Innovation Management

Strategies, Concepts and Tools for Growth and Profit

Second Edition

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The Innovation Imperative:
Why Innovate?

If you know exactly what you are going to do—what is the point of doing it?

—Pablo Picasso[1]

The good-to-great companies at their best followed a simple mantra: 'anything that does not fit with our Hedgehog concept [single simple organizing principle], we will not do. If it doesn't fit, we don't do it. Period.'

—Jim Collins, *Good to Great*[2]

LEARNING OBJECTIVES After you read this chapter, you should understand:

- The difference between invention, innovation and innovation management
- What innovation management is
- Why the ability to innovate and innovation management are vital core competencies for every manager
- Why innovation should pervade the organization's entire value chain, both direct and indirect
- The three reasons why innovation is crucial in order for organizations to survive and thrive
- How innovation energizes managers and workers, raises growth and profit and helps companies survive
- Who are the world's top 20 innovators and why it is so difficult to remain in the premier league of innovators

1.1 Introduction

The ability to innovate is a vital core competency—one that you, as leader, entrepreneur or manager *must* possess, in order to build growing, profitable businesses and with them change the world for the better. At the same time, *managing* innovation is one of the most *difficult* processes that you will guide and shape.

It is this combination of high risk and high return, mission-critical importance and Everest-size challenge that makes innovation and innovation management so challenging. The skills that drive creativity and inventiveness are often downright hostile to the competencies that drive strong management. Yet successful innovation requires both.

One of the many paradoxes that have innovation at their core is the clash between Pablo Picasso and Jim Collins—the need for free, unfettered creativity, together with the need for focused, systematic discipline—and the overriding imperative to make these two qualities not only coexist but fall in love and marry. Great organizations score 10 out of 10 on both culture of discipline and creativity. Yet these two dimensions are like wolf and lamb.

The Bible says, 'The wolf and the lamb shall lie down together.' 'But ... they won't get much sleep', commented humorist Woody Allen. Neither will managers trying to reconcile creativity and internal discipline. Judging by Collins' data, few managers fully succeed.

Case Study: Pablo Picasso: Creativity and Discipline

Picasso is a paradigm of sustained creativity and discipline, without parallel.

He created his first work of art in 1901 and his last in 1973, in the month he died. His life was a 72-year-long stream of path-breaking ideas. He worked with oil, watercolour, pastels, charcoal, pencil and ink, and he sculpted. A retrospective exhibition of his sculptures at the Pompidou Centre in Paris revealed that he never stopped innovating, even at age 90. Yet his real secret was *discipline*. Picasso worked in his studio nearly every single day. He worked incessantly, through the Spanish Civil War and the two world wars and through much turbulence in his personal life. Nobody told Picasso he *had* to work so hard. After he became famous and wealthy, he truly did not need to work. But he did, because he was passionate about art and loved to create, because he loved the *act* of creation, not just its material fruits.

Did Picasso create value? By the market test, he did. His 1905 painting *Garçon à la Pipe (Boy with Pipe)* was sold at an auction in May 2004 for $101 million—a new all-time record for a painting.

Source: Wikipedia (wikipedia.org).

1.2 A Key Fallacy

Of the many fallacies that surround innovation, perhaps the most damaging is one widely shared by many managers and organizations: 'Innovation is solely what happens in the Research and Development (R&D) centre.' It follows from this that responsibility for innovation lies primarily with the Vice-President (VP) (R&D).

Organizations where innovation resides *solely* among R&D engineers are often boring, bureaucratic places to work and rarely sustain growth and profit. *Innovation ought to be a process that pervades every single part of the organization's value chain, as oxygen pervades our atmosphere.* It should drive behaviour throughout the organization, from R&D to the assembly line, through the customer service centre and down to the mailroom and warehouse.

In your organization, can you imagine a warehouse worker calling up the CEO and saying, 'boss, why do we *need* a parts warehouse anyway? And explaining how much money could be saved by just-in-time parts deliveries, like the company down the block? And a CEO who will take the call and listen? If you cannot, your innovative culture needs some serious renovation.

DEFINITIONS

Successful *innovation* occurs when an *invention*, related to a product, service or process in some part of the organization's *value chain*, is joined with a *business design*, which in turn is implemented with discipline and skill through *innovation management*.

- **Invention:** The creation of novel services, products and production techniques.
- **Innovation:** 'The practical refinement and development of an original invention into a usable technique or product'; or, a process in which creativity is applied to every facet of an organization's value chain, from beginning to end, to develop new and better ways of creating value for customers.
- **Innovation management:** The process of creating and implementing a business design surrounding a creative idea, with the goal of transforming an invention into an innovation, and ultimately to achieving sustained competitive advantage, leading to growth and profit, in the marketplace (see Figure 1.1).
- **Value chain:** The series of related actions, processes and steps required to bring the finished product or service to the ultimate consumer; e.g., for the personal computer (PC) industry: product design, acquisition of components, assembly, testing, shipping, customer service and maintenance.


Definitions continued

Definitions *continued*

> An organization has an *internal value chain* comprising the processes the organization employs to get its product to market; the industry has a more comprehensive *industry value chain*, that shows all the various processes and products that create value for the ultimate customer.
> * Business design: An integrated system showing how to create an internal value chain—finance, produce, market, deliver, advertise and service a product or service innovation—and then implement and manage that system, down the value chain, in order to delight the customer.

Figure 1.1:   From Invention through Innovation to Sustained Competitive Advantage
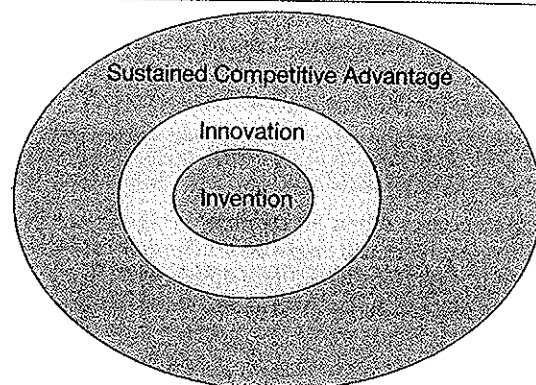
Inventions become innovations when they are refined in a manner that brings them successfully to market. Innovations create sustained competitive advantage when they are implemented in a manner that creates and sustains significant added value for customers above that created by competitors.

Source: Authors.

The ultimate goal of innovation is *sustained* competitive advantage. Sustained competitive advantage necessarily requires sustained innovation. We will see in Tables 1.1 and 1.2, how very difficult it is to sustain top-flight innovation. To bring an innovation to market, companies conceive an invention and create a 'value chain' around it. Consider some of the key links in a typical direct, or operational, chain of value that brings winning products and services to the consumer: R&D, production, supply chain management, quality assurance, customer service. And in the indirect or supporting value chain: human resource management, finance, strategy, marketing, sales.

Table 1.1   World's Top 20 Innovators, 2010 versus 2005

2010 Rank	2005 Rank	Company	HQ Country	HQ Continent	Stock returns 2006–09 (in %)	Revenue growth 2006–09 (in %)	Margin growth 2006–09 (in %)
1	1	Apple	US	North America	35	30	29
2	8	Google	US	North America	10	31	2
3	3	Microsoft	US	North America	3	10	−4
4	7	IBM	US	North America	12	2	11
5	14	Toyota Motor	Japan	Asia	−20	−11	n.a.
6	17	Amazon.com	US	North America	51	29	6
7	--	LG Electronics	South Korea	Asia	31	16	707
8	–	BYD	China	Asia	99	42	−1
9	4	General Electric	US	North America	−22	−1	−25
10	5	Sony	Japan	Asia	−19	−5	n.a.
11	12	Samsung Electronics	South Korea	Asia	10	17	−9
12	16	Intel	US	North America	3	0	12
13	–	Ford Motor	US	North America	10	−12	n.a.
14	–	Research In Motion	Canada	North America	17	75	−6
15	–	Volkswagen	Germany	Europe	8	0	14
16	--	Hewlett-Packard	US	North America	9	8	9
17	–	Tata Group	India	Asia	Private	Private	Private
18	20	BMW	Germany	Europe	−8	0	n.a.
19	–	Coca-Cola	US	North America	9	9	1
20	–	Nintendo	Japan	Asia	−8	22	3

Source: 2005 Data from *Business Week,* 15 August 2005, based on a poll of 940 senior executives in 68 countries by Boston Consulting Group; profitability data are from the Fortune 500 (*Fortune,* 18 April 2005); 2010 data from *Bloomberg/Business Week,* http://www.businessweek.com/interactive_reports/innovative_companies_2010.html (last accessed 14 February 2011).

Table 1.2   World's Most Innovative Companies (Fast Company), 2010

	Rank	Revenue (in $ billion)	Profit	Net margin (%)
1. Facebook	–	–	–	–
2. Amazon	#340	24.5	0.901	4
3. Apple	#197	36.5	5.7	16
4. Google	#355	23.7	6.5	27
5. Huawei	#397	21.8	2.7	12
6. First Solar	–	–	–	–
7. PG&E	–	–	–	–
8. Novartis	#160	45.1	8.4	19
9. Wal-Mart	#1	408	14.3	4
10. HP	#26	115	7.7	7
11. Hulu	–	–	–	–
12. Netflix	–	–	–	–
13. Nike	#453	19.2	1.5	8
14. Intel	#209	35	4.4	13
15. Spotify	–	–	–	–
16. BYD	–	–	–	–
17. Cisco	#200	36.1	6.1	17
18. IBM	#48	96	13.4	14
19. GE	#13	157	11.0	7
20. Disney	#199	36.1	3.3	9

Source: List for 2010 by Dr Shailesh Thaker, Fast Company, http://www.drshaileshthaker. co.in/blog/index.php/top-20-innovative-companies-of-the-world/ (last accessed 14 February 2011). Financial data from www.fortune.com, Global 1000.

To build profitable, in-demand products from appealing new ideas, it is necessary to *manage* the innovative process—i.e., wrap an innovative business design or model (how to finance, produce, market, deliver, advertise and service) around a product or service innovation, and then manage that process, down the value chain to the ultimate consumer (see Chapter 5 for a discussion of business models).

Often, innovative products are encased in conventional business models that do not fit the product innovation itself. For example, bringing the MP3 player iPod to market as a stand-alone product would have failed. Instead, the iPod innovation of Apple was part of a large ecosystem or business design that included 99-cent music downloads. Without that key element in the business design, the demand for the iPod would have been substantially smaller. Apple's iPad and iPhone both were at the centre of a vast number of applications that enhanced both products and were crucial to their huge success. No wonder Apple remains one of the few top 20 innovators that are able to retain their innovative skills.

This is why we argue that *in the term 'innovation management', the noun 'management' is as important as, or more important than, the adjective 'innovation'.* Frequently, entrepreneurs break the rules, ask insightful questions and come up with phenomenal inventive ideas, but fail to ask the three key questions:

- How will I build a business around this idea?
- How will I make money?
- How will I sustain growth and profit?

Lest the reader fears we are preaching unbridled greed let us explain the issue: in our experience, few successful entrepreneurs are driven mainly by greed or by the desire to become extremely wealthy. The ones who are, usually fail. However, unless their organizations achieve sustained growth and profit, they will not survive, the innovations they bring to society will shrivel and disappear and the jobs that come with them will evaporate. Money is to organizations what oxygen is to living cells. It sustains life. That is how innovators tend to regard money—it enables them to continue inventing and innovating; without it, innovation would grind to a halt.

'Successful strategy is 10 per cent *formulation* and 90 per cent *implementation*,' a senior manager from the information management and storage firm EMC² told us. Surely this lesson was learned the hard way from the key management discipline of competitive strategy. Michael Porter's powerful 1980 book *Competitive Strategy* created a new management discipline with the same name.[3] Business schools rushed to develop core compulsory courses in strategy. Companies hurried to appoint VPs in charge of strategy. It took a long time for organizations to realize that the key to successful competitive strategy was not the strategy itself *but how that strategy was implemented and managed.*

Harvard Business School professor Robert Kaplan claims companies need a VP (Strategy Implementation). The same principle applies to innovation: '10 per cent innovation; 90 per cent innovation management.' Unfortunately, the reverse proportion holds true in many organizations.

Why are innovation and innovation management so vital? We believe there are *three key reasons* to innovate:

1. Energize your people
2. Build growth and profit
3. Survive

We will now explain each reason more fully.

1.3 Innovation to Energize

One of the most important answers to the question, *why* innovate? is this: *To energize your existing people and to attract great new ones.* If your organization's competitive advantage is driven by its great people—and in today's global world, nearly all successful organizations fit that description—then it must be innovative, because great people love to think up, develop and implement new ideas. Organizations that do not innovate quickly lose their innovative people. They migrate to organizations that *do* welcome and encourage such people and allow their talents full expression.

In 2003, 73 per cent of CEOs indicated that they thought of leaving their job. In 2000, the proportion was only 54 per cent. Stress? Pressure? Uncertainty? Certainly, but also boredom and lack of challenge. And this was the case well before the 2007–09 global crisis that cost many CEOs their jobs. (In a two-month period, from December 2009 to February 2010, CEOs from 50 leading global companies resigned or were fired.[4]) We believe a far lower proportion of CEOs consider quitting dynamic, innovative, creative organizations. The problem is not confined solely to CEOs. Studies in the United States show that many employees as well want to quit their jobs. One study showed some 60 per cent of professional employees wanted to change jobs, and nothing could persuade them to stay.[5] The resulting 'churn' is very costly for companies, who then need to retrain, re-motivate and re-energize new workers.

Warren Buffet, the 80-year-old legendary head of the $136 (2010) billion holding company Berkshire Hathaway, 13th on the US Fortune 500 list in 2005, was once asked when he planned to retire.

'Two years after my death', he replied. 'Plans I put in place will last for two years after I am gone.' Does Buffet love what he is doing? There is no question. He is a constant innovator and original thinker.[6]

Case Study: (Lack of) Innovation and the 2007–09 Global Crisis

Most observers understand that the proximate cause of the 2007–09 global financial crisis was America's sub-prime mortgage crisis. But management expert Michael Mandel, writing in *Business Week*, believes there is a deeper cause: Failure to innovate. Notes Mandel:

> There's growing evidence that the innovation shortfall of the past decade [of the 2000s] is not only real but may also have contributed to today's financial crisis. Think back to 1998, the early days of the dot-com bubble. At the time, the news was filled with reports of startling breakthroughs in science and medicine, ... one thing is abundantly clear ... The commercial impact of most of those breakthroughs fell far short of expectations—not just in the U.S. but around the world.[7]

Case study continued

Case study continued

When pieces of paper, and the fortunes they created, energized the marketplace and attracted the best brains, rather than the tough road of technological innovation, and when those pieces of papers became detached from the underlying innovation that drives profits, the global collapse was perhaps inevitable.

Source: www.timnovate.wordpress.com

Change Society

'We innovate', notes an International Business Machines (IBM) report, 'when a new thought, technology, business model or service actually changes society'.[8] This 'change-the-world' passion is an enormous force that drives innovation and enhances the wellbeing of millions worldwide. 'Make meaning', not 'make money', is the true focus of the innovator.

Case Study: Lifeline Express (India)

How can one bring medical care to remote villages in India? Often, children and adults in India have medical problems that can be cured easily with surgery or other care, things like cleft palate or cataracts—but suffer with them for their entire lives, because they cannot afford medical care in the cities, or even get to the cities, where hospitals and clinics exist. India's rail network is one of the largest in the world. It transports several hundreds of millions of passengers yearly, has 1.4 million employees and has a route covering nearly 40,000 miles. In 1991, Indian Railways and the Indian Health Ministry joined forces to provide a simple solution to providing basic medical care for remote poor villagers. They called it Lifeline Express, or Jeevan Rekha Express. Equip a train with modern medical equipment and operating theatres. Staff it with volunteer doctors and surgeons. Run the train through the length and breadth of India, to more than 7,000 stations. Inform the villagers in advance, examine them quickly and choose those best suited for the Lifeline Express care. The project is supported by Impact UK (a charitable foundation), Indian businesses and individuals. Some 400,000 Indians have benefitted so far. A second train has now been added.

Source: S. Maital, 'Lifeline Express: 400,000 Lives Changed in India—Should America Follow Suit', TIMnovate blog, http://timnovate.wordpress.com/2009/11/24/806/

Case Study: Fistula: Two Million Women Suffer

Obstetric fistula is a hole in the birth canal caused by prolonged labour without prompt medical intervention, usually a Caesarean section. The woman is left with chronic incontinence and, in most cases, a stillborn baby. The condition leads to widespread social ostracism, pain and suffering. At least 3.5 million women worldwide, including many in Africa, Asia and the Arab region, are living with the condition, and some 50,000 to 100,000 new cases develop each year. The cost of curing the 2 million African, Asian and Arab women who suffer from the condition is $600 million, or $300 per woman. This is a desperate social need that can be solved only through feet-on-the-ground innovation, taking into account the resource-poor health care systems in the countries in which women with fistula live. It is a black mark on Western medicine and innovation that it has not fully addressed the suffering of these two million women and focused its innovation on it.

Source: UNFPA, United Nations Population Fund (www.unfpa.org).

ACTION
LEARNING

fistula
e Internet to research 'obfistula'. What data do you
How would you organize a
o find a practical solution?
ould join the team? Do you
specialized medical knowl-
> tackle the problem?

Ideas can sprout anywhere and everywhere, but the question is, *Does senior management listen?* Innovation changes the organization and this change can be initiated *anywhere* in an organization, even at the lowest levels. If no one with the power to implement listens seriously, who will bother to express those ideas? If new ideas are shot down as soon as they are born, a second idea will rarely follow the first. But if every new idea gets a serious hearing no matter who proposes it, one day just such an idea may transform your organization and brighten its future. Global giant IBM is a prime example.

Case Study: IBM Global Services

Today IBM is America's 10th-largest company (by sales). About half of IBM's total revenue of $95.8 billion (2009) comes from a business unit that did not exist a decade ago, called Global Services, now divided into Global Technology Services ($37.3 billion in revenue in 2009, with 35 per cent gross margin) and Global business Services ($17.7 billion in revenue in 2009, with 28 per cent gross margin). This division helps companies develop e-business 'on demand', by integrating software and hardware systems. As told by strategy guru Gary Hamel, the story of its birth is instructive. It began early in 1994, with

Case study continued

Case study continued

IBM deep in crisis. A junior IBM employee, a programmer named David Grossman, one of some 250,000 IBMers, had a vision. Based at Cornell University, Grossman used a supercomputer to download the Mosaic Web browser (forerunner of Netscape) and quickly envisioned the Next Big Thing: Web-based business. He became determined to get IBM out in front of it, even though IBM at the time still focused on hardware and mainframes. He conveyed his vision to manager John Patrick. They formed a team. Grossman led the technology team; Patrick supplied the business design. They wrote a nine-page manifesto titled 'Get Connected', showing six ways IBM could leverage the Web. New IBM CEO Lou Gerstner championed the idea. And IBM built a powerful, profitable and fast-growing new business, without which its future would have been bleak.

Source: Based on Gary Hamel, 'Waking Up IBM', *Harvard Business Review,* July–August 2000, and Jay Galbraith, *Designing the Customer-centric Organization: A Guide to Strategy, Structure, and Process* (San Franscisco: Jossey-Bass, 2005).

One lesson the IBM Global Services case teaches us is this: Despite common belief, innovation is not necessarily technological. 'Most people, when they think innovation, immediately think technology', notes the chief strategist for Sony Corporation, 'when indeed innovation can be anything. It can be a marketing innovation, a financing model, it could be the way you run your life.'[9] IBM already had the technology it needed to build its e-business model; what it needed was a business design and organizational structure to leverage that technology in order to build growth and profit. Web technology would have been worthless to IBM without a business design to accompany it.

For example, we once worked with accountants from a global electronics company on a new way to finance consumer purchases of electronic devices. This was as much an innovation as the devices themselves: without it, selling those innovations would have been much more difficult.

Successful innovations are often a portfolio of new ideas, with some of them focused on the *product* and some focused on the *value chain* supporting the product innovation. That is why a pervasive spirit of innovation is so necessary and so valuable.

Case Study: Motorola—Competing with Japan

A pioneer in pagers, Motorola found, like many companies, in the 1980s, that superior Japanese efficiency in manufacturing pagers, and their lower prices, would drive

Case study continued

Case study continued

Motorola out of this business entirely, unless rapid remedial action was taken. Motorola innovated. It came up with custom-tailored pagers: customers could design their own pager specifications. Each customized pager sold for $200, twice the price of the standard 'commodity' pagers. The key innovation here was in the business design or value chain. Orders were transmitted by fax to Motorola headquarters, sent by computer to the factory in Boynton Beach, Florida, where sophisticated robots produced each unique pager, then shipped by FedEx to the customer, all in a matter of days.

Source: From B. Joseph Pine, *Mass Customization: The New Frontier in Business Competition* (Boston, MA: Harvard Business School Press, 1992).

Innovation is like skydiving—fun, scary and risky. The risk can only be managed and minimized by disciplined organization. The levels of innovation risk should parallel the Three Bears' porridge: not too hot, not too cold. When risk is optimized, people are energized, successes emerge and growth and profit result. When companies avoid risk altogether, they perish. The greatest risk is to attempt to avoid risk altogether.

Case Study: Bizet's *Carmen*

Sometimes innovation exacts a heavy personal toll; the fruits of victory can come too late to benefit the innovator, or perhaps never, at all. Perhaps the best-loved opera ever composed, Georges Bizet's *Carmen* is just such a tale.

Carmen premiered at the Paris Opera Comique on 3 March 1875. At the time, there were rigid rules for composing operas. There were grand operas (Wagner was the paradigm) with larger-than-life tragic themes, and comic operas, featuring lighter-than-air love stories, large choirs and no social themes.

Bizet, a virtuoso pianist and aspiring composer, decided to innovate—to break the rules. His *Carmen* debuted at the Comic Opera, but had a tragic theme. The first act was more or less conventional and the audience applauded. But after that, it was all downhill. Both the audience and the critics severely panned it after the tragic Acts 2 and 3. Bizet died, apparently broken-hearted, a few months later.

That same year *Carmen* was performed 46 times. Its popularity grew steadily until it attained its unchallenged position as one of a handful of truly great operas. Bizet did not live to enjoy the fruits of his successful innovation. Did he regret composing his revolutionary opera? We cannot know for certain.

Source: S. Maital, 'Innovation: Batman as Management Educator', TIMnovate blog, http://timnovate.wordpress.com/2008/07/28/innovation-batman-as-management-educator/

Innovators like Georges Bizet often reconcile two conflicting metaphors: that of the 'internal compass' and the 'radar'.

- 'Internal compass' is an inner voice that drives creative energies. Writers sometimes talk about simply putting down on paper what an inner voice tells them. It is oblivious to, and independent of, external signals.
- Radar is a highly sensitive device that collects signals from people and uses those signals to generate innovations people want, need and enjoy.

Innovators need both compass and radar—neither works alone. Bizet sensed what operagoers love. He generated a new form of opera, ignoring the existing conventions and constraints. But he listened to his internal compass. He was both 'in the box' (of opera lovers' needs and wants) and 'out of the box' (of existing forms, rules and conventions).

Are You Having Fun?

The world's leading industrial design company is called IDEO. Based in San Francisco and run by legendary Stanford professor David Kelley and his brother Tom, IDEO has come up with hundreds of winning ideas.

IDEO has on its staff anthropologists, psychologists, MBAs and engineers. They have a secret weapon: they have fun. They love to come to work. They throw rubber darts at one another. Hung high on the ceiling above their workplace is the wing of a DC-3. Why? Because someone thought it would be neat.

Creating an energized workplace, which workers enjoy being in because they have fun is a highly serious winning strategy. Great innovators are those who sometimes do and say outlandish things. Workplaces where this is frowned on throw a wet blanket on creativity.

Not everyone agrees. We know of a leading global high-tech company that, as a start-up in the 1970s, was a fun place to work. As competition heated up and as the company became increasingly global, a stern message went out from the CEO and top management: 'It is a competitive jungle out there. The fun is over. We are at war. Let's get serious. Cut out the horseplay and nonsense.'

We understand the reasons underlying this message, but strongly doubt the company became more competitive as a result. The opposite is the case: the company lost creative people who were stifled by its new approach.

ACTION LEARNING

Envisioning Your 'Photograph of the Future'
Picture yourself as Georges Bizet in 1874. You can compose a safe conventional opera—comic or grand—and achieve acclaim. Or you can take risk and innovate by combining those two genres in a creative, novel way.
Suppose you are a short-term clairvoyant. You know your innovative opera *Carmen* will be panned and booed. You do *not* know how it will be regarded 50 years from now. Would you compose it anyway? Is the personal sacrifice worth the ultimate result? Would your internal passion for innovation sustain you through the hard times that you know will come? Be brutally honest with yourself.
Suppose now you are a long-term clairvoyant—you *know* *Carmen* will ultimately become perhaps the most popular, best-loved opera of all. Would you still compose it knowing that it will face certain vilification?
What role do you think vision plays in driving innovation?

Case Study: Basketball—Win Games by Having Fun

Few basketball fans have ever heard of the Grinnell College Pioneers, a basketball team in Division III of the United States National College Athletics Association (NCAA). Yet it is hugely successful.

- They are the highest-scoring team in the NCAA, averaging 128.9 points a game, with 100 field goal attempts a game, including 63 three-pointers.
- They have won the Midwest Conference championship three times in the past seven years.
- In one game, in 1998, the Grinnell Pioneers scored 84 points in the first half (the average is less than 45–50).

Their 'recipe' is simple: have fun. Here is their 'business design'. Grinnell has three complete teams of five players. The coach, David Arsenault, puts a whole new team in after 35 seconds (the length of the shot clock), or at every whistle or dead ball. The players love it—they 'run and gun' at a furious pace. The crowd loves it because the pace is very fast and scores are high. The team once scored 149 points, and lost to Illinois College, who scored 157!

'This is the best time I ever had playing basketball!' says Paul Nordlund, one of the players. 'There's great camaraderie because everyone plays and plays about equal time … here I can run and gun. It's great!'

Arsenault has essentially built a radically new 'business model' for college basketball. When he got the job 15 years ago, the Grinnell basketball team had won four games in the previous three seasons combined. It is not surprising. Grinnell has only 1,400 students and the college, in a small Iowa town, is ranked as one of America's top academic institutions. Arsenault had brainy players whose individual ability was far below the average in the league.

So, how do you win games? By building a system based more on teamwork than on individual ability. Teamwork means everyone plays, about a third of each game. 'Because everyone plays, not just the stars, we're more of a team than other teams', says Steve Wood. Wood averages 28 points a game, even though he only plays a third of the 40-minute game on average. Grinnell players press all the time, all over the court, double- and triple-teaming the opposing player with the ball. They have fun—and they excel. Those two qualities are closely linked.

Source: Jaime Irvine, 'Grinnell College Basketball's Rapid Offense Still Astounds', posted on 21 February 2009 at http://bleacherreport.com/articles/127759-systems-check-checking-in-on-the-system-at-grinnell

1.4 Innovate for Growth and Profit

There is a second, powerful and practical answer to the question, *why innovate?* It is to achieve high, sustained growth and profitability.

It is an empirical fact that companies that excel at innovation are also far more profitable than companies that do not (see Table 1.1). Boston Consulting Group asked nearly a thousand senior executives to rank companies by their innovativeness. The top 20 companies almost always lead their respective industries in return on equity, total return to investors and profit margins. The link between successful innovation and profit is almost a tautology (a self-evident truth). By definition, innovative products that achieve marketplace success generally command higher prices and higher profit margins than competing products. It is also a near-tautology that successful innovation demands high-level innovation management.

Innovation is one of the best ways to build market share. And, in turn, market share is directly related to Return on Investment. Market share exceeding 40 per cent is, on average, associated with pre-tax return on investment exceeding 20 per cent (see Figure 11.3).

If successful innovation is the key to profitability, *why then do some organizations fail miserably at it?* We believe the reason is this: Global organizations follow a three-step procedure to attain growth and profit. Those three key steps embody an internal contradiction. They are:

1. Innovate
2. Deploy and scale up
3. Adapt locally

There are built-in trade-offs between innovation and scale, and between scale and local adaptation and customization. These trade-offs are difficult enough, that they are better described as paradoxes.

Innovation comes from empowered individuals and teams who break rules. To exploit their creativity, organizations need to deploy—produce, market, distribute, sell, service—worldwide. Increasingly, this applies to small start-up companies as well. Organizations that deploy globally from day one will have a competitive advantage over those that defer going global. This brings economies of scale (cost savings). But size may destroy innovation; creative persons tend to feel lost in large organizations, especially when 'scale' implies bureaucracy, discipline and 'following the rules'.

The Challenge of Sustained Innovation

Becoming innovative is hugely difficult for an organization. Sustaining that innovation over time is much harder. Table 1.1 shows that between 2005 and 2009, Apple retained its #1 ranking, mainly through the leadership of CEO Steve Jobs and through its pioneering three breakthrough products, iPod, iPhone and iPad. Google, Amazon, IBM and Toyota improved their innovation rankings substantially, though lately Toyota has been troubled by product quality and recalls (showing how vital operational excellence is, in addition to innovative skill). Amazon has leaped ahead through its new e-book *Kindle*. In contrast, Sony and GE slipped several rungs on the innovation ladder.

A number of companies not even on the 2005 Top 20 list have excelled in the 2010 list: LG, BYD, Ford, RIM, Volkswagen (VW), Hewlett-Packard (HP), Tata, Coca-Cola and Nintendo. Later in this book, we will feature case studies for several of them. BYD is the only Chinese company on the list. A large number of companies saw disastrous declines in their innovativeness between 2005 and 2010. Among 2005 Innovation leaders not even on the 2010 list are: 3M, rank 2 in 2005; Dell, rank 6; Procter & Gamble (P&G), rank 9; Nokia, rank 10; Virgin, rank 11; Wal-Mart, rank 13; eBay, rank 15 and Starbucks, rank 19. For most of these declining companies, business results matched the decline in innovation. Table 1.1 reveals, we believe, how supremely challenging it is to sustain innovation over the years.

The very concept of Top 20 Innovator has changed rapidly. *Fast Company* magazine, which focuses on entrepreneurship and innovation, has an alternate ranking of the Top 20 (See Table 1.2).

According to Table 1.2, the top innovator in 2010 is Facebook, not Apple. This remarkable social networking start-up, featured in the motion picture *The Social Network*, joins Hulu, Netflix and Spotify, as pure Internet businesses enjoying meteoric rises. (Hulu distributes movies and videos by Internet; Netflix enables online ordering of mailed digital versatile discs (DVDs); Spotify provides online music libraries.) For the first time, clean-energy companies appear on the list (First Solar, PG&E). For this list of top innovators as well, innovation has proved profitable. The average net profit margin (net profit as a per cent of revenue) is 12 per cent, a third or more higher than, for instance, the net margin for the 500 Standard & Poor companies for 2010 (8.6 per cent). The presence of Huawei, a large Chinese networking and telecom equipment company at rank 5 is highly significant, signalling China's intention to implement a policy of 'Invented in China' to complement its 'Made in China' competitive advantage.

Table 1.2 shows, we believe, that there are two key difficulties in sustaining innovation. One is at the level of the organization: Maintaining innovative energy with a powerful innovation process that generates a constant torrent of ideas and resists tendencies toward bureaucratization. The second is at the level of the industry: Tracking constant changes in technology, in competitors, and above all in customer preferences, and adapting to them with first-rate strategic agility and renewal. Strategic innovation must link the internal innovation processes of the firm with the external forces that drive changes in the market and in the industry.

Be Big, Feel Small

'How can we *be* big, and *feel* small?' a senior Intel executive once asked us. Some of the ways to do this will be discussed in Chapters 2 and 4.

Another paradox, or internal contradiction, pertains to 'scale and adapt'. Cost savings derive from selling standard products everywhere, enabling long production runs and learning-curve savings. As a result, there is continual pressure to make products standard. But local markets often differ widely in culture, preferences and tastes. Adapting products for each market can be essential for market success but fatal for costs and profit margins.

Sometimes, powerful branding and marketing can overcome local taste differences. Philadelphia brand cream cheese is sold all over Europe, in the same flavour, taste and package even though tastes for cheese differ widely between countries. More often, however, local adaptation is essential. Even Coca-Cola subtly calibrates the sweetness of Coke across different countries.

In Israel, the Magnum ice cream bar was introduced—but it flopped. Only when managers realized that Israelis prefer milk chocolate—while the existing Magnum had a dark chocolate covering—did they adjust the product and attain huge success with it. 'Adapt' was a vital next step, after 'Deploy'.

Excess standardization ruins the product. Some believe General Motors (GM) overstandardized its cars, so that all the once-powerful car brands became homogenized lookalikes. But Toyota, now challenging GM for the title of global sales leader, once overly adapted, proliferating options to the extent that costs soared.

Case Study: Vicks Vaporub: Think Local, Act Global

'Think global, act local' (deploy globally, adapt locally) has become a cliché. But, notes a former P&G top manager, Gurcharan Das, the reverse is also true, 'International managers must also think local and then apply their local insights on a global scale ... re-employing communicable ideas in new geographies ....' One of Das' innovations was to introduce Vicks Vaporub in India in small 5-gram tins. Priced at 10 cents each, it was cheaper to buy four of them than the larger 19 gram tin. 'The trade thought we were crazy', notes Das. But it was a wise local adaptive innovation. Working-class people bought the small tin. Middle-class consumers bought the larger one. Each segment remained loyal to the tin size that suited it. The same strategy was successful for shampoo. Tiny one-dose sachets sold well to those who could not buy a whole bottle. Even package size can sometimes be a major profitable innovation.

Source: From Gurcharan Das, 'Local Memoirs of a Global Manager', *Harvard Business Review*, March–April (1993).

Risk

Discerning readers may be asking themselves this question: for every successful innovation story, like those above, there must be many failures. It is certainly true that innovation is risky. But when the nature of the risk is analysed carefully, it can be reduced significantly. Here is how this might be approached.

Statisticians argue that there are two types of errors. Type I error (rejecting a true hypothesis, equivalent in the courts to convicting an innocent person whose 'hypothesis' is, 'I didn't do it!') and Type II error (accepting a false hypothesis, equivalent to acquitting a criminal who falsely says, 'I didn't do it!').

Both errors exist in innovation. You can reject good, high-potential ideas (Type I error), and you can accept and implement terrible ideas (Type II error). Great innovators not only choose and implement good ideas, *but they are very good at rejecting terrible ones.* It is remarkable how many terrible ideas are brought to the marketplace, at high cost, only to find certain failure. This happens when managers fail to face the brutal facts.

Case Study: What Were They Thinking?

Marketing expert Robert McMath has 80,000 new products in his New Products Showcase and Learning Centre in Ithaca, New York. There are a lot more 'fizzlers' (failures) than 'sizzlers' (successes), he notes. New products succeed, he observes, when 'just about everything that needs to go right does go right'. He claims *you are a success as a new product developer if you abandon ideas destined to fail.* Among the new products that flopped and were certain to flop in advance:

- Gillette's 'For Oily Hair Only' shampoo (who wants to admit they have oily hair?). ('Break the rules'—later, other shampoos did create special products for dry, brittle, oily hair, but more subtly.)
- Frito-Lay Lemonade: While millions love salty Frito-Lay snacks that make you thirsty, who would buy a product with the same name that purports to *quench* thirst? Another major flop.

Source: From Robert M. McMath and Thom Forbes, *What Were They Thinking? Marketing Lessons You Can Learn from Products that Flopped* (New York: Three Rivers Press, 1998).

In the justice system, most people find Type I errors (convicting the innocent) horrifying, more than Type II (freeing the guilty). In innovation, Type I errors (rejecting good ideas) happen all the time.

> ## DEFINITIONS
>
> - **Type I Innovation Error: Rejecting a good idea.**
> - **Type II Innovation Error: Implementing a bad idea.**

We know of strong businesses established by picking through the junk piles of other companies and bringing to market ideas they rejected. If you know of such a junk pile, you may find exceptionally powerful innovations in it. In a sense, the patent system is just such a junk pile. There are millions of patents registered by the United States Patent Office alone, and millions more in Europe and Asia. An overwhelming proportion of patents are never used or implemented. Wise innovators are good at searching for existing patents before they begin reinventing the wheel.

In innovation, Type II errors are generally very costly. Courage to kill projects doomed to fail is often rare, if only because of the sunk-cost fallacy ('we've already spent $x million, let's spend a bit more and get this project done'). As McMath observes, successful innovation often relies more heavily on deciding which innovations *not* to implement, than the ones to be implemented. Wrong decisions waste not only money but, more importantly, *time.* You often get one chance to capture a window of market opportunity. Waste it, and the window closes, sometimes forever. We have personally seen many innovative projects, in which the engineers charged with carrying them out know with near-certainty, long before the projects are completed, that they will fail, but do not communicate this knowledge to (or are not heard by) senior decision-makers. Money and crucial time to market are both lost.

Make your innovative ideas leap high hurdles. Why waste years struggling uphill with a bad idea, when you might be having fun implementing a great one? Contrary to what most managers and entrepreneurs believe (that wasting a good idea is terrible), it is far worse to try to implement a bad idea, because many years of your life are wasted, years that cannot be recovered—although, it is true that the value of the learning acquired in grappling with a bad idea is highly valuable.

Innovation as Hurdle Jumping

One way to understand why innovation management is so vital, and so very difficult, is through a metaphor: The 110 metres hurdle event in the Olympics. There are key success factors common to both sprint hurdles and innovation management.

Suppose you are an Olympic hurdler. Olympic hurdle sprint races for men are run over a distance of 110 metres. Hurdles are 42 inches high and there are 10 of them. Suppose you have trained for years and are an expert at the hurdle-leaping technique. You know that to win, you must leap over all 10 hurdles successfully; knocking over a hurdle is allowed but slows your pace considerably. Suppose the probability of leaping

over a hurdle is quite high, 80 per cent, or 8 times out of 10. *What are the odds you will leap over all 10 hurdles?*

The answer is 0.8 multiplied by itself 10 times,

$$(0.8)^{10} = 0.107$$

or just over 10 per cent. In nearly 9 races out of 10, you will hit at least one hurdle and probably lose (though admittedly, some Olympic hurdlers, and some hugely successful innovators, have knocked over one or even two hurdles and still won, by superhuman effort).

Why is hurdling a metaphor for innovation management? Because, like Olympic hurdlers, innovators must leap a series of high barriers successfully; failing at any one means failing in general. They must develop a good idea, find resources, hire a good team, produce the product, market it, distribute it, sell it, advertise it, package it and service it. Failure at any step will cause the innovation to fail. They have to get every step right. This is a key reason why innovation management is so crucial. *Success at the ideation stage is far from a guarantee that the product will find success in general; the idea is only the first hurdle, and often the easiest.*

As McMath observes, there are four million parts in a Boeing 777 airliner. Every single part has to be precision-made and assembled properly for the airliner to fly well and safely. Successful innovations are not unlike Boeing 777. Every part in the business design has to fit and has to work. One missing part can cause even worthy innovations to crash and burn.

1.5 Innovate for Survival

The third key reason for innovating is simply survival. Today's global marketplace is fiercely competitive. *Organizations that fail to bring to market innovative products that create value for their customers will quickly find that their competitors have done so, and that their own existence is in danger.* There is no better way to describe this than in terms of Darwin's theory of evolution driven by survival of the fittest. Organisms best adapted to their environments, and best able to *change* in response to changes in that environment, are most likely to survive.

Today, innovation is an adaptive competence that is necessary for survival in global markets. Those organizations that lack innovation will simply not last in the long run.

Figure 11.5 portrays the dilemma that companies face once they start innovating. As once-innovative products become mature, their growth slackens and they reach market saturation. This is the point in time when profits from these products are highest, because huge investments in R&D, launch, advertising, marketing and branding have been completed and scale economies are the biggest. At this time, products are most vulnerable to attacks by other innovators.

Wise companies attack *their own mature products* by introducing new, better ones. Intel was famous for introducing next-generation microprocessor, the '486', even while the old one, the '386', was making large profits, in order to pre-empt its competitors' products. Knowing how to balance mature and innovative products in a company's portfolio, and knowing how and when to kill profitable but aging products, are among the most valuable leadership skills that managers possess. At the same time, skill in keeping mature products alive is also valuable. P&G still makes money from a brand of soap, Ivory, that is now over 120 years old. Because it is a respected and recognized brand, advertising and marketing costs are negligible. By maintaining its core brand identity for over a century, P&G has kept a cash cow alive far beyond a product's average life expectancy; yet, at the same time, P&G is one of the world's great innovators.

Case Study: Intel

Intel's profits plummeted from $198 million in 1984 to less than $2 million in 1985. The reason: fierce Japanese competition, and commoditization in Intel's key product memory chips. Intel President Andrew Grove, together with CEO Gordon Moore, decided to shut down the entire memory chip business. They did this by doing what Harvard Kennedy School of Government scholar Ron Heifetz calls 'getting on the balcony' (stepping outside a subjective perspective). If we got kicked out and the board brought in a new CEO, Grove asked Moore, what would he do? Get out of memories, said Moore. Why not walk out the door, come back, and do it ourselves? asked Grove. Grove said that at the time he had a hard time getting those words out. 'Face the brutal facts' is a key skill of great companies, notes Jim Collins—easy to say, very hard to do—and a crucial component of innovation. Intel fired 8,000 people in 1986 and lost $180 million, but by innovation management, transitioned successfully to microprocessors and as a direct result became number 62 in the Fortune 500 (2010 list), with $35.1 billion in sales, and $4.4 billion in net income.

Source: Intel's decision to abandon memory chips is recounted in R. Tedlow, 'Lessons in Leadership—The Education of Andy Grove', *Fortune*, 28 November (2005) (also on Fortune.com).

Case Study: When the Going Gets Tough

Legendary American football coach Vince Lombardi used to tell his players, 'when the going gets tough—the tough get going'. The tougher the constraints, and the more hostile the environment, often the more innovation and creativity flourish. This is certainly true of the Incas, whose empire in the Peruvean Andes was ended

Case study continued

by the Spanish invasion and conquest in around 1530. The Andes Mountains have peaks higher than the highest mountain in the American Rockies. The Incas lived at elevations of around 4,000 metres. Their descendants today have larger hearts and lungs than Americans or Europeans as a result. They faced the challenging questions:

- How do you feed your people, in a cold mountainous region whose weather is notoriously unstable? By growing food. But how, on steep mountain slopes? Answer—terraces. The Incas perfected terracing—creating flat stepped areas on steep mountain slopes that resisted erosion and on which crops could be grown. They brought the soil from afar and it remains fertile to this day. They used guano (bird droppings) for fertilizer and protected the birds that supplied the guano. They were the first to plant potatoes, a vegetable brought from Peru to Europe by the Spanish, and developed more than a hundred varieties. Agronomists claim as many as half the vegetables we cultivate and consume today originated with the Incas. The Incas developed many varieties of maize (corn), also imported later to Europe. The Incas used medicinal herbs. They knew, e.g., that quinine was effective against malaria.
- How do you ensure an ample water supply? The Incas built irrigation channels, diverting and even straightening whole rivers.
- How do you know what plants to grow, and how to grow them? By experimenting. The Incas built a remarkable experimental farm, in the shape of a huge terraced bowl. The bowl covered several temperature and climate ranges, from bottom to top.
- How do you do scientific research? The Incas, who had no written language, were skilled mathematicians nonetheless and had a system for recording data based on knots tied on ropes. They placed water containers at various elevations in their experimental 'bowl' and then measured the rate at which the ice in the containers, frozen during the cold nights, thawed and became water.

Machu Picchu, discovered by an American explorer, is known as the Lost City of the Incas. Its elevation is 2,430 metres. It was completed in the year 1462, then abandoned a century later, probably because its inhabitants were wiped out by smallpox brought by the Spanish, and to which the Incas had no natural resistance. Today Machu Picchu is a popular tourist site. Some of its buildings reflect the Incas' amazing skill at building with enormous stones, transported across the mountains for huge distances.

Source: The Discovery Channel, http://news.discovery.com/incas/

1.6 Summary and Conclusion

There can be little doubt that competition in global markets in virtually every product, service, industry and market segment is fierce, and in the coming decade will grow even fiercer. In order to not only *endure* but also *prevail,* global organizations will find that bringing products to market that are Bobbsey Twins relative to existing products is a strategy doomed to failure. *Only innovative differentiated products that create substantial additional value, relative to what customers can buy already, can succeed.*

To achieve this, organizations will need skills, competence and excellence in innovation management. In the Darwinian world of global markets, the companies able to innovate and manage innovation will be the survivors who will be significantly better than their competitors. They will understand that winning innovation is a set of Russian 'Babushka' dolls, and that the 'idea', the innermost doll, is of no value unless wrapped in successive and successful 'dolls'—marketing, sales, service, strategy, production, etc., that together comprise a powerful, compelling business design.

In business schools and executive education programmes, courses on innovation and new product development have been increasing in proliferation. Courses on innovation *management* are rather scarce. It is our hope that this book on innovation management will support its becoming a core discipline in business schools everywhere, just as strategy management is now a core course in virtually every graduate management degree programme.

1.7 The Structure of This Book

Part I of this book comprises four chapters (1 to 4), which focus on innovation and creativity, and supply answers to the four questions: why innovate, how to innovate, what to innovate and who innovates. Part II comprises 10 chapters (5 to 14), each providing a key management tool to guide the manager in implementing innovative ideas by building and managing a winning business model.

The proportion, 4 chapters to 10, reflects our view that *managing* innovation is as important as, or more important than, the initial creative idea.

In the next chapter, we explore the question, *what* to innovate? In the process, we examine proven tools that enable innovators to create successful, profitable innovations that find marketplace success.

1.1 CASE STUDY: TATA STEEL

The story of the evolution and growth of Tata Steel from the difficult days in the early 1990s, when the company used to a protected environment, was suddenly exposed to global competition consequent to the liberalization of the Indian economy, to the present intensely competitive marketplace is that of a company that has focused relentlessly on price, value and costs to gain astounding marketplace success and resulting excellent profitability. A series of initiatives launched by the company over the last two decades culminated in these stellar results.

The great visionary Jamsetji Nusserwanji Tata (J. N. Tata) founded Tata Steel in 1907. It is one of the crown jewels of the Tata group, which has businesses spanning automobiles, steel, chemicals, information technology, communication, power generation, consumer products, hotels and much more. The company started production of pig iron from its blast furnace in 1911. Since then it has added various manufacturing facilities. These facilities together constitute a totally integrated steel manufacturing complex, including raw materials mining and processing, sinter making, coke making, iron making, steel making, steel rolling and a host of other manufacturing facilities and services.

Economic policies in post-Independent India (1947–91) held back Tata Steel from blossoming into a global corporation at the cutting edge of technology. Protectionism and government-controlled prices curbed the industry's competitive spirit. When the Indian economy was liberalized in the early 1990s, the company was ill-prepared to face the emerging business situation that was increasingly characterized by market-determined prices, lower import tariffs, intense competition and the move from a seller's market to a buyer's market. This period also coincided with a change in leadership at Tata Steel when Mr Ratan Tata (J. N. Tata's great-grandson) took over as the chairman of the company and Dr Irani took over as the managing director (MD).

After decades of operating in a protected environment, there was considerable complacency in the rank and file of the company, as was the case with most companies in the country during the pre-liberalization era. The range and magnitude of problems that confronted the company by the early 1990s included global competition, product quality issues, poor compliance in meeting delivery commitments, an outdated plant and an oversized workforce of more than 80,000. The company took concerted action over the next several years, focused on the three levers, price, cost and value, as the following discussion demonstrates.

Phase I: Embarking on the Reinvention Journey

When the management decided to reinvent the company in 1992, it began by initiating a series of concerted actions. Many of them sought to leverage the existing strengths of the company, which did not require large cash outflows.

Case study 1.1 continued

Case study 1.1 continued

- Intense inward focus on the part of top management to improve its performance without getting distracted.
- Harnessing new and better sources of raw materials, many of which the company had access to through captive sources (these had not been a focus of attention in the pre-liberalization era).
- Innovativeness in using blue dust, which is an iron-rich ore. It is a by-product of iron-ore mining operations and is as fine as talcum powder. Historically, the iron ore was mined and the blue dust was left at the mine site. The management decided to explore the possibility of using the blue dust as raw material for its sinter plant.
- Process innovation in the sinter plant through benchmarking with the best in the world to improve productivity.
- New coke-making technology: Process innovation through the 'stamp charging technology' developed in-house through painstaking laboratory tests and pilot plant trials over a 10-year period. This facilitated use of cheaper Indian coking coal that has higher ash content compared to imported coal. This was risky in that if the experiment failed, it would have resulted in a big setback to the company. The trials were, however, successful and all the coke ovens were eventually modified using this new method. The new technology reduced to a large extent the use of costly imported coal for producing coke needed for steel making. This gave the company significant sustainable cost advantage because Indian coal is relatively low cost and the company has an unlimited supply of medium-coking coal from its captive coal mines.
- Blast furnace optimization.
- Reducing energy costs through process innovation.
- Addressing overstaffing, reducing headcount of employees from 80,000 to 40,000 in a humane way, over a 10-year period, without any trade union–related problems.
- Modernization of facilities.
- Creation and spread of a new performance culture in the organization.

Phase II: The Quest for Business Excellence

Tata Steel's journey to international competitiveness had much to do with the personal commitment and change-oriented leadership of its top management, with an intense focus on the 3Cs: change (mutate and improve furiously), cost (ruthless cutting of wasteful expenditure) and customers (strive relentlessly to build relationships and influence consumption). All this was anchored in the Tata Steel code of conduct,

Case study 1.1 continued

Case study 1.1 continued

which provides a strong, ethical value base and moral compass for each employee in the company.

The top management's checklist for driving change in the company included the following:

- Lead the change process and take personal ownership—the responsibility for this cannot be delegated.
- Be a role model and the first to change—personal involvement and investment of time is the key to success.
- Create endless opportunities for two-way communication within the company.
- Create a sense of urgency (not panic)—embrace change even when it does not appear necessary.
- Set up a small hand-picked group to drive change in the organization—train and empower them.
- Set Key Result Areas (KRAs) carefully—include the top management in it.

Quality and Cost at the Centre Stage

The journey towards excellence has been facilitated by implementing the Tata Business Excellence Model (TBEM). TBEM has been adopted from the Malcolm Baldrige business excellence model. It covers almost every aspect of a corporation including: visionary leadership, focus on the future, focus on results, organizational agility, customer-driven excellence, valuing employees and partners, management by fact, managing innovation, systems perspective and public responsibility. The progress of Tata Steel on the journey of business excellence can be seen from its steadily increasing scores on the Jehangir Ratanji Dadabhoy Quality Value (JRD QV) assessment: starting from 587 (on a scale of 1,000) in 1999, to over 700 on a consistent basis over the last several years. A score in excess of 700 is considered excellent by world standards. Over the last three years, the company has consistently achieved scores in excess of 700, which is considered excellent by world standards.

Changing Mindsets and Ensuring Accountability at All Levels

The willingness of the top management to create total transparency and subject its own performance to discipline and the scrutiny of the entire organization, helped greatly in bringing about a mental transformation in the workforce. The company relies heavily on the balanced scorecard, a performance management and strategy deployment method developed by Harvard Professor, Robert Kaplan and consultant

Case study 1.1 continued

Case study 1.1 continued

David Norton, to break down strategy into its component elements and track performance across the organization starting from the MD. It defines KRAs for the top managers, which are then cascaded down, using the Balanced Scorecard tool for strategy translation, communication and implementation. In this manner, strategic alignment across the organization is achieved.

Challenge of Being Internationally Competitive

With all the steps discussed above, a lot of progress was made in putting Tata Steel back on track and positioning it strongly to face the emerging competition in India. The plants were modernized with significant investments (more than ₹100 billion over a 10-year period). The company implemented several initiatives towards quality enhancement. Product delivery was reasonably streamlined. However, the emerging global steel scenario during the late 1990s was a cause for concern for the top management. The forces at play during the turn of the century (late 1990s and early 2000) clearly indicated that the steel industry was indeed in dire straits. There was severe pressure on world steel prices. The world steel industry's cyclical nature had been irrelevant during the pre-liberalization era. This scenario underwent a sea change post liberalization. To survive in a globalized world, the company realized that its manufacturing costs had to be globally competitive. Thus, by 1998 operational improvement became the top priority of the company. Since quality had been largely addressed through the various business excellence initiatives, the spotlight now shifted to reducing manufacturing costs and maximizing output from the plants.

In response to these strategic forces impacting the company, a variety of initiatives such as Total Operational Performance (TOP) to ruthlessly drive down costs and improve productivity of the plants by taking on stretch targets and tapping into the innovative potential of all the employees, Total Productive Maintenance (TPM), Knowledge Management (KM), Operations Research and Decision Support Systems (OR & DSS), and Six Sigma were launched. These were integrated through an umbrella programme, ASPirational Improvement to Retain Excellence (ASPIRE). The idea was to drive cost reduction in operations and effect drastic improvement in productivity. Some of these initiatives also laid a strong foundation for a culture of innovation in the organization.

Phase III: Relentless Focus on the Customer

Having ensured that its operations were world-class and that its costs were amongst the lowest in the world, Tata Steel then turned its energies towards the customer. It first undertook an intense process of product and customer rationalization to weed

Case study 1.1 continued

Case study 1.1 continued

out unprofitable products and customers. It was clear that the old way of selling was no longer relevant. Hitherto, the focus of the sales force comprising Customer Account Managers (CAMs) to the company's business market customers was on meeting the targets. The sales were largely based on offering low prices, ensuring timely deliveries and leveraging the Tata name. The company did not focus much on retail markets in the past.

The old paradigm of doing business suddenly appeared to have lost its relevance in the changed environment. In the past lowest price was the basis for obtaining an order. This was further reinforced by the customer's aggressive approach of treating steel as a commodity product. Thus, supplier–customer relationships, far from being cooperative, were largely transactional. The steel industry, in general, historically operated on a 'one-size-fits-all' approach. The top management realized that all this had to change, and if it could drive the change in the industry, Tata Steel would emerge as a leader.

In mid-2001, the company was restructured along the profit centre concept as against the earlier functional organization structure, with a view to making it more responsive to the needs of the marketplace. Two distinct profit centres, viz., flat products and long products were created, each headed by a VP, who was responsible for both manufacturing and sales. A key challenge was how the sales force, which was essentially the same set of people from yesteryears, could be energized to take up the new challenges. It was not uncommon for the customers to squeeze Tata Steel on price, frequently demanding a 3–5 per cent drop in price each year. With the resulting suspicion on the part of both the company and its customers, it was clear that neither was gaining from the relationship. Customers clearly began to have many options. The company became acutely aware that it needed to find ways to come out of the commodity trap.

The company found answers to these issues through its now celebrated Customer Value Management (CVM) initiative for business markets and Retail Value Management (RVM) for its retail markets. CVM and RVM have redefined the way steel is marketed and sold in the country and have been seminal initiatives that have placed the company firmly on a trajectory of profitable growth. These were relentlessly driven by the top management, and in a span of about four years the entire sales and marketing was brought on par with the best practices of the top steel plants anywhere in the world. CVM has emerged as an important vehicle for customer retention in business markets. Through CVM, Tata Steel, under increasing pressure from relentless competitive forces, sought to retain and increase the share of business from profitable existing customers. In this way, it hoped to find a way out of downward spiralling price pressures. Tata Steel has redefined steel retailing in the country through its RVM initiative launched in 2002. It has brought order and discipline into

Case study 1.1 continued

Case study 1.1 continued

the hitherto disorganized retail steel business. These initiatives, all anchored on innovation in different aspects of the company's operations, have helped the company to increase the value delivered to its customers while seeking a better price for the higher value delivered and a greater share of the customer's wallet.

Results

Tata Steel had taken significant strides to address the challenges that confronted it consequent to the changed economic policies of the country that were initiated during the early 1990s. It had put in place rigorous systems to ensure that operational costs were examined through a structured process and ruthlessly reduced. It had implemented mechanisms for productivity enhancement and monitoring equipment to ensure maximum uptimes and efficiencies. The top management found ways to ensure that the enthusiasm of the employees involved in implementing these initiatives was sustained. Appropriate reward and recognition mechanisms were put in place to ensure the development of true meritocracy in the company.

CVM has resulted in the company focusing on a few profitable customer firms with which it chose to do business and deliver extraordinary value to them. This helped the company to come out of the intense price pressures consequent to commoditization in its business markets. It has resulted in increasing the share of wallet that the company enjoys with its chosen customers. This is especially true of customers in the automobile, white goods and construction industries, where the company primarily seeks to do business. RVM has established Tata Steel as the leader in branded steel for retail markets as the company successfully pioneered the concept of branding steel in the country for retail markets.

Looking Ahead

According to the company's management, the focus is now on gearing up for growth. The company seeks to get past the 30 million tons per annum capacity and beyond in the next few years, from the 5 million tons per annum capacity that the company had in the early 2000s. Global competition will get even more intense in the years to come. There is likely to be a huge global over-capacity in steel production worldwide in the next few years putting pressure on prices, due to large-scale new capacity build-up that was initiated a few years ago. At the same time, enormous opportunities are opening up that companies with a winning spirit can harness. The country's most respected entrepreneur started the company with a pioneering spirit over a century ago. The present challenge is to sustain that spirit of entrepreneurship across the organization.

Case study 1.1 continued

Case study 1.1 continued

To scale newer heights from the stage that the company has now reached, a managerial attitude alone is not enough. It is essential to infuse an entrepreneurial approach across the organization. The company should find ways of continuing to innovate across all levels in the organization. One of the things to guard against is complacency. It is very easy for employees in the company to look at what has been achieved since the early 1990s, and believe that they have climbed the Mount Everest. While the company has achieved a lot, how does it continue to press ahead, and ensure that the sense of urgency and purpose is not diluted? How can the forward momentum of the company gain even more acceleration? The Price-Value-Cost dynamic is clearly a moving target, and no company can afford to rest on its past laurels.

So *why* do you have to innovate? It is clear from the Tata Steel case study that if it had not innovated the way it did over the last two decades, it may have ceased to exist in its current form. Thus, innovation is not a luxury but a necessity for your organization.

Notes

1. From a postcard purchased by Shlomo Maital at the Picasso Museum in Antibes, France.
2. James Collins, *Good to Great: Why Some Companies Make the Leap ... and Others Don't* (New York: HarperCollins, 2001). The book discusses at length the clash between the 'culture of discipline' and 'creativity'.
3. Harvard Business School professor Michael E. Porter's book *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1980) sold over a million copies, went into 60 printings and was translated into 19 languages.
4. Joe Light, 'More Workers Start to Quit', Wall Street Journal blog http://online.wsj.com/article/SB10001424052748704113504575264432377146698.html (last accessed 14 February 2011).
5. Joe Light, 'More Workers Start to Quit', Wall Street Journal blog, joe.light@wsj.com, posted on 25 May 2010.
6. Burton Marsteller, *Forrester Magazine,* Issue 1, 2005, p. 37.
7. Michael Mandel, 'The Failed Promise of Innovation in the U.S', *Bloomberg/Business Week,* 9 June 2010, http://www.businessweek.com/magazine/content/09_24/b4135000953288.htm (last accessed 15 February 2011).
8. *International Business Machines, Global Innovation Outlook: 2004* (Armonk, NY: IBM, 2004), p. 3.
9. Contribution by John Furth, Chief Strategist, Global Hub, Sony Corporation in *International Business Machines, Global Innovation Outlook: 2004* (Armonk, NY: IBM, 2004), p. 3.

2

The Innovation Portfolio: *What* to Innovate?

Even in these daunting times, one person with a good idea can still change the world.
—Adam Cohen, *International Herald Tribune*[1]

LEARNING OBJECTIVES After you read this chapter, you should understand:

*   How and why vision drives innovation
*   How to differentiate between a good innovative idea and a bad one
*   What a unique value proposition is and how to define it for your product
*   How demographics, technology, generational change, economic downturns, tastes, legislation and customers can inspire innovation
*   What are the various 'feelings' and 'needs' and how to determine the feelings and needs your product satisfies
*   The difference between 'brands' and 'lovemarks'
*   Why experiences are a fruitful area for innovation
*   How to distinguish between incremental, standard and radical innovations
*   How to optimize a portfolio of low-risk and high-risk innovations

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2.1 Introduction

The business of innovation pervades the daily business of life. When implemented and managed with skill, innovation enriches and enhances our lives immeasurably. This is the ultimate goal of innovation and it drives the vision of most great innovators, as this chapter shows.

The first chapter focused on *'why* innovate?', this chapter focuses on *what* to innovate—ways to determine which novel products, services and processes will

achieve marketplace success for growth and profit. It is important to link this chapter's 'what?' with the previous chapter's 'why?'. A study by Kim and Mauborgne of the business launches of 108 companies[2] found the following:

- The vast majority of launches, six out of every seven, were in what the authors call 'red oceans' (incremental improvements within existing industries). They accounted for 62 per cent of total launch revenues, but generated only 38 per cent of total launch profits.
- A small minority of launches, only one in seven, were in what the authors term 'blue oceans' (industries *not* in existence today); they accounted for 38 per cent of revenues but 62 per cent of launch profits. Note that these figures include launch failures that bring no revenue and only losses, which are much higher, of course, in 'blue' than in 'red' oceans. Nowhere is the link between risk and return sharper than in innovation.

In cricket, batsmen score an over-the-fence 'six' infrequently. To win the test match, or achieve a century (100 runs), you need many singles, 'twos', 'threes' and 'fours' as well. In baseball, the top hitter hits over-the-fence home runs at most once every 12 at-bats (Boston Red Sox's Manny Ramirez). To win the game, you need singles and doubles as well. This is equally true of innovation.

Start-ups and entrepreneurs strive for 'home run' innovations, because they cannot otherwise defeat powerful incumbents. Existing companies seek an optimal balance between sixes, fours, threes, twos and singles, while knowing when to 'swing for the fences' (invest massive effort in finding a truly radical innovation). Determining what to innovate will thus differ for different firms depending on their age, resources, size, industry and capabilities.

2.2 Vision, Portfolios and Feelings

There are three core messages in this chapter, related to vision, innovation portfolios and subjective feelings and needs:

1. *Vision, not greed, drives successful innovation.* A powerful visionary 'photograph of the future' is vital to create and sustain the energy needed for profit-driven innovation and to guide the blueprints for implementing it.
2. *Innovation is fundamentally different for entrepreneurial start-up companies than it is for established organizations.* Start-ups need to focus on offerings sharply different from those already available and which create and sustain measurably and perceptibly higher value than that provided to customers by existing products. Established organizations need to optimize their innovation portfolio, balancing mature products with *incrementally* new and *radically* new ones.

Each organization will have a different optimal innovation portfolio, depending on market conditions, competitors, resources and technology and that portfolio will change, sometimes rapidly, over time. Start-up companies will have to transform themselves and their innovation portfolios more than once, as they evolve from small to medium and then to large established global players.

3. *Successful innovations create powerful feelings and emotions, and satisfy well-defined needs.* The more clearly you define the feelings your innovations arouse and the needs that they satisfy, the more likely it is that your innovations will succeed. A winning innovation is driven by skill in connecting with and responding to customers' needs and feelings.

The leading online auction company, eBay, and a rapidly rising Chinese automobile company, BYD, help illustrate these three principles.

Case Study: BYD: Build Your Dreams

Here is a test of your knowledge of acronyms. What does BYD stand for? Don't know? Never heard of it? You will. It stands for Build Your Dreams. And—it stands for an upstart car company that plans to be #1 in China by 2015 and #1 in the world by 2025, according to its President Wang Chuanfu.

Wang is a genius. He invented a revolutionary battery that powers a third of the world's cell phones. And now, he has leveraged his knowledge of battery technology to build electric cars, that can charge in as little as 15 minutes.

Founded in 1995, BYD employs 170,000 workers in 7 huge plants, and has 10,000 engineers and scientists in its R&D centres. Evidence that BYD is on the right track? An investor named Warren Buffett bought a 9.89 per cent interest for $230 m.

BYD is planning to produce over 400,000 cars in 2012, despite the global slowdown.[3] How did BYD transition from making cell phone batteries for Nokia, to making cars? It bought a Chinese car manufacturer four years ago. Car production, according to BYD, is rather low technology. BYD uses its high-technology experience, to upgrade the technology of car production.

BYD is a sort of Chinese role model. According to the *New York Times*,[4]

In April, Credit Suisse forecast that one-third of all export-oriented manufacturers could close within three years. And a study released in March by the American Chamber of Commerce Shanghai and Booz & Company, the consulting firm, says foreign investors are growing bearish on China and that rising costs are driving American manufacturing out of the country.

Case study continued

Look for America and Europe to bring back home some of its manufacturing. Look for China to respond, by moving up the value chain and upgrading its factories, to build branded high-quality high-technology products, like BYD's electric cars. This has been China's vision from the outset. We will all watch closely, now, to see if they can implement it.

Source: Shlomo Maital, 'Build Your Dreams', TIMnovate blog, posted on 14 December 2008, http://timnovate.wordpress.com/2008/12/14/byd---build-your-dreams/

Case Study: eBay—From Ponytails to Suits

Driven by a simple, yet powerful vision, eBay has successfully transformed itself from a start-up to an established company in the past decade, retaining its innovative energy while adapting constantly to its complex environment, meeting competitive challenges and customer needs. In the process, the company has changed many peoples' lives. It proves that while good innovators improve our lives, great ones fundamentally change how we lead our lives—how we work, spend, save, consume, travel and enjoy leisure.

As the world's largest online auction company, eBay shows that a person with a good idea can indeed change the world. In 2005, it had $4.6 billion in revenues, with profits (before taxes, interest, depreciation and amortization) of $1.82 billion, or a 32 per cent operating margin. The company employs 2,500 people.

While almost everyone has heard of eBay, few know the name, Omidyar. If one day, an Innovators' Hall of Fame is built, eBay founder Pierre Omidyar will doubtless have a place of honour in it. The market value of eBay stock is $56.6 billion, as of 5 February 2006, making Omidyar one of the world's richest people; he personally owns 202 million shares, currently worth many billions of dollars.

Who is this innovator and what can we learn from him?

Omidyar was born in 1967 in Paris to French-Iranian parents and moved to the United States when he was six. At the age of 24, in 1991, he launched a start-up, one of whose by-products was software for online commerce. The company, eShop, was sold to Microsoft in 1996, making Omidyar a millionaire before he was 30.

But he was only getting started.

Omidyar's vision is 'a global marketplace, driven by free, open supply and demand, enabled by the Internet, where every human being everywhere can be both seller and buyer, producer and consumer, of anything'.

In global markets, you can sell anything, anywhere, to anyone, at any time—eBay makes this possible.

'I sat down, frankly, over Labor Day weekend 1995, and I just whipped up some [software] code', recounts Omidyar. 'By Monday afternoon I had the site up.'

Like all radical innovations, there were powerful naysayers who claimed, 'strangers won't trade online with strangers', and 'people will cheat (take the money and not deliver the goods)'. But Omidyar, who wore Birkenstock sandals and had a ponytail, says only 30 sellers out of a million fail to deliver on their online promises.

The initial stock issue of eBay was in 1998. Omidyar wanted to auction the shares (as Google did in 2005), but Wall Street underwriters said no!

Some 724,000 Americans make either primary or secondary income from selling on eBay. It is global, not American; over 170,000 people in 12 European countries make money selling on eBay, and 50 million Europeans (one in every six) buy from or browse the site. Since its inception, eBay has sold over 45 million items; 250,000 items are added daily, and there are 50 million registered users. Today, the value of something is often measured by what it can bring on eBay.

The metaphorical shift of eBay from ponytails to suits came as a result of a crisis. The 'ponytail' company neglected its technology and had no backup. On 10 July 1999, the eBay site crashed and was down for nearly a full day. That led to large investments, more systematic management and conceptual 'suits'—though founder Omidyar still drives a battered VW convertible.

How does eBay connect with feelings? A key eBay principle from the start has been to treat small and big customers in precisely the same way—with direct email access to Omidyar himself. The Feedback Forum has buyers and sellers rating each other after a transaction; the ratings are compiled and placed after users' names. The result: a business that is huge but that was purposely built to feel small and intimate.

Today, eBay faces major challenges from Google and Microsoft, both now adding online shopping to their search engines, and from Amazon. The response, led by its CEO Meg Whitman, has been continual innovation. (Whitman announced she was stepping down as CEO on 23 January 2008. She entered politics, ran for Governor of California against Democrat Jerry Brown in 2010 and was not elected.)

But eBay's future success is by no means assured. Successful innovation management generates profits that attract competitors in droves. That is why innovation and innovativeness must be sustained over time. One way to ensure this is by asking the right questions.

Sources: Some information on eBay is available online at http://www.internet-story.com./ebay. htm and on the CNN Money Website at http://cnnmoney.com. Another source is Paul Meller, 'Europe's Entrepreneurial Spirit Is Alive and Well—On eBay', *International Herald Tribune*, 2 February 2006, p. 14.

2.3 Vision, Strategy and Innovation

In 1993, when Lou Gerstner became CEO of IBM, replacing John Akers, he famously said, 'the last thing we need now is a vision'. What he meant was, what IBM needs, after an enormous loss in 1992, is a top-to-bottom reform of its operations. But despite his words, Gerstner did bring a new vision—a vision of renewed innovation at IBM, after years in which it never missed an opportunity to miss a business opportunity. That renewed vision brought IBM its Global Services division, comprising over half of its revenue today.

Vision, strategy and innovation are closely linked, in a very pragmatic way. All strategic innovation processes begin with a vision. Here is why.

Vision defines 'what ought to be'—what the organization seeks to achieve, why it exists. There are always gaps between what *is* today (the current situation), what will be in 5–10 years if current trends continue unchanged, and what ought to be in 5–10 years if the vision is fulfilled and achieved. Strategy is an operational plan regarding how best to bridge the gap between what is and what ought to be. No effective strategy can be articulated, without a clear vision articulating the shape of the desired dreamed-of future, any more than explorer Roald Amundsen could set out to reach the North Pole, and South Pole, without knowing exactly where he was and in which direction to travel. An organization's vision is the metaphorical equivalent to Amundsen's compass (see Figure 2.1).

Figure 2.1   The Link between Vision, Objectives and Strategy: Filling the Gap between What Is and What Ought to Be
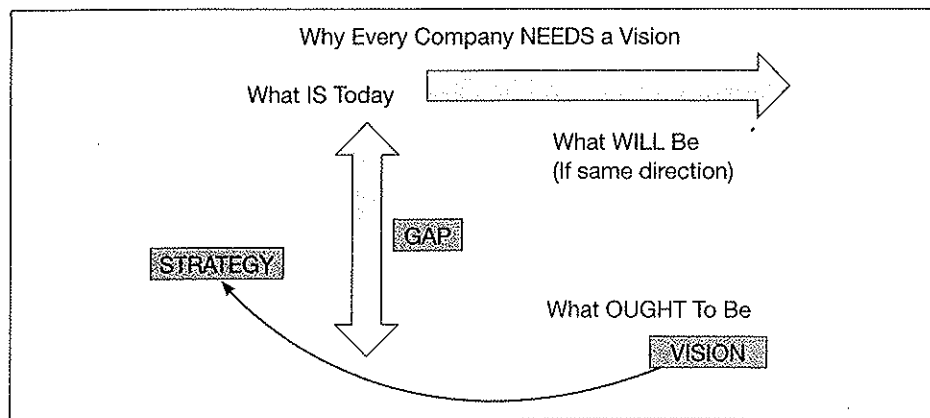
Source: Authors.

Interestingly, compasses point to the *magnetic* north, not the geographical north; the distance between the two is a huge 960 kilometres. Similarly, organization's visions often are blurred or fall into disuse, and the organization's compass gathers dust, and no longer guides operational decisions. This is in part what happened to IBM.

The process of articulating an organization's vision, and updating it, begins with what Collins calls 'core ideology'. Core ideology consists of two parts: core values, the enduring, timeless essential guiding principles that never change (such as Disney founder Walt Disney's core belief that 'imagination and wholesome fun' are intrinsic values); and core purpose, the answer to the question, why does this organization exist? (Note: The answer is *not*, to make a profit for the shareholders; this is a result, not a 'first principle'.)

DEFINITIONS

Core Ideology—The core values and core purpose of the organization; core values never change; core purpose may change in response to changing technology and market conditions.

Big Hairy Audacious Goal (BHAG or Mission)—A bold, audacious 10–30 year goal, described vividly (as a photograph) (vivid description) and supported with a powerful mantra.

Mantra—A three-word description of the organization's value-creating proposition.

Strategy—An operational plan that shows how the organization will close the gap between what *is* today, and what *ought to be* in the future if the organization's vision is to be realized.

Strategic Innovation—Innovation that supports, strengthens and reinforces strategy, by rethinking all aspects of the organization, including its products and services, business design, core processes and its innovation process itself.

In an age of rapid change, with the pace of change accelerating, it is sometimes forgotten that some aspects of the organization must never change—these are what are termed 'core values'. Core values are the DNA of the organization. They answer the question, what are the five values that this organization believes are non-negotiable and unchanging, forever, which every member of the organization supports and implements? Here are two examples[5]:

- Walt Disney: No cynicism; nurturing and promulgation of wholesome American values; creativity, dreams and imagination; fanatical attention to consistency and detail; preservation and control of the Disney magic.

- Merck (pharmaceutical company): Corporate and social responsibility; unequivocal excellence in all aspects of the company; science-based innovation; honesty and integrity; profit, but profit from work that benefits humanity.

How to Create a Powerful Vision—The Approach of James Collins

In his book *Good to Great*, author Jim Collins claims that powerful visions occur at the intersection of three key elements: passion (deep conviction, enduring energizing belief), resources (financial, human and technological) and 'best in the world' (the desire to excel above all others). Once this clear 'hedgehog' focus is determined,[6] a process begins, creating a feedback loop: (*a*) build believers—those who truly believe it is possible to achieve the vision, however ambitious; (*b*) build strength—build the capabilities required to implement the vision; (*c*) demonstrate results—especially, achieve 'quick wins', small but tangible gains, that reinforce belief in the vision; (*d*) build 'brand' (build the intangible image of the organization and its products, aligned closely with the vision); (*e*) and continue to build believers and so on (see Figure 2.2).

Figure 2.2   The Feedback Loop of Organizational Vision
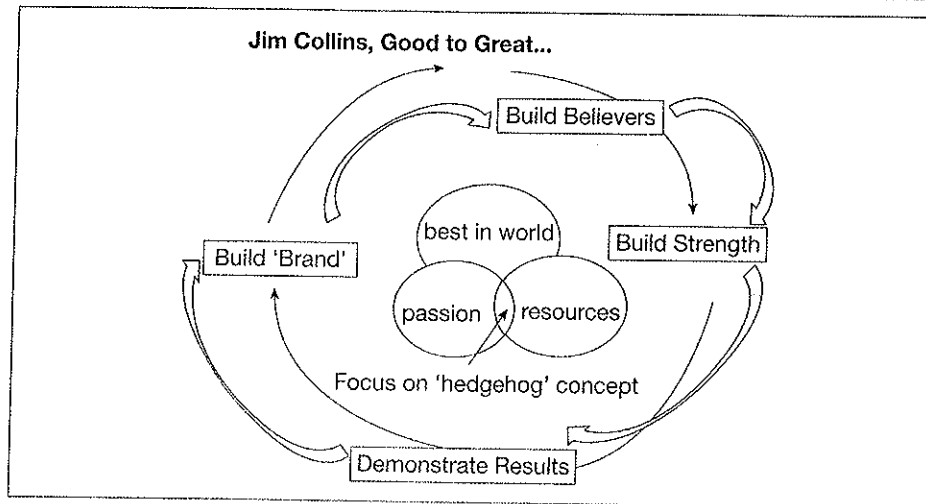
Source: Adapted by authors, based on Jim Collins, *Good to Great: Why Some Companies Make the Leap... and Others Don't*. Harper Business: New York, 2001.

Case Study: Honda: Core Values versus Radical Change

In boom times, when demand is growing, it is no trick for managers to boost their top lines (revenues) and bottom lines (net profits). But in bad times, when demand is contracting, that indeed is a great achievement. Let us, therefore, look more closely at Honda. In America, where high oil prices and the housing bust have slashed consumer spending, GM, Ford and Toyota reported large sales declines: 18 per cent, 14 per cent and 7 per cent, respectively, in 2007–08.[7] But Honda? Its US sales were up by 3 per cent in 2008 and it is struggling to maintain inventories, as its cars 'fly out of the showrooms'. Its US operations remain highly profitable. Why?

A brilliant combination of what Jerry Porras and Jim Collins, in their classic 1991 *California Management Review* article,[8] call 'core values and purpose', and 'dynamic change'. From the time Honda's namesake founder Soichiro Honda built a fuel-efficient engine with his own hands decades ago, Honda has stuck to its core values of fuel efficiency. When GM, Chrysler and even Toyota chased the high-margin market for sport utility vehicles (SUVs) and trucks, Honda stuck to its core values. Its new FIT hatchback, which uses only 7 litres of gasoline per 100 kilometres, was a huge hit on introduction and in 2008 its sales were up by 79 per cent, despite the global crisis! Honda's Civic and Accord models are also selling well.

Source: S. Maital, 'Change & Renewal at Honda', TIMnovate blog, posted on 26 August 2008, http://timnovate.wordpress.com/2008/08/26/innovation-change-renewal-at-honda/

Collins uses a yin-yang diagram to illustrate the key management dilemma, of retaining core values while implementing radical change. This is one of the toughest dilemmas in innovation management: what to keep, what to change. Some companies innovate away their core values. Invariably they self-destruct—GM, once the world's largest industrial corporation, dived towards single-digit ($ billion) market value and ultimately went into bankruptcy. Honda innovates *within* its core values. And its bottom line proves why this is wise.

Vision and mantra: The term 'mantra' originates with the Vedic (Hindu) tradition in India, and was later embraced by Buddhism, Sikhism and Jainism. It means a sound, syllable or group of words capable of creating spiritual transformation. In the context of organizational vision, a mantra is three or four words that capture the essence of the organization's vision. Those three words are aimed principally at the managers and workers of the organization, in order to communicate clearly and memorably the vision, and only secondarily, to the organization's clients. We believe every organizational vision should be accompanied by a powerful mantra. Here are some especially strong examples of vision-related mantras:

- Walt Disney: 'Make people happy.' At Disney theme parks, workers are trained to be actors, in order to sustain the fantasy world Disney offers. They all know

clearly the goal: to make people happy. As an example, those who clean the streets at Disney World, it was found, are often asked questions by visitors, partly because they are ubiquitous and wear clearly identifiable uniforms. As a result, street sweepers at Disney are trained to respond to a wide variety of questions and are highly knowledgeable about the park. They know their job is not just to keep the sidewalks and streets clean, but 'to make people happy'. This is the measure by which their success is measured, and by which they measure their own success. A mantra answers the question, how will I know if I am successful at what I am doing?

- Wal-Mart: 'Give ordinary folk the chance to buy the same things as rich people.' This is an overly long mantra, but it captures Wal-Mart's vision and it drives operational excellence every single day.
- Mary Kay Cosmetics: 'Give unlimited opportunity to women.' Mary Kay sells cosmetics from door to door. The key to its success is its huge sales force of motivated women, many of them mothers, who support their family by part-time sales work. Many of these women support their families and educate their children with their incomes. So, the Mary Kay vision communicates to its key resource, that Mary Kay's success is built on their own success.
- Target: 'Democratizing design.' Target is a retail chain selling low-priced products. Its differentiator from Wal-Mart is in its well-designed products. So while Wal-Mart seeks to bring 'goods' to ordinary people, Target seeks to bring 'beautiful products' to people who can only pay minimal prices. This two-word mantra captures its goal perfectly.
- MIT: 'Mens et manus.' One of the world's greatest science and technology universities, MIT was built from the outset by its founder William Barton Rogers to link basic research ('mens', or mind in Latin) with tangible results that enhance the wellbeing of society ('manus', or hand in latin). As a result of that vision, MIT to this day is a hotbed of technology-based entrepreneurship; companies founded by MIT grads generate gross domestic product (GDP) that would make the aggregate the world's 11th largest economy, if it were a country.

Case Study: *Star Trek:* Where No Man Has Ever Gone Before

There is a strong, logical connection between the TV series *Star Trek*, its inventor Gene Rodenberry, da Vinci, Picasso, Einstein, Edison, the pre-frontal cortex (part of the brain) and psychologist Daniel Gilbert. The links are obvious, once you know them. *Star Trek* was a successful TV series, and later movie and sequels. Its theme: the Starship Enterprise 'to go where no man has ever gone before'. This is the principle of innovation. The inventor of *Star Trek* was Gene Rodenberry. He was an Air Corps pilot, flew bombers in

Case study continued

World War II (over 80 missions), later became a Pan Am pilot and saved his passengers with a brilliant desert crash landing in the Syrian desert. His dream and passion: to be a TV writer and producer. He quit his job as a pilot, moved with his family to Los Angeles and became a policeman for seven years to support his family while he pursued his dream. He sold several TV scripts, finally selling and producing *Star Trek*. The network wanted to cancel it, but its dedicated fans staged a write-in campaign and saved it. How many of us would have followed Rodenberry's path, quit a great job to pursue a dream and passion? What keeps most of us from doing this? The answer is—our pre-frontal cortex. This part of the brain, according to Harvard psychologist Daniel Gilbert, is our 'simulator', our imagination. With it, we can simulate future events and experience them before they happen. Only humans can. Animals lack this ability. But the pre-frontal cortex, which has developed only over the past two million years, is limited. It has 'hedonic bias'. That is, it overestimates the happiness we think we will derive from future events (mostly things we buy) and overestimates the pain and suffering we think we will sustain from bad things that may occur. We fail to pursue our dreams, perhaps, because we think about failure, overestimate the pain it will cause—and never try to pursue our dreams and our passions. We come up with 'excuses'—reasons why we never even try.

The world's great inventors and innovators avoided this trap. Leonardo da Vinci had every reason in the world not to amount to anything. He was born out of wedlock, in the 15th century, when the Church controlled every facet of life. Had he been born in wedlock, he would have become a notary, like his father, and been trapped by the life of a Guild member. As an illegitimate child, he had the freedom to pursue anything he chose—and he did. Picasso lived during a turbulent nine decades, experienced war, Nazi occupation of Paris, a ban on sculpture and painting—and never missed a day in his studio, producing amazing works of art, fearlessly innovating, producing an astonishing total of 50,000 works! 'If I know what I am going to do', he once said, 'why bother doing it?' Einstein finished his Ph.D. and could not get a university post, because his professor had been insulted by him and failed to recommend him. Because he was only a lowly Swiss patent office clerk, he had the time to write three revolutionary papers, on relativity, the atomic structure of matter and $E = MC^2$. All of this, in one year, 1905. He changed the world. Edison, as a child, was booted out of school. He was hard of hearing and had attention deficit hyperactivity disorder (ADHD). His mother home-schooled him and he taught himself by reading. He invented the phonograph, because of his deafness—he sensed vibrations through his fingers and realized that sound was something real, something physical, that could be captured and stored.

Source: Shlomo Maital, 'Stumbling Upon the Star Trek Principle: Innovation Secrets of da Vinci, Picasso, Edison & Einstein', TIMnovate blog, posted on 11 June 2009, http://timnovate. wordpress.com/2009/06/11/stumbling-upon-the-star-trek-principle-innovation-secrets-of-da-vinci-picasso-edison-einstein/

Reader: What is your dream? Your passion? What are you doing to achieve it, to implement it? What are your excuses for not doing so? Can you learn from Edison, Einstein, Picasso and da Vinci, and turn your constraints into creativity levers? Can you emulate Gene Rodenberry and pursue your dream no matter what? Can you learn from Daniel Gilbert and sharpen your pre-frontal cortex?

2.4 What Is the (Right) Question?

That is *not* the right question.
—former Intel CEO and Chair Andy Grove⁹

Former Intel CEO Andy Grove was famous for rebuking his managers for not asking the right questions. If you do not ask the correct question, Grove noted, then by definition, the answers will be irrelevant; knowing the questions is more important than knowing the answers.

What, then, is the key question regarding *what* to innovate?

It is this: *How can innovators tell the difference between a winning business idea and a disastrous one?*

Much is at stake when innovators select ideas for implementation. Many radically new ideas seem at first sight to be ridiculous; that is why great innovators insist on never rejecting any idea at once. And many ideas that sound wonderful at first hearing turn out to be disasters. Can one tell the difference?

In economics, Gresham's Law says that bad money drives out good (i.e., fake gold coins stay in circulation, real gold coins are withdrawn and hoarded). The same is true of innovation. Bad ideas drive out good ones, because they capture scarce resources and time. How then can innovators avoid wasting time and money on doomed ideas? What are the hallmarks of a winning innovation? A good place to start is with 'vision', expressed as a Unique Value Proposition (UVP).

DEFINITION

UVP: A short sentence stating how your product or service creates substantial added value for customers in ways that competitors do not.

Consider the following 12-word 'Unique Value Proposition' (see Chapter 12, for further discussion):

Uninterrupted mobile phone service everywhere in the world, any time, any place.

This was the value proposition of Motorola's Iridium. It sounds sure-fire. But it failed: the added value (above conventional cell phones) did not justify the $3,000 price. (The high price was driven by the enormous cost of building and launching dozens of low-orbit satellites.) In addition, the Iridium phones were heavy, clumsy and did not work well. Could Motorola have known in advance that the idea was a loser? If so, how?

Here is a key question to ask about your innovative idea, suggested by management educators W. Chan Kim and Renee Mauborgne, that can help discriminate between winning and losing ideas:

How does your idea change your customers' or clients' lives?

It seems obvious, but ideas driven by demand—needs and wants—based on real evidence and data are far more likely to succeed than those driven by supply—fascination with virtuoso technological skill and gadgetry. Ideas 'pulled' by demand and the market are far more likely to succeed than ideas 'pushed' by technology and inventors. An idea that, when implemented delights customers, will tend to be a winner. Iridium flunks the test: it aimed at improving people's ability to communicate, but did not fundamentally *change* it because people already had cell phones (even though they might not work in Antarctica or Timbuktu—but how many people need to call home from Antarctica?).¹⁰

Every winning idea has a powerful UVP; *if you cannot frame one, your innovation is in trouble.* In our experience, innovators (especially those founding companies) err with wishy-washy UVPs. In their book *Built to Last,* authors Jim Collins and Jerry I. Porras define what they call BHAGs, such as NASA's 'a man on the moon by the end of the '60s' or General Electric's 'become #1 or #2 in every market we serve'.¹¹ A BHAG gets powerful momentum from a strong UVP. And it should directly address, and connect with, human wants, needs and feelings.

One must keep in mind, however, that many pressing needs are not consciously recognized or verbalized by customers. Truly innovative ideas are often initially rejected by customers precisely because they are different, strange and unfamiliar. *Great innovators anticipate needs long before they are articulated.* The following case study provides an example.

Case Study: Checkpoint: Anticipating a Real Need

The Israeli global software company, Checkpoint was born in a stuffy Tel Aviv apartment in July 1993. Three software-engineer friends wrote a business plan for Firewall-1, an Internet security product designed to protect networks from hackers and invaders.

The World Wide Web (WWW) had been launched only two years earlier, in 1991, but already showed signs of phenomenal growth. Based on their experience in military intelligence, the three engineers knew that there would eventually be a demand

Case study continued

for 'firewall' security for internal company networks, even though few companies used such networks at the time and there was no demonstrable market demand. The three innovators sensed that with Web users growing by 50 per cent yearly, and with security issues inevitably arising from it, the ultimate market would soon be huge. The friends created a software solution for an embryonic need that market research most likely could not have shown or revealed. They perceived that need because they themselves needed the product they were launching. In 2004, Checkpoint, a market leader, had sales of nearly $600 million, and net profit of about half that, or $300 million.

Source: Based on Jeffrey Anapolsky, 'NSK Software Technologies Inc.', Harvard Business School case study 9-298-071, 1998.

Very often, new product ideas arise from inventors who themselves feel a need for the product they ultimately invent. Legend has it that Omidyar built the eBay website after his fiancée said she was having problems finding other PEZ candy dispenser collectors with whom to trade (a nice story, though it is now said to be untrue). 3M's very successful product, the ubiquitous 'Post-it®' likewise emanated from the personal need of Art Fry, 3M's legendary innovator, while there was no immediate need for the product from customers. Intuition and introspection, then, are good tools for finding new product ideas. If you yourself really need the product you innovate—chances are, others do too.

2.5 Identifying Feelings and Needs

After defining how your innovation alters peoples' lives, the next logical question is: What specific aspects of people's *lives* are improved by your innovation, what specific *feelings* are generated and which *needs* are met?

A comprehensive list of 'feelings when your needs are satisfied' is given in Table 2.1. The categories of feelings are: affectionate, confident, engaged, inspired, excited, exhilarated, grateful, hopeful, joyful, peaceful, refreshed. Table 2.2 provides a list of the needs themselves. The categories of needs are: connection, honesty, play, peace, physical wellbeing, meaning and autonomy.

In the 21st century, people are starved of emotion and feeling because many modern technologies limit or reduce face-to-face human interaction. Increasingly, then, products that meet this basic human need by creating emotional bonds between product and buyer become successful innovations. 'Prices', Princeton University

Table 2.1 List of Feelings When Your Needs Are Satisfied

AFFECTIONATE	EXCITED	JOYFUL
Compassionate	Amazed	Amused
Friendly	Animated	Delighted
Loving	Ardent	Glad
Open hearted	Aroused	Happy
Sympathetic	Astonished	Jubilant
Tender	Dazzled	Pleased
Warm	Eager	Tickled
CONFIDENT	Energetic	PEACEFUL
Empowered	Enthusiastic	Calm
Open	Giddy	Clear headed
Proud	Invigorated lively	Comfortable
Safe	Passionate	Centred
Secure	Surprised	Content
ENGAGED	Vibrant	Equanimous
Absorbed	EXHILARATED	Fulfilled
Alert	Blissful	Mellow
Curious	Ecstatic	Quiet
Engrossed	Elated	Relaxed
Enchanted	Enthralled	Relieved
Entranced	Exuberant	Satisfied
Fascinated	Radiant	Serene
Interested	Rapturous	Still
Intrigued	Thrilled	Tranquil
Involved	GRATEFUL	Trusting
Spellbound	Appreciative	REFRESHED
Stimulated	Moved	Enlivened
INSPIRED	Thankful	Rejuvenated
Amazed	Touched	Renewed
Awed	HOPEFUL	Rested
Wonder	Expectant	Restored
	Encouraged	Revived
	Optimistic	

Source: Center for Nonviolent Communication, http://www.cnvc.org, 2005; used with permission.

Table 2.2   List of Needs

CONNECTION	HONESTY	MEANING
Acceptance	Authenticity	Awareness
Affection	Integrity	Celebration of life
Appreciation	Presence	Challenge
Belonging		Clarity
Cooperation	PLAY	Competence
Communication	Joy	Consciousness
Closeness	Humour	Contribution
Community		Creativity
Companionship	PEACE	Discovery
Compassion	Beauty	Efficacy
Consideration	Communion	Effectiveness
Consistency	Ease	Growth
Empathy	Equality	Hope
Inclusion	Harmony	Learning
Intimacy	Inspiration	Mourning
Love	Order	Participation
Mutuality		Purpose
Nurturing	PHYSICAL	Self-expression
Respect/self-respect	WELL-BEING	Stimulation
Safety	Air	To matter
Security	Food	Understanding
Stability	Movement/exercise	
Support	Rest/sleep	AUTONOMY
To know and be known	Sexual expression	Choice
To see and be seen	Safety	Freedom
To understand and be	Shelter	Independence
understood	Touch	Space
Trust	Water	Spontaneity
Warmth		

Source: Center for Nonviolent Communication, http://www.cnvc.org, 2005; used with permission.

Professor William Baumol once said, 'are relationships among people, expressed as relationships among things'. Innovations, too, ultimately are relationships among people, but are expressed as relationships between people and things. It is a forlorn commentary on modern life that emotional attachments to things have come to fill the void left by a lack of attachment to people.

Former Swiss psychiatrist Clotaire Rapaille who now lives in America and works with Fortune 100 companies says his mission is to 'decode' basic emotions that cause people to buy things. 'People have unspoken needs', he says, 'they're not even aware of those needs.' Rapaille counsels, 'Don't say, buy my product because it's 10 per cent cheaper. You don't buy loyalty with percentages. It is not a question of numbers; it is the first reptilian (basic, primal, emotional) reaction.' He advised car firms that despite findings from focus groups and from what customers *said* they *wanted*, what buyers *really* wanted in SUVs was not 4×4 off-road capability, but size, muscle, control, dominance.[12]

Make them bigger, Rapaille advised. Give them tinted windows. And it worked. At the deepest level of successful innovations, you will find a clear emotion or feeling the product supplies; you will find an almost audible 'click' between the feelings the innovation arouses and the feelings people most value. This is true not only of consumer goods but to some extent of capital goods as well.

This emotional aspect is in part the basis for the 'solutions' approach to innovation, which claims that what buyers want is not a product but a solution for their problems, generating calm, relaxed and serene feelings and meeting the need for safety, security, stability and support. Customers ultimately want an experience, not a product.

Hearts and Minds: New research by a Canadian doctor, Dr J. Andrew Armour,[13] reveals a stunning new finding: our hearts actually have their own nervous system, packages of 'neurons' (nerve cells specially designed to conduct nerve impulses), that have memories! This work gives new meaning to the phrase: 'Listen to your heart!'. Armour's recent monograph describes a controversial, newly emerging view of the heart as a 'complex, self-organized system that maintains a continuous two-way dialogue with the brain and the rest of the body'.

Brandeis University researcher Susan Birren has studied the mechanisms of how sympathetic neurons in the heart and cholinergic neurons in the brain are regulated and communicate. Her work reveals 'just how sympathetic these two entities are to each other'.

Using rats and mice as model organisms, neurobiologist Susan Birren's research is helping to demystify the complex relationships that govern neuron development and function in the heart and the brain. The questions are fundamental: How do cells in the nervous system communicate with each other?[14]

Recent TV series have shown people who received heart transplants, and who have taken on some of the personalities and memories of their donors. Experts, of course, were sceptical. But now comes Dr Armour's findings, including microscope photographs of the neuron cells in the brain. Other evidence comes from heart-transplant surgeons. When hearts are transplanted, the moment their blood supply is renewed they begin to beat. How? Apparently within the heart are neurons, including related memories that help hearts 'remember' how to beat and what they are supposed to do when blood begins to flow. It is a remarkable phenomenon. Could it be that those neurons contain other memories, of the person whose body they occupied?

Hearts and minds? Well, apparently, hearts have their own minds. One more example of the wondrous human body, as it has evolved over tens of thousands of years. Wise innovators will find ways to take into account both hearts and minds, and integrate the two in their novel products and services.

Case Study: Webkinz Create a Need, Change Culture

Meet Webkinz. Webkinz pets are lovable plush pets that each come with a unique Secret Code. With it, you enter Webkinz World where you care for your virtual pet, answer trivia, earn KinzCash, and play the best kids games on the Net. They are an example of how bold innovators can create an unrecognized need, and meet it, rather than satisfy a known need. Often this involves culture change.

A friend of the first author told him that in one of Haifa's leading schools, boys come to school with plush toys (perhaps, a little cat or dog)—yes, macho 12-year-old boys with skinned knees and a broken front tooth—that embody their Webkinz pet. During the lunch break, the boys feed their toy cats, because the Webkinz website says they have to feed it, or it will be unhappy. Or play with it, sing to it, put it to sleep or pet it. As every parent knows, the culture of young boys is fiercely resistant to all efforts to civilize or tame it. The peer pressure of their friends provides a powerful magnetic shield against all parental efforts to penetrate it. So, let's tip our hats to Webkinz. They create demand for plush toys by literally bringing them to life, through a magical website, and by evoking the powerful emotion of love and affection. If they can change the culture of 12-year-old boys, perhaps it is possible to change, with innovations, the culture of adolescents, senior citizens, terrorists, bond traders or politicians.

Source: Shlomo Maital, 'WEBKINZ—How Innovation Changes Culture', TIMnovate blog, posted on 17 May 2009, http://timnovate.wordpress.com/2009/05/17/webkinz-how-innovation-changes-culture/

2.6 Innovating Experiences, Battling Commoditization

Many global CEOs lose sleep wondering how to get customers all over the world to *like* their product enough to buy it. But in today's competitive markets, the real question is: *How do you get customers to love your product?*

In his book *The Experience Economy* (with Joseph Gilmore), strategist B. Joseph Pine describes a product 'ladder'.[15] At the bottom are commodities, standardized undifferentiated products where competition is based solely on cost and price; next, goods, which are differentiated, often through branding; then, services, and then, transformational experiences—*services offering a memorable and delightful experience that we love and remember them.* Some examples: a trip to Disney World for children, a flight on the Concord, a weekend at a superb resort or highly user-friendly software.

DEFINITIONS

- **Transformation: The individual is the offering.**
- **Experiences: The encounter is the offering.**
- **Services: The process is the offering.**
- **Goods: The product is the offering.**
- **Commodities: The material is the offering.**

The higher your product is in the commodity-to-transformation ladder, the higher your profit margins and the stronger your customer loyalty. Truly wonderful experiences are the uppermost rung on the ladder. Pine calls them transformations. For example, after a day at Disney World, one of our children said with a huge smile, 'Mom, Dad, that was the best day of my life!' Such experiences are so powerful, they can change our lives. Companies that provide superior customer service, e.g., make sure that every touchpoint they have with customers comprises a positive, memorable experience of this kind. *Innovation should aim as high as possible on the Experience Economy ladder.*

In today's global markets, there are powerful, inexorable forces that drive innovative products down the ladder to quickly become low-margin commodities. Inevitably, as innovative products 'click' with buyers, they are imitated and become standardized and commoditized. The only effective 'pushback' is to follow up with continual innovation, remaining as high as possible, as long as possible, on the Pine 'ladder'. Great managers find ways to push their products up the ladder and resist this commoditization. Experiences and transformations create an emotional bond with customers—the basis of enduring customer loyalty and powerful global brands. For innovators, the eternal question is, *'How can our products be kept from sliding down the ladder, becoming commoditized, and how can we push them up the ladder by shaping them into memorable customer experiences?'*

Case Study: When Financial Services Becomes Not a Commodity but an Experience: The Case of USAA

An American bank, USAA, topped Business Week's 2009 rankings for superior customer service. It has ranked #1 or #2 for four straight years. No other firm comes close. Surely, this provides a terrific best-practice benchmark for customer service. USAA provides financial services for US military families. These families have special needs related to the fact that part of the family serves in distant parts of the world. In almost everything

it does, the financial services outfit puts itself in the spit-shined shoes of its often highly mobile customers, many of whom face unique financial challenges.

Here are a few things USAA does to provide superior customer service:

- When Staff Sergeant Corey Mason wants to deposit a check, he does not use an ATM, a teller at a branch or even a stamped envelope and deposit slip. Rather, the 37-year-old GPS systems specialist takes a picture of the check with his iPhone, uses an application to send it to his bank, and within minutes the money shows up in his account.
- USAA was the first bank to allow iPhone deposits, it routinely texts balances to soldiers in the field, and it heavily discounts customers' car insurance while they are deployed overseas. 'They do all this really creative stuff that applies to guys and gals who are in Afghanistan', says Karen Pauli, a research director at consulting firm TowerGroup. 'There is nobody on this earth who understands their customer better than USAA.'

Here are some things USAA does to keep its employees happy and in touch with their customers:

- Customer intimacy: '[T]raining for USAA employees is steeped in the military experience. New representatives attend sessions where they dine on MREs, or "meals ready to eat", which troops consume in the field. They try on Kevlar vests and flak helmets. And each representative is handed a bona fide deployment letter—with the names changed, of course—to get them thinking about the financial decisions customers face at such an emotional time.' Colleen Williams, a Phoenix-based service representative who joined the company in 2008, says the training clued her in to family issues that help her when answering calls. 'I speak to women who haven't talked to their husbands in six weeks', she says. 'It never really registered to me, the real disconnect' deployed soldiers have from their families.
- Training is not the only thing USAA lavishes on employees. After all, it takes satisfied workers to get satisfied customers. In 2009, even call centre agents at USAA saw bonuses nearing 19 per cent of their pay, up from 13.5 per cent the year before. A new $5-an-hour concierge service lets employees outsource errands on the cheap during the workday. And when the company closed two call centres in 2009, it offered every employee a company-paid relocation package to jobs at other locations, even helping staffers burdened with underwater mortgages unload their homes. Of the 1,200 affected workers, 50 per cent accepted move offers, far more than the fewer than 20 per cent USAA expected.

- Staffers get time to do their jobs, too. Employees are not rushed through calls with customers or evaluated on how fast they handle the inquiries. 'Member satisfaction trumps every single metric', says Forrester's Temkin. Other call centres 'may relax things like average handle time, but they still measure it, and still you get in trouble if you're out of bounds'.
- Representatives are also armed with software that lets them view a history of the online screens a particular customer has viewed on USAA's website, letting them know what policies or business lines the customer was perusing—and may be ready to buy.

Every business has a number of generic functions it does. Customer service is one. Even if your business is very distant from banking—study USAA. Many of their best practices can be adopted and adapted. Superior customer service transforms your offering from a commodity into an experience. The impact on price sensitivity and profit margins will be substantial.

Source: http://images.businessweek.com/ss/09/02/0219_customer_service/25.htm

2.7 Technology and Psychology

The story of radio and television exemplifies how technology and intuitive psychology interact to satisfy unarticulated needs and create memorable experiences when in the hands of master visionary innovators like David Sarnoff.

Case Study: Radio and TV: David Sarnoff as Visionary and Innovator

Two of the most powerful innovations of the 20th century are radio and television. Both were pioneered by one man—David Sarnoff. Sarnoff immigrated to America from Uzlian, Russia with his parents at the age of nine.

Radio

Sarnoff was a Marconi telegraph operator atop a tall department store in Manhattan when on 14 April 1912 he picked up the message, 'S.S. Titanic sinking fast'. He

rapidly relayed the news to the world. Sarnoff proposed to his company, Marconi, a vision for a 'radio music box' at a time when radio was largely used in shipping and by amateur Morse code enthusiasts. 'Bring music into the house by wireless', was Sarnoff's vision—a radio in every home (reminiscent of Bill Gates' vision, 'a computer in every home'). The idea was ridiculed. But in 1919, General Electric formed Radio Corporation of America (RCA) to absorb Marconi's assets in the United States. Sarnoff and his imagination were among those assets. Sarnoff conceived an ecosystem business model for his radio innovation, comprising *content* (music, news, sports), a *radio music box* (RCA's Radiola, priced at a steep $75, or $750 in today's dollars), and a *national network* of stations. In 1921, Sarnoff arranged for a ballyhooed prizefight between Georges Carpentier and Jack Dempsey to be broadcast on the radio, a memorable experience and watershed marketing event. In 1926, Sarnoff became general manager of RCA's subsidiary, National Broadcasting Corporation (NBC). And the profits rolled in.

Television

Sarnoff saw at once the amazing potential in inventor Vladimir Zworykin's 1923 'iconoscope' (precursor to television). In 1928, Sarnoff set up an experimental TV station, and launched the first commercial telecast from WNBT in 1941. 'Now we add sight to sound', he said simply.

Today *the average US family watches TV for more than 50 hours a week*—more than they spend sleeping or working. Television certainly passes the hurdle of a life-changing innovation.

Source: From Marcy Carsey and Tom Werner, 'David Sarnoff', *Time*, Special Issue: Builders and Titans of the 20th Century, 7 December 1998, p. 88.

2.8 Innovation, Feelings, Needs: Creating Emotional Appeal

How can an innovator transform a product or service into an experience with strong emotional appeal? Kevin Roberts, worldwide CEO of Saatchi & Saatchi, a global advertising company, has some answers.[16] Born in Lancashire, Roberts left school at age 16. He worked with the inventor of the miniskirt, Mary Quant, worked in marketing

with Gillette, Procter & Gamble, Pepsi, and then joined Saatchi & Saatchi. Roberts coined the term 'lovemarks' (products that arouse deep emotional ties), and explains how to tell the difference between an ordinary branded product and a 'lovemark' (Table 2.3).

Table 2.3   The Difference between a Brand and a Lovemark

Brand	Lovemark
Information	Relationship
Recognized by consumers	Loved by people
Generic	Personal
Presents a narrative	Creates a love story
The promise of quality	The touch of sensuality
Symbolic	Iconic
Defined	Infused
Statement	Story
Defined attributes	Wrapped in a mystery
Values	Spirit
Advertising agency	Ideas company
Professional	Passionately creative

Source: Kevin Roberts, *Lovemarks: The Future Beyond Brands* (New York: Powerhouse Books, 2005).

Roberts' message is best stated in his own words:

People are trying to get emotion into every brand promise. Wal-Mart has gone from being trusted to being loved. Procter & Gamble, the world's biggest branded company, seeks to improve the lives of consumers, through creating 'brands they love'. Once brands were admired, trusted, respected, now ... they have to *be loved*. The people are voting and they are voting emotionally. *They want to buy things they have an emotional connection with*. McDonalds campaign is: 'I'm loving it.' Not hamburgers. Love, loving, feelings. Harley-Davidson does not sell motorcycles, but rather the loving, feelings. Harley-Davidson does not sell motorcycles, but rather the experience of a rebel lifestyle. They say *'What we sell is the ability for a 43-year-old accountant to dress in black leather, ride through small towns and have people be afraid of him.'* You want *mystery*. You want to connect past, present, future. You want

to connect with the icon .... Cut emotion loose and let it rip. Emotion is an unlimited resource with unlimited power. By streaming the power of emotion, *design can be an extraordinary force for good.*[17]

The invention of transformational experiences is a fruitful area for innovation. In modern economies, services comprise 75 per cent or more of GDP. Some services, like haircuts, are low level and commodity-like. But some are high-price and high-margin. And by definition, innovation in creating experiences is almost entirely about emotions and feelings. With the right ambience, style and panache, even haircuts can become a profitable, transforming experience and a highly profitable business. Big industries have been built by innovators able to transform commodities into experiences. Starbucks is an example.

Case Study: Starbucks: Coffee at $5 a Cup

Entrepreneur Howard Schultz had a vision: to alter how and where every American has their breakfast coffee—cappuccino at Starbucks rather than instant coffee at home—by transforming coffee from a 50-cent commodity into a $5 experience. It succeeded. Today Starbucks (the name Starbucks comes from a character in the Herman Melville novel *Moby-Dick*) is a large global chain of coffee shops, with 5,715 company-operated outlets worldwide: 4,666 of them in the United States and 1,049 in other countries and US territories, together with 3,956 joint-venture and licensed outlets, 2,222 of them in the United States and 1,734 in other countries. By creating ambience and stressing the international 'coffee culture', Starbucks is able to charge high prices for its coffee, while delighting customers (the average Starbucks client visits Starbucks 18 times a month, almost daily on workdays) thereby realizing Schultz's vision. Starbucks continues to innovate, providing Wi-Fi (wireless computing) hotspots and lately, music downloads. In 2005, Starbucks had $6.4 billion in revenues, $495 million in net profit, and in the period 1995–2005 paid its shareholders an average annual return of 27.6 per cent.

Source: Iris Ginzburg and Shlomo Maital, 'Services Innovation: New Challenges, New Models—Six Guidelines in Search of a Theory' presented at Global Advanced Technology and Innovation Consortium annual conference, Kyoto, Japan, 2006.

ACTION
LEARNING

Lovemarks
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2.9 Searching for Innovation Opportunities: Find a Perfect Storm

Where should innovators search for new opportunities and ideas?

A simple answer is: Wherever there is significant change (in tastes, preferences, technology, market structure or regulation). We once heard a renowned marine biologist speak about a powerful storm on the seacoast. She noted that by stirring up the sea bottom, storms create new opportunities for many organisms. Things that live in the sea love storms, she said. So do innovators, we believe. Innovators look for perfect storms. They constantly track social trends and find opportunities where others find only crises or problems. Here are some examples.

Aging

With birth rates plummeting, the age pyramid of countries in both West and East is growing older and shallower. This will create a new demand for a wide variety of products tailored for older people—in housing, electronics, vehicles, furniture, clothing, medical treatment and medicines.

Technology

Contrary to prevailing opinion, new technologies often *do* trumpet their birth long in advance. The difficult part is not forecasting technology but translating new technology into innovative businesses. The Internet is an example.

Case Study: Internet—1969 to Present

The Internet was born in 1969, when a computer-engineering firm Bolt, Baranek & Newman (BBN) built Advanced Research Projects Agency Network (ARPANET), to link computers far apart on behalf of the US Defence Department for four US universities. BBN then developed an electronic mail software programme, in 1972, in the second stage. In the third stage, in 1991, a European Research Laboratory, Conseil Européen pour la Recherche Nucléaire (CERN) released the software code written by a CERN physicist, Tim Berners-Lee, to help researchers exchange information. The WWW was born. Finally, the WWW consortium adopted a new standard for defining and naming data, known as Extensible Markup Language (XML). The Internet, as we know it today, took 37 years to reach its current state. Yet, it continues to surprise many managers—like those in the embattled music industry.

Source: John Hagel III, *Out of the Box* (Boston, MA: Harvard Business School Press, 2002), p. 20.

Case Study: Music

In 2004, more blank compact discs (CDs) were sold than ones with recorded music. This is evidence that the music industry, once large, growing and profitable, has been almost destroyed by Internet music downloads, some of them illegal. Yet the Internet, as shown above, has existed (at least in primordial forms) since 1969. Why did music industry executives choose to fight this technology, futilely, in the courts, rather than join it and innovate to harness it? Those who did—Apple's iTunes, e.g., with 99-cent download per tune—reaped large rewards, but they were among the exceptions.

Source: http://en.wikipedia.org/wiki/Compact_Cassette

Generational Changes

Often, there are large differences in tastes, values and habits between generations, e.g., between baby boomers, born in 1947–61 and baby busters, born after 1961. As one generation ages, and is replaced by another that grows into a high-spending generation, business opportunities arise as core generation values change. For example, Charles Schwab's discount brokerage was ridiculed but it turned out to appeal strongly to baby boomers.

Economic Downturns

While many businesses shudder at the thought of recession, others profit. Downturns make buyers price-sensitive and create opportunities for new lower-priced products that provide strong value for money.

Tastes and Preferences

Consumer tastes may change rapidly, especially in the face of 'tipping point' phenomena, where markets seem to change almost overnight and a critical mass of initial buyers quickly pulls others into the circle. The food industry now faces such a change: consumers who once wanted foods that did not damage their health now seek foods that *actively* reinforce and build good health. Subway is an example that has crafted its offerings to these changing trends.

Legislation

Changes in government regulation create superior opportunities for innovation. Chapter 10 relates how entrepreneurs anticipated the 1978 US Public Utility Regulatory Policies Act (PURPA) that encouraged co-generation of electricity and launched Cogentrix, a company that supplied co-generation plants. By anticipating the legislation, they gained a decisive competitive edge on competitors who only reacted to the legislation after it was passed.

Case Study: Subway

Subway is a chain of fast-food restaurants specializing in 'subs' (submarine sandwiches); it leaped on the health trend with its 'Jared' campaign, built around 425-pound college student Jared Fogel, who lost many pounds by living on a Subway turkey sub for lunch and a Veggie Delite for dinner for a whole year. Subway offered '7 under 6' (a powerful memorable and simple UVP, meaning '7 subs under 6 grams of fat'). In December 2001, Subway's 13,247 shops surpassed the number of McDonald's outlets in the United States, though McDonald's revenues are still eight times higher.

Source: From Rita Gunther McGrath and Ian C. McMillan, *Marketbusters* (Boston, MA: Harvard Business School Press, 2005), p. 159.

Another example is generic medicines.

Case Study: Innovation through Legislation

Teva Pharmaceutical Co., headquartered in Israel, is one of the world's largest generic medicine companies. (Generic medicines are drugs that contain the same active chemical ingredients as patented 'branded' products and are 'bioequivalent' in their effects; they come to the market when patents expire.) Teva CEO Eli Hurvitz spotted an opportunity when the Hatch-Waxman Act was passed by the US Congress in 1984, encouraging generic drugs as a way to cut the soaring cost of medicines for consumers. Teva quickly aligned its competencies with the generic business model and in two decades became the world's largest supplier at a time when for years other drug companies scorned the low margins inherent in the generic business.

Source: As related to the first author by Teva's Eli Hurvitz in 2007.

Customers

MIT Professor Eric von Hippel has shown that a great many successful innovations come from companies' major customers (whom he calls 'lead users'). When a customer steps up and says, 'If you make X, I will gladly buy 500 of it', there is

a *double* dividend—the idea itself and potential buyers. According to von Hippel's research, 77 per cent of innovations in scientific instruments are developed by users as are 67 per cent of innovations in semiconductor and printed circuit board process. However, he notes, customers do not always come forward with their new ideas, 'users ... may keep [innovations] hidden behind their factory walls as a trade secret', as a source of competitive advantage and profit. Stronger and closer contacts with their customers will help businesses discover their customers' valuable innovations.[18]

Contracting, Declining Industries

Great innovators pick a declining industry no one finds attractive and revive it with novel ideas. Southwest Airlines is said to have paid the highest enduring total return to investors of any company. Southwest is in an industry plagued by enormous, persisting losses, but itself has been consistently profitable, through its innovative point-to-point, efficient, no-frills business model. Fire-eater (literally) Guy Laliberte, CEO of Canada's Cirque du Soleil, entered the rapidly disappearing circus industry and reinvented it, creating startling productions seen by 40 million people in 90 cities worldwide. By creating an entirely new experience, Cirque du Soleil drew new customers, delighted them—and charges prices many times higher than conventional circuses. In declining markets, innovative products revive growth and profit by drawing customers who previously scorned the old product.

2.10 Process Innovation

One of the most under-exploited innovation opportunities lies in the business processes that firms use. Excellence in process innovation—small incremental improvements that cumulatively generated unsurpassed efficiency—led Japan to global pre-eminence in manufacturing in the 1980s. Part II, Chapter 5 relates how IBM saved billions by radically re-engineering its supply chain management. Process innovation often involves many small incremental improvements, each of which is insignificant but together, leads to enormous productivity gains and cost reductions. This type of innovation requires participation of every worker and demands great persistence and patience. It is driven by a strong culture of continuous improvement that is shared by a company's entire work force.

Innovation itself, of course, is a key business process; so are the processes of cost management and operations management. Major cost reduction is a type of innovation that can impact the lives of billions of people; e.g., bringing cheap cellular phones to poor developing countries with little or no fixed-line infrastructure or the $100 laptop.

MIT Professor Nicholas Negroponte, founder of the MIT Media Laboratory, is the driving force behind the $100 laptop computer aimed at bringing durable, affordable laptops to students in poor countries. It uses free, open-source software (Linux) rather than the more costly Windows. For obvious reasons Negroponte faces fierce opposition from Microsoft. In general, innovations that bring order-of-magnitude cost reductions threaten incumbents who may have large resources and use them vigorously to defend their business designs.

Source: From John Markoff, 'Battle to Bring Cheap PCs to the Masses', *New York Times,* 30 January 2006.

Here are two examples of how companies use value-creation and cost-reduction innovation in very different ways to build growth and profit.

Rubbermaid versus Wal-Mart

Fortune magazine conducts an annual survey that chooses America's most admired companies. In 1994, Rubbermaid was high on the list. Rubbermaid won its laurels in part for its value-creation innovation, launching new products almost daily. Its *forte* was value creation through continual innovation.

A decade later, in 2004, Rubbermaid was replaced in the list by Wal-Mart. Wal-Mart, too, is an innovator, but its invention was its cost-reduction business model, built on 'everyday low prices' (see case study 'Wal-Mart' in Chapter 8). With growing inequality in the distribution of income in the United States, low-income groups seeking value and low prices grew proportionately rapidly. Wal-Mart's 'low-price' UVP won their hearts. Wal-Mart's low prices are driven by low costs, powered in part by large-scale imports from China. If Wal-Mart were a country, it would be the world's sixth-largest importer from China. Wal-Mart's huge Global Processing Center in Shenzhen, China, deals with some 6,000 different suppliers. Many of Wal-Mart's imports arrive in containers at Long Beach Port, near Los Angeles—$36 billion worth a year. Wal-Mart's core competency is the use of information technology to manage its store inventories and supply chain.

3M versus Best Buy

3M's legendary President, and later Board Chairman, William L. McKnight built a culture that put employees in direct contact with customer problems and encouraged initiative and innovation. His philosophy was to listen to anyone who proposed an original idea and to let him or her 'run' with that idea through what he called 'experimental doodling'. 'It's essential that we have many people with initiative if we are to continue to grow', he said. Today 3M has a 15 per cent rule, requiring technical and scientific employees to invest about a sixth of their time to pursue ideas that are not related to their official job assignments. Along with its spirit of innovation, 3M is fiercely profit-focused—every innovation must pass the 3M trial-by-fire: 'Will it make 3M (profit) margins?'

Best Buy, a chain of retail consumer electronics stores, fourth largest in the specialty-retail industry in the United States, defines innovation focus as 'continuous innovation in operations and service, to cater to the changing tastes of consumers'. Its process innovation begins with a consumer need, identified by an individual, who forms a team that then presents its ideas to senior management. Best Buy had sales of $25 billion in 2004, up 10 per cent from 2003, net profit of $705 million and 100,000 employees.

Source: The account of 3M's William Mcknight is from *Managing Creativity & Innovation* (Boston, MA: Harvard Business School Press, 2003), p. 109; also from personal communication with MBA student Nimesh Bhandari.

2.11 Innovation Portfolios for Established Organizations

Financial advisors recommend a portfolio approach to asset management by dividing investments among different types of assets (stocks, bonds, foreign exchange). By diversifying, investors can reduce risk without reducing their returns.

A similar approach applies to innovation. While entrepreneurs generally focus on a single core innovation, established organizations work on balancing and optimizing a spectrum of innovations, from incremental to radical.

One way to classify innovations is by their impact on product features. This approach, known as 'feature driven innovation', will be explained in detail in the next chapter. Meanwhile, here are some basic definitions.

Product Attribute: A characteristic or feature of a product, comprising an essential element of how the product satisfies wants and needs and is capable of being quantified and compared.

Incremental Innovation: An innovation in which a new version of an existing product is created, by improving or altering some of its existing attributes. For example, a corporate jet, say, Gulfstream IV. A reconfigured improved Gulfstream V may have better range, speed, payload, climb and cabin room.

Standard Innovation: One additional attribute is added to the product that did not exist before. For example, the addition of a CD-ROM read-only drive to PCs.

Radical: Several significant new attributes are created which did not before exist, thus creating, essentially, a new product. For example, a handheld computer (e.g., Palm Pilot).

Source: The definitions of incremental, standard and radical innovations are from S. Maital and H. Grupp, *Managing New Product Development and Innovation: A Microeconomic Toolbox* (Cheltenham, UK: Edward Elgar, 2000), Chapter 1.

Table 2.4 shows three different 'innovation portfolio' strategies for a large company, depending on the proportion of resources invested in radical (high risk) innovation compared with incremental (low risk) innovation.

Table 2.4   Innovation Portfolio Strategy: Fraction of Innovation Resources and Time Invested in Each Type of Innovation

	Low risk	Moderate risk	High risk
Incremental	70%	50%	25%
Standard	20%	30%	15%
Radical	10%	20%	50%

Source: Authors.

Each organization needs to optimize its own innovation portfolio, taking into account the fact that a 'low risk' strategy focused on incremental innovation is highly vulnerable to a radical innovation strategy by a competitor. Paradoxically, in innovation, low-risk policies may ultimately incur the highest risk of all, as the fierce battle between Nokia and Samsung illustrates.

2.12 Pioneers, Migrators, Settlers

The notion of managing and optimizing an innovation portfolio is a widespread concept in innovation management. There are many different typologies of innovations. For instance, Vijay Govindarajan distinguishes between *continuous process improvement* (countless small investments in incremental process innovations); *process revolutions* (improvements in existing business processes, but in major leaps); *product or service innovations* (creative new ideas that do not alter established business models) and *strategic innovations* (innovations in process or product that involve new, unproven business models).[19]

Case Study: Nokia versus Samsung

For years, Nokia followed a winning strategy of incremental innovation, improving the performance and design of its cell phones by 5 per cent yearly to remain ahead of its competition. The strategy worked—until Samsung came on the scene with large resources and several radical innovations in cell phone design and performance. According to market research firm Gartner, in 2004 'sales of mobile phones jumped sharply to record-setting levels during the first quarter, but longtime leader Nokia saw its share of the market fall to the lowest level in five years', falling from 34.6 per cent in 2003 to 28.9 per cent in the first quarter of 2004. Nokia's share price fell precipitously as a result. A Gartner expert explained that Nokia's market share dropped because other phone makers (like Samsung) were more aggressive in rolling out more feature-laden phones.

Source: Based on a report by Keith Regan in *E-Commerce Times*, 9 June 2004.

A more colourful typology is that of Chan and Mauborgne, who use a *how they won the West* metaphor to describe a growth portfolio consisting of 'settlers' (mature cash cow products), 'migrators' (products once pioneers, now becoming settlers) and 'pioneers' (innovative new products in their markets). Innovators, say the authors, should 'wisely balance between profitable growth and cash flow at a given point in time'. This may involve a major shift toward 'pioneers'—which often encounters resistance from a coalition of interests, including shareholders (who seek short-term gain), employees (threatened by rapid change) and senior managers (who may lack the energy, leadership and competencies that 'pioneering' requires). Only strong leadership, a key component of successful innovation, can overcome such resistance.

Jeffrey Immelt, General Electric CEO who succeeded legendary CEO Jack Welch in September 2001, is an example. Under Welch, GE focused on operational excellence, using such tools as 'Six Sigma' (a system for eliminating errors and slip-ups).

Under Immelt, GE is focusing on innovation. 'The biggest challenge is continuing to drive consistent growth in a world that is more volatile and has less economic growth', Immelt told *Business Week*.[20] Innovation is the tool he chose to achieve this goal.

2.13 Conclusion

It is sometimes believed that in innovation, the most challenging and difficult task is coming up with new ideas. In our experience, this is not the case. When people are empowered, inspired by vision, provided ample time and resources and an appropriate environment, ideas proliferate like wild flowers in springtime. The main challenge lies not in ideation—producing ideas—but in winnowing wheat kernels from chaff, good ones from bad, and then in matching innovative business designs to innovative ideas for products and services.

Bringing innovative products to market is risky. But refraining from doing so is even riskier. Remember this wise business advice from poet Robert Frost:

Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference.

2.1   CASE STUDY: INGERSOLL-RAND (INDIA) LTD.*

Sanjay Mehta, sales executive of Ingersoll-Rand (India) Ltd. (IRL), Mumbai was excited to receive the first order for a ₹9.3 million (about $200,000) centrifugal compressor from Deccan Textiles—an account that was historically the stronghold of a competitor. The very next day, he gatecrashed into the office of Mr Anand Ranganathan, Executive VP, Air Compressors, at Ahmedabad: 'Boss! I have clinched this order of our dreams!' The grim expression on Anand's face after he had finished reading the customer's order got Sanjay worried.

Anand paused for a moment and then replied in a calm voice, 'As impressive as this deal looks on the surface, I wish you had not taken the order.' 'I don't understand, Boss! I thought you would be very impressed with this!' exclaimed Sanjay, clearly disappointed. 'At this price, this sale will earn us only a 2–3 per cent profit. I see no sense in offering a

* Names of people, figures, client company name, etc., have been disguised to preserve confidentiality of the company's information.

world class high value product at such a heavily discounted price!' was Anand's terse response. Sanjay said raising his voice:

> Well then, if we cannot afford to offer our compressor for Rs 9.3 million, our competitors will be more than happy to offer theirs at a price 10 per cent lower than this price. Anyway, I am too shaken up now, and need to compose myself first before hearing from you on what you want me to do on this order.

Without wasting another minute, he walked out of Anand's office in a huff.

With a turnover of over $9 billion, Ingersoll-Rand worldwide has a truly diversified product portfolio that includes construction equipment, refrigeration equipment, temperature-control equipment for the transport industry, security and safety equipment and air and gas compressors. (Note: Some of these businesses have since been divested to achieve focus.) IRL set up its first manufacturing plant in India in 1965 at Naroda, Gujarat to manufacture reciprocating compressors, and in 1978 IRL commissioned its second production unit at Bangalore to manufacture various construction equipment. With an annual turnover of ₹4,062 million (2001–02) and an employee strength of about 1,000, IRL delivered an annual growth rate of 7.69 per cent in revenues and 5.62 per cent in profits after tax for the year 2002. There are a variety of compressors manufactured by the company, and in each of these product categories, competition is intense from both domestic and foreign suppliers.

After Sanjay stomped out of Anand's office, Anand decided to convene an emergency meeting of his senior colleagues to discuss the issue at hand. The meeting was held later that day.

At the emergency meeting, the sales and marketing people were appalled that rather than celebrating the event for the big order received, the room seemed filled with gloom. According to the finance controller:

> Offering this product at a price as low as Rs 9.3 million would mean undervaluing the product. Besides, we will end up losing money, should we sell it at such a low price, since there are a lot of hidden costs involved in the implementation, over which we do not have too much control. Our present business model of selling such sophisticated equipment by competing on price simply does not make sense!

On completion of the emergency meeting, Anand created a 'fact-finding' team that included Sanjay and two others. The reason he constituted this fact-finding team was to get a better understanding of the challenges being faced by Deccan Textiles. He asked the three members of this team to report back their findings to him within a week.

'Should IRL continue to bleed, doing business this way?' Anand asked himself, at the end of a long and eventful day, after his team of senior managers left on conclusion of the emergency meeting. 'If we carry on doing business in this manner, we will come under enormous bottom-line pressures. Also, we will end up growing the company at about the same rate as the growth of the economy.'

Anand recollected some of the concerns expressed by Simon McDonald, President, Industrial Technologies group at Ingersoll-Rand, USA, during a recently held meeting in the global headquarters in the United States of America only a few weeks earlier. 'There is much more potential for air compressors in the Indian market', Simon had said confidently to Anand.

> You guys in IRL are not capitalizing on this opportunity. Something is missing somewhere. You have the right kind of people, the required technological skills, the market seems to be there, but your growth has not been anywhere near the 'aha' that I have been hoping for!

Anand came away from this meeting with a clear directive that he had to grow the domestic air compressor business at a faster clip. In parting, Simon advised Anand that the way forward was for IRL to 'do something very different'. Anand was too seasoned a manager to ask Simon if he knew what that 'something very different' should be!

The fact-finding promptly came back in a week with their report of the ground realities prevailing at Deccan Textiles. The findings are summarized as follows:

- Sales and marketing function at Deccan Textiles was under enormous pressure to increase the company's domestic and international market shares.
- The company's falling turnovers and profits figures over the last three years has had the MD of Deccan Textiles worried.
- In his drive to cut costs and minimize waste in the company, the MD has given the VP (Manufacturing) a clear mandate to reduce cost of production in the three divisions, viz., textiles, cotton yarn and denim.
- Known to be shrewd extractors of price concessions and service support from vendors, the purchase department had over the years created a lot of negative feelings amongst its vendors.
- Over the past three years the utilities manager of Deccan Textiles had encountered numerous problems with many of the equipment (e.g., exhaust fans, transformers, motors, etc.) purchased by the company. He felt that this was due to the mercenary policies adopted by the company in its price negotiations with the suppliers.
- The maintenance head had his own bag of woes to recount to the IRL team. He highlighted the sudden breakdown of critical equipment such as compressors

Case study 2.1 continued

used to supply compressed air to the process plants as one of his biggest problem areas. He attributed this to poor quality of equipment purchased.

- In trying to follow the instructions of the MD, the VP (Finance) was all set to ensure that the company ramped up its profitability 'anyhow'. His approach to contain costs and enhance profits would clearly be through time-tested methods: very aggressive cost control on all fronts, including steep reduction in overheads, variable costs as well as sales and marketing expenses and controlling investments in R&D.

All the soul-searching that followed the receipt of the report on Deccan Textiles from the fact-finding team led to a change in the business model. Rather than simply focusing on pushing compressors to customers, the involuntary crisis that resulted from bagging the Deccan Textiles order forced Anand and his team to re-examine the value they were actually providing their customers. Intense discussions within the team resulted in the realization that they were in the business of helping their customers like Deccan Textiles to actually succeed in their respective marketplaces.

Over the next several months, this realization resulted in the company exiting from the 'never-ending battle of commoditization' that was taking place even in the markets for sophisticated compressors and the resulting price wars. Instead, IRL decided to focus on providing solutions to its customers through its 'solutionizing initiative'. However, this was not without its challenges. The company found that moving into solutionizing threw up many new challenges relating to the people, processes, customers and financial aspects of doing the business.

After about three years of sustained effort, the company succeeded in fully implementing its new business model, based on providing effective solutions to the customer, rather than 'hard sell' a compressor as a 'product' as they had done in the past. This transition necessitated significant innovation by coming up with new services. This led to considerable improvement in the company's market performance, including revenue and profitability growth. In the case of Ingersoll-Rand, the innovative change in business model encompassed their entire way of doing business, and resulted in a totally different business model vis-á-vis the traditional business model that they had followed for decades and that their competitors continued to follow. The results of IRL's Air Solutions Division (the new name for the Air Compressor Division, to reflect the change in the business model) in terms of indicators of performance relating to the financial, customer, internal business processes and employees, have been excellent.

So *what* do you have to innovate in your organization? The IRL case study shows that when pushed against the wall, it had to innovate the entire business model, thereby leading to a change in nearly all aspects of its 'going to market strategy'. There is a powerful lesson in it for your own organization—constantly look for vulnerabilities in your business model and get your funnel of innovation flowing!

Notes

1. This quote is taken from Adam Cohen's account of how eBay was founded: 'Pierre Omidyar's Perfect Store', *International Herald Tribune*, 8 September 2005, p. 7.
2. W. Chan Kim and Renee Mauborgne, *Blue Ocean Strategy* (Boston, MA: Harvard Business School Press, 2005), p. 7.
3. Fu Yanyan, www.english.caixin.com
4. Richard S. Chang, 'A Plug-in Hybrid Goes on Sale, in China', *New York Times*, 18 December 2008, http://wheels.blogs.nytimes.com/2008/12/18/a-plug-in-hybrid-goes-on-sale-in-china/
5. Jim Collins and Jerry Porras, 'Building Your Company's Vision', *Harvard Business Review*, vol. 74, 1996, p. 65.
6. The 'hedgehog' metaphor comes from a famous passage by the scholar Isaiah Berlin, who claimed there are two kinds of people, 'foxes', who know many small things, and 'hedgehogs', who know one big thing.
7. *International Herald Tribune*, 26 August 2008, p. 11.
8. Jim Collins and Jerry Porras, 'Organizational Vision and Visionary Organizations', *California Management Review*, vol. 34(1), 2001, pp. 30–52.
9. Quote from Richard S. Tedlow, 'The Education of Andy Grove', *Fortune*, 12 December 2005, p. 34.
10. W. Chan Kim and Renee Mauborgne, 'Knowing a Winning Business Idea When You See One', *Harvard Business Review*, September–October 2000, pp. 129–37.
11. Jim Collins and Jerry I. Porras. *Built to Last: Successful Habits of Visionary Companies* (New York: HarperCollins, 1994).
12. Material on Clotaire Rapaille is drawn from the video, 'The Persuaders' in the PBS *Frontline* series (Boston, 2005).
13. J. Andrew Armour, *Neurocardiology: Anatomical and Functional Principles*, monograph.
14. J. Andrew Armour, 'Hearts and Minds: Do Our Hearts Have Their Own Brains?', http://indigosociety.com/showthread.php?46125-Hearts-and-Minds-Do-Our-Hearts-Have-Their-Own-Brains
15. B. Joseph Pine and James H. Gilmore, *The Experience Economy: Work Is Theatre and Every Business a Stage* (Boston, MA: Harvard Business School Press, 1999). See also their article, 'Beyond Goods and Services: Staging Experiences and Guiding Transformations', *Strategy & Leadership*, May–June 1997.
16. See Kevin Roberts, *Lovemarks: The Future Beyond Brands* (New York: Powerhouse Books, 2005).
17. A rough transcription from an interview by Peter Day on the BBC World Service's *Global Business*.
18. Eric von Hippel, *The Sources of Innovation* (London: Oxford University Press, 1988).
19. For innovation typologies, see Vijay Govindarajan and Chris Trimble, 'Not All Innovations Are Equal', *Harvard Business School Working Knowledge*, 5 December 2005; and W. Chan Kim and Renee Mauborgne, *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant* (Boston, MA: Harvard Business School Press, 2005), p. 98.
20. 'Best Managers of 2004', *Business Week* online, 10 January 2005.

3

The Innovation Voices:
How to Innovate?

Thirty thousand new consumer products are launched each year ... over 90 per cent of them fail ... after marketing professionals have spent massive amounts of money trying to understand what their customers want.

—Clayton Christensen, Scott Cook and Taddy Hall[1]

LEARNING OBJECTIVES After you read this chapter, you should understand:

- Why innovation processes work best when they are structured, organized and disciplined
- Why in-the-box thinking leads to out-of-the-box creativity
- What the four innovation 'voices' are
- How to use the five arithmetic creativity templates
- What product profiles are, how to build them and how to use them for innovation
- How to use empathic design
- How and why customers can be great innovators
- How to adapt one of the five innovative-process templates to your organization
- What the inspiration/perspiration 'eutectic point' is
- What the six myths about creativity are and why they are false
- How to listen to your inner voice (intuition) when innovating

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3.1 Introduction

The first two chapters explored *why* and *what* to innovate. This chapter examines how. It defines each of four innovation 'voices' as a source of inspiration and methodology for result-oriented innovation for growth and profit: products' voices, customers'

voices, organizations' voices and our own inner, intuitive voices. We offer tools and techniques for listening to each of the voices and for extracting maximum innovation value and information from them. The sole objective is to find ways to significantly improve the daunting odds against success facing innovators.

The core message of this chapter is: *Effective, applied creativity, the foundation of innovation, is structured, disciplined and systematic. Great innovators have a system.*

Research overwhelmingly supports this. Paradoxically, it has been found that 'out-of-the-box' thinking is best done *inside* the box, where 'box' represents the real *constraints* in which innovators must operate—technological, psychological, business, financial, human. The main reason is that *all* innovation is constrained in some manner. It is unwise to discard or ignore the 'box' (constraints); better, rather, to know where to *position* the box, i.e., to know which constraints must be accepted and which can be ignored.

3.2 Thinking 'Inside the Box'

The phrase 'think outside the box' is at least 30 years old. Its origins lie in a famous puzzle (Figure 3.1). To solve the puzzle, connect nine dots, arranged in a square grid, by drawing four straight lines *without your pen leaving paper*. The only solution to this puzzle is one where some of the lines extend *beyond the border of the box* (Figure 3.1).

Figure 3.1 'Out-of-the-Box'

Join the dots with four connected straight lines without your pen leaving the paper.
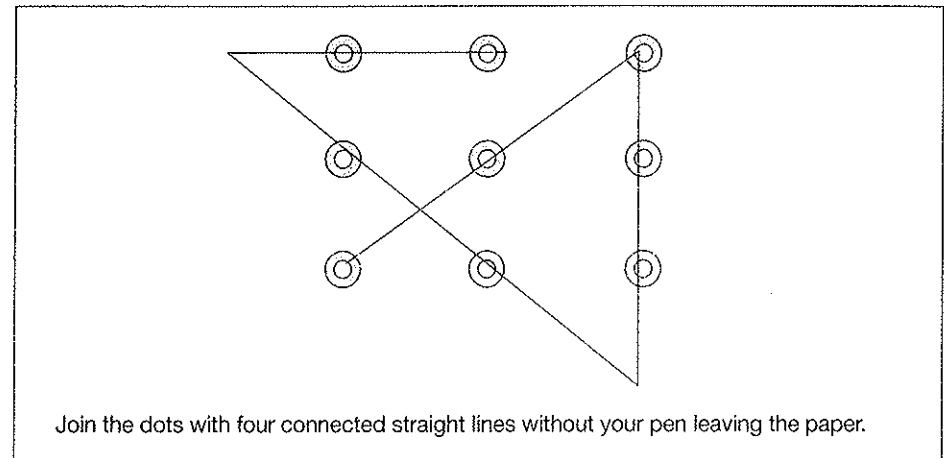
Source: Authors.

Our own mind tends to limit our pen within the imaginary box formed by the nine dots. This box may be imaginary, but such imaginary boxes are at times more confining than iron cages.

The puzzle illustrates the principle that innovators need to discard self-imposed constraints, such as the assumption that the lines must remain within the box, to create novelty. But the true secret of creativity and innovation lies in thinking *inside* the box, because in business and management, boxes (constraints) *always* exist. The question is, *which of the constraints are truly constraining and which are not and can be ignored*. The small box formed by the nine dots is not a real constraint. But the need to draw four connected straight lines *is*.

Here are two examples of outside-the-box inside-the-box thinking, from outer space and from inner space.

Case Study: Going to Mars by Changing the Box

Years ago, engineers and scientists at America's National Aeronautical and Space Administration (NASA) were dealt a severe blow. The problematic 'box' was the maximum weight constraint. Because of problems with their launch rocket, the Mars explorer spacecraft they had spent years designing was found to be too heavy. The rocket lacked thrust. Even after paring down its weight to the bare minimum, the rocket could not get it to Mars. It looked like the mission would have to be cancelled, a waste of years of work. The 'box' had changed—and threatened the idea itself.

One creative engineer refused to give up. He solved the problem with creative thinking that was both inside the box (the available rocket thrust) and outside the box (the trajectory).

The Mars explorer was not launched toward Mars. At this innovator's suggestion, it was launched in the opposite direction toward nearby Venus! The rocket had just enough thrust to get it to nearby Venus. As it circled Venus, the planet's gravity acted like a slingshot, accelerating the spacecraft and shooting it toward Mars. It reached Mars and sent back thousands of photographs.

Source: http://en.wikipedia.org/wiki/Voyager_program_(Mars)

Was aiming the rocket straight at Mars a rigid 'box', like the rocket thrust? In fact, it was an unnecessary assumption. Eliminating it led to an innovative 'in-the-box' (and 'out-of-the-box') solution. Note how powerful *hidden* assumptions are. It is natural to assume that you must send the rocket in the direction of your objective. Smashing 'assumption boxes' is a proven tool for coming up with path-breaking inventions.

Yet 'boxes' are also wonderful spurs to creativity. By facing up to constraints on time, money, space, weight and technology, innovators dream up amazingly ingenious solutions. Ignoring real 'boxes' generates ideas that at best are scrapped, and, at worst, swallow resources futilely before failing. Yielding to unreal boxes leads to more-of-the-same ideas. Great innovators know which constraints can be discarded.

Case Study: Curing Ulcers—In the Body, In and Out of the Box

In the early 1980s, two Australian scientists, J. Robin Warren and Barry J. Marshall, decided to prove it was a *bacterium* that caused stomach ulcers, not stress. Their wild notion faced several constraints—vested interests in the prevailing wisdom, including drug companies, ulcer surgeons, and psychiatrists and psychologists who treated stress; and science—doctors had been taught for years that no microbes could grow in the stomach's corrosive gastric juices. Warren, a pathologist, had seen *Helicobacter* bacteria in stomach biopsies as early as 1979. 'Once I started looking for them, they were obvious,' he said, 'but convincing other people was another matter.' A librarian found that doctors had described the bacteria in published papers as early as the late 19th century, but their findings had been ignored. Warren and Marshall were ridiculed by their peers. In desperation, Dr Marshall performed a famous self-experiment—he swallowed a culture of the bacteria, got an ulcer, documented it and was cured with an antibiotic—now the standard cure. Warren and Marshall won the 2005 Nobel Prize for medicine.

A former medical school dean, Dr Samuel Hellman, commented how doctors 'often fall in love with a hypothesis .... Medicine's peer-review system ... tends to adhere to things that are consistent with prevailing beliefs and models.' So do unsuccessful innovators, he might have added.

Source: From Lawrence K. Altman, MD, 'Nobel Came after Years of Battling the System', *New York Times*, 11 October 2005.

Warren and Marshall worked *inside* the box of medical science, but *out of the box* of rigid mindsets and prevailing assumptions. And they *listened*—to their 'product' (ulcers), their patients, their organizations and their own inner voices.

Out-of-the-box thinking, combined with a healthy respect for the inevitable boxes that cannot be avoided, can be greatly assisted by a process called 'reframing'. Experienced innovators know that one way to crack a very tough innovation problem is simply to reframe the question being asked.

Innovators often ask, what features can we add to the existing product to improve it?

Why not ask, instead: What features can we *remove*? Designers at Philips asked this, and created the highly successful one-button DVD player. So did Apple, with the

one-button iPod. We will return to this theme of 'innovation by subtraction' later in this chapter.

A new book by behavioural economists Richard Thaler and Cass Sunstein makes the point strongly, that how issues and choices are framed makes a huge difference in our behaviour.[2] Of course, advertising agencies know this better than anyone—they use it constantly to 'frame' their ads and influence our choices. Dan Kahneman and Amos Tversky wrote extensively about it—they noted, for instance, that if a surgeon tells you that your chances to *not* to survive an operation are 5 per cent (1 time out of 20, you will die!), patients reject it, but when they are told their chances are 95 in 100 to survive it, they tend to accept it (even though the facts underlying the choice are identical—they have simply been 'framed' differently).

So, when tackling innovation, and when you are stuck, try reframing the question. Try asking it differently. Try changing direction. Nudge yourself in a different direction. Chances are, you'll come up with solutions you might not have reached otherwise. Thinking both in the box, and outside it, is often a matter of how to eliminate the unseen chains of unnecessary boxes by redefining the problem.

3.3 The Four Voices

Innovators, it is said, are inspiring speakers. They lead by communicating their unique innovative vision to their people, teams and organizations.

This is sometimes true. But what is *always* true, we believe, is that innovators are outstanding *listeners*. Their ears are literally to the ground.

Geologists tell us the earth rests on continent-sized tectonic plates that drift on a sea of hot liquid rock. The plates move a few inches a year, slower than the rate at which fingernails grow. Though very slow, their movements are inexorable. In places where plates meet and collide, such as where the Indian plate encounters the Eurasian plate, earthquakes occur, like the recent tragic one in Kashmir.

Innovators live on the business equivalent of tectonic plates. To succeed, they need the human equivalent of a geologist's seismograph, a highly sensitive one, to listen to underlying trends, some of them initially faint but potentially powerful.

As an aspiring innovator, *to whom* should you listen, and how? How can you construct your own sensitive, internal seismograph? There are four different voices you must listen to regularly:

- The voice of your own *products* and those of your competitors
- Your *customers'* voices
- The voice of your *organization*
- Not least, your own *inner voice*

Here, in turn, is how each voice can lead you to profitable innovation. We begin our discussion with a case study, LEGO, which exemplifies how an embattled

Danish family business survives by listening, in its own way, to each of the four voices.

Case Study: LEGO: Big Company, Little Bricks

LEGO is an example of a great innovator that has struggled for profit. The name LEGO comes from two Danish words, *leg godt*, meaning, 'play well'. LEGO is the Danish family-owned company that makes the famous LEGO 'automatic binding bricks' first patented in 1958. The secret: tiny tubes that ensure the bricks lock together firmly, with machine tolerances as small as 0.002 metre.

LEGO is a great serial innovator and, by sales, is the world's fourth-largest toymaker. After the initial LEGO brick invention, LEGO innovated LEGO Technic (advanced LEGO bricks), Minifigures, LEGO Technic computer control (with MIT Media Lab), LEGOLand theme parks, LEGO Mindstorms (the intelligent LEGO brick, integrated with robot technology), LEGO retail stores, Clikits (a new design for girls) and Bionicle (combines construction toys and action themes).

For the first LEGO toys, carpenter Ole Kirk Christiansen listened to his *inner voice*. His son, Godtfred Kirk Christiansen, pioneered interlocking LEGO bricks, in part, by listening to the *product* itself. The grandson of the founder, Kjeld Kirk Kristiansen, retired as CEO in 2004; his skill lay in listening to LEGO's *customers*. Today's LEGO managers, when upgrading a LEGO robot kit, Mindstorms, listen to their customers in interesting and novel ways (recounted below), and listen to the LEGO *organization*, adapting its innovation system to its culture, history and personality.[3] Despite these successful innovations, for LEGO it is an uphill battle. Increasingly, children prefer computer video games. LEGO is squeezed at the high end of the market by these games and by cheap Asia-made imitations at the low end. As a result, LEGO has lost money in three of the past five years, despite its innovations, cost-cutting and restructuring. Yet had it not been for innovations like Mindstorms, LEGO would have disappeared long ago. In competitive industries like LEGO's, sometimes survival is an even bigger achievement than achieving growth and profit in less Darwinian industries.

Source: http://en.wikipedia.org/wiki/Ole_Kirk_Christiansen

We begin our discussion of the four 'voices' with the product itself.

3.4 Voice of the Product

Listen to the voice of your product. It will tell you how to change and improve it, sometimes radically, if you just listen to it carefully.

But how? Here are two related approaches, 'innovation templates' and 'product profiles'. Both provide a systematic, structured approach to a process known as ideation (the process of developing novel ideas) that is widely (and wrongly) believed to require an unstructured, almost chaotic approach.

The innovation template method is based on the thinking of a Russian inventor and scientist Genrich S. Altschuller, who studied thousands of creative ideas and identified the patterns that created them. Some of his early thinking on the subject was done while he was a prisoner in Stalin's *gulag*, jailed for criticizing the Soviet establishment's dismal lack of innovation. Theory for Inventive Problem Solving (TRIZ), a method widely used by engineers all over the world, is based on Altschuller's ideas.

TRIZ, a Russian acronym for *Teoriya Resheniya Izobretatelskikh Zadatch*, meaning 'Theory for Inventive Problem Solving', is a method for generating innovative ideas and solutions for problem-solving. TRIZ expands approaches developed in systems engineering and provides tools and systemic methods for use in problem formulation, system analysis, failure analysis and patterns of system evolution (both 'as-is' and 'could be'). In sharp contrast to techniques such as brainstorming, based mainly on random idea generation, TRIZ aims to create a systematic, algorithmic approach to the invention of new systems and the refinement of old ones.

A particularly powerful version of Altschuller's algorithm was developed by a group led by Hebrew University Professor Jacob Goldenberg, and is today applied across the world by a Tel Aviv-based company, Systematic Inventive Thinking (SIT). 'Don't listen solely to the voice of your customer,' cautions Goldenberg. Customers are creatures of habit and become habituated to overcoming deficiencies inherent in the products and services they buy, to the point where they may be unaware of those deficiencies and unable to articulate them. 'Listen to your product,' Goldenberg advises. Analyze your products' features.[4]

The SIT approach uses five patterns, or templates, to guide innovation based on those features. Here is our own, simplified version of the templates, which we trust does not distort or devalue the original SIT version; we recommend that readers read and study the full version.[5]

If you can apply one of these four basic arithmetic operations to your product's voice, we argue, then you can achieve winning innovations:

1. Subtraction

Most innovators begin with addition—by adding features on to an existing product. Why not *subtract?* Most products today are excessively complicated (e.g., the 'programmable' VCR that nobody can programme), because many innovators assume wrongly that innovative product improvement *invariably involves more and better features*. Philips, aided by SIT, came up with a winning sleek design for its DVD player, with a single button for control, by applying subtraction single-mindedly. Precisely because it is counterintuitive, subtraction often generates powerful new innovations.

2. Addition

A conventional approach is to add features to an existing product. Examine the product, observe carefully how customers use it (see later, voice of the customer: empathic design), and look for features that strengthen the product's unique value. For instance, Cirque du Soleil added to the conventional features available at Ringling Bros/Barnum and Bailey circus—artistic music and dance, and a refined viewing environment.

A different approach to addition involves combining two or more product features, to make one feature perform two different functions. For instance, designers of the early Volkswagen Beetle used air pressure from the spare tyre in the front trunk to power the windshield wipers. This form of addition is often effective for cost reduction as it was for VW.

Finally, author Daniel Pink notes that 'the most powerful ideas come from simply combining two existing ideas nobody else ever thought to unite'.[6] For instance, Reese's Peanut Butter Cups that combine peanut butter and chocolate. (See the case study on Viewmax in Chapter 5—Do Hyun Kim combined TV and VCR for LG Electronics.)

3. Division

Divide your product into its component parts (physically, or by function). Look at the parts, then reconfigure them in unanticipated ways, to create unforeseen benefits. An Israeli household rug company took a standard rug, divided it into four 'ruglets', and created an innovative product—a rug that could be assembled in unique ways, or used as four separate small rugs, or two smaller rugs. Sony engineers separated record/play heads of a tape recorder from its speakers (with earphones), to make it smaller, and a new product, the Walkman, resulted (but not before the engineers were ridiculed for creating a tape recorder that could not record).

4. Multiplication

Once you have an innovation, can you multiply it, to create a whole product line, benefiting from scale and scope? This is known as a platform strategy. (See Chapter 10 for a discussion of 'platform leadership'—using multiplication to create a range of many products out of one innovative design.) There are more than 200 different versions of the Walkman, making this innovation a veritable industry in itself. Apple, too, has used multiplication to create many varieties of iPod.

A design principle cliché says: 'form follows function'. The SIT innovators invert this, saying 'function follows form'—listen to the product, study its form and derive new functions from it.

There is a fifth SIT template that does not fit easily into the four arithmetic operations, which we may call *transformation* (in fact, also a mathematical operation, but in

Case Study: 'Eat Your Fork, Johnny!'

A start-up company we studied invented remarkable technology for producing *edible* straws—straws stiff enough to drink through, yet made of tasty food-like matter that could be eaten. The technology was patented. The same material could produce edible plates and cutlery (forks, knives and spoons). The 'cutlery' product had the following key features: functionality, hardness, elasticity, weight, price, appearance, storability and shelf life. The 'snack' product had the following features: taste, texture, colour, sweetness, appearance, aftertaste and natural food content.

The standard cutlery features were transformed, to take on 'snack' features. But the company had difficulty defining whether it would sell the product mainly as an edible cutlery, or as a cutlery-like snack novelty. The product did not reach the market.

Source: Authors.

Case Study: Subtraction: What Can You Take Away From Your Life?

Professional golfer Phil Mickelson is one of golf's great athletes. When his wife Amy was diagnosed with cancer, and his mother as well, Mickelson took time off from the Professional Golfers' Association tour to care for them. Later he returned. He told the press:

> I've always loved competing, whether it was for a soda, a golf ball, tees, or on the PGA TOUR for huge purses. I missed the competition. I also just miss being on the golf course. It's where I've grown up, and I just love this game of golf.

It occurred to us, in reading what Mickelson said, that often we learn about what we love most only when they are gone or missing. In everyday life, we simply act on habit and take those crucial parts of our lives for granted—activities, jobs, work, skills, profession and loved ones.

Source: S. Maital, 'Simply Wonderful!', TIMnovate blog http://timnovate.wordpress.com/2008/09/17/simply-wonderful/

matrix algebra). You transform a product by giving an existing feature an entirely new role. Here is a case study.

3.5 Profile Your Product for Profit and Growth

No one in the history of the world ever bought a car. Or, for that matter, a TV, VCR, house, toaster, computer or stereo. It *is* true that the 6 billion inhabitants of the world, in 225 countries, buy about 16–18 million vehicles every year. Overall, they buy some $45 trillion worth of cars, TVs, VCRs, houses, toasters, computers, stereos and much more (accounting for bulk of the world GDP) each year.

But what are they *really* buying? They are buying the pleasure-giving, problem-solving and want-satisfying *properties*, or characteristics of goods and services. Ultimately, people buy what products do for them.

Define 'features' as 'what products do for people' in order to satisfy their wants and needs. People buy goods and services because they have features they want. By identifying, measuring and benchmarking product features, and by systematically examining which existing features should be improved and which new features should be added, the often chaotic process of innovation and new product development can be systematized to attain greater profitability and faster growth. This is the essence of our feature-driven innovation approach.

This approach has originated and evolved largely independently in four different disciplines: economics, marketing, competitive strategy and management of technology and innovation. Perhaps the most compelling version is that of Kim and Mauborgne, whose 'value innovation' and 'blue oceans' tools have been used successfully by many innovators.

Here is how to listen to your product's voice, profile your product and generate winning innovation. In many ways, this tool, variously known as feature-driven innovation, or value innovation, is similar to the Altschuller 'innovation template' approach. It is implemented in four steps:

1. Choose the fundamental characteristics or attributes that capture how the product, process or service creates value for customers. These attributes usually number between five and 12 (even for complex products, the main value-creating features usually do not exceed a dozen), and must be measurable, even if the measures are at times subjective.
2. Measure those attributes and do the same for comparable competing products. Choose your benchmark carefully; sometimes, the competition for software is a pencil (see the case study on Quicken later).

ACTION LEARNING

Subtract—and Improve Your Life
Practice 'mental subtraction' on your life. Take away some things from your life—your profession, friends, people, possessions. Picture your life without one thing. How does it feel? We can improve our lives immensely by subtracting parts that are burdensome, unnecessary and unhappy. We can also improve our self-awareness by learning through 'mental subtraction'—understanding which parts of our lives bring us true happiness—like Phil Mickelson.
What does 'mental subtraction' tell you? Listen to it—and then act.

ACTION LEARNING

Applying the Five Mathematical Operators
Take your organization's product, or any product you like and buy. Study it carefully; examine its functionality. Then, apply one or more of the five mathematical operators listed above (subtract, add, divide, multiply, transform) to create an innovation. Begin with subtraction.

3. Graph, aggregate, and otherwise analyse, the product's strengths and weaknesses, across all attributes.
4. Use the resulting 'product profile' or 'value curve' as a tool for innovation, by asking:

- Can I create an innovative product by eliminating some features, perhaps using the savings and resources to strengthen others?
- Can I create an innovative product by adding one or more completely new features? (Table 3.1).

Table 3.1   Profile Your Product

There are four ways to innovate, based on product features. You can:

❍

Raise existing feature or features above industry standard

❍

❑

Introduce totally new feature or features

Lower feature below industry standard to reduce cost and price

Eliminate features low in value to reduce cost and price

Source: Authors.

Here are two examples of how product profiles can generate successful innovations: detergent and wine.

Case Study: Wheel Detergent

After losing market share, the Indian detergent company Hindustan Lever Limited (HLL) launched a new detergent known as 'Wheel'. It did this by creating a new 'product profile' (Figure 3.2), which included features not present in existing detergents. 'Wheel' targeted the villages (there are a million of them in India) with door-to-door sales, tailored the product to those who previously did not use detergent, created a formula suitable for hand-washing in rivers, eschewed expensive national media advertising and instead used local fairs and vans. The result: substantially higher return on HLL's capital.

Case study continued

Case study continued

Figure 3.2   Wheel Strategy
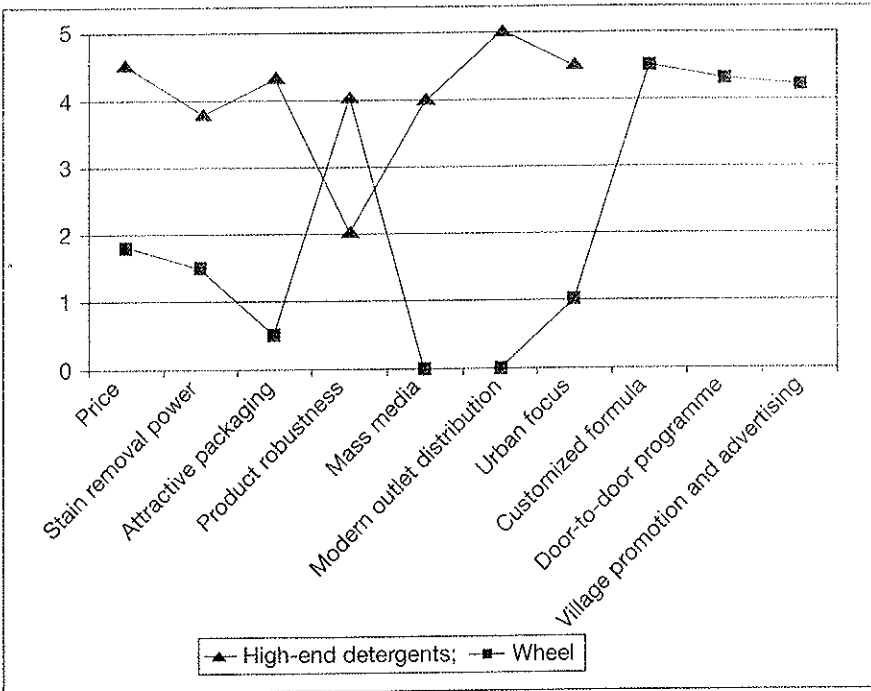
Legend: ─▲─ High-end detergents; ─■─ Wheel

Source: Bernardo Sichel (Director of Consulting, Decision Sciences International), 'Value Innovation for the Bottom of the Pyramid: Profitability Pursuing Superior Value and Low Cost in Emerging Markets (Really)', *DSI Quarterly*, www.thinkdsi.com

Case Study: Yellow Tail Wine

In the late 1990s, a small family-owned Australian winery, Casella, entered the US wine market which is characterized by 60,000 new wine labels yearly, intense competition, and consolidation (eight top companies controlling most of the volume). Traditionally,

Case study continued

Case study continued

wine appealed to knowledgeable connoisseurs. But Casella's innovation, 'Yellow Tail', took a new approach, appealing to those who normally did not drink wine. New features were added to conventional ones (Figure 3.3): easy drinking, easy selection and above all, 'fun'. Only two Yellow Tail wines were made: one red, one white. The wine had a soft, sweet and fruity taste. The logo on the bottle was a kangaroo. Yellow Tail quickly became the number one imported wine in the United States and the fastest-growing wine in US and Australian history. The key: Yellow Tail's recognition that only one Americana in four drank wine, that the potential market among non-wine-drinkers was far bigger than among those who already drank wine and the key to this market, in turn, was a new product profile.

Figure 3.3   Yellow Tail Strategy
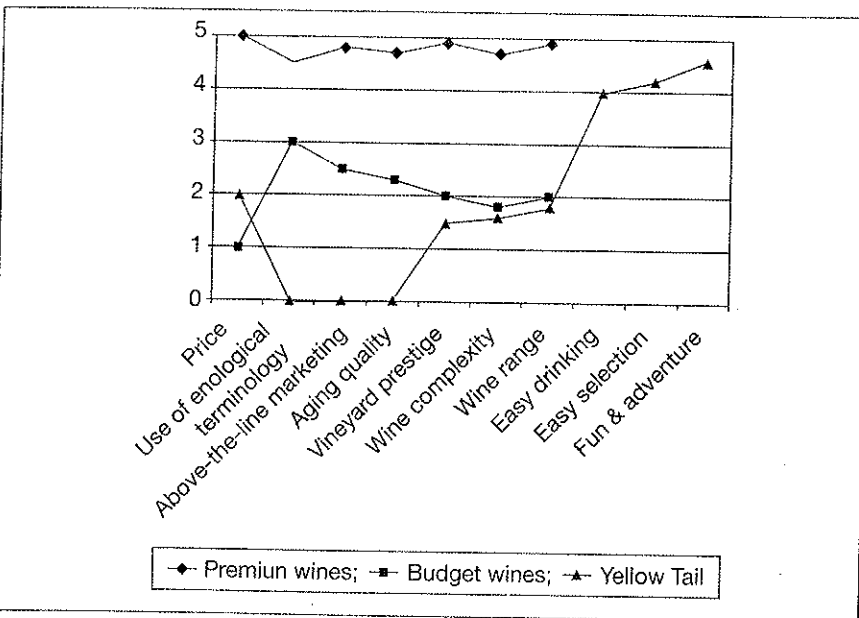
Premium wines; Budget wines; Yellow Tail

Source: Bernardo Sichel (Director of Consulting, Decision Sciences International), 'Value Innovation for the Bottom of the Pyramid: Profitability Pursuing Superior Value and Low Cost in Emerging Markets (Really)', *DSI Quarterly*, www.thinkdsi.com

An advantage of the 'product profile' approach to innovation is that it is *visual*. We believe modern innovation tools should generate visual images. Only when senior managers can convey their vision and direction clearly will that vision be implemented; to this end, there is no substitute for a sharp, striking and memorable graphic portrayal of that vision.

Here are two additional examples of feature-based innovation in action, Palm Pilot and 'Centrino', Intel's innovative microprocessor.

Case Study: Palm Pilot

Jeff Hawkins developed an idea for a consumer-focused handheld computer while he was vice president (Research) at GRiD Systems, a manufacturer of pen-based computing devices. He founded Palm Computing to develop a new generation of Personal Digital Assistants (PDAs), in January 1992, with backing from GriD's parent, Tandy Corp. A joint venture with Tandy was formed in 1992, with Casio brought in as a manufacturing partner. Two products were produced, Tandy's Zoomer and Casio's Z-7000. Similar to Apple's Newton, both flopped.

Palm then adopted a feature-based approach. They surveyed their Zoomer customers and found that customers' purchase decisions were driven by four product features:

- Connectivity
- Size, shape and weight
- Data entry
- Performance

They found that 92 per cent of Zoomer owners had PCs, and of those, half were buying Palm's rudimentary connectivity pack that made it possible to link their Zoomers with their computers. It became clear to them that 'connectivity with the PC' was an extremely important feature.

As a leading software developer for PDAs, Palm was able to see what products Motorola, IBM, AT&T and HP were developing. Palm became convinced that the other platforms 'had missed in each of the areas customers most wanted: connectivity, form factor, data entry and performance'.

Jeff Hawkins originated the core concept for a connected organizer as an accessory to the PC, making *connectivity* a central driver of the design. The Pilot 1,000 and Pilot 5,000 were announced in January 1996. The results were 'astounding'—at a price of $299 all-in-all, they 'reinvigorated the market for handheld computing devices'. The company shocked everyone in the industry, as everyone had assumed that Palm was only developing software applications.

Source: From Thomas J. Kosnik, Rajesh Atluru and Keven Wasserstein, 'Palm Computing—The Pilot Organizer', Case Study #9-599-040, Harvard Business School.

According to Stephen H. Wildstrom, a *Business Week* columnist writing in the year 2000, Intel has turned laptop computers into 'speed demons', matching the performance of desktop PCs. The problem is, the fastest microprocessors drain batteries quickly, he noted. A laptop with a 650 MHz processor gives about two hours of battery life. Intel has put resources and energy into boosting speed, because faster processors cost more and have higher profit margins, and the product feature 'speed' has become the core of Intel's unique value proposition.

But there is a feature-based trade-off between speed and battery life. Is innovation that boosts speed rather than seeks longer battery life what buyers really want? Wildstrom claimed that he would be happy if some of the engineering genius that goes into producing faster machines at the expense of battery life 'went into making slower notebooks that run longer'. However, he noted, 'speed sells'.

As Wildstrom was writing those words, teams of Intel engineers were developing precisely what he asked for—a powerful microprocessor called Centrino that provided longer battery life, to support wireless computing—'Unwire your World', became Intel's new marketing slogan. Intel's new unique value proposition shifted from speed to mobility. Laptop computers, now selling more units than desktops, themselves voiced the need for this innovation.

Source: The article that anticipated the Centrino microprocessor is Stephen H. Wildstrom, Laptops Catch Up to Desktops', *Business Week* (7 February 2000): 8.

3.6 Voice of the Customer

The great gift of human beings is that we have the gift of empathy.
—Meryl Streep[7]

After listening to the voice of our product, we now look for ways to listen to the voice of our customers. But how can innovators effectively listen to their customers, when their customers are unable to clearly articulate or communicate their true needs?

Anthropologists claim that two-thirds of all communication is non-verbal, done by body language, gestures, facial expressions and other ways of 'speaking'. It follows, then, that innovators must learn to become amateur anthropologists, who 'listen' to their customers by closely watching them.

But how?

A proven approach by Dorothy Leonard and Jeffrey Rayport is known as empathic design: watching customers use products and services in real-world settings, in the course of everyday routines.[8] 'Empathy' is a feeling of concern and understanding for another's situation or feelings, or 'climbing into another's mind to experience the world from that person's perspective'.[9] It differs from *sympathy*, sharing the feelings or interests of another, because with empathy, you do not *share*, you actually feel what others feel. 'Sometimes', note Leonard and Rayport, 'customers are so accustomed to current conditions that they don't think to ask for a new solution.' By empathizing with how customers *overcome* difficulties inherent in 'current conditions', new product ideas emerge in droves.

According to Leonard and Rayport, empathic design follows the following four stages:

1. Observe
2. Capture data
3. Reflect and analyse
4. Brainstorm for solutions

They are illustrated in the case study, Quicken.

Case Study: Intuit: *Quicken* Your Sales, 'Follow Me Home'

1. Observe

Intuit is the leading producer of bookkeeping software. In 1984, in Palo Alto, California, near Intuit's hometown of Menlo Park, Intuit founder and president Scott Cook observes several well-dressed women, members of Palo Alto junior league, sitting at keyboards trying to use computers to write cheques. Cook watches. Empathizes. And learns.

2. Capture Data

Intuit developed a version of empathic design known as 'Follow Me Home', in which Intuit managers closely observe customers as they buy Quicken, open the cellophane wrap, load it on their computers and begin to use it. They never intervene, even when tempted, but observe, take notes and sometimes videotape.

Case study continued

3. Reflect and Analyse

A year earlier, in 1983, Cook had an epiphany. Realizing that more and more consumers and small businesses were buying PCs, he saw that software that would write cheques and keep financial statements should be a hit product, because software could automate dull, humdrum bookkeeping tasks. The problem was: there were already dozens of such products on the market. Cook had to find a way to compete. He asked a group of women from the Palo Alto Junior League to sit in front of computers and operate Quicken. Some had never touched a computer in their life.

'People couldn't be bothered learning a complex programme,' he found. There was a big market: but the product had to be cheap, fast, hassle free, easy to use. Cook benchmarked Quicken not against other software but against the leading competitor, the pencil. The first conclusion: Quicken had to be very cheap, priced at between $20 and $50, because pencils sell for a dollar a dozen. By matching the pencil's ease-of-use (making Quick exceedingly simple to load and run), and adding other features that pencils lack (speed, accuracy), Quicken's product profile dominated that of the pencil. It lacked a large number of optional features that competing software had—but people did not find those options important. As a result of another empathetic insight, Intuit observed that buyers of Quicken were not using it to manage their cheque books—they were managing their small businesses with it!

4. Solutions

Knowing how customers were really using Quicken enabled Intuit to adapt and sell to, in a focused way, a market it had not been aware of previously: small businesses. Quicken became the #1 product in its area, and was in fact so successful that a $1.5 billion acquisition offer from Microsoft to acquire Intuit was vetoed by the US Justice Department on antitrust grounds.

Source: John Case, 'Customer Service: The Last Word', *Inc.*, April 1991.

Product profiles are always seen *relative* to those of competitors and require choice of a benchmark against which the product is compared. Picking the right product is essential. The story of Quicken illustrates this point well. Entrepreneur Scott Cook wisely benchmarked his software *not* against other leading personal financial software packages—but against his real competitor: the pencil! The result was to focus Intuit's creative energies on making Quicken as simple and user-friendly as humanly possible, resulting in a winning product.

Democratizing innovation: One of the most powerful models of innovation involves using lead users, or key customers, as full-blown partners in the process of new product design starting with ideation. Here is how LEGO implemented this idea successfully, with the upgrade for its Mindstorms product.

Case Study: LEGO's Mindstorms: When Your Customers Innovate

'In Billund, Denmark (LEGO's manufacturing centre), not only is the customer right, he's also a candidate for the R&D team,' notes a journalist in *Wired* magazine. How is this done?

LEGO's innovative Mindstorms, which combines LEGO bricks with programmable robots, debuted in 1998 and with no advertising became LEGO's all-time bestseller. It sold 80,000 units in its first three months, and 1 million units in all. But six years later it needed an update. LEGO lost $238 million in the fiscal year 2003.

In September 2004, LEGO executives felt the Mindstorms innovation team needed a fresh perspective. LEGO decided 'to outsource its innovation to a panel of citizen developers', known as a Mindstorms User Panel (MUP). Such panels often serve as 'beta' sites (testers of prototypes and working models). But LEGO's MUP was different. It would actually design and invent. Four members were chosen, from a short list of 20. They received no pay and even paid their own airfare! They met with Soren Lund, head of Mindstorms, in Washington DC, to hammer out the final details of the upgrade, known as NXT. 'Why are you doing this?,' Lund asked them. Because, they said, they were playing a vital role in shaping a product they loved. According to *Wired* magazine, '[O]pening the (innovation) process engenders goodwill and creates a buzz among the zealots, a critical asset for products (like Mindstorm) that rely on word-of-mouth evangelism.' If NXT is a hit, the 'democratized' innovation process may be extended to the full range of LEGO products.

Source: Brendan I. Koerner, 'Geeks in Toyland', Wired News, http://www.wired.com/culture/lifestyle/news/2006/01/69946?currentPage=all

Product opportunity gaps (POG): A useful approach for listening to the voice of the customer is what authors Jonathan Cagan and Craig M. Vogel call POG.[10] But how does an innovator identify such trends? The authors recommend using social, economic and technological factors (SET) that create new trends and generate POGs.

DEFINITIONS

- POG: The gap between what is currently on the market and the possibility for new or significantly improved products that result from emerging trends.
- SET: The changes in social, economic and technological factors that produce new trends and create POGs.

Case Study: The Good Grips Peeler

Cagan and Vogel describe a vegetable peeler; its designer's wife had arthritis and had trouble gripping existing peelers. The POG was the opportunity to design kitchen utensils that were easy to hold in the hand as well as being aesthetic (so the user would not be labelled as 'handicapped'). The designer used SET as follows:

- Social: Increased awareness about the needs of the physically challenged; growing numbers of older people; more food preparation in the home.
- Economic: High disposable income among seniors; more spending on house wares; children buy aids for aging parents.
- Technology: New molding techniques, new application of neoprene.

A revolutionary grip for the peeler was designed, that was comfortable, convenient and aesthetic. Ultimately, the company launching the new peeler made the new handle a part of every one of its products held in the hand.

Source: Jonathan Cagan and Craig M. Vogel, *Creating Breakthrough Products: Innovation from Product Planning to Program Approval* (London: FT Press, Financial Times, 2002).

Case Study: Listening to Those We Love

A powerful source of inspiration for innovation can often be the immediate needs of those we love. Here is a powerful example about an innovator named Forrest Bird. He's in his late 80s, still working 12-hour days, still inventing and still flying his 21 planes. Chances are, you never heard of him. But odds are good that you know someone whose life he saved. Bird invented the respirator—the device that keeps people breathing when they cannot themselves. His Baby Bird respirator has saved numerous babies' lives, including the lives of two of his neighbours in Idaho, now strapping young men.

As with all inventor stories: he identified a need, and satisfied it, using his skills, inventiveness, creativity and determination. His respirator, that helps lungs breathe, is based on his knowledge of aviation. 'In the lung are rudimentary air foils. It's like

Case study continued

a million airplane wings all down through the lungs. In and out, all the way through, that facilitate your normal, spontaneous breathing. So it was just applying all this,' Bird explains. 'Taking it from aviation.' It sounds simple enough, a concept even school kids can grasp. But in reality, the human lung works with mind-numbing complexity. For his own education, the military sent Bird to medical school. And though his studies took him to the outer limits of science, his next respirator was still definitely low tech. For example, he used strawberry shortcake tins to construct one of his early machines. 'And what I did was, I put a diaphragm in here so that when you did that, it would drop the pressure and this magnet would grab it and hold it off,' he explains. Back then, there weren't many options for people with respiratory problems. The worst cases required iron lungs, which were big, primitive, expensive and confining. So Bird kept on trying to develop a small, affordable device that could automatically help people breathe. His breakthrough came in the late 1950s with the 'Bird Mark 7' respirator, a device so effective that the Air Force made a training film about it, with Hollywood music and all. 'We were able to assist your respiration. We could control it,' Bird explains.

Bird's respirator kept his first wife, who suffered from advanced emphysema (lung disease), alive for many years. Ultimately she died of the disease, when her lungs were simply destroyed. Bird makes his respirators in Idaho, in the complex in which he has his home and lab. They are used all over the world.

What can innovators learn from Forrest Bird?

- Build prototypes. Use what you have. They can be crude—but they are essential. Paper business plans are just not enough.
- Use what you know. Bird understood aviation, air foils, aerodynamics, and transferred this knowledge from airplane wings to lungs. Find knowledge in 'X' and transfer to 'Y', when no one else has thought of doing it or has seen the connection.
- Keep innovating. Bird is still coming up with inventions and improvements. Creativity is not the sole province of the very young. Older people may have harder arteries, and poorer memories, but they have the wisdom of age and ages.
- Accept huge challenges. When Bird invented his respirator, many people, including children, were doomed to huge Iron Lungs—breathing machines that were expensive, confining and very non-portable. Most people just accepted the fact that those constraints were a necessary part of survival, especially for children who had polio. Bird did not. His first model was patched together, and was operated by a door knob—push on it, and air streams into your lungs.
- Make it yourself, if you can. You don't have to assume automatically that you can only make your device in China. There are huge advantages to making it right next to your development lab. If it's in Idaho, you can have your home next to your plant, right next to amazing mountains and a sparkling clear lake (where you land your seaplane), like Forrest Bird.

Source: Authors.

Simplify

Meet John Maeda. Maeda is a world-renowned computer scientist, visual artist and graphic designer, who until recently was the associate director of Research at MIT's Media Lab. He accepted the offer to become the 16th President of Rhode Island School of Design (RISD), perhaps the world's greatest design school.

What is the key to great innovation, according to Maeda? Simply, simplicity.

Maeda has framed 10 laws of simplicity, as outlined in his simple slim 127-page book *The Laws of Simplicity: Design, Technology, Business, Life*.[11]

Simplicity: Remove the obvious, add the essential, to your products, your business and yes, even to your life. Innovation is often, perhaps nearly always, based on addition—adding new features. Why not, then, innovate in the way people innovate? Break the rules? Reduce, subtract, rather than add!

Maeda recently produced a piece of visual art known as *Marital Life*. It is two iPods, linked together, showing a film. Now iPods recharge their screen from time to time. So, as a result, small differences develop in the synchronicity. And they tend to grow....

Maeda is Japanese-American. His father, a Buddhist, raised him in the Buddhist faith. He told the BBC that he recalls being severely rebuked for crumpling a piece of paper. Why? In Buddhism, even inanimate objects have souls that should not be destroyed or offended. Maeda has used this idea in this design work.

Here are his 10 principles (See Box 3.1).

Box 3.1: John Maeda's 10 Principles of Simplicity

1. Reduce: The simplest way to achieve simplicity is through thoughtful reduction.
2. Organize: Organization makes a system of 'many' appear fewer.
3. Time: Savings in time feels like simplicity.
4. Learn: Knowledge makes everything simpler.
5. Differences: Simplicity and complexity need each other.
6. Context: What lies in the periphery of simplicity is definitely not peripheral.
7. Emotion: More emotions are better than less.
8. Trust: In simplicity we trust.
9. Failure: Some things can never be made simple.
10. The One: Simplicity is about subtracting the obvious and adding the meaningful.

ource: John Maeda, *The Laws of Simplicity—Simplicity: Design, Technology, Business, Life* (Cambridge, 1A: MIT Press, August 2006).

3.7 Voice of the Organization

Every organization, small or large, needs an innovation *system*—a method for creating, developing, designing, planning, producing and marketing innovative products, services and processes. It is important to stress that *there is no 'one-size-fits-all' innovation system* that matches every organization's needs, personality, culture and values.

We interviewed key players in organizations with proven track records in innovation, from widely differing industries and walks of life. We then identified five different models, or templates, for organizing inspiration and perspiration.

The Great Dictator

In this model, a single person controls the entire innovative process, from idea selection through implementation, production, marketing and distribution. The single leader/manager/arbitrator provides integration and a broad market perspective, knitting together conflicting forces within the young organization. What most characterizes great dictators is big-picture thinking—the ability to perceive how the whole is composed of its parts, without becoming lost in details. Successful great dictators are good at systems thinking—they see all parts of the business system and from the outset work to knit them together into a powerful single unit, which they personally lead.

This was the model employed with huge success—at least for a time—by Thomas Edison, in bringing electricity to homes and businesses around the world. As Edison's biographer notes:

> One consistent sign of Edison's genius ... was his inclination to think globally long before achieving success locally. 'All parts of the *system* must be constructed with reference to all other parts,' he wrote of the electric light endeavor, as he viewed it, 'since in one sense all the parts form one machine.'[12]

Edison was a great dictator. He led the efforts at invention. He found the right material for the light bulb's filament. He built the business model. He did the public relations work and raised the funds. And he built the organization that electrified America.

Great dictators rarely know when to exit gracefully from the stage. Later in his life, a victim of 'founder's disease' and deaf, Edison became alienated from his company and the disciplined bottom-line management ethic he had instilled. He was forcibly removed by the managers of the company he founded. All too often, great dictators end their career in ignominy, as they fail to change and adapt to the times. This is one of the key flaws of this model.

**ACTION
LEARNING**

Simplify Your Life
The French writer Antoine St. Exupéry once said (quoted by Maeda): 'Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.' Apply this principle, and apply each of Maeda's simplicity principles, not only to your organization and to your products, but also, to your own lives. How can you *simplify?*

Separation of Forces

We found this model in a leading Israeli advertising agency. The basic principle: Separate the idea *creators* from the idea *choosers* and idea *implementers*. Here, the creative department focuses on the *inspiration* (ideas) while another department concentrates on the *perspiration* (implementation). Management must help choose the ideas and continuously mediate the often fierce built-in conflict between the two. In high-tech companies, this model is sometimes implemented by having separate R&D (or engineering) and marketing functions.

As one of the founders of the Israeli ad agency told us[13]:

> You must have complete freedom in coming up with ideas. Otherwise: you'll get 'more of the same'. There are lots of great creative ideas. *You have to choose among them.* Often, the wrong ones are chosen for implementation. The American adman Bill Bernbach (of the legendary ad agency Doyle Dane Bernbach) often said: the essence of creativity lies in *choosing* ideas—there are endless ideas out there, the problem is to pick the right one!

The Israeli adman continued:

> The creative department (note: creative people are highly paid—higher than other parts of ad agencies) comes up with ideas. The campaign is presented to the implementation department. Ideas are often broad. A sketch of a film is presented. This then goes to the CEO and comptroller—they have authority to authorize the campaign. Once authorized, the media department chooses the media. The final film is an end product. A budget could be $2 million for a campaign; a costly film for TV could run for only 15 or 30 sec.

On the set itself: the creative people have the last word! This was once not the case—we learned that often, during the past 15 years, key ideas were changed, and got lost. So the creative people, and implementers, each have to OK the final result.

What we learned from a major global ad company is this: After the whole process ends, and the film has been made: the CEO must give his final OK. And he may say *no!* This is costly, but has happened. This is very important—killing projects before they are launched. There are other milestones, but this final one is a key one. The CEO may cancel a campaign even when it is finished and this could cost hundreds of thousands of dollars. And this has happened more than once.

To sum up the four principles of separation of forces:

1. Separate the creative process from the implementation process.
2. Final authority for implementing the creative idea lies with the CEO.
3. Authority for deciding on *how* the creative idea is put into practice should rest with the creative people who invented it.
4. Creative people must be educated in working under constraints (time, money, etc.). Constraints ('in-the-box thinking') can be an aid to successful innovation rather than a hindrance.

This Train Runs on Time

We found this model at the Philips Design Studio in Singapore. In this approach, discipline becomes a strategic asset throughout the innovation process, including the ideation/creativity stage. Singapore-based innovation must take into account the cultural values within which innovation occurs: Singapore's highly disciplined regulated society and economy.

Case Study: Game Port

In Philips Singapore, innovation is like a train; it stops at well-defined stations, at defined points in time according to a very clear and precise timetable. The innovation cycle lasts about a year. Weeks 1 through 26 are driven by innovation. Then there is a kind of 'handoff' with Weeks 27 through 52 being driven by-product planners and marketing; marketing is involved right from Week 27. Here is how the method was used to develop a successful variant of a mini-stereo system.

The kick-off event is the New Paradigm workshop in Week 3. Preparation for this workshop begins at the start of Week 1. Francis Chu explains the process (in conversation with the authors):

> The New Paradigm workshop aims to trigger ideas. We provide rich context as personal experience to facilitate idea generation. Sometimes when designing, we forget about what people's homes look like, how the set will be competing with others on the shop floor. For example we took time to check out IKEA and illustrate how the product looks on their furniture's shelves. I took photos of shelves—and shared them with the team as an additional input to trigger ideas.
>
> Over 100 different ideas were generated by the participating teams who then reported them in the plenary session. Ideas for implementation were then chosen, based on analysis of their costs and benefits.
>
> After the workshop, further development of the chosen ideas is done in innovation teams. For example: a team of five persons is assembled, including an innovation manager, a designer, and one each from the areas of software, mechanical, and electrical. The final decision always rests with the commercial person.

Case study continued

During week 16, a Product and Development workshop is held, to move the ideas forward. ... we've found it useful to observe users experiencing the product—try it, play with it ... then we observe how they use it. Sometimes we videotape them. This can inspire new thinking, which can improve the concept. This is *not* like many focus group studies or statistical research. This method provides instant feedback to the team. *The innovation team itself facilitates it, not an agency.* The loop is: see the product used—change it—see again how it is used.

A midyear update workshop is held during week 26. This is to check user feasibility and technical specifications. This is the stage at which marketers, and product planners, become dominant, and begin to pilot the project toward the market.

Soon after, during week 30, a Long-Term Product Planning workshop is held, at which the 'architecture' of the product for the coming 18 months is defined. The innovation team meets with the planner and a Product Road Map for the next 18 months is constructed. At this stage the planner communicates the new product idea to various geographical regions and asks for feedback on the product and on its price. Often a product profile is constructed, comparing the product with its competition, feature by feature. This is followed in week 44 by the High Design Process workshop. In many innovation systems, the product designer joins only at this stage, after the product specifications are clearly defined. But in the Philips system, the product designers participate in the process from the outset, right from preparations for the week 3 New Paradigm workshop.

According to Philips' Corporate Market Intelligence Group, 'The FWC577 (one of the game port mini systems developed using the above method) was doing very well in the US between August-October 2003. It is the best-selling Philips Mini/Micro product in the period with 2.3 million units sold.'

Source: As recounted to the authors by Francis Chu.

Elders of the Tribe

We encountered this model during interviews with senior military officers. According to it, creative individuals (often younger members of the organization, but not always) spark ideas, which are then very carefully examined, explored and tested by experienced senior officers, 'elders of the tribe', who bring long years of field experience to their analysis. This template creates what some see as a 'schizophrenic' organization. It focuses on day-to-day discipline, emphasizing safety and risk-minimization, and including compliance, hierarchy and procedures. At the same time, the organization admires and promotes risk-takers *who challenge all of the above.* This is the most emotionally demanding template

for reconciling the conflicting values, *because members of the organization have to struggle with the double-message all the time.* The elders of the tribe are often examples of people who were promoted because they broke some laws, took risks and succeeded. These elders are then placed in charge of maintaining discipline—and of encouraging creativity. It is they who show the adaptive leadership that makes this difficult system work.

Head in the Clouds, Feet on the Ground

In this model, creative groups brainstorm and float sometimes utterly outrageous ideas, with their 'heads in the clouds'. Then, as this process exhausts itself, at a signal, the group shifts gears and changes focus. The focus in stage two becomes one of 'feet on the ground', checking for feasibility: testing the business design and viability of the idea, its potential and its technical feasibility. Often academic research is conducted this way in technological areas: researchers frequently switch modes between ideation and evaluation, and every new piece of work is judged both by the originality of the idea and by its practical feasibility. In this way, organizations retain creativity but ensure that operational discipline is also invited to the table.

An Israeli startup came up with an idea to build a device for ultrasound cardiologic diagnosis based on the PC ('head in the clouds'). The idea was rather 'wild' because at the time (1998) the PC was far from having the processing capacity needed for the idea to be feasible. However creative R&D engineers felt that through Moore's Law (computing power doubles every 18 months) this constraint would be eliminated when the product reached the market in two to three years.

In late 1998, GE Medical bought the company. GE Medical had earlier rejected the idea of PC based ultrasound for cardiology. But they agreed to let the acquired start-up's team pursue the 'head in the clouds' idea. Once a prototype was created, GE's feet-on-the-ground management system, based on what is known as 'SixSigma', took over, and guided the innovation process through to ultimate marketing, sales and servicing. The start-up founders themselves say they were unlikely to have attained market success without GE—while GE Medical may not have had the bold head-in-the-clouds creativity of the start-up. This is why feet-on-the-ground companies often seek head-in-the-clouds ideas by making acquisitions of start-up companies.

Source: S. Maital.

Each of the five templates we have described contains a high-level challenge for those who manage them, and 'sinks' that absorb large amounts of energy. For example, the divide and conquer approach in 'separation of forces' creates rivalry

among members of different teams which management must deal with all the time. The 'elders of the tribe' model involves a kind of organizational split personality that creates continual tension and potential instability.

Each organization needs to define its own innovation system, according to its culture, history, values and personality. The better the fit, the more productive and profitable the innovation is likely to be. No organization is exempt from this voice—each must look inward and outward, examine its culture, structure, strategy and resources, study best practices and, based on this inventory and needs assessment, build an approach for bonding discipline and creativity that is most suited to it.

Art & Copy: Abolish Your R&D Department

A brilliant recent film documentary about advertising is called *Art & Copy*. Here is a brief synopsis:

Art & Copy describes advertising's 'creative revolution' of the 1960s— artists and writers who all brought a surprisingly rebellious spirit to their work in a business more often associated with mediocrity or manipulation: George Lois, Mary Wells, Dan Wieden, Lee Clow, Hal Riney and others featured in *Art & Copy* were responsible for 'Just Do It', 'I Love NY', 'Where's the Beef?', 'Got Milk', 'Think Different' and brilliant campaigns for everything from cars to presidents.

Innovators can learn a lot from this 85-minute film. Perhaps startups should *begin* by creating the advertising for their product. If you cannot produce an exciting ad for it, why bother?

The film explains that in the 1960s and 1970s, the key people at ad agencies were account executives. The creative department was valued at less than zero. Then a revolution occurred. Creativity, not account managers, created order-of-magnitude changes in revenues and profits for Wendy's (Where's the Beef?), iPod, Apple, New York City, Nike, milk producers—and votes for Barack Obama. The creative department faced the risk aversion of senior managers and their wives, who a priori rejected brilliant but unconventional ad campaigns—and had to come up with new campaign ideas when their original ones were rejected, after weeks and months of round-the-clock work.

A few small memorable episodes from the film:

- Nike's 'Just Do It' campaign was inspired by a newspaper headline. In Utah, a convict about to be executed by firing squad said to the executioners: 'Let's Do It!'. An ad agency executive read the story—and came up with the legendary mantra for Nike.
- The ambience of the ad agency is crucial; all the truly creative agencies shown had spaces that were open, sunlit, comfortable, spacious, unusual—the exact opposite of design-by-committee. On the wall of one agency was a sign, made with 100,000 clear plastic push pins: 'Fail harder!' The unusual part of the sign:

Rather than write the words: 'Fail Harder!' with the push pins, as most people would do, the creator made the sign the hard way by filling all the spaces in the sign with push pins, leaving the words 'Fail Harder!' only where there were no pins—far harder and more time-consuming but far more striking. Take the hard way, the sign says. Don't take the easy obvious way.

- Seize the opportunity! Nike once brought in a Latin dance expert, to help pose models for still photos, for the iPod ad campaign. The expert, though not told to do so, took the model's hand—and they did a torrid salsa dance. It was his way of showing the model how to pose. The creativity department watched in awe. At the end of the dance, everyone in the department agreed: This is our ad! That is how the famous iPod salsa ad was born—dancing figures, in black shadow, with the white iPod earphone cords.

In watching this film, *Art & Copy*, the following rather wild conclusion emerges. No company should do R&D, have an R&D department, or appoint a VP (R&D). There *is no such thing* as R&D. Companies do not do research. Universities, labs, scholars do research. Companies do development. But there are different flavours of development.

Every organization should have a VP (Creativity). Every organization needs a Creative Dept., just like that in ad agencies, whose goal is to come up with wild, unconventional ideas. In his or her creative department, there will be three reports: head of product (or service) creativity; head of process creativity (dealing with the company's business model, every aspect of it, including sales, marketing, advertising, supply chain, pricing, and HR) and head of innovation scouting, or imitative creativity— benchmarking other industries to bring home new ideas, to adapt and adopt. (BT has a head of innovation scouting, for example.) These three senior managers should work closely together, travel together, meet face-to-face frequently to exchange information and should embrace the principles of applied creativity (head in the clouds, feet on the ground).

Call a spade a spade. R&D? Why? If the goal is creativity, call the function just that. You will then staff the creativity group with creative people, by definition. The truly great ad agencies were created by creative people who were chewed up and spit out of conventional bureaucratic ad agencies. How many creative people are out there, crushed within bureaucratic organizations, just waiting for a chance to join a truly creative organization unafraid to call its R&D by that precise word.

The Need for Urgency: For innovators who seek to transform their organization and spur its creativity, what is the first crucial step?

The very first step in innovation transformation is: *Urgency*! Develop a sense of urgency—within yourself, within your team, within your organization. Without that, you will lack the necessary energy and speed to move forward and pull people with you. This is the view of Harvard Business School Professor John Kotter.

Unless you yourself believe that you *must, now, today, this minute*, change your life and transform what you are doing … it just may not happen or may drag on

and you will lose enthusiasm. If your organization believes all is well, the important transformations will be shoved to the back burner by the daily press of operations. Innovative organizations hear the voice of urgency.

How do you create this urgency? Within yourself—by simply believing it. Within your team—by persuading other team members, perhaps by the scenario method: Painting possible scenarios that could happen, that would endanger the team. ('What could happen that might hurt us and our company?' Foreign exchange traders ask this question every hour, in examining their positions.) For the organization: Persuade senior people that a crisis may loom. Some companies like Intel actually create such mini-crises, and of course Intel's 'only the paranoid survive' is well known.

Just for interest the other seven steps of Kotter's method are: build the guiding team; get the vision right; communicate for buy-in; empower action; create short-term wins; don't let up and make change stick.

Ignoring Your Organization's Voice

Sometimes, innovation requires not listening to your organization's voice, but rather totally ignoring it. Few organizations have as long and venerable a history as Britain's Royal Opera House. Yet here is how this revered institution has used modern technology to innovate, in what many might see as blasphemy:

Someone had the idea of asking the public to submit 'tweets' (to the Royal Opera website). In August 2009, the Royal Opera website presented the public a sentence on which to build a story: 'One morning, very early, a man and a woman were standing, arm-in-arm, in London's Covent Garden.' Some 900 140-character Twitter messages were received. Composers Helen Porter and Marc Teitler set the tweets to music. If they all were used, they would be a full seven-act opera—even beyond Wagnerian Valkerie proportions. So instead, excerpts will be used, making a 25-minute opera. It will be performed as part of the Deloitte Ignite Arts Festival.

The *BBC Music Magazine*'s deputy editor called the exercise 'an accident waiting to happen'. He said: 'Whenever there is a new fad you know somebody in the art world is going to grab hold of it by the horns. They should be careful that it doesn't overtake the serious stuff they do.'

In response, Sara Parsons, the publicity officer for Ignite, says, 'It's about getting people involved and interested in opera—and it's certainly done that.'

3.8 Inspiration, Perspiration

One of the key determinants of an organization's innovation system is the search for balance between 'inspiration' (free open creativity) and 'perspiration' (systematic disciplined management). In the two-dimensional space of creativity and discipline, there is a 'eutectic point' uniquely suitable for each organization.


> **DEFINITION**
>
> **Eutectic Point: The term is used in metallurgy to describe the alloy of two component materials with a precise 'eutectic' proportion of each. When a non-eutectic alloy freezes, one component of the alloy crystallizes at one temperature and the other at a different temperature. With a eutectic alloy, the mixture freezes as one at a single temperature. It must be aggressively sought and, once attained, determinedly maintained.**

In his book *Good to Great,* author Jim Collins shows that of the thousands of organizations he and his team studied, only 11 attained true greatness (measured by order-of-magnitude superiority in returns to shareholders over a sustained period), and all 11 succeeded in achieving a high degree of discipline and 'culture of creativity' simultaneously. The optimal balance between creativity and discipline may change over time, varying with the particular stage of the innovation project—early, middle or late.

Figure 3.4 shows an example of how the optimal 'eutectic' point in creativity–discipline balance, changes with discipline proportionately increasing. The term

Figure 3.4   Creativity versus Discipline
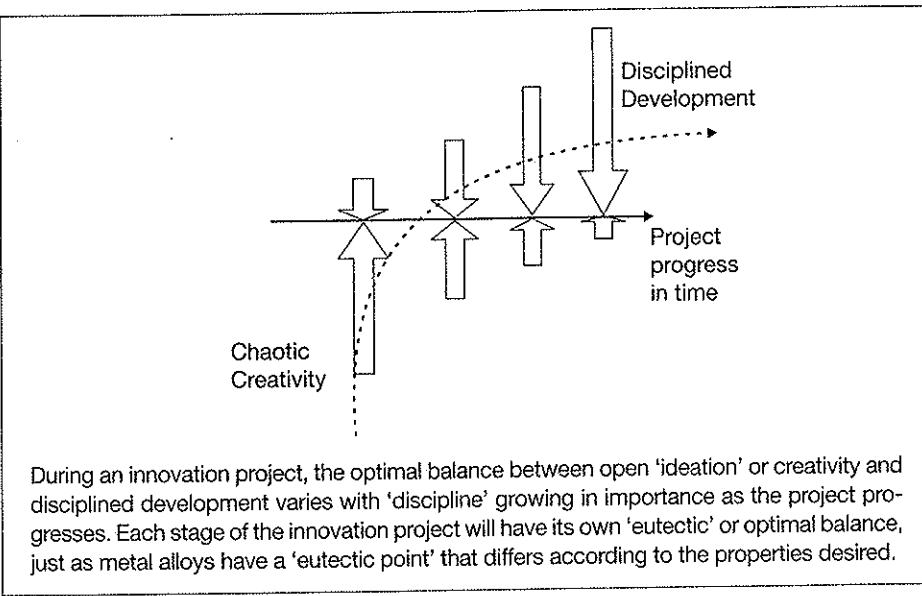
During an innovation project, the optimal balance between open 'ideation' or creativity and disciplined development varies with 'discipline' growing in importance as the project progresses. Each stage of the innovation project will have its own 'eutectic' or optimal balance, just as metal alloys have a 'eutectic point' that differs according to the properties desired.

Source: David Perlmutter, VP (Mobile Processing Group), Intel Corp.

'chaotic creativity' should be regarded with caution; many of the superior models for the process of ideation are in fact highly disciplined and systematic.

The innovation systems of organizations are dynamic. As organizations grow, they may need to shed old systems, like snakes shed their skins, and embrace new ones, *even when such systems have proved enormously successful in the past.* Implementing change under perceived success is a major challenge. As they mature, many organizations focus on operational discipline and cost reduction. In today's competitive global marketplace, this is vital. Yet no organization can grow and thrive solely by optimizing efficiency and slashing costs. The discipline that cost reduction entails should not be allowed to strangle creativity. Cost reduction and value creation must become allies, not warring enemies.

The innovation system of each organization must be constantly defined, examined, dissected and where needed, altered. Where no such system exists, one must be developed. Innovation must not be left to random forces or serendipity.

3.9 How to Foster Creativity in Organizations

One of the world's top researchers on applied creativity is Harvard Business School Professor Teresa Amabile. Amabile mobilized a group of Ph.D. and graduate students and managers from various companies and collected data on creativity. She analysed nearly 12,000 entries in the diaries maintained by 238 people working on creative projects in the consumer products, chemical and high-tech industries. She asked people to discuss their work and work environment in a daily email. She then coded the emails for creativity, by searching for moments when people struggled with a problem or came up with a new idea. Her goal: 'Study creativity "in the wild"!'

What she found runs counter to many cherished beliefs about how to innovate. Here are Professor Amabile's six myths about creativity, and the research findings that debunk each of them.[14]

1. Creativity comes from only from creative types
Untrue. 'The fact is, almost all of the research … shows that *anyone* with normal intelligence is capable of doing some degree of creative work.' Creativity depends on experience, talent, an ability to think in new ways and the capacity to push through uncreative dry spells. You *can* teach people to be creative. It has been proven. Motivate people, empower them, *listen* patiently to their ideas. But you need to really listen and defer judgment. Kill an idea too fast, twice or three times, and the person offering ideas will never offer another.

2. Money is a creativity motivator
False. Amabile asked her subjects, *to what extent were you motivated today by monetary rewards?* We do not think about our pay cheque on a day-to-day basis, they said;

this is not what it is about. The real problem with bonuses and pay-for-performance innovation is that it tends to make people risk-averse. Avoid this. You want people to be willing to take some chances without worrying about how it will affect their pay. And remember the basic principle of psychology: an intrinsically motivated person—someone driven to innovate simply because it is fun and fulfilling—will respond badly when rewarded, because the 'extrinsic' motivation tends to destroy the intrinsic.

3. Time pressure spurs creativity
Generally, untrue. Amabile's 12,000 days of work time showed the opposite. People were least creative when fighting the clock. A sense of urgency in business is of course vital. But extreme time pressure is usually counterproductive. Under time pressure, reflection is suspended; routine and habit rule, in order to boost speed. People are most creative when they are under zero pressure and are given adequate idle 'do nothing time' to ponder. We find that among managers, lack of such idle time is one of their most vexing problems. Make such time for yourself and your workers.

4. Fear generates breakthroughs
Again, the opposite is true. People are most creative when they are experiencing feelings of joy, happiness, fulfilment and satisfaction. They are least creative when they are unhappy, pressured, stressed and depressed. Do not use fear as a motivator. It is ineffective.

Case Study: Serious? or IDEO?

We are told that in its early days, a large high-tech organization was a fun place to work, and as a result, was a fountain of individual creativity. When competition stiffened, senior management told their engineers: It's a jungle out there. Get serious. Get competitive. This may have been a mistake. A workplace that lacks playfulness may drive creative people to leave.

In contrast, perhaps the world's greatest design organization, IDEO, is a place where fun, jokes and laughter are encouraged. Founded by Stanford design professor Dave Kelley, along with his brother Tom, IDEO stresses its unique combination of freewheeling eccentricities (e.g., the IDEO designers' request to mount a DC-3 wing on the ceiling for better ambience and decor) with disciplined, organized design process and rapid prototyping. IDEO designers, it is said, postpone studying for their advanced degrees, simply because they are having too much fun.

Source: ABC Nightline—IDEO Shopping Cart, http://www.youtube.com/watch?v=M66ZU2PCIcM

5. Competition beats collaboration in creativity

No. Creativity is at its best when people cooperate and work together in teams. High-performance teamwork is a hallmark of highly creative organizations. You get more innovation when you lead individuals and teams together to explore diverse points of view, synergies and complementary skills.

6. Lean, mean, streamlined organizations are creative

Amabile studied a large global electronics firm during a severe downsizing that took 18 months. Every single measure of creativity and innovation suffered. Make sure your short-run cost reduction programme does not kill the key strategic resource, creativity and innovation, that you need to ensure long-run survival. It has happened more than once. Harvard Professor Robert Kaplan and Management Consultant David Norton developed the Balanced Scorecard, which is a management tool that if implemented properly, seeks to ensure that such compromise between short term financial objectives of the company and its long-term ability to innovate and compete does not happen.[15]

Professor Amabile[16] summarizes:

My 30 years of research and these 12,000 journal entries suggest that when people are doing work that they love and they're allowed to deeply engage in it—and when the work itself is valued and recognized—then creativity will flourish. Even in tough times.

3.10 Listening to Your Inner Voice

The fourth voice—and in some ways the most important one—is the inner voice of our intuition.

In his book *Blink: The Power of Thinking without Thinking,* author Malcolm Gladwell provides evidence that our snap judgements and first impressions can be educated and controlled and often produce results far better than those from systematic decisions based on encyclopaedic data.[17]

Each of us has what psychologists call an 'adaptive unconscious'. This is the part of our brain that works like the Fire Department—alert while we sleep, always on guard, processing information and sending us warnings. Great innovators know when and how to listen to it. Mediocre ones rarely do.

Gladwell's book contains a wealth of evidence based on interviews with researchers in favour of such intuitive thinking. He describes intuitive decision-making as 'thin-slice decisions'—the ability to deduce, like Sherlock Holmes, a major conclusion from tiny fragments of evidence, just as forensic experts track a criminal from a few molecules of DNA. Often, he shows, we make far *worse* decisions by collecting more and more data.

The inner voice is not about snap judgements. It is about how the unconscious part of our mind knows things the conscious brain does not—and how innovators consult with, and listen to, it.

Case Study: Blink and the Aeron Chair (Herman Miller)

An industrial designer named Bill Stumpf designed a radically new office chair for furniture maker Herman Miller. He called it the Aeron. Stumpf made the most ergonomically correct chair ever conceived. The seat pan and the back of the Aeron chair move independently, the best technique to ensure no undue stress is placed on the back. The arms are fully adjustable. There is support for the shoulders—the top of the chair was wider than the bottom. It had a wire frame and looked weird.

The chair was tested for comfort. It scored 4.75 on a scale of 10. 'Chair of Death,' joked Herman Miller managers. Everyone thought it was a monstrosity. After changes, the comfort score rose to 8. But when people were asked if they liked how it looked, it scored below zero. So they put together a focus group of facility managers and ergonomic experts. They all said it would never sell to corporate clients. Dump it, they said.

Aeron project manager Bill Dowell had a hunch and sent the innovative chair design into production. The chair attracted attention from the cutting edge of the design community. It won awards. In Silicon Valley it became a cult object. It was cool. It appeared in films and on TV. By the end of the 1990s, Herman Miller realized that it had on its hands the best-selling chair in the history of the company. What seemed ugly had become beautiful—and had changed forever the rules of the design game for office chairs.

Source: Authors.

Case Study: New Coke

In the mid-1980s, Pepsi was gaining ground on Coke. Worried Coke executives ran extensive market research tests. In blind head-to-head taste tests, 57 per cent preferred Pepsi to Coke. Coke had twice as many vending machines, more shelf space and double the advertising budget—and was losing to Pepsi! Why? 'You have to begin asking about taste,' said Coke managers. Thus was born New Coke—lighter and sweeter than Old Coke. In blind tests with hundreds of thousands of consumers

Case study continued

all over North America, New Coke beat Pepsi by six to eight percentage points. New Coke was launched. It was a disaster. There were protests all over the country. CEO Roberto Goizueta revived Classic Coke. What happened? Sip tests ('take one sip') were misleading. One sip is different from drinking a six-pack. Sweetness becomes cloying when a litre of sweet stuff is consumed. Home-use tests give better information ('take it home, drink it, tell us how you like it'). Goizueta may have ignored his intuition. It nearly cost him his job. He kept it because he insisted on launching a new product, Diet Coke, even though it failed every taste test. Why? His inner voice told him there was a market need, and it was right. Diet Coke became one of the hottest new product launches ever.

Source: Authors.

3.11 Integrating the Four Voices

Is there a tool that can help global managers integrate the four voices (product, customer, organization, intuition) to build future-oriented powerful narratives, ones able to drive new businesses like Nokia to growth and profit? We offer the reader the Geopolitics, Economics, Lifestyle, Technology (GELT) tool.[18] This tool requires a deep understanding of the organization, its vision and strategic long-run plans; of the products and services; of the customers and clients and their evolving needs and a finely tuned ear for the inner voices of intuition that generate sparkling new ideas. After explaining the tool, an action-learning exercise follows.

GELT

A basic principle of management is that risk and return are linked, positively correlated; generally achieving higher returns requires accepting higher risk. The issue is, does the added return justify the higher risk? Skilled investors seek 'bargains'— higher returns that do not entail significantly higher risk.

This is true of global deployment as well. Higher-growth markets are also higher-risk markets. Skilled global managers find growth opportunities without accepting unreasonably high risks. The question is: How to do this?

We propose a simple methodology known as GELT, an acronym that stands for four key interrelated dimensions global managers must track.

G—Geopolitics: Instabilities and changes resulting from political trends in various regions and countries in the world. Example: The Iranian ayatollahs, Venezuela's

Hugo Chavez, the new French president, the American 2008 presidential elections.

E—Economics: Economic trends, including exchange rates, economic growth, trade, exports, finance, interest rates, capital flows.

L—Lifestyle: Sociology, the way people live, social trends, cohort effects (differing values across age groups). The iPod and iPhone are lifestyle products.

T—Technology: Technology trends, new technologies, new basic science that can lead to new technologies (new ways to produce semiconductors, new ways to test and evaluate them, new technologies for increasing transistor density on microprocessors, etc.)

These four areas are not independent; they are related. Lifestyle, e.g., can drive technologies (the need for mobility can generate technologies that support it, e.g., Centrino; the aging of society leads to higher healthcare spending, leading to Intel's MCA mobile clinical assistant, etc.).

There are global trends: Major changes in the four GELT categories that need to be tracked. Then there are industry trends: specific trends that impact mainly the semiconductor industry, or the Printed Circuit Board (PCB) or the Flat Panel Display (FPD) sub-industries, for example. A zoom-in approach can be used: Begin with the 'broad canvas', zoom in on the specific sub-industries. This helps avoid missing opportunities arising in 'adjacent' industries.

A visual methodology for translating GELT global trend analysis into business opportunities and action plans is based upon the mind mapping technique. A mind map is a diagram used to represent words, ideas, tasks, or other items linked to and arranged around a central key word or idea. It is used to generate, visualize, structure and classify ideas. Our GELT version places the central idea not at the centre of the mind map, but at the end of a causal chain constructed as a narrative linking politics, economics, sociology and technology.

What follows is a step-by-step method that can help global managers build innovative narratives (see Box 3.2). It is often helpful to apply this tool in small teams or groups.

BOX 3.2:   The Eight-Step GELT Method

Step 1: 'The Shopping List.' List the major trends, over the coming three to five years, that you believe will impact the world. Put them down quickly. Each individual should take 10 minutes to write a 'shopping' list. The team should then together build a single list based on the lists of its members. Write down the key trends regardless of their GELT category, on a flip chart page.

Step 2: 'Categorize.' Beside each trend, write a letter: G, E, L or T, depending on its category. Some trends may be hard to categorize: if so, write down two letters, e.g., G and T.

BOX 3.2 *continued*

Step 3: 'Prioritize.' Of the entire list, select the major trends that the team believes will be most important for your organization. There should be 10–20 of them.

Step 4: 'Quantify.' For each trend: assign two numbers, on a scale of 1 to 10. First: *impact*: the impact of the trend on the industry, from 1 (very low) to 10 (very high). Second: *timing*: *when* the trend will be fully felt, in 'years from now'.

Step 5: 'Roadmap'—diagram. Plot each trend, as a point on an x, y graph: The x axis is *time*, the y axis is *impact*. Use four different colours: G—green; E—red; L—blue; T—black.

Step 6: 'Teleology' *causality* and *narrative*. Connect the dots in a coherent narrative. Link trends, where possible, showing causal connections. Use for your model, the narrative constructed by Jorma Ollila. (See Figure 3.5). Have you created a powerful plausible business story?

Step 7: 'Business Opportunities': Identify a major business opportunity, the final destination of your GELT narrative.

Step 8: 'Action': Construct a business plan that will enable you and your organization to implement your GELT narrative.

Figure 3.5   The 'GELT' Narrative That Created Nokia Mobile
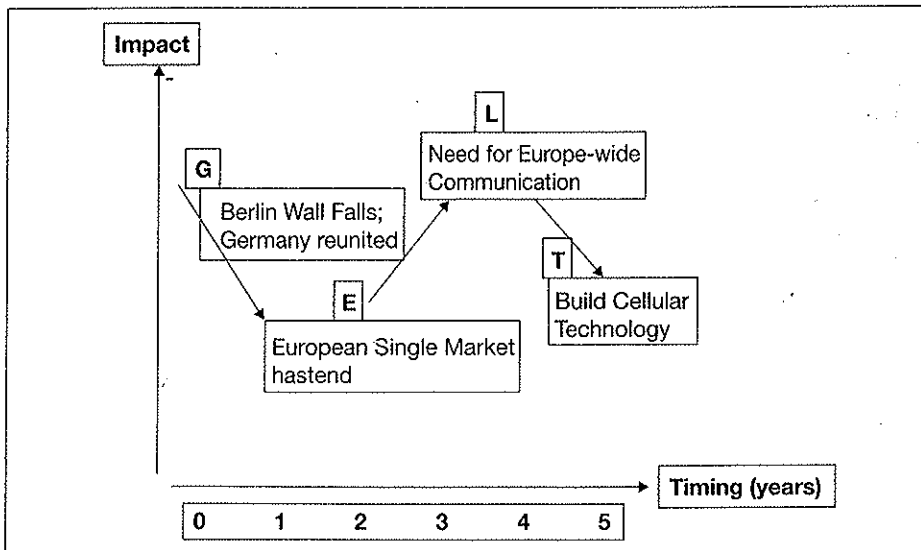
Source: Authors.

Several key implications derive from the GELT model:

- First, it is almost always true that it is not T—technology that drives sweeping global change, but rather Geopolitics, Economics and Lifestyle. Technology is an enabler. Technology helps bridge the gap between what is needed, and what is currently existing (e.g., cellular technology). It is therefore often the last of the four GELT causal stations, rather than the first. Technology is in general pulled by the other three drivers, rather than pushing them.
- Second, most sweeping global trends, and business opportunities, involve a combination of all four drivers or forces. This is why one key hallmark of a global manager, and *a global perspective*, is the ability to track not only business and economics (E) but the other three drivers as well. Geopolitics is especially important. In today's global markets, shifting alliances, allegiances and conflicts among nation states can be powerful creators and destroyers of global risk and global opportunity. This is in part why former US Secretary of State Henry Kissinger (who served under President Richard Nixon) has found great success with his consulting firm Kissinger Associates, which supplies geopolitical consulting services to leading global firms. It is of course legitimate to hire such companies, but vital for global managers to bolster their own geopolitical skills and insights.
- Third, an important determinant of success in using the GELT tool lies in the narrative, or story. Simply identifying global trends, without a story and without causal links, is of little value and rarely leads to business insights.
- Fourth, in almost all successful global innovations, all four elements of the GELT portfolio are present. The key lies in fitting them together into a seamless powerful business model, based on a persuasive narrative. Sometimes, the narrative may be quite wrong. But if it makes sense, sometimes it can be created rather than fulfilled. In other words, markets may be educated in order to create it, rather than exploited to fulfil it.

ACTION LEARNING

Build a GELT Narrative
1. Choose one of the following globally-successful products: iPod, iPhone, iPad, PlayStation, HD TV, WiFi, PCs, radio, hybrid cars. Identify the key GELT trends that led to business success. Link these trends in a simple narrative.
2. The Next Big Thing: What is your story? Build a global narrative, linking geopolitics, lifestyle, economics and technology, that tells the story of the next big thing—the next major global business innovation success.

3.12 Conclusion

This chapter opened with a quote that cited depressing statistics. Even with extensive market research, the data show, your innovative products will fail more than 9 times out of 10. Out of 30,000 new product launches each year in the United States, fewer than 3,000 achieve growth and profit.

How can innovators improve their chances for success? Become great *listeners*, we argue. Develop skill in listening to the four innovation voices. Make each of these voices an integral part of your own unique innovation system. Learn how to amplify their

signals when they are especially quiet. Learn how to mediate when the voices send conflicting messages. Recall that the high probability of failing in innovation is simply an average. It includes many innovators who do not use best-practice methods. By listening closely to your products, your customers, your organization and your own inner voice, you can achieve consistent innovation success far above the 1-in-10 average.

3.1 CASE STUDY: TATA MOTORS LTD.

For the last several decades, Tata Motors has manufactured the heavy vehicles around which 'body-builders' build trucks and buses. Over the last about 20 years, the company has made forays into passenger cars. Their first cars were large, in the station wagon range, for which the company leveraged its knowledge in building heavy vehicles (some of these models were the Estate, Safari and Sumo). Using this experience, the company subsequently got into the manufacture of traditional passenger cars, with its Indica and Indigo models.

These were the company's first fully Indian, 'true' passenger cars, competing with other passenger cars built by the big players in the Indian market such as Maruti and Hyundai. The car was christened the Indica and its larger variant, the Indigo. It was built on the dream and passion of the company's chairman, Ratan Tata. Many industry observers felt that Tata Motors could never succeed in this effort, as making passenger cars was a very much more complex task than making truck and bus platforms. Nearly all successful car manufacturers in India were either foreign companies or had a strong foreign collaboration.

Given this backdrop, the launch of the passenger car by Tata Motors created a lot of hype in the market, and customer bookings were brisk. However, there was a lot of teething troubles, including quality issues, and competitors—including many multinational car manufacturers—went into overdrive to suggest that Tata Motors would never be able to recover from this debacle. This period, in the early 2000s, was a very testing time for the company. Many industry analysts predicted that the company and the Tata group itself was finished with this ill-fated project.

However, Ratan Tata continued to believe in his dream. He gave his all to set the project back on track, addressed all the issues that plagued the car, and invested a whopping ₹17 billion (about $400 million) to create what has now become a winner in the Indian auto industry. The success of this turnaround effectively silenced Mr. Tata's critics. The Indica V2 version of the relaunched car has been a success in the Indian marketplace, and also has gained considerable momentum in the export market. It was clearly a do or die situation as far as the company was concerned, and its response proves the adage: 'when the going gets tough, the tough get going.'

Soon after pulling off the impossible in the Indica/Indigo car project, Ratan Tata announced another impossible project: that his company would deliver by 2007–08 the one lakh–rupee (₹100,000) car, equivalent to $2,300. The car was appropriately named, 'Nano'. There is no car at this price range available anywhere in the world. With India's billion-plus population and the similar population of China together accounting for a third of the world's population, Mr. Tata felt that these markets could explode with opportunity for his company if they could make this car a success. This move also fits well with the exhortation of strategy guru C. K. Prahlad, that the next frontier for companies to tap is the 'bottom of the pyramid'. The project was derided as a non-starter by naysayers and rivals in the industry. Typically, large auto companies make their profits on the higher-end cars, where margins are better. In India, the cheapest car sells for upwards of ₹250,000 (over $6,000)! If Tata Motors had to sell its 'people's car' for ₹100,000, it would have to restrict the cost of manufacturing the car to less than ₹70,000 (about $1,600), a target that was thought to be impossible by the automobile industry, to provide margins for the company and the distributors.

While the path ahead on how to make the 'people's car' a reality was not be very clear, the company pushed ahead on this 'project impossible', fuelled by Ratan Tata's vision, and by the success that the company had tasted with the Indica/Indigo in the Indian market, despite having to take on big and established players such as Hyundai, Ford, Suzuki and others. The Nano project defied all conventional thinking of car manufacturers anywhere in the world. It required innovation in nearly all aspects of car-making and at every step along the way. This car was not to be a stripped-down version of any existing car (low-end Indian cars, selling at $6,000 apiece, are already stripped-down!) but was to be a 'ground-breaking experience' for the company, according to Ratan Tata. It can seat four or five passengers, has four doors, is safe, is gearless and adheres to stringent emission norms. It may not have the finish of normal cars, and is not capable of going at very high speeds. At the same time, it is not a scooter or three-wheeler converted into a car. It has a rear engine and is a 'compact' car.

While much of the technology and know-how for the car was developed in-house, in areas where the company did not have know-how, Tata Motors partnered with other industry leaders who were willing to rise to the challenge. These partners also had to innovate in the design, development and manufacture of their respective modules/components. The partners included Delphi for electronic engine management; and the Italian design company IDEA for styling; Exide for technologically advanced small car batteries; and several others including a foreign partner for continuous variable transmission technology for gearless driving.

The Indian market for two-wheelers is the largest in the world, with demand for over 10 million vehicles per year, while the car market is about a 10th of that size. What Tata Motors' 'people's car' hopes to achieve is to get potential two-wheeler buyers to

Case study 3.1 continued

purchase Nano instead, thereby opening the floodgates to a huge market. The company hopes that these large numbers will enable economies of scale, making it attractive for various partners to design and develop inexpensive components that will go into the car. Mr. Tata was also keen that his company should not waste resources on reinventing the wheel, and if there is some know-how that is tried and tested and readily available elsewhere, the company should go out and source it through innovative partnering. A consortium of companies actually had to innovate to deliver on the Nano promise. Ratan Tata also banked on the innovative engineering and manufacturing skills available in the country to make Nano a reality.

To contain costs, the company came up with various innovative ways of assembling the car. One option being pursued is that the company would sell to customers the car in a 'kit' form, which they could take to one of the thousands of authorized assembly mechanics in the country, who would be trained for the task. These authorized assembly mechanics would assemble and test the car and get the car ready for the customer to drive home! Now if this is not innovation, what is?

The team involved in building the car has been constantly coming up with new and innovative ideas to make the 'mission impossible' a reality. The car has since been launched successfully in India and efforts are being made to increase the geographic footprint of Nano to other parts of the world. The successful launch of Nano has forced other automobile manufacturers to work on their own models of a 'people's car'.

The key learning from the Tata Motors story is that when an impossible target has been set, innovation must take place across the entire value chain. There are no holy cows that cannot be questioned. 'Mission impossible' has been made 'mission reality' by Tata Motors. So, how do you innovate? Well, get everyone in your organization to think innovatively, and do whatever it takes to get the innovation engine in the organization into 'cruise' mode.

Notes

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13. Bill Bernbach, 'Ten Principles of Advertising', http://smartamarketing.wordpress.com/2011/11/25/10-principles-of-advertising-from-bill-bernbach/
14. Reported in *Fast Company*, December 2004.
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16. Bill Breen. 'The 6 Myths of Creativity'. Fast Company (Excerpts from Theresa Amabile), Issue 89, December 2004 http://www.tim.ethz.ch/education/courses/courses_ss_2007/course_mrc_ss_2007/Session6_Reader_Creative_groups_commented.pdf
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4

The Innovative Mind:
Who Innovates?

You need three things to be an original thinker. 1. a tremendous amount of information. 2. be willing to pull the ideas, because you're interested. 3. ability to get rid of the trash ... you cannot think only of good ideas ... you must be able to throw out the junk immediately.

—Mihaly Csikszentmihalyi[1]

Many psychologists view creativity as some kind of innate ability. I, on the contrary, view it largely as a decision. People are creative largely by dint of their decision to go their own way. They make decisions that others lack the will or even the courage to make ....

—Robert Sternberg[2]

LEARNING OBJECTIVES After you read this chapter, you should understand:

- Why innovators operate on three levels (individual, team, organization)
- Whether you *want* to be an innovator
- The role of *vision* and independent thinking in individual innovation
- How innovative clusters (like Silicon Valley) form
- How to exercise your creativity 'muscles'
- What factors characterize successful global innovation teams
- How to use 'catchball' for team innovation
- What the eight 'realms' of innovation are and how your organization ranks in each
- What 'skunk works' are
- Who America's most innovative organizations are and why

4.1 Introduction

In the first three chapters, we looked *outward,* toward innovative best practices by individuals and companies, to answer the questions: why innovate? what to innovate? and how to innovate? In this, the concluding chapter of Part I of this book, we ask our readers to look *inward,* deep inside yourselves. We ask you to question whether you have the *desire* to achieve excellence in innovativeness and whether you, your team and your organization have the necessary *core competencies.*

'We may travel to the moon,' Charles de Gaulle once remarked, 'but that is not far at all; the greatest distance we have to travel lies within us.' To assist you in this journey, we will provide a number of diagnostic tools; as a result, this chapter has plenty of action-learning exercises.

Before beginning this journey into yourselves, we ask you to prepare to be brutally honest. 'Face the brutal facts' is a key factor for success in organizations, according to author Jim Collins, and it is equally vital for success in individuals.

4.2 Three Levels of Innovation

There are three levels of innovation. The first is the innovative *individual.* Many ideas are born in the brains of creative individuals. The second is the innovative *team;* most serious innovative work in developing ideas is done in small and large groups. And the third is the innovative *organization,* which provides the setting, vision, goals and resources for innovative ideas—to deploy, produce and market them.

In this chapter, we provide some answers to the questions, who are innovative individuals, teams and organizations? How do they function? And, what are their personalities and nature? We explore each of these three levels in turn, moving outward from the individual at the core to the team and finally to the organization.

Heroes, it is said, are made, not born. The overriding question this chapter addresses is 'nature or nurture?'—are creative persons 'made', by circumstance, desire and learning, or are they 'born'? Can *anyone* learn to be creative or does creativity come from our DNA?

The prevailing view is that creativity is innate. We differ. Along with Robert Sternberg, one of our generation's leading psychologists, we believe that creativity and innovation are the result of decisions. We believe that anyone can innovate successfully, and that creativity is largely an acquired, learned skill, not an inherited one.

The starting point for all innovation is the question: Do I truly *want* to innovate? Not everyone wants to engage in the creative act, fraught with risk, difficulty, ridicule and often, dismal failure. Innovation requires both the *desire* to innovate (motivation) and the *ability* to carry out the intention. Motivation is a necessary (though far from sufficient) condition for success.

4.3 The Individual Innovator

bs—Pick One
re many different tasks
o in their work; innovation
ne. Here is a classification
ypes of work.[1]

cation of Technology: Use
ology and engineering to
business problems
titative Analysis: Use
ematical and financial
sis to solve problems
ry Development and Con-
tal Thinking: Take an aca-
c, conceptual approach to
ess problems
tive Production: Generate
ative business ideas
selling and Mentoring:
others in their careers,
op personal relationships
workplace
iging People: Achieve
ess goals by working
and directing people
prise Control: Having ul-
e strategy and decision-
ng authority
nce through Language
Ideas: Exercise influence
gh skilful use of persuasion

each of the eight tasks on
of paper.
ige the slips on the table
int of you. For each of the
types of work, picture a
rete task and a flesh-and-
d person doing it (prefer-
yourself).

arrange the slips in order of
desirability for you—which
em would you love to do,
which would you avoid at all
Which of them make you
out of bed in the morning,
r to tackle them, and which
es you want to place the pil-
over your head and smash
larm clock? Allow ties.

does 'creative production'
onestly? If it ranks low,
u may be highly creative but
prefer to do other things.

This section explores the question: *who* is suited for creative endeavours? We argue that everyone is potentially creative, but like our muscles, our creative brains must be constantly exercised to fully realize that potential. And like physical exercise, mental creativity exercise and innovation requires motivation.

Motivation

We begin with an action-learning exercise that addresses the key question of motivation and desire—do you really *want* to innovate? Above everything else, innovators *want* to create new ideas and are willing to invest the effort, and undergo the rejection and ridicule that this entails.

In his research, psychologist David McLelland found a strong link between success and what he calls 'n-achievement', the motivation for high achievement. This is certainly true of innovation. The history of innovation is sprinkled with stories of highly motivated individuals who overcome incredible odds to achieve their goals.

Case Study: Motivation Overcomes Insurmountable Obstacles

Here are four case studies that prove why 'I cannot innovate because ...' should never ever be used to explain or accept failure, or failure to try.

- *Bram Cohen* has Asperger's syndrome. Some psychologists view Asperger's as a mild form of autism. According to Susan Berfield, writing in her blog in *Business Week*, Asperger's is a condition that keeps him rooted in the world of objects and patterns, puzzles and computers, but leaves him floating, disoriented, in the everyday swirl of human interactions. According to Berfield, Cohen had an unhappy childhood. 'I was picked on a lot,' he says. 'There was something obviously wrong with me. But it wasn't

Case study continued

acknowledged until I was much older that something had always been off-kilter. Were I to have to redo high school, I would just drop out immediately.'

He attended the State University of New York at Buffalo for one miserable year and then left. After miserable experiences working with start-up companies, Bram headed for Silicon Valley. There he started BitTorrent. Cohen sought an efficient way to share huge amounts of digital data. Napster and other peer-to-peer programs already allowed people to pass smaller music files from one computer to another. But big files would clog the system. The elegance of Cohen's solution is that as more people join a network, data move faster rather than slower. His software breaks files into pieces and scatters them on users' hard drives. When someone requests a movie, the software gathers the pieces from the nearest computers on the network and assembles them only once they reach their destination. This allows a file to download much more quickly.

BitTorrent has run into difficulties. Bram is no longer CEO. But the mere fact that it exists and survives, and the fact that a person with Asperger's launched it successfully are inspirational. It is hard enough to start a company. But starting one with Asperger's? And, reader, you say *you* face tough obstacles?

- *Liz Mayer: From Homeless to Harvard*—What are the odds that a homeless virtually orphaned child, whose parents were both drug addicts from the time she was three, could graduate from Harvard University and founded an innovative organization?

Liz's parents were both severe drug addicts, injecting heroine into their veins, often in Liz's presence, from the time she was three years old. She recounts, in her book, that they were always loving parents, despite the addiction. But they lived in filth and hunger, because the monthly welfare checks were spent on drugs, leaving her and her sister to scrounge meals from neighbours. She recounts, 'We would do things like eat ice cubes, or chapstick or toothpaste. We would knock on our neighbours' doors. But everyone in the neighbourhood was living off government cheques.' Her father was an all but doctorate (ABD) in psychology and read voluminously, using New York City's famous Public Library (often under pseudonyms, because he failed to return books); Liz, thus, read widely too.

Liz's mother was diagnosed as HIV-positive in 1990, and she died in 1996. With a mother in and out of hospital, and a father who was still heavily addicted to heroin, Liz eventually ended up on the streets, homeless.

Despite being homeless, she went from high school to high school, seeking admission. After many rejections, she was somehow accepted to an 'alternative' high school—Humanities Preparatory Academy in Chelsea, Manhattan. She did

homework at friends' homes, in school, even while living on the streets. She had an inspiring teacher, who chose her as one of 10 students to go on a field trip to Boston—her first time outside of NYC. They visited Harvard University. Liz recounts she could not take her eyes off the Harvard students, clean, neatly dressed, wearing Harvard sweatshirts.

Back at high school, she began looking for college scholarships. She spotted, in the *New York Times*, a full $12,000/year scholarship for four years. Some 21,000 students applied. She made it into the last 20. In her final interview, she was asked about her ability to overcome obstacles—and told her story about living on the streets, homeless, while attending high school. She got the scholarship to Harvard. According to her account on the BBC, '[W]hile she was at Harvard, she began public speaking—helping people who, like herself, had an almost impossible mountain to climb to succeed in life.' 'Now, today, she makes her living as a motivational speaker and founder of Manifest Living, a company which offers workshops for people wanting to change their circumstances.'

Liz's father also contracted AIDS, and she returned to care for him. 'Just before he passed away, he wrote me this card,' she recounts. 'He wrote in the card, "Lizzy, I left my dreams behind a long time ago. But I know now they're safe with you. Now we're a family again."'

The next time you encounter an obstacle, big or small, to achieving your goals, remember Liz Murray. With determination and courage, the human spirit is capable of anything.

- *Jeff Pearce: Innovator Who Couldn't Read or Write*: Jeff Pearce is literally someone who could not spell his own name for 54 years, nor read or write—yet he was voted Retailer of the Year in the United Kingdom and twice built innovative retailing business empires. If Pearce could succeed, despite the odds, surely any of us can. In his words[4]:

Three letter words, cat, dog. I'd spell them backward. Teachers thought I was disruptive, kids laughed at me, teachers put me in the corner with a dunce cap, made me face the wall, they did not know what dyslexia was then, and the punishment made me worse, I lived with shame. In promotion from junior to senior high, the day before I went in, my mum knew I would get laughed at, because I could not write my own name, James, I couldn't spell it, mum sat me down and said from now on, you are JEFF 'J' 'E' 'F', then add another 'f' on, I could just about handle that. I lived with that all my life. I became Jeff Pearce. My mom brought us up on the

'markets', she had to find money to feed five children, dad drank every penny he earned; in the morning, she told me, on you go on, go earn some money. I was 14. I went to the 'markets', asked the business people there if I could do errands, deliver messages? I became an entrepreneur ... that put me in good stead when I went into the world. I set up own business at 17. I've always worked for myself, for the simple reason I was unemployable, who would employ someone who couldn't write their own name?

How did I manage? I lived two lives. As entrepreneur/businessman, I employed over 40 staff. They didn't know I lived another life of torture, as a man that couldn't write his own name. I hid things. Gina, my wife—she came with me to the bank, gave me a form to fill out, she'd say, I'll do that so you can keep talking. I couldn't fill it out. She'd say, Jeff, just sign there. And it got worse. We lived a millionaire life style. We mixed with doctors, accountants, lawyers, we'd go for dinner. I couldn't read the menu. Gina would say, Jeff, the steak, you like that, 'Yes, I'll have that', I'd say, pretending I read the menu. Wine list? Gina: Jeff's bad at wine, let me pick. Gina and I have been together, for 35 years ... she's with me here today, she goes with me everywhere.' 'When I lost my business, in 1992, when the recession came, the bank called me in, called the loan, I lost everything. I sat there, close to suicide ... at that time, I thought, that was my punishment for being a fraud. I should not have succeeded in the first place. I lost my family home. My daughters were privileged, all of a sudden I took it away from them. But I started again, on the markets, and 10 hard years later, I built up another empire, my own dept. store in Liverpool, I felt then I wasn't a fraudster. I was named most outstanding retailer of the year ... in the taxi on the way back to the hotel that night, with 2 awards, I felt as equal as the person next to me ... I told my daughters, I can't read and write! It was very emotional.

- *Paraplegic: Dad, Let's Do a Triathlon*: A young man with cerebral palsy was confined to a wheelchair, cared for by his loving father, who had heart disease. 'Dad,' he said (few except his father can understand his speech), 'I want to run a marathon with you.' Marathon? But—how?

The father began to train, running and pushing his son in his wheelchair. His fitness grew. Eventually, they ran a 42-kilometre marathon. His son was ecstatic; his face lit up at the finish line. And soon they did another one. Then ... 'Dad!' he said. 'I want to do an Iron Man triathlon!'

Triathlon? That includes a 120-kilometre bike ride and a 4-kilometre swim, then a full marathon. Intense activity for 8–10 full hours. But how? His father swam, towing his son in a rubber dinghy. His father biked, with his son in a seat in front of the handlebars. And his father ran the marathon, pushing his son in the wheel chair. They crossed the finish line to the amazed cheers of the crowd.

We learn from these case studies that there is nothing the human spirit cannot overcome, there is nothing too 'hard' to overcome, if the will and motivation are strong enough.

Source: Liz Mayer: http://timnovate.wordpress.com/2011/02/08/from-homeless-...-of-liz-murray/
Jeff Pearce: http://timnovate.wordpress.com/2011/02/17/the-entreprene...l-his-own-name/
Bram Cohen: http://timnovate.wordpress.com/2008/11/06/life-is-hard-t...is-on-for-size/
Triathlon: http://timnovate.wordpress.com/2008/11/06/life-is-hard-t...is-on-for-size/

Defy the Crowd

According to psychologist Robert Sternberg, '[C]reative people ... are ones who are willing to defy the crowd ... they make decisions that others lack the will or even the courage to make, daring to define problems in ways different from those in which their colleagues define them.' The case study of Chuck House and HP illustrates this principle—in this case, among the 'crowd' House defied was the company co-founder and CEO.

Twenty-six-year-old Chuck House, an engineer, had been with HP for just a few years, but had already tasted failure. House observed that people were buying HP oscilloscopes—a piece of electronic test equipment that creates a visible graph of a signal, as, e.g., a wavy line—and using them as monitors (see case study in Chapter 3, 'When Your Customers Innovate'). This pointed the way to a big new market, he thought. At the time, HP had new technology that could electronically focus a cathode ray, achieving higher resolution without the huge tube that at times stretched a full four feet behind the screen. House and his superiors built a display using the electronic lens that was faster, smaller, used less power and was brighter. But when they tried building such displays for the Federal Aviation Administration (FAA) air controllers who guided air traffic, they failed; with the

HP prototype, the FAA controllers could not read the tiny code numbers that identified each plane. The resolution was not quite high enough for that purpose.

Many might have given up. But House, against his superiors' wishes, went to war. He loaded a large prototype monitor into his VW (tearing out the front passenger seat to do so), and set out to do some one-on-one market research, violating HP's sacred principle that you *never* show prototypes to customers. He went to 40 potential customers (mainly computer manufacturers) and came back fired up, believing oscilloscopes could become displays.

At the annual review of the division in which House worked, however, HP founders William Hewlett and David Packard saw House's monitor and heard the marketing people describe the dismal reaction they had gotten from oscilloscope customers. David Packard ordered House's project aborted. 'Next year I don't want to see that project in the lab,' he said. Chuck's response, later, was: 'If we put it into production, Packard won't find it in the lab.'

A year later, Packard returned to the project. The monitor was on the market. And it achieved glory. When America launched the first manned rocket to the moon on 20 July 1969, NASA scientists watched it through HP's innovative high-resolution monitor, using a new type of cathode ray tube. It also found use in a medical monitor used in the first heart transplant and quickly came to be used in almost half of HP's instruments. House won an HP 'Medal of Defiance'. His product soon reached $10 million in annual sales with no redesign and made high profit margins.

The key success factors? A creative, defiant individual; a strong team; a champion; House's one-on-one market research with users; House's perseverance—and rank insubordination; *defying the crowd;* a sponsor in the form of House's manager and an organization culture that tolerated such insubordination.

Source: Gifford Pinchot III, *Intrapreneuring* (New York: Harper, 1985), pp. 23–30.

This case confirms a theory of creativity by Sternberg, who borrows a saying from legendary investor Bernard Baruch (1870–1965). Baruch's recipe for accumulating wealth: 'Buy (assets) low, sell high.' According to Sternberg, creative persons 'buy low'—they propose theories that are 'cheap' because no-one will accept them, then slowly or quickly persuade their peers; and 'sell high'—see their innovations meet high demand and high value; then go on to do the same process yet again.

Many creative entrepreneurs, like Chuck House and Steve Jobs, achieve serial innovative successes, by repeatedly buying low and selling high. HP's Chuck House went on to develop more innovations. Steve Jobs built Apple, left, built NeXT (computers), returned to rebuild Apple as CEO (for a salary of $1 a year), innovated iPod, and then founded Pixar Animation Studios, which sold to Walt Disney for $7.4 billion in 2006.

What is the secret of these serial innovators? One key element is 'vision'—they all have a powerful vision that drives them forward in the face of seemingly insurmountable obstacles.

Vision

Innovators are visionaries. The reason is simple. To sustain the high energy and dogged determination needed to succeed, to push the idea through to the marketplace, a powerful vision is vital (see Chapter 5, 'The Power of Vision').

Vision, according to Jim Collins and Jerry Porras, is an 'envisioned future', or a *photograph of the future*. It is feasible, yet bold and audacious; it challenges people to stretch and it excites and energizes them. Their colourful term for vision, BHAG, has become part of business language. It excites the emotions, not just the powers of reason.[5]

Vision is concrete, identifying what needs to be done and what should *not* be done. Such a vision transformed an entire country, Ireland, from poverty to wealth and growth, despite enormous obstacles.

Case Study: Ireland

For two centuries, Ireland was poor. Its young people finished high school and hopped onto the next ship to find work abroad. As a result, there are estimated to be 70 million ethnic Irish abroad, with only 4 million Irish in Ireland itself.

Today Ireland is wealthier than Britain, with per capita GDP of $47,000, low unemployment, $75 billion total in inward foreign direct investment, and strong economic growth. How did this happen? In 1987 Charles Haughey, head of the Fianna Fail party, enunciated a bold vision:

We will win for Ireland, its people and its regions, the best in international innovation and investment so as to contribute to the continued transformation of Ireland to a world-leading society which is rich in creativity, learning and personal and social well being. We will work in partnerships with other organizations to enhance the best of Irish capabilities and talents and match them to the best of global investment. We will carry out our vision with integrity, professional excellence and responsiveness to all with whom we work or are in contact.

Ireland's Industrial Development Agency (IDA), fuelled by this vision, has largely implemented it, through innovative policies (especially, a 10–12 per cent corporate tax rate) that brought the world's leading global companies to build plants in Ireland.

Source: IDA, Ireland.

Wisdom

In his novel *Hard Times*, Charles Dickens has two characters say, *'Teach boys and girls nothing but facts! Facts alone are what is wanted in life.'* A large part of our education system teaches facts. But Psychologist Robert Sternberg, a pioneer in cognitive psychology and now an educational innovator, thinks this is misguided, and has used his remarkable life story to blaze new trails in reinventing the concept of IQ. After he suffered from test anxiety and failed an intelligence test, Sternberg realized that this score did not predict his intelligence. Just one year later, in the seventh grade, Sternberg developed his first intelligence test: the Sternberg Test of Mental Ability, or STOMA. Because he was a perpetual 'outsider', Sternberg never feared challenging the prevailing paradigms in psychology, such as conventional IQ. Writing in *School Psychology International*,[6] Sternberg outlines his own concept of intelligence, called WICS, an acronym for 'Wisdom', 'Intelligence', 'Creativity' and 'Synthesis'. The key is wisdom, 'the ability to use one's intelligence, creativity and experience for a common good.' Sternberg writes:

The basic idea is that citizens of the world need creativity to form a vision of where they want to go and cope with changes in the environment, analytical intelligence to ascertain whether their creative ideas are good ones, practical intelligence to implement their ideas and to persuade others, and *wisdom to ensure the ideas will help achieve ethically-based common good.*

Then, 'synthesis' is needed to combine the W, I and C. As we saw during the global financial crisis 2007–9, creativity without wisdom, especially the ethical component, leads to disaster.

The WICS theory is remarkably similar to what innovators need to achieve marketplace success: Creativity, for vision; Intelligence for analysis and implementation; Wisdom, to create value for everyone not just the inventor; and then Synthesis, to combine the three seamlessly. I would prefer to call the 'innovation' version of the model, CIWS.

Sternberg has created a Rainbow Project to measure WICS and complement the standard terrifying SAT tests for college entrance. At Tufts University, where he served as Arts & Sciences Dean, he developed Kaleidoscope, which asked applicants to write stories on such creative topics as 'The End of MTV'. Kaleidoscope scores did not correlate at all with SAT's.

Sternberg's WICS teaching method encourages students to: (*a*) create, (*b*) invent, (*c*) discover, (*d*) imagine if … (*e*) suppose that and (*f*) predict. Teaching for creativity is very hard for teachers used to teaching 'facts'. These six stages match closely stages the inventors follow, in particular, (*d*), (*e*) and (*f*), viz., imagine, suppose, predict. They also match what parents and teachers often call 'dreaming', for children and students whose vision wanders far away from blackboard 'facts'.

ACTION LEARNING

Apply WICS to *Your* Innovation Machine

Adapt Sternberg's six-stage innovation model to your own PCM. State how you tackle each of the six stages: (a) create, (b) invent, (c) discover, (d) imagine if … (e) suppose that and (f) predict.

Excellence, Passion, Resources

Vision, as Jim Collins explains, occurs at the intersection of three circles—*passion* (something the innovator truly and deeply cares about); *excellence* (a skill or realm where the innovator and team feel they are or can become the very best) and *resources* (the time, money and people needed to implement the vision). (See Chapter 2.) All great innovations have a vision at their core. And all great innovators are capable of envisioning the future boldly to inspire those around them.

If you err in your vision, err on the side of boldness. A watery, dull vision is no vision at all. From our experience of working with product-development teams in both start-up and established technology-intensive companies, 'visions' such as 'Raise our market share by 5 points' or 'achieve a 15 per cent operating margin' are very common, but are not true visions. They do not inspire. The response to a vision should be a 'Wow!', or its equivalent. If you fail to draw a 'wow'—reformulate.

Case Study: Global Construction Equipment Firm

We worked with an India-based R&D team that is part of a global firm that makes construction equipment. The team worked on two new pieces of road-building equipment. Their initial 'vision' was to achieve market success and profitability. We indicated that this was not a true vision and would not energize the team to invest the long hours needed to complete the project fast and successfully. After discussion, a new vision was shaped: Creating equipment that would help link 700 million Indian villagers with the rest of India, enabling them to share in India's growth and progress by facilitating road-building. This vision excited the team and helped contribute to the innovative designs that ultimately reached the market.

Source: Authors.

Case Study: Google

Two Stanford Ph.D. candidates named Larry Page and Sergey Brin set up shop in a garage in 1998. Their vision: *Use the Internet to make nearly all information accessible to everyone all the time.* (Note: 'all' and 'everyone' are powerful, inclusive, energizing words.) How? By creating a search engine algorithm that was fast and far-reaching. In 2005 Google made $1.5 billion in net profit on $6.1 billion in sales (mostly advertising), with

Case study continued

a 67 per cent gross margin. As of 22 February 2006, its market value was $108.3 billion (making it the world's largest media company), and its stock price had risen from its initial price of $85 to as high as $475. Google's three-word credo is: 'Don't be evil,' though few know precisely what those words really mean. Brin and Page brought in a veteran manager, Eric Schmidt, Google's CEO today; the three provide a good balance of vision, discipline and managerial skill.

Source: www.moneycentral.com; Adi Ignatius, 'In Search of the Real Google', *Time*, 20 February 2006, pp. 28.

Independent-Minded

Innovators and entrepreneurs are independent thinkers. We often ask students, how many of you intend to become entrepreneurs? Those who respond favourably often come from homes where fathers or brothers are independent businesspersons rather than wage earners and serve as role models. For example, the 'father of the spreadsheet', Dan Bricklin, inventor of VisiCalc, relates that his father headed a family printing business in Philadelphia, Bricklin Press, founded by Dan's grandfather. Afternoons spent at the printing plant, Bricklin relates, prepared him for trials faced in his own business.[7] FedEx founder Frederick Smith's father, too, was a rather flamboyant businessman.

A study by MIT Professor Edward Roberts of start-up firms in the Greater Boston area[8] reveals the following:

- 'Entrepreneurs tend strongly to come from families in which the father was self-employed.'
- Fifty-nine per cent of technical entrepreneurs had fathers who were either professionals or managers.
- There is no 'first-born effect' (oldest children show no special tendency to become entrepreneurs).
- Some 10–25 per cent of each sub-sample of new high-technology firms are formed by someone born outside of the United States (Greece, Sweden, etc.).
- Regarding age, Roberts finds that the median age at time of company founding is 35–38 years.
- Entrepreneurs, before launching their companies, tend to work in *development*, not in *research*, and had an average of 10 years of work experience.
- And finally, many entrepreneurs had work experience with a 'key technology source organization', i.e., large technology-intensive laboratory or company,

where knowledge and skills were acquired. Ken Olson, founder of Digital Equipment Corp., worked for years in MIT's Lincoln Laboratories, for instance. The latter factor explains the 'cluster effect'—entrepreneurs tend to cluster in geographical areas, such as Bangalore, India; Route 128 in Greater Boston and Silicon Valley.

Creativity Loves Company

Apparently, innovation and innovators love company. Innovation tends to occur in geographical clusters, because innovators often like to remain in the area where they studied science or engineering: Boston/Route 128 (MIT), Palo Alto/Silicon Valley (Stanford), Bangalore (Indian Institute of Science), Chennai (Indian Institute of Technology), Cambridge, the United Kingdom (Cambridge University), Research Triangle (Duke, North Carolina) and so on. For instance, shortly after India gained its independence on 15 August 1947, Prime Minister Jawaharlal Nehru announced that India would build five (later expanded to many more) Indian Institutes of Technology (IIT) to rival the best such institutes abroad. Today many of India's high-tech companies are driven by IIT graduates, who built their companies not far from the campuses where they studied, e.g., Bangalore, home to the Indian Institute of Science, now a key information technology hub in India.

Case Study: Silicon Valley

Silicon Valley is an 80-kilometre stretch of former apricot and walnut orchards radiating outward from Stanford University, between the San Francisco Bay on the east, Santa Cruz Mountains in the west and the Coast Range to the southeast. (Silicon, of course, is the wafer on which semiconductors are constructed.) It has become synonymous with fever-pitch technology-based entrepreneurship generating rapidly growing companies, funded by dynamic venture capital.

The 1990s saw Silicon Valley virtually explode with startup activity. Between 1990 and 1997, 7,500 high-tech companies were formed. Brilliant research at Stanford University and the University of California at Berkeley graduated entrepreneurs who approached angel investors and venture capitalists.

Stanford University was founded in 1891 by California Governor Leland Stanford in memory of his son. In the 1920s, Stanford recruited one of its graduates, Frederick Terman, a stellar electrical engineering professor at MIT. Terman encouraged his students to start businesses near the university, to keep graduates from migrating to the East

Case study continued

Coast in search of jobs. Two of his students were William Hewlett and David Packard. Hewlett, a graduate student, had designed and built an audio oscillator. Terman saw market potential in it and persuaded Packard, who worked for GE on the East Coast, to return home and join Hewlett. In 1937, in a small garage in Palo Alto, Hewlett and Packard began to produce their audio oscillator commercially. It was used in 1939 in Walt Disney's pioneering film *Fantasia*. HP, based in Palo Alto, is America's 11th-largest firm, with $79.9 billion in annual sales in 2004, $3.5 billion in profits and a market value of $59 billion.

In 1955, William Shockley (inventor of the transistor at Bell Labs) brought a team of brilliant young scholars to the Stanford area to found Shockley Transistor. Some of his team disagreed with his choice of germanium as an optimal semiconducting material, preferring silicon. Members of that team, including Gordon Moore and Robert Noyce, started their own company, known as Fairchild, and began to mass produce a device able to integrate large numbers of electrical on–off switching functions, etched onto a silicon chip, and known as an 'integrated circuit'. That company formed the basis of many famous start ups: Intel, AMD and National Semiconductors. These companies were the core of a semiconductor industry that led to the name 'Silicon Valley'. Intel, based in Santa Clara, California, is now the world's largest producer of semiconductors, with annual sales of $34.2 billion in 2004, a net profit of $7.5 billion, a market value of about $145 billion and employing some 80,000 employees worldwide.

While Silicon Valley pioneered semiconductors, Japan quickly became far better at producing them. In 1984, Intel senior managers Andy Grove and Gordon Moore decided to stop producing memory chips entirely. Silicon Valley's days of prosperity seemed to be over. But like the Phoenix, Silicon Valley reinvented itself and rose from its own ashes. The resurrection was based on the PC—the personal computer.

In March 1975, a group of students formed a club, the Homebrew Computer Club, in Menlo Park to experiment with home computers. Among them was Steve Wozniak. He built a computer with an inexpensive microprocessor that he bought at a computer show and built a machine around it. Later, his friend Steve Jobs joined him to form Apple Computer Co. in 1976. On 1 April 1976, they released the Apple I. Apple II in 1977 was a big success. In August 1981, IBM introduced its own PC. An enormous industry resulted—one that caused Silicon Valley to boom.

4.4 Creativity Muscles

One of the most complete theories of creativity is that of social psychologist Mihaly Csikszentmihalyi, who between 1990 and 1995 intensively interviewed 91 'exceptional individuals' in art, literature and science.[9] He calls his theory of creativity 'flow'. 'Creativity does not happen inside people's heads,' he observes, 'but in the *interaction* between a person's thoughts and a socio-cultural context. It is a systemic rather than an individual phenomenon.' The system within which creativity occurs, Csikszentmihalyi calls the 'domain'.

> **DEFINITIONS**[10]
>
> - **Domain:** The existing set of rules, procedures, conventions and accepted wisdom.
> - **Creativity:** Any act, idea or product that changes an existing domain, or that transforms an existing domain into a new one.
> - **A creative person:** Someone whose thoughts or actions change a domain or establish a new one.
> - **Gatekeepers:** Those who decide whether a new idea or product should be included in the 'domain'.

In order for creativity to succeed, the innovation must be accepted by the 'gatekeepers'. (For instance, in academic research the gatekeepers include those who edit and review research for scholarly journals.) This implies that creative people must first understand the domain within which they work and find ways to persuade those in the domain to accept their novel ideas. Most breakthroughs, Csikszentmihalyi notes, 'are based on linking information that usually is not thought of as related'. In creativity, 'integration—across domains and within domains—is the norm rather than the exception'.

The nine main characteristics of extraordinarily creative people mentioned repeatedly in his interviews were:

1. Clear goals at every step
2. Immediate feedback (both given and sought)
3. Balance between the level of difficulty of a task and the skill required to accomplish it
4. Action and awareness are merged
5. All distractions are ignored
6. There is no fear of failure
7. Self-consciousness disappears
8. The sense of time disappears
9. The creative activity is autotelic (an end in itself)

Can you practise creativity? Csikszentmihalyi recommends 'creativity muscle exercises'.

When we teach innovation, we consistently urge our students to stretch their creativity muscles during the course by consciously abandoning habits, because habit is the sworn enemy of creativity. Eat different foods; listen to different music (try opera, if you generally listen to rock); rise earlier or later and come to class using a different mode of transportation than usual. By smashing conventions in one area of your life, you may find that the effect continues into other areas as well.

Applied Creativity in Action: Kilby and Walton

Jack Kilby was a man who, perhaps more than any other, changed our world. He invented the integrated circuit while working for Texas Instruments (TI). He definitely qualifies for the title of 'extraordinarily creative'. Here is his story, and that of Sam Walton, founder of Wal-Mart, whose creativity expressed itself not in technology but in an innovative business model that also changed our lives. Both regularly exercised their creativity muscles—and changed the world as a result.

Case Study: Jack Who?

Integrated circuits are the building blocks for every appliance we love and use today, including personal computers.

How did Jack Kilby dream up and produce his invention? During a TI plant shutdown, engineers went on vacation. But Jack went to work. Using borrowed and improvised equipment he built the first integrated circuit, half the size of a paper clip, on a piece of germanium. It was Kilby's idea that made it possible to shrink a huge mainframe computer down to the size of a palm. Kilby's first integrated circuit contained one lonely transistor. Today's microprocessors hold more than 100 million transistors. Kilby won the Nobel Prize for Physics in 2000. Six months after Kilby's prototype, Intel co-founder Robert Noyce came up with a similar idea independently. The two were friends and shared the credit.

What was the secret of Kilby's breakthrough? In order to miniaturize, Kilby needed to get rid of the massive wires needed to connect the transistor to the devices it served. *Let the chip itself be the connector,* Kilby thought. 'The following circuit elements could be made on a single slice (of germanium or silicon): resistors, capacitor, distributed capacitor, transistor,' he wrote in a notebook in 1958. The wires were an unnecessary 'box', or constraint. Forty-seven years later—our world is utterly changed as a result of Kilby's insight.

Case Study: Sam Walton: A Little Anarchy

The founder of Wal-Mart, Sam Walton, attributed his success to his 'constant tinkering':

> I never could leave well enough alone, and, in fact, I think my constant fiddling and meddling with the status quo may have been one of my biggest contributions ... I have always been driven *to buck the system*, to innovate, to take things beyond where they've been ... I have always been a maverick who enjoys shaking things up and creating a little anarchy.[11]

Creative people like Walton enlist the principles of Charles Darwin, innovator of the theory of evolution. They try many 'market experiments', observe the results, quickly end the many experiments that fail and rapidly leverage the few that succeed. Walton tried lowering prices, found it worked like magic—and built a powerful business model on 'everyday low prices'. Innovative companies regularly try such 'market experiments', because ultimately only the marketplace and consumer are the final arbiters of whether an innovation truly meets needs.

Source: Jeffrey A. Krames, *What the Best CEOs Know* (New York: McGraw-Hill, 2003), pp. 206–13.

Kaleidoscope Thinking

Great innovators see the world differently from others. Federal Express (FedEx) founder Frederick Smith calls this 'kaleidoscope thinking', a term coined by Harvard Business School professor Rosabeth Moss Kanter. In 2010, FedEx had revenues of $35.5 billion, and profits of $98 million. The market value of FedEx shares was $28.6 billion. FedEx ranked #13 in Fortune's 2010 list of most admired companies. Here is how Fred Smith founded FedEx in 1973.

Case Study: Frederick Smith and FedEx—'It's Only Money'

Smith, born in 1944, served two tours of duty as a Marine in Vietnam. His father was an independent businessman. While at Yale, Smith wrote an economics paper proposing the concept that ultimately became FedEx. His professor was unimpressed. Smith does not recall his grade, but remarks that he got a 'gentleman's C' on all his courses. FedEx aircraft—named that, because Smith hoped, in vain, to get a contract from the

Case study continued

Case study continued

US Federal Reserve system flying checks among banks—first flew in March 1973, after Smith raised $42 million from investors, bankers and family members. Smith faced huge difficulties; FedEx was a network, and its value could not be proven before huge sums were invested in creating it. But, explained Smith, 'what we were really talking about was money, not life and death issues', a valuable perspective he acquired in Vietnam.

His insight was that in the age of computers, there would be enormous demand for overnight package delivery—a demand that only a company that used both planes and trucks could meet. No such company existed. Starting one would be risky and expensive. But Smith used 'kaleidoscope thinking'. He looked at IBM, and realized it would need a logistics system that 'provided parts and pieces wherever its computers were located, whenever it was needed'. Kaleidoscope thinking is the ability to comprehend large complex systems. Fred Smith invented a new UVP: 'We would be the transportation system that an organization like IBM needed,' he thought. Others saw the computer business, Smith saw the transportation and logistics network that it would vitally need to run. Today, FedEx is a vital part of the value chain created by, say, a company like Dell Computers; direct sale of computers to customers requires an efficient, worldwide network to deliver them quickly.

Source: Gretchen Morgenson, *Forbes Great Minds of Business* (New York: John Wiley & Sons, 1997), pp. 35–72.

Case Study: Darwin, *The Beagle* and Galapagos

Charles Darwin changed the world with his 1859 book *The Origin of Species*. He too employed kaleidoscope thinking that integrated curiosity, synthesis and courage. We can learn three things from Darwin's life and discoveries about innovation? (*a*) Curiosity: Darwin was exceptionally curious about everything, from the time he was a small child. In his long four-year voyage on *The Beagle*, he visited Chile. He made extensive notes on everything he saw. There, he climbed high mountains and noted how layers of soil had been pushed up to form mountains. In the layers he found fossils of seashells and crustaceans. Aha! He thought. These layers were once, therefore, under the sea. How did a layer under the sea become a 12,000-feet mountain? Later, he found the answer in a book by geologist Charles Lyell, who theorized (against conventional wisdom) that earthquakes pushed the earth up, twisting horizontal layers into near-vertical

Case study continued

mountains. This process must have taken millions of years, Darwin thought. He filed this insight away—for later use. (*b*) Integration: Darwin read widely. He read about geology. And he read about economics. In 1798, an economist named Thomas Robert Malthus wrote an essay, 'An Essay on the Principle of Population', in which he observed that population expands rapidly, geometrically, while food expands only as an arithmetic series, meaning that food per person declines, leading to a struggle for survival. Darwin later remembered this idea and integrated it, along with his geology readings, into his theory. The theory of evolution owes its discoveries to Darwin's ability to understand and use ideas very far from biology. (*c*) Courage: Prevailing theory about how species evolved attributed them mainly to Divine Providence. At the time Darwin lived, the Church was very powerful. Theories that contradicted the Church's doctrine were labelled as blasphemy. Nonetheless, Darwin published his insight, in 1859, despite the consequences. Species evolve, he wrote, as they struggle for survival; only species who have traits that help them survive to reproduce will endure and pass on those traits. He used his observations of mockingbirds, collected in the Galapagos Islands, whose beaks had adapted according to conditions in different islands. This process, he noted, took many thousands of years. It contradicted the literal Biblical theory of creation (though, not entirely—the sun and stars were created only on the fourth day, so the first three 'days' could have lasted for many millions of years). But Darwin wrote what he believed was the truth, regardless of Church sanctions. Innovators should follow Darwin, as a role model, and constantly seek new ideas and information. One day, perhaps, you, our reader will take a piece from geology, a piece from economics, and a piece from botany and zoology, like Darwin, assemble it, integrate it and find something so beautiful, so insightful, so earthshaking that the world will never again be the same.

Kaleidoscope thinking often creates innovations simply because innovators look beyond the narrow focus of their current products and services. Author Steven Johnson calls this 'the adjacent possible'—looking beyond existing products, far enough to be innovative, close enough (adjacent) to be feasible. He cites as an example Johannes Gutenberg, who invented the printing press. Gutenberg looked 'adjacent' to printing, to the wine industry, which had then invented the screw press for increasing the yield of grape juice from grapes (far higher than the traditional approach of stamping grapes with the feet). Gutenberg realized the high force exerted by the screw press in wine could be used to press type into paper, for printing. As author Arthur Koestler once observed, 'all decisive (creative) events involve cross-fertilization beyond disciplines'.

urce: S. Maital, 'Lessons from Charles Darwin, on the 200th Anniversary of his Birth', Mnovate blog, http://timnovate.wordpress.com/2009/02/11/lessons-from-charles-darwin--the-200th-anniversary-of-his-birth/

Penicillin? Or Mould? How Errors Generate Innovations

In his book *Where Good Ideas Come From: The Natural History of Innovation* (2010), Steven Johnson observes that a large number of transformative ideas in the annals of science can be attributed to 'contaminated laboratory environments'. For example, Nobel Laureate (for medicine) Hans Selye, pioneer of modern trauma theory, tells of his days as a research assistant. He noted a Petri dish covered in mould and threw it out in disgust. Much later, Donald Fleming saw precisely the same thing—but noticed how the mould destroyed bacteria, and, curious as to why this happened, went on to discover the uses of penicillin. Fleming thus developed the first antibiotic, and saved hundreds of thousands of lives as a result during World War II. Innovators see things differently than others, often with extraordinarily beneficial results!

Johnson notes that the invention of the cardiac pacemaker occurred only because its inventor 'grabbed the wrong resistor' while building it and noticed that the result simulated a regular heartbeat. 'Error,' notes Johnson, 'often creates a path that leads you out of comfortable assumptions. Being right keeps you in place. Being wrong forces you to explore!' He cites William Stanley Jevons, who in 1874 wrote that 'the errors of the great mind exceed in numbers those of the less vigorous one'. This contrasts sharply with the common view that smarter, creative people make fewer mistakes. To create an innovative environment, it is vital to permit a certain amount of random 'noise'. The best innovation environments are also somewhat 'contaminated', and are never 'sterile'.

'Fail early to succeed faster' is a well-known principle for speeding up innovation. Innovators should never be afraid to fail, but should always be open to learning from their failures, rather than mourning them.

Stubborn, Dogged Persistence

Innovators are doggedly, stubbornly persistent. They do not give up easily, or at all—those who do never see their ideas implemented. Illinois-born Abraham Lincoln, elected the 16th American president in 1860, is not generally regarded as an innovator, yet his career typifies the persistence needed to succeed in the face of repeated failure.

Case Study: Lincoln as Loser

The list of Lincoln's defeats is long. He failed in business in 1831 and had a mental breakdown in 1836. He then lost at least eight elections, among them, for state legislature (1832), speaker (1836), elector (1840), Congress (1843 and 1848), for the senate (1855 and

1858), vice president (1856) ... but ultimately won the great prize, when he was elected President of the United States in 1860. Like great entrepreneurs, his character was forged in the fires of adversity and defeat, strengthening him to lead his nation in the desperate Civil War, 1861–64.

ource: 'The Glurge of Springfield', Snopes blog, http://www.snopes.com/glurge/lincoln.asp

4.5 Innovative Teams

It may be that the future HP hero will not be limited to the engineer with the new idea for a circuit, but will also include the person who can make groups of people separated by product type and geography work together successfully.

—the late Lew Platt, *former president & CEO, HP*

Increasingly, innovation occurs within teams. MIT Professor Edward Roberts found that the likelihood of a technology-driven start-up succeeding increases dramatically if there are two or three founders rather than just one. Apple was founded by Steve Wozniak and Steve Jobs; Google, by Sergey Brin and Larry Page; Intel, by Robert Noyce and Gordon Moore; Infosys was started by seven founders. The reason team-based innovation succeeds more often is clear. Teams outperform individuals. Successful innovation management requires a broad range of skills: technological, human, business, administrative. There are few individuals who alone embrace *all* the needed skills. An ideal start-up team includes a technology expert, a manager and a sales and marketing expert.

Whom should you invite to join your team? This exercise may help.

What *is* a team? Jon R. Katzenbach and Douglas K. Smith note that the term 'team' is used loosely. Many teams are simply loose 'working groups'. While working groups discuss and *delegate,* teams do real work *together,* they note. Working groups have individual measures of output, while teams measure their *collective* output. Successful teams do some or all of the following: they select their members for skills and potential, not for personality; establish urgency, set demanding performance goals and offer clear direction; set clear rules of behaviour; challenge the group regularly with new facts and information; spend time together and exploit feedback, reward and recognition.[13]

Catchball

One method for managing innovation in teams, developed in Japan, is known as 'catchball'. Like the metaphor of tossing and catching a ball, a team member creates an idea 'ball' and tosses it to a collaborator. The person catching it takes responsibility for understanding the idea and for finding a way to improve it. He or she then tosses it back to the group, where it is again caught and improved. Through the cycle of improvement, the process of tossing and catching builds commitment and 'buy-in'. Catchball emulates the Socratic dialogue approach described by Plato; team members engage in a dialogue by means of serially improving a core idea.[15]

4.6 How to Build a Global Team

Vijay Govindarajan and Anil Gupta studied 70 global business teams to determine why they succeed or fail.[16] Most such teams, they found, failed. Among the key factors that senior executives listed for success were (in order of importance): trust among team members, overcoming communication barriers, aligning individual members' goals, ensuring the team has the needed skills and obtaining clarity for team objectives. Their prescription:

1. Define the team's 'charter' or mission clearly and make sure it is well understood by all members.
2. Choose team members with care; encourage diversity in skills, perspective and personality, but do not allow the diversity to fragment the team's efforts.
3. Keep team size manageable—make the 'core team' no more than 10; while the extended team can be larger. Choose the team leader with care and be sure there is a team 'champion' (senior manager within the organization).
4. Manage the team well—foster trust, use frequent face-to-face meetings, rotate meeting locations, link rewards to performance and build decisions on data.

ACTION
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where 10 is the score
nization that excels in
Then, draw a graph,
of your organization's
vation characteristics.
ns must be undertaken
(Note: the 'organiza-
be the business school
y at which you are cur-
ing.) How competent is
ization in:

r goals: Clearly defining
ative objective.
ing ideas: Coming up
r, original ideas for prod-
vices and processes.
g among ideas: Selec-
e best idea from among
r implementation.
enting ideas: Managing
ementation of a chosen
rough to the market-

ig creative people: Se-
and hiring people who
ivated to innovate, and
good at it.
ig the creative pro-
Managing the process
which ideas are cre-
hosen, organized into
entation projects and
tered, up to a prototype
:ket testing.
resolution: Skill in
g conflicts that arise
individuals and teams,
oroduct development.
ig a creative culture:
g a culture that empow-
ative individuals and
motivates them and
ents their ideas.

(he later became HP CEO). MPG used cross-functional teams, defined as 'teams that perform unique, uncertain tasks to create new and non-routine products or services'. The cross-functional approach was employed to roll out the Viridia Patient Care System—'a family of patient-monitoring and information management systems designed to help caregivers balance clinical and business objectives in healthcare settings'. Viridia required teams able to develop and deliver the various components, including diagnostic workstations, remote computer and communications links, and the healthcare telemetry system. Six teams were set up, with some 200 members in all. A special training programme was set up to foster speed, efficiency, leadership and group decision-making. During product development, efforts were made to keep all six teams in close touch with one another ('teamwork among teams'). All 200 team members met face-to-face twice, once in Massachusetts and once in Germany—an expense that would deter many companies. There were also weekly videoconference calls. Teams were not only cross-functional, they were also cross-divisional, cutting across division lines, thereby ensuring that HP divisions, too, would cooperate and collaborate. Thomas Legate, in recounting this experience, notes: 'Organizations should limit ... bureaucracy and rules ... and create a fluid, entrepreneurial culture.'

Source: See Thomas Legate, 'How Hewlett-Packard Used Cross-Function Teams to Deliver Healthcare Industry Solutions', *Journal of Organizational Excellence*, Autumn 2001, pp. 29–40.

4.7 The Innovative Organization

Innovative individuals and teams can be successful and productive, even if the organizations within which they work are bureaucratic, conservative and risk-averse—but their life is much harder.

How innovative is your organization? How well does it nurture and encourage innovative individuals and teams? How can it be made more innovative? We begin this section with a diagnostic tool that helps answer this question.

All these eight attributes of innovativeness are important. But perhaps the last, fostering a creative culture, is most important, because innovation cannot flower if the soil (i.e., culture) within which it is planted is acidic and hostile. As companies merge in order to attain global scale, they find that their very size discourages innovation, while, paradoxically, they increasingly *need* innovation to develop new products susceptible to global scale and deployment. An innovation culture can offset this.

There are two approaches to fostering innovation within large organizations. One is the so-called 'skunk works' approach; a second is 'intra-preneurship'. Skunk works create an isolated 'island' of entrepreneurial, innovative culture; 'intrapreneurship' spreads that Island culture to the whole organization.

Skunk works create a kind of 'playground', populated by eccentric, individualistic, creative people; give them tools, time and isolation from daily corporate pressures, challenge them with difficult, unsolved (and ostensibly unsolvable) problems, then leave them alone, and come back in six months to harvest the solutions. In this approach, the polluting impact of corporate bureaucracy is kept at bay, almost like creating a 'clean room' in a semiconductor factory that filters out even the tiniest of impure particles.

A second, and opposite, solution is 'intrapreneurship'—entrepreneurial innovation *inside* a large organization, rather than in a small start-up company. In this approach, the entire organization is structured to foster and support maverick entrepreneurs who spring up and work within the system as an integral part of it. Here are two case studies that respectively illustrate each of these two approaches.

Case Study: Lockheed Skunk Works

In the American comic strip *Li'l Abner*, created by Al Capp, the *skonk works* (sic) was an (illegal) alcohol still, where its operators tossed shoes and dead skunks into the vat. Lockheed's version, officially known as the Advanced Development Programs unit, was set up downwind of a smelly plastics factory in Burbank, California, during World War II. (In 1989 it moved to Palmdale, California, where it exists today.) Its legendary head Kelly Johnson gave it the name Skunk Works when an engineer came to work wearing a gas mask. Later, the skunk logo and name Skunk Works became official Lockheed trademarks. Among the remarkable inventions of this creative unit were the *P-38 Lightning fighter*, the spy planes *U-2* and *SR-71 Blackbird*, the *F-35* Joint Strike Fighter and the *X-27*. Lockheed's Skunk Works is credited with inventing the design principle known as Keep It Simple, Stupid (KISS). Skunk Works has become an engineering term for secret (or 'black') projects.

Source: Ben Rich and Leo Janos, *Skunk Works* (Boston, MA: Little, Brown & Company, 1996).

**Case Study: Entrepreneurship within Organizations: Art
Fry, Post-it Notes**

The ubiquitous yellow Post-it notes invented by 3M's Art Fry are
perhaps the most widely known and cited example of innovative-
ness and intrapreneurship. Yet the story is still worth telling. Fry
noticed that, as a member of a church choir, the paper markers
he used to mark places in the hymnal tended to fall out; he felt he
needed a marker that would stick to the page yet not damage it.
He made one, using an adhesive (a glue that did not really glue)
developed at 3M, and circulated it in the hope someone would
find a use for it. Fry was told 3M could not manufacture the prod-
uct, so overnight he developed a crude machine that could.

Then, 3M Marketing said its research revealed no market for
it and a four-city campaign failed, because potential customers
'did not understand what they were being asked to buy'. But
Art's manager became a supporter and champion. Boise, Idaho,
was chosen for a market test, and Post-its were placed everywhere
for people to try. Sales were huge, and regional, national and
international success quickly followed.

Source: Gifford Pinchot III, *Intrapreneuring* (New York: Harper, 1985), pp.
137–42.

Which approach works best: skunk works or intrapreneurship? It depends on the
nature of your organization.

Here are eight questions, based on a questionnaire designed by Gifford Pinchot,
that test your organization's 'intrapreneurship readiness'. If the answers are mainly
'no', either change your organization culture, or persuade your CEO to set up a
protected skunk works where the organizational culture cannot destroy creativity.

4.8 Conclusion

Each year, *Fortune* magazine surveys thousands of senior managers and board mem-
bers, to determine the 'most admired companies'. The respondents rank companies
in eight dimensions. The first (and perhaps most important) is 'innovation'. Here
are (in Table 4.1), in order, America's most admired companies for innovation for
2010 (2006 rank is also shown alongside):

Table 4.1   America's Most-Admired Innovative Companies

2010 Rank & Company	2006 Rank
1 Apple	1
2 Google	2
3 Nike	8
4 Amazon.com	not in top 10
5 Goldman Sachs	not in top 10
6 Procter & Gamble	4
7 McDonald's	not in top 10
8 Intel	not in top 10
9 UPS	not in top 10
10 FPL	not in top 10

Source: http://money.cnn.com/magazines/fortune/mostadmired/2010/best_worst/best1.html

Six of the top innovative companies in 2010 were not in the top 10 in 2006. And 6
of the top 10 innovative firms in 2006 failed to make the top 10 in 2010. The lesson is
clear and obvious. Creating an innovative organization is a huge challenge. *Remaining*
innovative over the long haul is an order of magnitude more difficult. But it is pos-
sible, through construction of a *culture* of innovation, fostering an innovation *process*,
as Apple and Google prove by remaining #1 and #2, respectively, and by choosing and
developing creative people.

Each of these top 10 firms is innovative in a unique way. There are, however, three
common denominators. First each has a powerful innovative leader. For Apple, Steve
Jobs. For Google, founders Brin and Page. For Procter & Gamble, CEO A. G. Lefley.
America's 19th-century President John Quincy Adams once defined leadership: '[I]f
your actions inspire others to dream more, learn more, do more and become more,
you are a leader.' This defines an innovation leader as well, and all innovative organi-
zations have one.

Second, each of the top 10 has found a compelling answer to four questions: Why
innovate? what to innovate? how to innovate? and who innovates? For AMD, a pro-
ducer of microprocessors and competitor of chip giant Intel, the focus is on designing
new, innovative chips that meet and anticipate market needs. AMD made the 2006
top 10 innovation list but in 2010 was replaced by Intel. Against the global scale and
efficiency of Intel, only innovation can help AMD survive and prevail. AMD's decline
in innovativeness has been paralleled by a decline in its business performance. Procter
& Gamble's innovativeness focuses on brand management, an expertise this company
has developed over seven decades. Nike's innovation is in its winning designs. Target

(retail chain) focuses on a business model that competes with the compelling low-price economies-of-scale business design of Wal-Mart; it made #10 in 2006, but failed to make the top 10 in 2010.

Third, these top 10 innovative companies all share another common skill. Having answered the four questions (Why? What? How? Who?), and having identified innovative business ideas that create unique value, they are also expert in the next two crucial stages. After 'innovate' comes 'deploy' (usually globally) and 'adapt'. Facility in innovation requires operational efficiency (deploy widely) and customer intimacy (adapt to local markets and segments) in order to achieve growth and profit.

In Part II of this book, 'Tools for Profit and Growth', we offer 10 chapters, and 10 tools, that show how to manage innovation by deploying and adapting innovative ideas, through estimating and managing costs (Chapters 5–11), understanding consumer demand (Chapter 12), managing risk (Chapter 13) and balancing competition and cooperation (Chapter 14). We urge readers to use the four chapters in Part I of this book to develop an innovative business idea. When you have one, apply the 10 tools in Part II of this book in order to build an innovative business design well aligned with this idea, to generate growth and profit. Combining the strategies and concepts of innovation with the tools of innovation management gives innovators the best chance of building competitive, growing and profitable brands, product lines and businesses.

4.1   CASE STUDY: REINVENTING PROJECT MANAGEMENT AT TATA STEEL

Implementation of the cold rolling mill (CRM)

In March 1996, R. P. Singh joined the senior management of Tata Steel, Jamshedpur, with a brief to focus on new projects. He had earlier worked in projects at Bokaro Steel Plant and the Vizag Steel Plant prior to joining Tata Steel. In November 1997, the Tata Steel Board decided to go ahead with the ambitious 'Cold Rolling Mill' (CRM) Project, approved at a cost of ₹18.74 billion (about $400 million) and implementation time of 36 months, which were reasonably aggressive targets, given other similar project implementations worldwide by other steel plants.

R. P. Singh and B. Muthuraman (until recently the managing director of the company, but at that time the director responsible for the project) benchmarked worldwide CRM Projects and felt it would be great if Tata Steel could create a world record, in terms of both implementation time and cost, in the CRM Project. They found that recent implementations worldwide included Baoshan Steel, China (38 months), Siam United Steel, Thailand (37 months), Bethlehem Steel, USA (30 months) and Posco, South Korea (29 months), which was currently the fastest implementation for a CRM Project worldwide.

Case study 4.1 continued

Case study 4.1 continued

They decided to set themselves a completion time target of 28 months and a project cost of ₹16 billion for the Tata Steel CRM Project; which, if achieved, would set a new world record.

Tata Steel had a 300-strong, well-established engineering division, with its own way of implementing projects. Perhaps the innate desire to create a new culture in project implementation was what prompted the top management to induct Singh as the project in-charge. In a large organization like Tata Steel, such a senior induction for heading the company's most important project in decades was not likely to be received enthusiastically by the existing project management group.

When Singh made his time and cost targets known to his team of project engineers, contractors and collaborators, many silently wondered whether such an aggressive target was part of the initial enthusiasm of a new entrant. They were certain that in due course Singh would accept ground realities and reset the target to a more realistic timeline and cost estimate. Existing senior managers in good humour cautioned him that the way he was going, it would cost him his future in the company. Singh handpicked a team of 60 engineers with proven track record from different parts of the company and set about his task. The earlier Engineering Division was essentially dismantled. He communicated his dream to these 60 engineers and about 300 others, representing various contractors and suppliers, in an open meeting in January 1998. He proposed the brave new target cost and implementation time for the CRM Project. He also presented the goals of the CRM Project:

- Create a 'world-class CRM complex at the lowest project cost'.
- Set a world record in implementation time and project cost so that Tata Steel becomes the new benchmark.
- Develop people with a new 'mindset'.
- Develop improved systems with universal applicability that can be carried over to other Tata Steel projects.
- Make the CRM Project an example of change for others.

The reaction from the group ranged from stony silence followed by polite amusement to outrage and outright disagreement. The group was unanimous in its verdict: 'Commissioning the CRM in 28 months is impossible!' It was clear to Singh that the culture was not aligned to the vision. Foreign contractors such as Hitachi, Fluor Daniel and others were kinder in their responses but the implicit message was the same. They clearly put forward the question 'Mr. Singh, you are Indian. How can you even think of these outrageous targets for a project being implemented in India?'

Over the next two years, by means of a large number of innovations in project management and by motivating people, Singh and his team actually completed the project

Case study 4.1 continued

Case study 4.1 continued

in 26 months and well within the tight budget of ₹16 billion. Innovative practices he brought in included meticulous hour-to-hour planning, creating winners out of ordinary people, breaking the barriers between contractors and the owner (which is a bane in most projects, leading to a lot of wasted energy) and meticulous monitoring. He also found innovative ways to ensure that everyone involved in the project took complete 'psychological' ownership of the project and drove innovation in his/her areas of responsibility. He demonstrated what is possible by 'leading from the front' and by setting an example for others to emulate.

To achieve the lowest project cost, Singh insisted on:

- Economic design of civil and structural works
- Optimum tender specifications
- Each tender specification being given a target cost value, based on extensive homework by the project team
- Enough competition among the bidders
- Hard negotiation with the bidders
- No additions in scope after order placements
- Any deletions in scope suggested by the bidders being entertained only on merit

Revamp of Blast Furnace F

Soon after the completion of the world record-creating CRM Project in 2001, R. P. Singh was given his next challenge: the revamp of Blast Furnace F. The old furnace had outlived its utility and had to be totally upgraded. Its capacity had to be increased to 1 million tons per annum (tpa) from the current 0.60 million tpa. Foreign companies estimated implementation time and cost for the completion of this project at 210 days and ₹5 billion ($110 million). These estimates were not acceptable to Singh. Each day that could be reduced in the schedule meant a large addition to the company's top and bottom lines, since the furnace could then begin production sooner. Most foreign consultants, including Paul Wurth, dissuaded Singh from attempting anything more ambitious than what the foreign consultants suggested, stating that lesser estimates would be impractical even in western countries, let alone India.

Singh passionately believed that results could be achieved through the right efforts and hard work. One of the concerns of the project team that Singh was heading was its inability to visualize what the new blast furnace would look like, and the complexities that could arise during the revamp process. Singh thought that a good place to begin shrinking the timelines was through detailed and meticulous planning. He believed that planning was the crux of successful project implementation. Another big

Case study 4.1 continued

challenge was to coordinate the work of dozens of world-class contractors to ensure that each performed their role in the given short period of time. There were over 5,000 activities to be completed. The project was scheduled to commence on 6 February 2002. Singh and his team had about a year before the project commencement date to plan out the various activities. Singh wanted to leverage the experience gained in the Blast Furnace F revamp to sharpen the project management skills of the company, so that two other major projects that were to follow, i.e., the Blast Furnace G revamp and the expansion of steel-making capacity, could also be successfully completed against challenging cost and time targets.

Singh was certain that a lot of difficult challenges would arise as the project for the revamp of Blast Furnace F unfolded. The fact that the entire work of revamping the 'F' blast furnace had to be done during summer when peak ambient temperatures soared over 45°C, and the fact that adjacent to this furnace, other blast furnaces would be in operation during the project work, only added to the complexity of the task at hand. For instance, the thickness of the scab (the muck that settles on the walls of the furnace during its operation over the years) in the furnace could only be speculated upon during the planning stage. The actual magnitude of difficulty in removing the scab would be known only when the furnace was opened up for revamping it. Relaying the refractory would have to be done after removal of the scab, and this was a time-consuming job.

The project also had to meet the highest standards of quality and safety, while adhering to the time and cost budgets, since any sloppy work would impact the operation of the furnace once it was re-commissioned.

As in the case of the earlier CRM Project, through a series of innovations in project management, Singh and his team completed the revamp in a record time of 104 days, against Singh's revised target of 110 days, and the cost was less than half of what the foreign consultants had quoted. He came up with innovative ways such as building a scaled down model of how the revamped Blast Furnace F would look like, a computer simulation of the revamp process, etc., to ensure that each of the 5,000 people who would be working on the project, including Tata Steel engineers, many contractors and a large number of unskilled labour, had a complete picture of the project and knew their particular role in it and the consequences of delays. He got their commitment for timely completion of the project at target cost, with highest quality while ensuring safety. This project again set a world record for a project of this magnitude.

Having tasted what it means to be a winner, Singh has managed to create a team that is 'addicted to winning', so much so that the next project, the revamp of the Blast Furnace G, which was nearly twice as big as Blast Furnace F, was completed in 95 days. Singh has been successful in creating a team of people who are ready for even bigger challenges as the company continues to expand rapidly.

Case study 4.1 continued

Just what keeps Singh at such high levels of energy and passion is captured in his interpretation of one of Patanjali's (a great ancient Indian scholar) many aphorisms from the Patanjali Yoga Sutras:

> When you are inspired by some great purpose, some extraordinary project, all your thoughts break their bands—your mind transcends limitations, your consciousness expands in every direction and you find yourself in a new, great and wonderful world. Dominant forces, faculties, and talents become alive and you discover yourself to be a greater person by far than you ever dreamed.[17]

So *who* innovates? The case study of R. P. Singh and project management at Tata Steel suggests that if your organization can succeed in unleashing the innovation potential of your entire workforce, as Singh had done of his entire project management team, your organization can achieve the impossible!

4.2 CASE STUDY: INDICORPS: HARNESSING THE POWER OF YOUTH THROUGH VOLUNTEERISM BY CREATING A META-NGO

Indicorps was set up to inspire collective action amongst non-resident Indian (NRI) youth towards engaging productively in the development of India, the country of their origin, roots and identity. Anand Shah, at the age of 32, is the embodiment of exuberance and dynamism, combined with an immense passion for the country. Mahatma Gandhi's words, 'We ourselves must be the change we want to see in the world,' seem to sum up what he and his sisters Sonal Shah and Roopal Shah had set out to do through Indicorps. Indicorps seeks to bring together people with a desire to contribute to society and who have an ability to visualize where India should be going in the years to come. Through Indicorps, the Shahs hope to unite Indians around the world in a common vision for the nation by effectively engaging them in the development of the country.

The Shah family migrated to the USA in 1971. Sonal, Roopal and Anand had their entire education there. All of them had enviable educational and professional careers in the USA, before they decided to start Indicorps. Their upbringing had ingrained in them values such as humility, sacrifice and cooperativeness, which enabled them to do great things together.

In 1988, the entire Shah family took a three-month tour of rural India. Towards the end of the trip the three siblings had resolved that they would someday do something to

Case study 4.2 continued

contribute to the progress of rural India. During the 1990s, Sonal, Roopal and Anand each got the opportunity, separately, to spend a year in India. Each came with a different motive and took back with them a deeper and broader experience of India.

In the late 1990s, Anand journeyed to India to study Indian philosophy. This experience changed Anand's perception of life. He discovered his own potential, which convinced him that he had the capability to satisfy the burning passion inside him to serve the Indian community. A transformed Anand went back to his home in Houston, USA. A couple of months later, he lost a very dear friend of his in a bus accident in South America. This event shattered Anand and roused in him great anger towards God and fate, raising questions as to why such cruel things had to happen only to good people. This was a defining moment in Anand's life, and made him realize that the same thing could happen to him, that he may not live tomorrow and, therefore, that he had to get started *now* with what he really wanted to do, which was to serve the community. The three siblings discussed this dream among themselves and made a firm decision and commitment to fulfil their passion to serve Indians in India. They had no concrete plan about how to go about this. They decided, however, that at any given time, one of the three would work in the USA to help pay for the living expenses of the other two in India. The sisters also decided not to get married as this might deflect them from their goal.

Anand's frequent interactions with the Indian community in America revealed that second-generation Indian-Americans were interested in doing something outside-the-box and wanted to contribute to the development of India, despite the resistance of their parents. It was obvious to Anand that Indian-American youth were enthusiastic about volunteering their services to make India a stronger country. However, these youth had neither the opportunity nor an organization that they could rely on to fulfil their aspirations. These were usually second-generation Americans with no direct contact with India. In many cases their parents, usually first generation immigrants, had left India for greener pastures and, having prospered in America, did not want their children to be concerned with India and her myriad problems. However, what was clear to the younger generation of Indians was that, even in America, they could not run away from their Indianness. Anand resolved to set up an organization that would foster a pan-Indian identity to provide Indian youth in America with opportunities to engage meaningfully with India. He felt that an important strength of India was the voice of Indian-Americans, and this was not being meaningfully harnessed.

The initial plan was to provide human capital for the voluntary sector through a fellowship model—inspiring NRI children in America to come as volunteers to India to work on rural development projects in coordination with reputed local non-governmental organizations (NGOs). In October 2001, Anand put together a network of reputed NGOs, with Indicorps as a 'meta-NGO' that would work with each of

Case study 4.2 continued

them to provide human capital in the form of NRI youth who wanted to volunteer in India. There were several challenges in the voluntary sector in India. Most NGOs had no vision of where they wanted their organization to go or what they wanted to achieve. From time to time, some of the better-known NGOs would get requests from volunteers based overseas (both foreign and NRI) to work with them for a period of time. However, these NGOs did not have the means to judge the capabilities of the overseas volunteers. Anand realized that, apart from providing human capital to the voluntary sector, Indicorps had to work with its partner NGOs to help each one to create an immediate and a long-term vision for itself. It had to provide the NGOs with people with leadership potential and drive to help realize their vision.

As per the fellowship model crafted by the founders of Indicorps, each fellowship year was to begin on 15 August (Indian Independence Day) and end in July the following year. Fellows of the Indicorps programme would spend a year in India working on a grassroots project of their choice. They had to provide for their own airfare to/from India, their health insurance (together costing about $3,000) and all local living expenditure. Indicorps would cover only the costs of the initial month-long orientation and in-country travel costs. Indicorps partner organizations (i.e., the partner NGO) would arrange for living arrangements and materials for the projects. The projects would be suggested by partner organizations and Indicorps would send its fellows to help implement them. The first fellowship programme commenced on 15 August 2002, and has been growing from strength to strength ever since.

Indicorps specifically chooses to focus on projects in rural India, because small interventions can go a long way in rural areas. By leaving their comfort zones and placing others' interests before their own, the Indicorps fellows get an opportunity to test their own potential and take a lead by committing themselves to effecting change in the world around them. The guiding philosophy is: 'If you move the youth, you move the nation.' The fellowship experience fits into a larger vision that each volunteer will carry for his/her life. The Indicorps experience kindles in them the desire to contribute something that they perceive as value to the society and world around them, no matter what they choose to do later in life, and to inculcate in them a spirit of service. Indicorps produces fellows with integrity and passion who will become some of India's most powerful assets and leaders in the future, playing the role of 'ambassadors' for India when they go back to their home countries.

Inspiring a global movement that allows a large number of people who care about India to collectively take responsibility for the country's progress and give back to India through grassroots service is one of Indicorp's key goals. Helping NGOs to create their own voluntary programmes to engage Indians within India to contribute to the development of the country is another key goal. There is a vast training gap in the voluntary sector, a gap that Anand hopes Indicorps will help fill. A broader vision of

Case study 4.2 continued

Indicorps is to bring about an attitudinal shift in Indians within the country and in people of Indian origin in America—unless the attitudes of people change, they feel, India as a whole will not progress to its full potential. Every single person who is 20 or older, whether in India or abroad, should recognize that they have the ability to do something constructive for the country.

Challenges Ahead

The voluntary sector in India does not perceive the young vibrant energy present in the organization to be an asset and a primary contributor to its success. Consequently, convincing this sector about the infinite potential of the young fellows of Indicorps in particular and youth in general is a huge challenge. Indicorps also has to contend with the day-to-day bureaucracy at various levels—getting visas issued to its fellows for example. Indian parents abroad resist sending their children on the Indicorps programme for a variety of reasons. On the administration front, Indicorps is supported by only a handful of staff members, most of who are NRI volunteers. Activities of the organization require both NRI and Indian staff. NRI staff are invariably fellows who volunteer to stay back after their fellowship programme and serve Indicorps for a year or two thereafter. Staff is only paid a modest stipend. Attracting NRIs to take on permanent staff roles is not very easy. At the same time, Indicorps incurs huge costs in retraining new people every time. Anand and his siblings, fired by idealism continue to innovate to address these challenges.

So *who* innovates? Here we have a stellar example of Anand and his sisters who, as social entrepreneurs, have carved out, through innovation, a great opportunity for their dreams to be translated into reality. And they are having loads of fun doing it too! Having set up an entrepreneurial venture, the fellows and other staff at Indicorps innovate every day of their lives, solving some of the difficult problems in India's hinterland.

Notes

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Part II

Tools for Profit and Growth