89).

10. Judge and Cable (2004) review a number of the studies and reports that show the clear connections between physical height and career success via the mechanism of social and self-esteem.

11. Byrne (1999:154).

12. For a series of *New York Times* articles on this topic see http://topics.nytimes.com/topic/timestopic/se/s/select-editorials-failedstate/index.html (accessed January 30, 2011).

13. For a discussion of the social mechanisms that influence individual behavior see Cialdini (1993).

14. Quoted in Hoopes (2003:239).

15. Welch (2005).

21. Management Tools and Settings

1. Ghoshal and Bartlett (1997).

2. Simons (1995:59).

3. Johnson and Kaplan (1991).

4. Greens in Regulation: "A green is considered hit in regulation if any part of the ball is touching the putting surface and the number of strokes taken is 2 or less than par." Scrambling: "This is the percent[age] of times that a player misses the green in regulation, but still makes par or better." Putting Average: "Putting Leaders measures putting performance on those holes where the green is hit in regulation (GIR). For these holes, the total putts are divided by the total holes played. By using greens hit in regulation we are able to eliminate the effects of chipping close and one putting in the computation." Source: PGA Statistics, http://www.pgatour.com/r/stats/ (accessed September 6, 2011). The definitions are at the bottom of the player rankings for every category measured.

5. Students of Aristotle will recognize that the causes the scorecard shows are static and "formal," not the dynamic, "efficient" causes that golfers need to understand to improve their game. For a modern application of Aristotelian thinking to management see Waddington (2007); for its relevance to systems thinking see Ulanowicz (1997).

6. Researchers now see broadly similar patterns in the role of deliberate practice, which is evident in the success of expert performers in fields ranging from music, sculpture, and chess to swimming and tennis. It seems to take about ten years of focused training by an expert to become a top performer. This finding is so widespread that some have called it the "ten-year rule," which reflects the fact that almost any "overnight success" takes years of hard work. Candidates are usually identified by their interest in a particular field and their motivation to improve. By the time they are experts they will have put in about ten thousand hours of deliberate practice. The ten-year rule implies that this practice takes place at a rate of about a thousand hours a year, or fewer than four hours a day (Ericsson, Krampe, and Tesch-Romer 1993).

7. The balanced scorecard (BSC) (Kaplan and Norton 1996) is one of the best-known attempts to create a multidimensional scorecard for a corporation. It looks at the formulation and implementation of strategy in a particular firm from four perspectives, tracking the origins of financial results back through what is described as a chain of cause and effect: satisfied customers to business processes and employee learning and growth. These are seen as the performance drivers of financial results. Unfortunately, the BSC is too internally focused, mechanistic, and static: it tends to reinforce the "iron cage" of the formal organization, making it even more onerous. What began as an attempt to escape the tyranny of financial outputs remains a tyranny of abstract outputs, in which feedback is delayed, generic, and abstract. The so-called chain of cause and effect is really just a linear chain of logic. Given the power of the public financial marketplace, the hard measures invariably drive out the soft, and the BSC can easily degenerate into a meaningless checking of boxes, which wastes prodigious amounts of time. Either that or the players start to game the nonfinancial measures for their own benefit, as metrics become targets. It is an overwhelmingly left-brained (right-side) shareholder value model that leaves the existing power structure of the organization intact, which may account for its popularity. In some instances it has certainly been used well, but *how it is used* is important, not *whether* it is used. See Ittner and Larcker (2003) for a useful summary of

the challenges of using such scorecards and how the majority of organizations do not use them effectively.

8. For a discussion of the rules of thumb used by a mind that is "fast and frugal," as well as why and when they work, see Gigerenzer (2007).

9. T. J. Allen (2007).

10. Pfeffer and Sutton (2006) identify three functions of financial incentives: motivation, information, and selection but suggest that these functions can easily motivate the wrong behavior, send the wrong signals, and select the wrong people. Kohn (1993) argues that monetary rewards cannot create lasting commitment but only temporarily change what we do. Deci and Ryan (2000) suggest that extrinsic motivation suppresses its intrinsic counterpart under a broad range of circumstances.

22. Leadership Tools and Settings

1. Simons (1995:92).

2. Philosopher Alfred North Whitehead made a clear contrast between the different logics of discovery that I have called "management" and "leadership": "Thus understanding has two modes of advance, the gathering of detail within an assigned pattern and the discovery of a novel pattern with its emphasis on novel detail" (Whitehead 1938:57–58).

3. Ghoshal and Bartlett (1997).

4. Jay Conger (1991) shows how leaders frame issues and imbue them with emotional content by using compelling images and poetic language. They amplify values and the importance of the mission through the narrative techniques of metaphor and analogy.

5. One of the best ways to go about this is to find a piece of poetry that speaks to you and your organization's condition in some way and use it as a lens to look through. As Gregory Bateson has pointed out, we should regard prose as "poetry which has been stripped down and pinned to a Procrustean bed of logic" (1972:136).

6. For a discussion of the leader's role as a medium of interpretation, see Karl Weick's essay in McCall and Lombardo (1978:55).

7. H. Allen (2009).

8. Vera and Crossan (2005:205).

9. Claxton (1984).

10. Crossan et al. (2005).

11. See Lyttle (2007) and Romero and Cruthirds (2006). I suspect that humor is neglected because it can play an adaptive role only in an uncertain, nonlinear, paradoxical world, where emotion and reason are continually in tension with each other. In the dry, unemotional, stable world of neoclassical economics, humor has no role to play. Avolio, Howell, and Sosik (1999) found that humor makes little difference to

performance when used by contingent reward leaders (i.e., transactional managers who are working with management tools and settings to the right of center of the sweet spot). Thus, the effectiveness of humor is context dependent, and it is an aid to learning and creativity rather than to efficiency and performance. In *The Act of Creation* Arthur Koestler argued that the jester, the sage, and the artist are all connected by the ways that they deal with the imbalances and resulting tensions between emotion and reason inherent in living. Humor is the result of the sudden discovery and collision of two previously unrelated frameworks of meaning, or matrices, as he called them, and the release of tension in an explosion of laughter. Scientific discovery, on the other hand, is the result of the fusion or "bisociation" of two previously unrelated matrices of meaning: "Comic discovery is paradox stated—scientific discovery is paradox resolved" (Koestler 1964:95).

12. These conditions have been identified as an egalitarian status system, certainty about the future (in our case not because we could predict it but because we could invent it!), autonomy (a sense of control), relatedness (safety with others), and fairness (fair exchanges between people). Rock (2009) suggests that these conditions correspond to the latest findings from neuroscience. It is well established that a positive mood is highly correlated with creativity. See Davis (2009).

13. The technical name for invitations is "affordances." The concept was first outlined by ecological psychologist J. J. Gibson (1979) and has been used extensively by Norman (1988).

14. T. J. Allen (2007).

15. Fleming and Marx (2006). This replication of patterns across scales could represent a fractal structure.

16. Hollingsworth (2006) concludes from his in-depth analysis of major discoveries that, in organizational contexts that facilitate such discoveries, "leaders who integrate scientific diversity have the capacity to understand the direction in which scientific research is moving, provide rigorous criticism in a nurturing environment, have a strategic vision for integrating diverse areas, and have the ability to secure funding to achieve organizational goals" (321).

17. Granovetter (2005). Stanford professor AnnaLee Saxenian (1994) has demonstrated that Silicon Valley created an entirely new social dynamic with activities built around projects rather than organizations.

18. Berger (1999).

19. In his definitive biography of Adolph Hitler, historian Ian Kershaw contends that "Crisis was Hitler's oxygen" (1998, vol. 1, 200). He explains that Hitler was no "accident" and that context was critical to his rise to power:

> Without the unique conditions in which he came to prominence, Hitler would have been nothing. It is hard to imagine him bestriding the stage of history at any other time. His style, his brand of rhetoric, would, deprived of such conditions, have been without appeal. The impact on the German people of war, revolution, and national humiliation, and the acute fear of

Bolshevism in wide sections of the population, gave Hitler his platform. He exploited the conditions brilliantly. More than any other politician of his era, he was the spokesman for the unusually intense fears, resentments, and prejudices of ordinary people. (426)

23. Culture Tools and Settings

1. Kilmann et al. (1985:22).
2. Kotter and Heskett (1992).
3. Adapted from Kotter and Heskett (1992).
4. Potts (1996).
5. In 1955 economist F. A. Hayek suggested that *cultivation* rather than *control* should be the hallmark of managers of complex systems:

> Where our predictions are thus limited to some general and perhaps only negative attributes of what is likely to happen, we evidently also have little power to control developments . . . Such activities in which we are guided by a knowledge merely of the principle of the thing should perhaps better be described by the term "*cultivation*," than the familiar "control"—cultivation in the sense in which the farmer or gardener cultivates his plants, where he knows and can control only some of the determining circumstances, and in which the wise legislator or statesman will probably attempt to cultivate rather than control the forces of social process. (225)

6. Lorange (2008).
7. Http://www.research.ibm.com/resources/awards_fellows.shtml (accessed January 30, 2011).
8. Perrow (1986) suggests the following three levels of control:

   1. direct, fully obtrusive ones such as giving orders, direct surveillance, and rules and regulations
   2. bureaucratic ones such as specialization and standardization and hierarchy, which are fairly unobtrusive
   3. fully unobtrusive ones, namely the control of the cognitive premises underlying action (p. 129; paragraphs and numbers added)

If the mind is ecologically rational, then the "cognitive premises" include the physical and social contexts and settings.

9. Gaddis (2002).
10. Carr (1961). Historian Elliot Gorn's views on the disruptive role of the historian and on the historian's distinction between memory and history are helpful here:

> Why, when my students seemed happy in a culture whose moral and aesthetic sense was shaped by car and beer commercials, did I feel compelled to

cull through dismal texts, and, by anthologizing them, insist that those students become steeped in them, too? Why should I be the one to trouble people, disturb them with 500-year-old stories of atrocity?

It's my job, that's why. For better or worse, I think one of the things I am supposed do is challenge and even upset students. Not because unhappiness is good in and of itself. Far from it. But, increasingly, Americans are a people without history, with only memory, which means a people poorly prepared for what is inevitable about life—tragedy, sadness, moral ambiguity—and, therefore, a people reluctant to engage difficult ethical issues.

Consumer culture is mostly about denial, about forgetting the past, except insofar as the past is pleasant and, thus, marketable. As historians, we occupy one tiny space where the richness of the past is kept alive, where its complexity is acknowledged and studied, where competing voices can still be heard. One of the most important things historians do is to bear witness to the past, including its horrors, in order to battle the amnesia that would sweep away all that is difficult or repugnant. The distinction between history and memory—that is, the distinction between knowledge of painful things, painfully arrived at, and notions of the past that flatter us with easy myths or cheap emotions—is at the heart of our enterprise. (Gorn 2000:B5)

11. McKee (1997).

12. This sequence or plot is not inevitable. It resembles what McKee (1997) calls an archplot; there are several other kinds of plot and variations on them with very different sequences of events.

13. Roth (1999), together with my personal observations from my consulting practice.

14. Bruner (1986).

15. Pascale (1983).

16. Dennett (1991:418); emphasis in the original.

17. Vaill (1989).

24. Change in Depth

1. Kotter (2002).

2. Collins and Porras (1994).

3. Follett (1924:200).

4. Marsh et al. (2004).

5. See "The Viet Nam Story," http://www.positivedeviance.org/about_pd/Monique%20VIET%20NAM%20CHAPTER%20Oct%2017.pdf (accessed August 15, 2011).

6. Positive deviance practitioners now call such high-level descriptions "true but useless" (TBU) (Dorsey 2000).

7. Dorsey (2000).

8. The problem of transferring social innovations from one community to another are, of course, precisely those encountered when trying to transfer management innovations from one organization to another.

9. Cialdini (1993).

25. The Design of Choice

1. Dorsey (2000).

2. Follett (1924:198).

3. The practice upset his friend Goethe. See http://www.guardian.co.uk/stage/2009/nov/22/friedrich-schiller-anniversary-film-biography (accessed January 30, 2011).

4. North, Hargreaves, and McKendrick (1999).

5. Appiah (2008). It is a reminder that the word "company" comes from the Latin *cum panis*, meaning "with bread."

6. Such environments trigger our "approach" response. Environments that are unpleasurable—that arouse us too much or too little or make us feel submissive—trigger our avoidance response. A prison setting is an obvious example of such an environment, although many work settings can have a similar effect (Mehrabian 1976).

7. Johns (2006) suggests that these are three dimensions of what he calls "discrete" contexts—"settings" in the language used here.

8. Haynes and Price (2004) and Price (2002) conference paper available at http://www.ifm.eng.cam.ac.uk/mcn/pdf_files/part5_4.pdf (accessed January 30, 2011). The inspiration for this approach comes from Stuart Kauffman's NK model (Kauffman 1993), where the behavior of a system of N agents is determined by the number of connections K between them. When K is low, the system is frozen in its current state; as K increases, behavior becomes more variable until, when K is very high and approaches $N–1$, the system becomes chaotic and has no ability to select and retain innovations. The "edge of chaos" is when K is "just right" and the organization is perfectly poised between stability and change. It is the dancing rhythm exhibited by the healthy human heart, which is neither completely chaotic nor excessively ordered.

9. Max Boisot and Bill McKelvey suggest that a "region of emerging complexity" lies between the "edge of order" and the "edge of chaos" (Boisot and McKelvey 2010:422–23). Another way of thinking about this region is as a "liquid" phase between gas and solid. As a firm comes into being, it "condenses" out of a gas into a fluid, and then when it becomes a tightly connected system, it "freezes" into a solid. Staying in the sweet zone means keeping the organization fluid by oscillating between the "left-hand," evaporative- phase transition from fluid to gas and the "right-hand" crystallization transition from fluid to solid.

10. From Jim Womack of the Lean Institute, "Fewer Heroes, More Farmers," http://www.lean.org/common/display/?o=741 (accessed August 16, 2011).

11. T. J. Allen (2007).

12. This account of SEI is based on information from its website at http://www
.seic.com (accessed January 30, 2011); West and Wind (2007); Kirsner (1998); Taylor
and LaBarre (2006); and Fallon (2002).

13. For a more detailed discussion of hunting dynamics see Hurst (1995).

14. Kirsner (1998). Article available at http://www.fastcompany.com/maga-
zine/14/totalteamwork.html (accessed January 30, 2011).

15. Thaler and Sunstein (2008).

16. Http://www.navgen.com/3d_boids/#introduction (accessed January 30,
2011).

17. For termites see Marais (1970), and for bees see Seeley (1995).

18. Http://www.nbb.cornell.edu/seeley.shtml (accessed January 30, 2011).

19. Rock (2009).

26. Lean: The Practice of "Both . . . And"

1. Whether this effort to educate foreign managers has succeeded is debatable. As
lean guru Jim Womack put it, "Without an extended sensei-deshi (master-apprentice)
experience to embed it in habit, any effort to propound a Toyota Way is certain to be-
come an abstract, high-level flop" (pers. comm.).

2. Shimokawa and Fujimoto (2009:13–14).

3. I am indebted to Jim Womack for this observation (pers. comm.).

4. Some of the differences are the following:

Factor	Lean (TQM)	Economic Model of the Firm
Organizational Goals	serving the customer	maximizing profit
Individual Goals	personal fulfillment and acceptance	economic goals/self-interest
Time Orientation	dynamic: innovation and improvement	static optimization
Coordination and Control	self-management (expert employees can be trusted)	managers have expertise to address agency problems
Role of Information	open, timely, horizontal coordination	information flow matches organization hierarchy for decision making
Principles of Work Design	system-based optimization	productivity maximization
Firm Boundaries	broad; includes suppliers, customers, and partners	transaction costs define; firms separate from markets

(adapted from Grant, Shani, and Krishnan 1994)

5. The performance of NUMMI was astounding: it produced high-quality cars with a 40 percent reduction in human resources and a 30–50 percent reduction in capital investment in comparison to comparable GM facilities (Inkpen 2005).

6. For example, one of the principles of the Toyota Way is this: "Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly" (Liker (2004:40). This is good advice for some decisions certainly, but for all? And exactly how does one do it? It's impossible to consider "all options" given time and mental constraints, so that requires judgment. In addition, who can argue with "implement decisions rapidly"? However, that cannot be done unilaterally by a lone individual; for an organization to have a decision implemented rapidly is a real achievement. A further problem with "principles" is that they are often expressed using verbs that sound like action but really mean successful outcomes. The distinction between achievement verbs and task verbs comes from English philosopher Gilbert Ryle (1949). Thus, "hunt" and "seek" are task verbs, while "catch" and "find" are achievement verbs. The use of achievement verbs in books about management is so prevalent that the distinction between task and achievement is often lost.

7. Throughout this chapter I talk of the Toyota Way and its philosophy rather than of TQM in general. I do this because TQM often seems to be used as a management technique rather than as a philosophy.

8. Nonaka and Takeuchi (1995).

9. Psychologist Richard Nisbet (2003) has assembled a good deal of evidence on the difference in Western and Eastern thinking styles and suggests that they are related to the very dissimilar ecologies to which the Chinese and the ancient Greeks were exposed.

10. Thus, when one reads that the Toyota Way consists of radical contradictions between a "hard side" and a "soft side," between "forces of expansion" and "forces of integration," this is indicative of ecological "both . . . and" principles at work (Osono, Shimizu, and Takeuchi 2008). One finds the same intellectual puzzles in Taoism, with its concept of *wu wei*, or "actionless doing," which can be baffling to the Western mind that tries to grasp them in the abstract.

11. Quinn and Cameron (1988). Murnighan and Conlon (1991:182) studied string quartets, which are intense work groups that face three major paradoxes: leadership vs. democracy, the paradox of the second violinist, and confrontation vs. compromise. They found that the most successful quartets recognized and managed these paradoxes but did so by playing their way through them rather than discussing them. According to the authors, "they absorbed the conflict rather than compromising."

12. Quoted in Liker (2004:3).

13. The heart of this challenge is to find a way to create timely, effective, tangible feedback in day-to-day activities. This requires *focused training* or *deliberate practice*, as it is sometimes called. Its key elements, according to Ericsson, Krampe, and Tesch-Romer (1993), are as follows:

- motivation to improve performance
- close attention to the task
- immediate informative feedback on actions

- knowledge of results of performance
- multiple repetition of correct actions

14. See Rother and Shook (1999) for single-facility mapping and Jones and Womack (2003) for multiple-facility mapping.

15. Toyota never talks of "solutions" to problems, only "countermeasures," recognizing the fact that in a complex system anything you do inevitably causes the system to respond in both intended and unanticipated ways.

16. Nonaka and Takeuchi (1995).

17. The *obeya* became a central feature of the Toyota system during the development of the Prius, which required an extraordinarily large number of participants in the process because of the complexity of hybrid vehicles (Osono, Shimizu, and Takeuchi 2008).

18. Sterman, Repenning, and Kofman (1997).

19. See Kotter (2002).

20. An additional mechanical wrinkle in the problem was ADI's direct cost–based pricing system, which set selling prices by multiplying direct costs by a fixed multiple of about 2.1 to contribute toward indirect costs (overheads) and profit. The drivers of overhead costs such as sales, marketing, R&D, and administrative costs are organizationally complex, and the application of TQM techniques to them is much more difficult than to production processes. As a result, as direct costs fell sharply, indirect costs fell slowly, and ADI's contribution to overheads and profits began to drop. Unable to raise selling prices in the face of fierce competition, ADI was caught in a vise, a vicious spiral trap. Of course, if ADI had not done TQM, it would have been in an even worse position, with lower gross margins and declining demand, but its experience shows that improvements to the bottom line do not follow automatically even from successful TQM programs once results are filtered through the marketplace. See Sterman, Repenning, and Kofman (1997).

21. Sobek, Ward, and Liker (1999).

22. Toyota places its suppliers in three categories ranging from trusted partners, who will be involved in design, to regular manufacturers, who will produce a part to specification. Fujimoto (1999:132–136)

23. Adler et al. (2009).

24. Benner and Tushman (2003).

25. Mahoney and Deckop (1993).

26. Akio Toyoda, quoted in Shirouzu (2010:A1). In the same article Jim Press, former top U.S. executive in the company, attributed the problem to "financially oriented pirates" who "didn't have the character to maintain the customer-first focus."

27. Prescribed Burns

1. Goldstein and Wilson (2010).

2. Schwenk (1990).

3. Janis (1972); Allison (1971).

4. Grove (1996, title and p. 160).

5. Despite this anecdotal evidence of the benefits of dissent, conflict and crisis have been anathema to most schools of management thought. Within the rational model of management science it was indicative of poor analysis, faulty logic, and bad decision making. According to the rational-legal theories of bureaucracy, with their reliance on rules and regulation, it is seen as inherently dysfunctional. The human relations schools, with their stress on cooperation and equilibrium, view conflict as inhibiting the expression of feelings and hence creativity. For a long time, with the exception of the writings of maverick economist Joseph Schumpeter, the only perspectives that studied crisis and conflict seriously were Marxist ones. This situation is changing, although, in the absence of an ecological framework, the language used is typically anodyne (literally, "without pain"), employing high-flying euphemisms such as "deliberate perturbation" and "creative abrasion" (Brunner et al. 2009; Leonard-Barton 1995).

6. De Dreu and Weingart (2003).

7. Gerstner (2002:51).

8. Http://bobsutton.typepad.com/my_weblog/2007/05/an_insiders_vie.html (accessed January 30, 2011). See Coleman and Shrine (2006), on which this section is based.

9. Burgelman (2002).

10 Http://money.cnn.com/magazines/fsb/fsb_archive/2003/09/01/350791/index .htm (accessed January 30, 2011).

11. Http://bobsutton.typepad.com/my_weblog/2007/05/an_insiders_vie.html (accessed January 30, 2011).

12. The psychological framework best suited to thinking about the tool and settings preferences of managers is the well-known DISC system (Marston 1928), which maps very neatly onto the navigation tools.

13. This idea goes back at least as far as the Roman Republic, which operated successfully for four centuries with dual incumbents in a number of senior public posts. Sustained by social norms and laws that supported the separation of powers and maintained numerous checks and balances, the system fell apart only after societal consensus on the values on which the republic was founded disappeared. In the resulting chaos, a succession of strong men arose to restore order and begin the imperial era, with its one-man rule. See Sally (2002).

14. Explicit two-in-a-box systems seem to be more prevalent in complex businesses such as high-tech companies. Intel and Dell have formal pairing systems, and others, like Hewlett and Packard historically and Research In Motion currently (Lazaridis and Balsillie), use it informally. In the entertainment industry, where relationships are a full-time occupation and where task management, with its emphasis on large projects, is demanding, partnership are also common. That of Michael Eisner and Frank Wells at Disney seemed to produce excellent results until Eisner lost Wells's steadying influence when the latter was killed in a helicopter accident. See O'Toole, Galbraith, and Lawler (2002).

15. For a recorded interview with Jones on his selection of Welch see segment 3, "From the Archives: Reginald Jones Discusses Selecting Jack Welch as the New CEO of GE" (recorded June 12, 2000)," http://www.albany.edu/talkinghistory/arch2005july-december.html, September 15, 2005 (accessed January 30, 2011).

16. See Poole and Van de Ven (1989) for a theoretical treatment of the options for dealing with paradox. For practical approaches using four "trade-off shifting mechanisms" (metaroutines, enrichment, switching, and partitioning) together with two contextual factors (training and trust), see Adler, Goldoftas, and Levine (1999).

17. Vance (2009).

28. Growing People

1. Khurana (2007).

2. Advisory group to the Ford Foundation, quoted in Khurana (2007:277).

3. Quoted in Khurana (2007:286).

4. Peters and Waterman (1982).

5. Stewart (2009). Stewart's description of alternative "religions" is on p. 280.

6. Khurana (2007:297).

7. Michaels, Handfield-Jones, and Axelrod (2001). By using a marketplace as its central metaphor, McKinsey focused on the firm's brand, on individuals rather than teams, and stressed the importance of significant differentials in compensation for the top performers. Although the mantra that "firms with the best talent win" seems incontrovertible, it's far too superficial as a guide to action. In complex systems like business organizations, just having talented individuals is not enough. The quality of the systems is also critical: they can make good individuals look bad and mediocre individual talents look good. Jeffrey Pfeffer, in his excellent criticism of the McKinsey approach, points out the following:

- The emphasis on individual performance diminishes teamwork and creates destructive internal competition.
- The glorification of talent outside the organization plays down the skills and abilities of those inside.
- The approach can create self-fulfilling prophecies, as those labeled less able become less able through lowered expectations.
- It deemphasizes fixing systemic, cultural, and business process issues, which are invariably much more important.
- It develops an elitist, arrogant attitude that results in organizations that are superficially smart but deeply unwise. (Adapted from Pfeffer 2001)

Pfeffer's diagnosis was prescient because all of these factors were readily apparent in the collapse of Enron, one of McKinsey's major clients and ardent supporters of the

idea that a firm's success is based on hiring talent and giving out extraordinary rewards to the stars. It turned out that, in the constant turmoil that was Enron, managers had no time to judge people's actual performance and even less time to develop real skills on a job. The organization was a power-based structure where self-promoting, narcissistic individuals flourished.

8. These tacit premises were made explicit in Tichy (1989:101).

9. Welch's famous (or notorious, depending on your point of view) "rank and yank" system, whereby every year the lowest 10 percent of performers were either fired or removed, reflected the winnowing environment he created. For an excellent discussion of the issues involved in using the "rank and yank" approach see Grote (2005).

10. Shane (2010).

11. McCall, Lombardo, and Morrison (1988:58).

12. Charan, Drotter, and Noel (2001).

13. Jaques et al. (1978). The concepts of the time span of discretion and the stratified system theory of which it is a part, as developed by Jaques, are controversial. This is not because of the use of the time-span dimension itself, whose validity for measuring differences between levels of jobs seems to be widely acknowledged, but because of his contention that one's capacity for cognitive complexity or cognitive power (i.e., one's time horizon) is fixed at birth. Although Jaques distinguished cognitive power as only one component of the ability to work effectively, the fact that he regarded individuals as limited at birth was and is politically incorrect, and clear evidence for it is difficult to find. The ecological model is noncommittal on this question, although, in the absence of evidence, the view of growth as the unfolding of potential could clearly be used to argue for his point of view. With regard to the development of athletes, Chambliss (1989) has found that, with few exceptions, native gifts are relatively unimportant and thus argues in the opposite direction.

29. Don't Throw the Past Away

1. Gorn (2000:B4).

2. Daniel Boorstin, lecture at Downtown United Presbyterian Church, Rochester, N.Y., May 1, 2000.

3. Http://www.theologyweb.com/campus/archive/index.php/t-26682.html (accessed September 8, 2011).

4. Quoted in Friedman (1999:10).

5. Santayana (1905:284).

6. Van Fleet and Wren (2005:44–46).

7. This is the original derivation of the word "history" from the Greek *histor*, meaning "to know."

8. Kilts (2007). Duracell had, at one stage, actually been owned by Kraft, for whom Kilts had worked for many years, but it had been sold to Kohlberg, Kravis, and

Roberts (KKR) for $1.8 billion in 1988 (Kilts 2007:113). In 1996, before the sale to Gillette, KKR still owned 34 percent of Duracell.

9. The information on Duracell and its competitors is from "Gillette's Energy Drain (A) and (B)," *Ivey Business School Cases* 905M26 and 905M27 (2004).

10. Collingwood (1994).

11. Bloch (1968:117).

12. For a comprehensive criticism of the social sciences see historian Gaddis (2002). He argues that the social sciences made the mistake of modeling themselves on the old "hard" sciences. In his view they should be more like the younger, "historical" sciences such as evolutionary biology and ecology.

13. Mintzberg (2009).

14. For a comprehensive discussion of analogies, including how they work and how they can be abused, see Holyoak and Thagard (1995).

15. Welch (2001).

16. Hughes (1993:47).

17. This is based on the version of *On War* edited by Michael Howard and Peter Paret (Howard and Paret 1976).

18. Howard and Paret (1976:141). Clausewitz essentially sees theory as playing the same role as what I have been calling a "mental model."

19. In management this distinction between analysis and synthesis has been compellingly made by Henry Mintzberg in his critique of strategic planning. See Mintzberg (1994). Clausewitz see theorists as teachers and coaches:

> A genuine theorist is like a swimming teacher, who makes his pupils practice motions on land that are meant to be performed in water. To those who are not thinking of swimming the motions will appear grotesque and exaggerated. By the same token, theorists who have never swum, or have not learned to generalize from experience, are impractical and ridiculous: they teach only what is already common knowledge: how to walk. (Howard and Paret 1976:120)

One wonders what he would have made of modern-day business schools.

20. Neustadt and May (1986:251).

21. Quoted in McLuhan (1964:70).

22. Roethlisberger (1968:85–94).

23. Preface to *Leaves of Grass,* Bradley and Blodgett (1973:718).

24. From his essay "Walking," which appeared in the *Atlantic Monthly* in August 1862.

30. Using the Ecocycle

1. On a few occasions I have given context-free advice. You should *always* separate performance management from budgeting and its financial forecasting role

because no situation benefits from having the two joined (see page 112). Similarly, stretch goals should *always* be used for learning objectives, not for performance purposes, because of the different meanings attached to feedback in the two situations (see page 263n8). In a learning situation failure is seen as an opportunity for improvement; in a performance situation failure is just failure. But even this advice is context specific.

2. Clausewitz was more scathing about theoretical, principle-based approaches to war:

> It is only analytically that these attempts at theory can be called advances in the realm of truth; synthetically, in the rules and regulations they offer, they are absolutely useless. They aim at fixed values; but in war everything is uncertain, and calculations have to be made with variable quantities. They direct the inquiry exclusively toward physical quantities, whereas all military action is intertwined with psychological forces and effects. They consider unilateral action, whereas war consists of a continuous interaction of opposites. (*On War*, ed. and trans. Howard and Paret 1976:141)

3. For a description by Harvard professor Clayton Christensen of how his theory of disruptive innovation helped Intel's Andy Grove think, see his essay at http://hbr .org/2010/07/how-will-you-measure-your-life/ar/1 (accessed January 30, 2011).

4. These two styles are closely related to two broader categories of theories of change that Beer and Nohria (2000) call theory E and theory O. The change efforts of theory E focus on maximizing the economic value of a firm by using a programmatic, top-down leadership style. They concentrate on structures, systems, and incentives and often use armies of data-driven consultants to support them. In contrast, the change initiatives of theory O aim at developing organizational capability. Using participative leadership, they focus on mobilizing an organization's culture to search for emergent strategies. Under theory O, process consultants are often used to conduct small-scale, pilot projects: incentives typically lag the process. As Beer and Nohria point out, it's not a question of choosing *either* theory E *or* theory O but of using both together. They can be used in sequence: *first*, theory E and *then* theory O but *never* the other way around. The frameworks could be used together at the same time at different levels in the firm.

5. Wicked problems are problems with tangled roots and causes that involve multiple stakeholders with competing values and goals. They are truly "messes"— problems that defy definition, let alone technical solutions. Indeed, defining them is the first step toward developing countermeasures to deal with them. They are countermeasures rather than solutions, for there are no "right" answers. Wicked problems pose dilemmas that offer choices not between good and evil but sometimes between two "goods" and more often between two evils. Every action taken to solve them counts, for wicked problems change as you grapple with them. In Greek mythology the incarnation of a wicked problem was the nameless, snakelike Hydra, with nine heads and poisonous breath. If you cut off one head, two others grew back in its place.

Only if you cut off its one immortal head could you slay the monster. See http ://en.wikipedia.org/wiki/Lernaean_Hydra.

For the original description of wicked problems see Rittel and Webber (1973). For an accessible summary of the nature of wicked problems and how they might be "tamed" see Camillus (2008).

6. These questions are taken from Drucker (1954:52–55).

7. For a brief but useful guide to choice of metaphor see Andriessen (2008). For a discussion of sports analogies see Keidel (1984). A most helpful theoretical perspective on the use of metaphors is Donald Schön's *Displacement of Concepts* (Schön 1963).

8. You can use your mission (your reason for being) as a "skyhook" from which to hang a stairway to the future. Here mission and strategic intent act as "pull" devices that feed back down into the processes, capabilities, disciplines, practices, focuses, and commitments and into the people required to realize them. For a helpful discussion of how to use the "staircase" approach see Hay and Williamson (1991).