The Definitive Guide to the Principles,
Strategies, and Methods of Successful Innovators

PERMANENT INNOVAT!ON

Langdon Morris

Co-author of the classic work on innovation
4th Generation R&D

Preface by **Hartmut Esslinger**
Founder of frog design

Praise for *Permanent Innovation*

"Langdon in his very characteristic style details out what works and what doesn't to make innovation happen. It deals with situations that large organizations often encounter, road blocks to sustaining their innovativeness. He has dealt with the contradictory nature of permanence and innovation with absolute clarity. It is a must read for those in the business of enabling innovations in organizations. It makes a good learning for those who would like to jump start their innovation journey."

Divakaran Mangalath
Chief Technology Officer
Wipro Technologies

"This book is a mandatory tool in making your mind clear about what is really needed to achieve this famous 'growth through innovation' for your company. After having read it, just do it ... no more excuses."

Léopold Demiddeleer
Director of R&D and New Business Development
Solvay

"I've had the chance to review *Permanent Innovation* and I must admit that I love it! Langdon is an engaging writer with a fine ability to clearly communicate the notion of inventiveness and its realm. *Permanent Innovation* is simply a must read book that has many ideas and resources to help us address some of the challenges we will face in the future. Thank you for putting this effort together."

Dr. Mohammed A. Alansari
Intellectual Assets Management
Saudi Aramco

"Langdon's new book is itself an innovative contribution. It reshapes and elucidates what it takes to support, develop, and sustain innovation at the personal or enterprise level. This should be a foundation text for anyone in the modern organization."

Larry M. Starr, Ph.D.
Director, Organizational Dynamics Graduate Programs
Executive Director, Center for Organizational Dynamics
School of Arts and Sciences
University of Pennsylvania

"Amongst so many books about innovation, this is one of the best. It rests on twenty years of practical experience by one of the leading practitioners in the field. I was delighted to find the right mix of actionable information and deep concepts, several of which are ground breaking. I consider Langdon Morris to be a master."

Pascal Baudry
President
WDHB Consulting Group

"*Permanent Innovation* presents an important and comprehensive approach to understanding how the elusive phenomenon of innovation actually works. Langdon has written for a wide audience of practitioners, not just academicians debating the niceties of theoretical models. He provides a near encyclopedic overview of the field, practical every day tips, and some truly new insights regarding Innovation's unique relation to product, category and strategy development. A must read for anybody who takes innovation seriously."

Michael Barry
Principal, Point Forward
Adjunct Professor, Stanford University School of Mechanical Engineering

"I enjoyed *Permanent Innovation* enormously. The conversational tone is just a treat, and it succeeds in being powerfully authoritative in a pleasing, understated way. The material is typical Morris: lots of very practical and practicable observations and prescriptions written directly to the managing executive, all in a way that gets the reader interested in experimenting. Morris' experience facilitating (almost forcing) rapid change is reassuring, demonstrating that it's possible to grasp the crucial principles of change. The book takes the reader from foundation principles of innovation and organizational transformation to the contemporary battleground of the market. Permanent Innovation is inspiring to read, and in a practical way."

Robert Gregory
Director, Strategy
Xpress Data, Inc.

"Permanent Innovation sounded like an oxymoron to me when I first heard it. But after reading Langdon Morris' extensive analysis of the *process* of innovation along with illustrative examples from successful innovators like Dell, Saturn, Apple Computer, and FedEx, I understand Langdon's choice of the title. His book is a pragmatic guide for designing and implementing a methodology for continuous innovation so necessary to meet the challenges of exponential change facing every organization today. Read it and you'll understand how to make innovation a permanent process in your workplace."

Dave Davison
Venture Investor

"A powerful and practical book for executives who seek to understand the basic principles and practices of innovation. Langdon Morris has the rare gift of being both astute and practical. This book is a jewel because it points the direction to where innovation is evolving – to more collaborative systems."

Stu Winby
Founder and Executive Managing Partner
Sapience Group - Silicon Valley

Also by Langdon Morris

Managing the Evolving Corporation

The Knowledge Channel:
Corporate Strategies for the Internet

Fourth Generation R&D:
Managing Knowledge, Technology, and Innovation
(with William L. Miller)

The War for America

Beyond Earth:
The Future of Humans in Space
(co-author and co-editor)

Download Edition
August 2006

Permanent Innovation

The Definitive Guide to the Principles, Strategies, and Methods of Successful Innovators

Langdon Morris

Preface by Hartmut Esslinger

Langdon Morris is a co-founder and principal of InnovationLabs LLC and Senior Practice Scholar at the Ackoff Center of the University of Pennsylvania and Senior Fellow of the Economic Opportunities Program of the Aspen Institute.

A note to the reader:

Several years ago Bill Miller and I published *4th Generation R&D,* a detailed study of the process for achieving breakthrough innovations. We are gratified that the book remains in print, now beyond its 10th printing, and that it has become a standard reference work in R&D management and in academia.

Over the intervening years as I've worked with many companies, it has become obvious that there's a need for a more general book that provides an overview of both the strategic and the human dimensions of innovation, and of the business processes to support them. This material should be useful not just for R&D managers, but for people from top management and throughout the organization who are concerned with the innovation performance of their firms. This is the goal of the present book, *Permanent Innovation*; I hope you find it useful.

This book can be **downloaded** at
www.permanentinnovation.com.

You can **purchase** it at
www.lulu.com/content/360060

Your comments and feedback are welcome. Please email your thoughts to LMorris@innovationlabs.com.
Thank you for your interest in this work.

Excellence is an art won by training and habituation.
We are what we repeatedly do.
Excellence, then, is not an act but a habit.

Aristotle

Permanent Innovation

Innovation is the process of creating new ideas and turning them into new business value.

Permanent Innovation is the process of doing it continuously, as a matter of strategy, method, *and* habit. It happens in organizations that embrace innovation as a core value, practice innovation as a core methodology, and produce innovation as a consistent output. Permanent Innovation is thus a *strategic and human* process much more than a technological one, and we achieve excellence at it through thoughtful repetition of the right methods.

The notion of permanent innovation may at first be startling, and it may even seem to be a contradiction, in that the concept of permanence implies stability and the absence of change, while the concept of innovation implies constancy of change and novelty. Combining these two, however, yields an important synthesis, the practice of innovation not as an occasional occurrence, but as a repeating process of value creation and organizational adaptation.

Permanent innovation thus contrasts with random, intermittent, or one-shot innovation processes, none of which are sufficient for today's markets, and none of which are the basis for the excellence we aspire to. In these times of accelerating change and increasing competition, Permanent Innovation with a focus on the human dimensions of innovation is an absolute necessity, and in fact its principles are contributing significantly to the success of leading companies around the world.

This book is about how to achieve it.

The Ten Principles of Permanent Innovation

Innovation is a vast topic, one with many diverging highways, side streets, and dead ends. Consequently, there are many different ways to approach the complexity that you confront when you decide to make innovation a priority. The ten principles of Permanent Innovation are intended to be your map, for they are vitally important to a successful journey. They're presented here at the beginning of the book to give you an overview of the landmarks that lie ahead, and you'll also find them discussed at the appropriate points throughout the text.

1. ***Innovation is essential to survival, and all innovation is strategic.***

Since innovation is literally how organizations create their own futures, innovation as a process and an organizational priority cannot be separated from the development and implementation of strategy. Hence, the development of a highly productive innovation capability is one of the most important strategic priorities for any organization. At the same time, all innovation must guided by strategic priorities and intentions.

(Introduction & Chapter 2)

2. ***There are four types of innovation: incremental, breakthrough products & technologies, new business models, and new ventures.***

Taken together, all of your innovation initiatives constitute a portfolio. As you design your portfolio you'll have to decide how much effort and investment to allocate to each type. Each requires its own specific set of processes, tools, and teams, who will be engaged in the search for the future, which is what the search for innovation is all about.

(Chapter 1)

3. ***The longer you wait to begin innovating, the worse things will get.***

Companies that procrastinate usually pay a heavy price in the form of lost market share and lost profits, and ultimately the lack of innovation can significantly diminish their future prospects. The competition isn't waiting, and you shouldn't either. Create your action plan now, and starting implementing it now!

(Chapter 2 & Part 4)

4. ***Innovation is a social art; it happens when people interact with one another.***

People are the core of any innovation process. Their insights, concerns, and desires shape the pursuit of new ideas and the countless decisions to be made in the process of transforming these ideas into value. Consequently, managing innovation is largely a process of managing people, and also managing the principles and practices according to which their work is organized. This requires a great deal of thought, planning, and preparation.

(Chapter 3)

5. *Innovation without methodology is just luck.*

There are lots of creative people in your company, and given half a chance they'll probably create some great innovations. But if you rely on their random efforts then you're risking your future success on chance, and that's not enough. You have to develop and apply methodologies, the right methodologies, to make the shift from luck to consistency, predictability, and sustainability. Without the right innovation methodology you're risking far too much - you're risking your future.

(Chapter 4)

6. *All four strategic innovation viewpoints are critical to success.*

You can't rely just on the innovation efforts of top managers, nor of your own people in the field, nor of what only insiders can create. The complete innovation methodology has to leverage all four viewpoints: Top-down, Bottom-up, Outside-in, and Peer-to-peer.

(Chapter 4)

7. *Great innovations begin with great ideas; to find them, identify unknown and unmet needs.*

There are many different kinds of needs. Among the most significant for innovators are the ones that no one has recognized, for these offer the potential to create breakthroughs that bring significant added value and competitive advantage. So how to find them? There are dozens of tools explained here that you can apply to come up with new ideas. Experiment with these tools and you'll surely find some that work well in your organization.

(Chapter 5)

8. *Ready, Aim, Aim, Aim, Fire.*

Yes, it's a cliché. But it's also true. Effective innovation requires very careful targeting. Why? Because there are so many possibilities to chase that you have to make sure you're going after the right ones. Besides which, innovation is expensive both in terms of cash and time, and good aiming enables you to use your resources wisely.

(Chapter 6)

9. *Prototype rapidly to accelerate learning.*

The goal of any innovation process is to come up with the best ideas and get them into market as quickly as possible. Thus, the innovation process is a learning process, and learning faster has enormous advantages. Among the methods for learning that you can choose, prototyping is one of the most valuable because it so effectively condenses the learning process. Rapid prototyping is therefore central to most forms of effective innovation methodology.

(Chapter 7)

10. *There is no innovation without leadership.*

Companies are amazing expressions of human society. The fact of organizing thousands of people to create and deliver products and services around the world to thousands or millions of customers is a remarkable thing. But the ability to do this brings some unique challenges. In particular, the impact of the organizational hierarchy has tremendous influence on the culture of any company, on its ways of working, and the results it achieves. Thus, top managers can be powerful champions of innovation, or dark clouds of

suppression. It's up to leaders to ensure that their words and their actions support and enhance innovation efforts and methods, and that at the same time they work diligently to eliminate the many obstacles that otherwise impede or even crush both creativity and innovation.

(Chapter 10)

Table of Contents

Preface: The Culture Of Innovation 15
by Hartmut Esslinger

Introduction 19

Part 1 25
Innovation Foundations
Chapter 1: Great Ideas, Great Innovations, Great Businesses 27
Chapter 2: Innovation & Strategy: The Nature of Change and the Necessity of Innovation 41
Chapter 3: The Essential Definitions 57

Part 2 71
Permanent Innovation Methodology
Chapter 4: Innovation Strategy & Methodology 73
Chapter 5: Creativity: Methodology for Great Ideas 85
Chapter 6: Great Choices: Targeting 119
Chapter 7: Great Innovations: Transforming Great Ideas into Business Value 135
Chapter 8: Great Planning: Market Development 171

Part 3 179
Innovation Culture and Infrastructure
Chapter 9: Creative Methodologies in the Innovation Process: Inside the Black Box 181
Chapter 10: Great Businesses & Permanent Innovation: Normalizing the Innovation Culture, the Innovation Organization, and High Performance 199
Chapter 11: The Innovation Infrastructure 229

Part 4 247
Your Innovation Action Plan
Chapter 12: Doing it: 38 + 2 great ideas to get started with 249

Preface

The Culture Of Innovation

By Harmut Esslinger
Founder and co-CEO of frog design

Normally, the foreword to a book such as this is full of compliments, but in this case I should also like to complement Langdon's thoughts with some of my own. First, however, let me note that in this excellent work Langdon analyzes, describes, and recommends with both humanistic vision and meticulous, process-oriented pragmatism, how to achieve and sustain "Permanent Innovation." This is a remarkable contribution to the literature on innovation, and I am very happy that he has written it.

Langdon also makes the vital point that success at innovation requires a highly professional context that is beyond "just" technology or "just" business in a conventional sense, and takes the "discipline of innovation" seriously as a discipline in and of itself. As this is the discipline to which our firm, frog design, is dedicated, it is with pleasure that I offer a few comments as a preface to this fine book that you are about to enjoy.

Beyond Fads

Heraclitus tells us that "we cannot step into the same river twice," and from this notion we take the insight that "everything flows." Thus we understand from the philosophical perspective something that we also experience in pragmatic reality every day: change is quite inevitable in a world of competition and re-creation. Such is the reality of today's modern

economy, the world of the global market in which businesses compete for market share and growth amidst accelerating change.

Today, in 2006, a widespread awareness of such change has brought the pursuit of "innovation" to the forefront, and properly so. However, innovation has replaced previous management fads such as "re-engineering," "six sigma," "kaizen," and "out-sourcing" as the new trend-word, and like its predecessors, innovation is now in danger of getting abused. Too often it plays the role of tranquilizer, a shallow term covering a multitude of executive sins that are never addressed in any fundamental way. Ironically, for their organizations to succeed, those who would trivialize innovation must instead embrace it in all of its enormous complexity.

Thus, given the complex challenges faced by any would-be innovator, it's no surprise that only a very few organizations are able to attain innovation to its fullest potential, as a matter of both consistent practice and consistent output. Langdon's purpose in this book is to describe in great detail how this can be done, how it is that leading companies create better solutions and attain business success with something new, something that nobody else can do. You will do well to heed his advice carefully.

Creative Davids

We know that innovation is much more then just ideas, inventions, improvements, or reverse-engineered copies of someone else's original concepts. No, innovation is something deeper that comes about as the result of the very dynamic state in which creative professionals thrive. Innovators are driven by their desire to succeed at changing the world for the better, to humanize society and industry, and thus ultimately to improve people's lives. They know that innovation is not limited to technology, but applies to all areas of business and society because it adds value that improves human experiences.

But innovators need support, for despite the many enthusiastic proclamations by CEOs, consultants, and the media, the actual accomplishment of innovation requires constant engagement by creative forces against the ever-oppressive, stasis-seeking norms of the bureaucracy. The power and the money lie with the bureaucrats, the Goliaths; the creative Davids have to be cunning, brave, smart, and as Langdon takes such pains to point out, they have to apply superior tools and methods to overcome Goliath's many advantages.

Such a contradiction between public calls for innovation and the private fear of the changes that innovation brings is well documented in our recent history. As Langdon reminds us, Xerox scientists invented the personal computer but Xerox managers failed to exploit their remarkable work; Chester Carlson's pioneering xerography invention was of no interest to the giant corporations of his day; Western Union had no use for Mr. Bell's

telephone; and Ford rejected the minivan so the design team moved on to Chrysler. The examples of such expensive, bad decisions are endless; avoid them.

These two worlds, innovation and bureaucracy, come into close contact with one another during the timeless ritual of the "creative pitch." This is the strange moment when an innovator stands before the bureaucracy with a drawing or a model of the idea in hand, and tries to show why this idea will change the world. It's a culture clash of two quite different brains, the moment of truth when creative courage comes face to face with corporate fear, when the promise of hope confronts the rationale of conservatism. What happens? At this moment of truth, is innovation launched forth to soar onward, or does it become corporate roadkill?

Now ask yourself, "What choices will my organization make the next time it's confronted with this important decision?" And then read this book and learn how to improve the likelihood that you'll make the right choices.

Hartmut Esslinger

Introduction

Are you satisfied with the pace of innovation in your organization? And are you satisfied with the results? Are the people in your organization as creative as they must be to meet the demands of your markets?

If you're like most executives, the answer to these questions is probably, No.

Permanent Innovation Principle #1:

Innovation is essential to survival, and all innovation is strategic.

Since innovation is literally how organizations create their own futures, innovation as a process and an organizational priority cannot be separated from the development and implementation of strategy. Hence, the development of a highly productive innovation capability is one of the most important strategic priorities for any organization. At the same time, all innovation must be guided by strategic priorities and intentions.

In today's business world, there's occasionally a company that stands out above the rest, a company that's so

innovative, so consistently innovative, that you have to sit back and admire it. "They really get it!" you might say to yourself.

- Toyota gets it. It's about to surpass GM as the world's #1 car maker.
- Starbucks gets it. The company is changing how the world drinks coffee.
- Apple gets it. The iPod/iTunes combo has more than 70% market share.
- Nike gets it.
- Fedex gets it.
- Southwest Airlines gets it.

What do they get? They get that innovation gives them a decisive competitive advantage. They get that it's not just one innovation that is the foundation of success, but a constant stream of them. **Does your company get it?**

Few leaders are satisfied with their firm's innovation performance, because while innovation is increasingly important in the competitive global economy, it remains tremendously difficult for organizations to achieve on a consistent basis. For example, no one knows exactly what the failure rate for new products is, but estimates for some industries range all the way up to 50%, and in the grocery business it's much higher than that.

Consequently, innovation probably one of the most challenging issues that managers face. How about you?

There are a lot of reasons why innovation is so difficult; here are some of the most common ones:

- Innovation is so difficult because it's tremendously **complex**. New ideas are difficult to find, and great ideas are rare. And then turning them into useful, marketable products and services is by no means straightforward. Consequently, many managers shun the pursuit of innovation and instead focus on doing what they already do well. But this, of course, leaves them vulnerable to unexpected changes.

- Managers with P&L responsibility are measured and rewarded based on **short-term** results, but innovation is almost always a short-term cost with only a long-term reward. Hence, innovation is systematically dis-incentivized.

- Innovation is difficult because it's immersed in **uncertainty**. Everyone has heard stories about ideas that looked great on paper but failed anyway, and faced with such uncertainties the risks seem quite unpalatable.

- Innovation is difficult because what works in the normal course of business is often the opposite of what works for innovation. Businesses run on **historical information**, for example, but innovation runs on future visions and information gathered from the edges, not the mainstream.

- Many workers and managers don't grasp the difference between **practices** that help innovation and those that hinder it.

- Innovation is difficult for most organizations, particularly the larger ones, because their processes and rewards are focused on **conformity** and **predictability**, and they tend to punish the unpredictable sorts of thinking processes and behaviors that lead to new ideas. Creative people are undisciplined and even "unmanageable." But now that innovation is essential, they're essential too.

There are lots of other reasons, too, but you get the idea: innovation is difficult. But regardless of the specific problems you face, you're doubtless aware that in today's global market environment of ever increasing competition, where companies you've never heard of are working hard to take away *your* customers, innovation is also essential to your company's survival.

Which is why most executives find themselves thinking more and more about innovation, wondering how to increase the innovation performance of their own organizations, and looking for ways to improve their innovation *process* in the hope that it will also improve their innovation *results*.

But now even this is not enough. The nature of competition today has made innovation itself insufficient, because just having some ideas and bringing them to market does not assure a successful future. What you need instead is Permanent Innovation, the process of innovating regularly, constantly, & continuously, by developing an organizational culture that embraces innovation as a core value, practices innovation as a core methodology, and produces innovation as a consistent output.

If this description fits your needs, then you're reading the right book. The goal here is to provide you with a complete map of the essential strategies, principles, and practices of permanent innovation, to help your company to become a permanent innovator, and perhaps even a leader.

What's Different?

There are lots of books on innovation, including some that are very good. Most of them, however, focus on one or another particular topic, on a narrow analytical framework or a single innovation tool within the vast range of the innovation universe.

The intent here is different. Permanent innovation covers the entire innovation spectrum, so this book encompasses the broad span of issues and problems that constitute a comprehensive approach.

It begins with a discussion of the core issues concerning innovation strategy, and then offers a detailed description of the permanent innovation practice, including specific suggestions on how to create an innovation culture in your organization. It also explains a wide range of specific tools, and describes how they can best be used.

Key Concepts

The permanent innovation process is based on four key concepts:

First, there are **four different types of innovations**:

- Incremental innovations
- Product & technology breakthroughs
- Business model innovations, and
- New ventures.

Each of them addresses a different aspect of the competitive situation - incremental innovations enable you to keep pace with the competition, while breakthroughs, new business models, and new ventures can put you significantly ahead. Unfortunately, most companies focus only on incremental innovation, even though a broader practice that involves all four types is really necessary for survival and success.

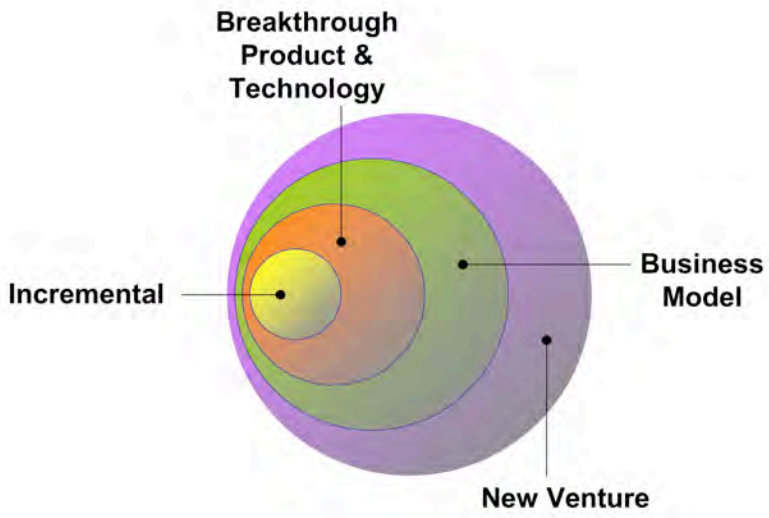

Figure 1.
The 4 Types of Innovation

The **second** major concept is that to succeed at innovation **you have to have to know <u>how</u> to innovate.** You have to have better insights that become better ideas than your competition, and that you have to test and develop these ideas through rigorous processes, which I refer to here as "methodology." Consequently, most of the chapters of this book are about this methodology.

The third major idea of **permanent innovation is a method that occurs across five stages**: ideation, targeting, innovation development, market development, and finally normalization, at which point the process of innovation has become so deeply embedded into the organizational culture that innovation is a permanent characteristic. These stages will be described in detail in Parts 2 and 3.

While the actual process of innovating is necessarily messy and suitably multi-faceted, this diagram shows the steps that must happen along the way, from the moment when you begin pursuing new insights through to the development of an organizational culture that exemplifies permanent innovation.

While it's simple enough to say that you need great innovations to make a great business, and that it takes great ideas to make great innovations, there's a Grand Canyon of difference between knowing the story and actually implementing successful methods and programs; hence, the emphasis here is on defining the concepts *and* on implementing them. Because none of this is really simple at all.

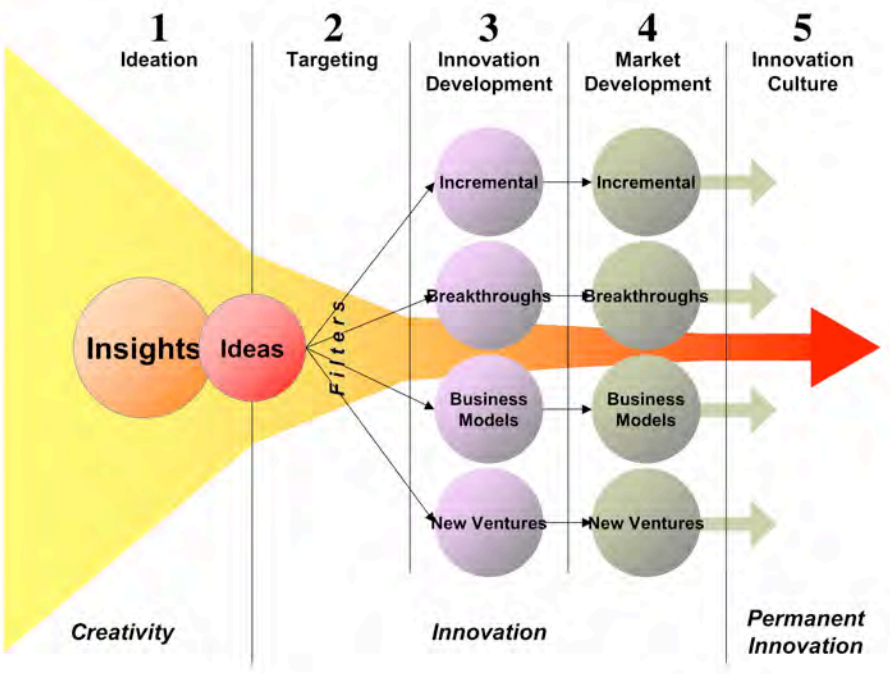

Figure 2.
Permanent Innovation Methodology
The four types of innovation shown across the 5 stages of the innovation process.

And the **fourth key point** is that to succeed at innovation you can't rely on any single point of view. Innovation happens in the complex milieu of the competitive marketplace where people you'll never meet are working to take away your market share. Many of these people are very smart, and very creative. **The only way to out-think and out-create them is to find and exploit a broad range of strategic innovation viewpoints:**

- **Top-down**, viewpoints emanating from senior managers.
- **Bottom-up**, viewpoints emanating from people throughout the organization.
- **Outside-in**, viewpoints emanating from everyone, including customers, vendors, competitors, and the world at large, and
- **Peer-to-peer**, viewpoints emanating from partners.

•••

Over the coming years you'll probably spend a lot of time working to improve the innovation capacity and performance of your own organization. You'll study key innovation principles, and you'll design methodologies to enable your organization to make innovation a regular and consistent part of how it operates. Along your journey, I hope that you find this book helpful.

Part 1

Innovation Foundations

Chapter 1: Great Ideas, Great Innovations, Great Businesses
Chapter 2: Innovation & Strategy: The Nature of Change and the Necessity of Innovation
Chapter 3: The Essential Definitions

Chapter 1

Great Ideas, Great Innovations, Great Businesses

Permanent Innovation Principle #2:

Four Types of Innovation

There are four types of innovation: incremental, breakthrough products & technologies, new business models, and new ventures.

Taken together, all of your innovation initiatives constitute a portfolio, so as you design your portfolio you'll have to decide how much effort and investment to allocate to each type. Each requires its own specific set of processes, tools, and teams, who will be engaged in the search for the future, which is what the search for innovation is all about.

You care about innovation because you know that great innovations often lead to great businesses, and you want your company to be a great one. You may also recognize innovation as the safest pathway to survival, since today's highly competitive markets put increasing pressure on your organization and you'll surely have to innovate to retain your share. Thus, Permanent Innovation is how companies adapt, how they grow, and how they create their futures. On the other hand, companies that don't innovate often disappear entirely, their lack of innovation a cause and a consequence of the inability to adapt to changing conditions.

Key Questions for this Chapter:

1: What are the four types of innovation?
2: Why is business model innovation important?
3: What is new venture innovation?

The starting point on the road to permanent innovation is your commitment to making it happen. Then come the ideas, but great ideas don't just magically appear; you have to work hard to find them. Turning great ideas into great innovations is also a lot of work, and so is bringing great innovations to market.

Doing all of this effectively requires not just good management intuition, but also effective methodology, and as you come to understand the nuances of methodology you'll discover many critical distinctions. For example, there's not just one major type of innovation to target, but four: Incremental innovations, which are usually the simplest; technology and product breakthroughs, which are rare and often very expensive to develop; new business models, which are perhaps the most difficult to achieve but often the most valuable; and new ventures, which leverage existing organizations into new markets. We will examine each of them in turn.

Incremental Innovation

Incremental innovations are also sometimes called continuous innovations. They're generally modifications to

existing products and services that improve functionality, reduce cost, or even change appearance just for fashion's sake. Even seemingly trivial ones can be important because they enable a company to keep up with the competition and maintain market position, which means they can be essential to cash flow.

When you bring new incremental innovations to market in advance of the competition you'll probably improve your market position, but even if you introduce them after your competitors have done so it may also be important, because it can prevent market share from eroding by appealing to existing customers who have been holding on, patiently waiting … and hoping….

Among the four types of innovations, incremental innovation is the most intuitively obvious. Material consumption in the Western world is largely built around the idea of progress, and incremental innovation is tangible, day-to-day evidence of it. The idea that products should be better today than they were yesterday, and that they'll be better still tomorrow is taken entirely for granted, and to an astonishing extent it's true. Compare this year's cars, computers, phones, toys, or appliances to the best of five or ten years ago and countless improvements are quite obvious - most products are higher quality, more attractive, and they work better.

Seen from the inside of any organization, the seemingly-mundane process of creating incremental innovations is the bread and butter of product development teams and marketing groups that focus on keeping up with competitors and protecting market share.

As a matter of practical management, pursuing incremental innovation is frequently an exercise in logic and in learning. By figuring out how to offer a product to your customers that's 5% better, or 2% faster, or 3% cheaper, you win their business again; or, failing to do so, your competitor may.

Taken to strategic extremes, incremental innovation can also be a compelling, effective, and even aggressive strategy in and of itself. For example, between 1980 and 1990, Sony produced a total of 160 different versions of the Walkman, which amounts to a new model on average every 25 days. Many of the changes from one to the next were superficial or minor, but the overall pace of advance was nevertheless impressive and reflected the behavior of a recognized leader in the consumer electronics field. With a focus on its long-term position in the market, the company chose, in effect, to reinvest heavily in product innovation rather than accepting the higher profits that they might have earned in the short term. The consistent process of incremental innovation did indeed reinforce Sony's image as a powerful force in the marketplace.

Another telling example is the Toyota Production System, pioneered by Toyota's legendary head of manufacturing Taiichi Ohno. Over a period of 30 years during which Ohno kept his focus on incremental improvements in manufacturing and assembly, Toyota became the world's most efficient, most

admired, and highest quality manufacturer of cars. Ohno's efforts and his leadership helped Toyota to achieve the most efficient new car manufacturing process in the world, setting standards and developing methods that have been copied by manufacturers in all kinds of factories around the world.

Among the innovations he pioneered across the entire production system were significant improvements to the process of changing the assembly line over from one model to another. These efforts enabled Toyota to cut changeover time that initially required two to three hours, to less than an hour, and then to fifteen minutes, and then down to merely three minutes (overall, an improvement of 60x), giving Toyota an enormous productivity advantage over its competitors.[1]

Since they're important to short term success, easy to understand, and relatively low risk, most organizations invest the majority of their innovation resources in incremental projects. By themselves, however, incremental innovations are never sufficient to assure the long term future of any organization. The three other forms of innovation are also vital to the future: breakthrough product and technology innovation, new business model innovation, and new venture innovation.

Breakthrough Product and Technology Innovation

Breakthrough technologies are significant or radical departures from whatever's already available in the market. They're sometimes referred to as "discontinuous innovations" or "rupture innovations," because they disrupt the marketplace, which is the desired effect, or because they disrupt the organization that comes up with them, which is usually not the goal.

Throughout the early stages of the industrial economy and well into the 1960s and '70s, when people spoke of "innovation" what they almost always meant was "technological innovation" that showed up in dramatically new or just slightly improved products. After all, two centuries of progressive technology innovation had created a society that was once utterly unimaginable. The material standard of living of the average person had been elevated to a level that exceeded what the richest of kings and emperors had possessed just a few short centuries before, and in this social, cultural, and economic transformation of human civilization, technology of every type and form played a decisive role; and of course it continues to do so.

---

[1] Taiichi Ohno. *Toyota Production System*. Productivity Press, 1988. p. 39.

The industrial revolution carried on for decades, and companies invested heavily in search of technology breakthroughs that could change the market structure. Research and development groups found them by the dozens, and the companies with the most effective R&D often became market leaders across a wide spectrum of industries, from minerals and manufacturing to high technology and even distribution.

The following story illustrates the disruptions, the risks, and the rewards of breakthrough innovation in the auto industry. During the 1970s, a product design team at Ford developed an idea for a new type of car, but when Ford top management rejected the idea, the team moved to Chrysler. There, however, the idea was rejected again.

Why? To begin with, there was no market research to justify the new design. In the words of team leader Hal Sperlich, "We never got a letter from anyone asking us to make a minivan. To the skeptics, that proved that there wasn't a market." In addition, as the cost to develop and bring a new car to market was in the hundreds of millions of dollars, the magnitude of the risk made the project unfeasible in the absence of proven market demand.[2]

During this period Chrysler was in deep trouble. Because of its universally poor quality, the company was failing in the market and was close to bankruptcy. A new management team was brought in headed by Lee Iacocca, and they decided to risk going forward with the new vehicle.

Before the minivan, buyers had to choose between a station wagon or a cargo van that had been converted to passenger use with windows and seats. If you had a large family you probably had one or the other. The problem with the station wagon was that it wasn't large enough to hold a big family and their stuff, while the van conversion wasn't ideal because it was too big to fit in the garage. In addition, it drove like a truck (because it was one), big and awkward. Hence the concept of a smaller version of the van, and hence the name, "minivan."

The huge market for a minivan is obvious now, but it was by no means evident at the time. As it turned out, however, the minivan saved Chrysler: between 1980 and 1990 Chrysler earned about $30 billion on minivan sales, enough to return the company to financial health and make it once again a credible competitor in the American auto market.

Today the minivan remains one of the most popular cars on the road, and because Chrysler was first to introduce it into the American market, the company still has strong brand recognition as a minivan innovator. More than 50% of all minivans sold in the US are Chryslers.

In hindsight, it's clear that the managers at both Ford and Chrysler who rejected the minivan concept made a foolish decision. But what did it look like without the benefit of hindsight? Imagine that you're on the executive committee and you have to decide which new cars to develop. Each project you choose will cost your company an investment of $1 billion or more, so

---

[2] John Huey. "Nothing Is Impossible." *Fortune* Magazine, September 23, 1991.

how much would you be willing to risk to develop a car concept which is so new that not one has ever been sold? When you look at it this way, you can see that in rejecting the minivan these managers made a *rational* choice. But hindsight tells us that they didn't make the *right* choice, and this is precisely what makes innovation so difficult: it isn't necessarily rational, and breakthrough innovation almost never is.

Why? Because when you're dealing with potential breakthrough innovations the one thing that's usually lacking is solid, irrefutable evidence that you've got a good idea. So what do you do? After all, if you reject *all* new ideas then it's likely that your company will be a perpetual follower, and may even end up on the scrapheap. So you've got to innovate, but you want to reduce the risk.

The solution to this dilemma lies in the use of innovation methodology, the essential practices that take the guesswork out of innovation, which are the subject of Part 2.

Business Model Innovation

The third type of innovation is business model innovation, which has evolved during the last few decades as a critical source of competitive differentiation.

Beginning in the 1980s a new pattern emerged as an entire generation of leading companies developed significant competitive advantages not by investing in the development of breakthrough products or new technologies, but by figuring out how to deliver products and services in innovative ways that created superior experiences for their customers. These companies developed *new business models*, and they are exemplars of business model innovation.

Among them we would count many companies and stories that you already know well:

• **Wal-Mart** developed a series of supply chain innovations that evolved into the core of a new business model in mass market retail. First, the company proved conventional wisdom wrong by showing that large stores could succeed in rural America. The company then invested heavily in an innovative distribution model that significantly reduced its shipping and warehousing costs, but rather than capture these lower costs in the form of

higher profits, Wal-Mart lowered its prices and thereby created an entire generation of loyal customers. As a result of all these business model innovations, Wal-Mart displaced the stagnating Sears to become the leading American retailer, and then the world's largest.

• **Home Depot** redefined what it meant to shop at a lumber yard and at a hardware store by combining them into a new business model that now dominates the US market. It's major national competitor, Lowe's, was forced to copy Home Depot's model, and Ace Hardware was forced to reposition itself as the anti-Home-Depot, the small local store that's easier to get into and out of quickly.

• **Charles Schwab** redefined the relationship between the stockbroker and the customer, creating a new kind of business, the discount broker. By providing excellent service to individuals who manage their own investments, Schwab discovered a huge market. However, once Schwab defined the new model, the big brokerage houses then moved downstream into its markets and Schwab did something that most companies are incapable of: it *re*defined itself and created new services to compete in a rapidly evolving market. Then the internet came along, and Schwab entered its third generation business model, providing online services to match a new generation of competitors. These transitions weren't easy, especially the last one, but with each new iteration of its business the company showed a remarkable capacity to innovate and reach its target customers.

There are lots of other business model innovators, so to this list we might add **Fedex, Starbucks, Nordstrom, Saturn, Nike, Visa, Dell, Southwest Airlines**, and many others. But no matter how long the list gets, the message is still the same: Many of today's most successful and most imitated companies have demonstrated that leadership can come not only by exploiting breakthrough technologies, but by defining new business models that meet customer needs in new ways. The key is *not* new technology, but rather new experiences delivered by new forms of organization. And while they all certainly employ technology in service to their new models, it's not technology per se that defines the critical innovations, but rather the way a company relates to customers.

Let's go into greater depth by considering Southwest Airlines. The company started one day in 1967 when Texas entrepreneur Rollin King wrote the company's business plan and engaged his attorney, future CEO Herb Kelleher, to start raising money for the new business. Kelleher said it was a lousy idea; King told him to work on it anyway.

Legend has it that King sketched the essence of the business idea on a cocktail napkin, drawing three dots and three lines to represent the three cities they would serve, Dallas, San Antonio, and Houston, and the three

routes connecting them, but the truth is that Rollin had a Harvard MBA and the business plan was a detailed one. Thus, Southwest Airlines was born.[3]

A year later the company got its license to fly from the FAA, but it took three additional years to overcome the legal obstacles mounted by Southwest's competitors, who wanted to keep the company out of the air. Toward the end the company had run out of money and Kelleher was working without pay, but finally in 1971 Southwest overcame the last legal challenge and started flying, but barely, with 3 airplanes flying the three-city loop. Soon, however, the company ran into financial difficulties, and was forced to give up one of its airplanes. In order to keep the business going they had to succeed with the two remaining aircraft, which led them to consider just how quickly they could unload, service, and reload an airplane. At the time, their competitors needed an hour or more to turn a plane around, but Southwest reduced that by about half.

Thus, partially by accident Southwest discovered an innovation that became the core of a new business model focused on lower costs and lower fares, which enabled Southwest to become the Greyhound bus of the air. It grew steadily into a major player in the US airline industry based on organizational innovations that kept costs under control. For example, by emphasizing work force flexibility Southwest attains higher productivity, which in practice requires employees with an open, flexible attitude as well as the training to perform many tasks. Hence, Southwest developed the principle of "hiring for attitude and training for skill." The company also standardized on a single type of aircraft to keep its operating costs low, and chose to serve airports that charged low landing fees and which were not well served by existing carriers. The company did all this with a feeling of warmth and a sense of humor that still supports a very high degree of customer loyalty.

While its major competitors lost a combined total of about $35 billion between 2000 and 2005, Southwest made a profit in each quarter except one, and today its stock is valued higher than its five major competitors - combined. Southwest's market capitalization is about $12.9 billion, while American, Continental, Delta, Northwest, and United have a combined value of $9.9 billion, even though their combined revenues are ten times greater ($79.47 billion vs. $7.94 billion for 2005).[4] The stock market has not forgotten that no organization has a future unless it earns profits.

The profitable discount airline business model that Southwest pioneered has been widely imitated by startups such as Jet Blue, which is itself growing fast and remains profitable most quarters.

One way to understand the difference between Southwest's model and that of its more conventional competitors is to recognize that it's possible to *overperform* in a given market segment, and to incur unnecessarily high

---

[3] Joseph Guinto. "Rollin On." *Spirit Magazine*, June 2006.

[4] Figures calculated on May 31, 2006.

costs as a result.[5] Given the choice between low-fare Southwest and a higher-fare, higher service offering, people are choosing Southwest in significant numbers.

United Airlines tried to imitate Southwest, but failed with its Shuttle and is trying again with Ted. Delta created a new airline called Song to imitate Southwest, while US Airways and America West are merging to create yet another discount competitor. In Europe, 30 to 40 new discount airlines were established between 1995 and 2005, led by RyanAir and EasyJet, both of which are also profitable.

All of these airlines however, the discounters and the full-service lines alike, are facing enormous challenges due to the rising cost of jet fuel, and even Southwest is lagging behind its profit targets. There remains, therefore, enormous need for innovation throughout the airline industry.

In summary, the innovations that have made these companies leaders are not based on technology, but rather on finding new needs and new ways to serve them in the framework of new business models. But beware, for this may be the most difficult of the four types of innovation because it requires extraordinary insight and exceptionally fortuitous timing. When it clicks, however, the results are revolutionary.

New Venture Innovation

You've probably noticed that each type of innovation has a character significantly different than the others, and as we'll see in Chapter 7, it also takes four different innovation methodologies to fully develop them.

The fourth major type of innovation is new venture innovation, which seeks to enhance the prospects for the future by enlarging a company's scope of operations into markets that are so different from its current markets that they must be addressed by entirely new entities, new ventures.

---

[5] Michael Porter. *Competitive Advantage*. The Free Press, 1985. p. 16. See also, Clayton Christensen. *The Innovator's Dilemma*. Harvard Business School Press, 1997.

While new products, technologies, and business models may play key roles in a new venture, this type of innovation constitutes a distinct category because the creation of a new venture is an *organizational* response to innovation, a journey into new territory where new skills, perspectives, and indeed an entirely new identity are required. Thus, when an emerging business is so different in its nature, process, market, or technology that the people running the existing venture don't have the needed competences to run it well, then it is logically constituted as a separate company in and of itself, a new venture.

We know these as spin-offs, subsidiaries, acquisitions that open new markets, and venture capital-supported start-ups. They're nothing new of course, but what's important to our story is the idea that the future of a company may be so far outside of its current competences that new ventures provide an evolutionary path to get there.

General Electric, for example, was an industrial manufacturing company in 1960 but it transformed itself into a financial services giant by 2005. More than half of GE's revenues and most of its profits now come from financial services.

At Shell, the process of creating new ventures has been formalized in a trademarked business process called GameChanger,™[6] a highly structured method of transforming compelling new ideas into new businesses. GameChanger was launched inside of Shell more than a decade ago by managers concerned that there weren't enough new ideas coming from inside the company.

Through a series of workshops, new ideas are formalized and developed into specific business proposals, and many are then funded. To date, hundreds of millions of dollars of value has been created through this program, and now it's available not only to Shell insiders, but outsiders as well. If you go to www.shell.com/gamechanger/ you'll find a detailed description of the GameChanger process and an invitation to submit your own ideas for consideration.

Another example of new venture innovation is Saturn, the GM subsidiary that was created specifically to revitalize GM's entry level offer. For its first decade Saturn was an emerging leader in the auto industry, but its innovations were focused not on the technology of the car itself, for Saturns were quite run of the mill, but rather in the way its cars were sold and serviced. In its early days, the company attracted a strong following, and became a trusted brand in the US auto market. Its quality standards were high, as was customer loyalty, and it looked as though its innovations might point the way to the future of the industry.

But then GM scaled back its support for Saturn, and deprived the company of capital needed to develop new models. With nothing new to sell for too many years, competitors passed Saturn by and the brand stagnated.

---

[6] GameChanger is a trademark of Royal Dutch/Shell.

Eventually Saturn lost its operating independence and was folded back into GM, becoming just another division alongside the bland Chevrolet and Pontiac.

Was Saturn's business model too bold and too disruptive for GM's top management to tolerate, or were the company's capital returns insufficient to justify continuing the experiment? It's not clear. But what is clear is that for a time Saturn showed that a new venture with a new business model could have significant impact in the industry.

In Silicon Valley and other hotbeds of entrepreneurial activity there's also a fevered pace of new venture innovation, but of course it has a different character since new ventures there are often started by people who have left the safety of their old jobs to go out on their own.

Stimulated and supported by the ready availability of high-risk investment from angel and venture capital investors, new ideas get turned into new companies at a prodigious rate. Although only a fraction of these new ventures will ever succeed, when they do the magnitude is usually significant and the financial returns are impressive, enabling the leading venture capital investment funds to average returns of nearly 20% per year despite the many failures. Some of the most notable new high tech and biotech companies of the last few decades were Silicon Valley start-ups, including Yahoo, eBay, Cisco, Google, Apple, Oracle, Genentech, and Chiron.

High technology is a magnet for new venture investment because the pace of technological discovery remains so high that new opportunities seem to emerge daily. Hence, leading universities are also hotbeds of entrepreneurial thinking as students explore new technologies and then try to figure out how to turn them into new businesses.

•••

The following table summaries the four different types of innovation, and shows examples from many different industries.

Figure 3.

The Innovation Table

Examples of the four types of innovations in various industries.

	TYPE OF INNOVATION			
INDUSTRY	Incremental Innovation	Breakthrough Product or Technology	New Business Model	New Venture
Autos	Remote Controlled Locking and Unlocking	Minivan, Airbags	Saturn	Saturn (GM); Lexus & Scion (Toyota)
Personal Computer	Bigger Hard Drives, Faster Processors, Bigger Memories	PC; Graphic User Interface (Mac; Windows); iPod	Dell; iTunes	IBM PC Division
Financial Services	Zero Points Home Loans	ATM	Charles Schwab	Visa; GE Capital
Food / Grocery	Organic Produce	Genetic Engineering	Whole Foods; Newman's Own	?
Airline	Frequent Flyer Programs; e-tickets	Online Reservations	Southwest Airlines	Shuttle; Ted (United); Song (Delta)
Telecommunications	Push Button Phones	Cell Phones	Working Assets	Cellular One (AT&T)
Health Care	Digital Thermometers	MRI / CAT Scan	HMO	?
Retail	Self Checkout	Bar Codes	Home Depot	Old Navy (Gap)
Office Supply	Recycled Paper	Post-it Notes	Give Something Back	?

Media	Live Remote News	Blogs	CNN	MSNBC (Microsoft & NBC)
Trucking & Transportation	Cross-Docking	Bar codes; GPS	Fedex	?
Chemicals	*New & Improved!*	Nylon	?	W.L. Gore (DuPont)

One of the important questions that the table suggests is this one: In the early stages of idea development, how do you know which type of innovation you're dealing with? It's may be intuitively obvious when a new idea will become the basis of an incremental innovation, and experience suggests that about 95% of all ideas are incremental in nature. But the difference between technology and product breakthroughs, new business models, and new ventures may not be so clear at the outset, and only as you work with ideas in these categories will the right positioning become evident.

Nevertheless, whether you're in a brand new field or an industry with centuries of history, innovation will play a key role in your future. New technology has enormous impact on even mature industries such as retail, chemicals, steelmaking, agriculture, and shipping, and the pace of change will surely continue to increase, creating lots of new opportunities and threats in old and new industries alike. For example, trucking companies now rely on GPS and the Internet, and radio frequency ID tags are coming soon not just to products in boxes, but also to cattle out on the open range, while farmers use satellite imagery to help them plow and fertilize, computer chips will soon be embedded in your family pet as well as perhaps your family members, and bar codes that were invented to track rail cars are now on all 60,000 products in your supermarket.

The results of innovation are everywhere, and they affect each of us and every company. Thus, all four types of innovation should play a role in your thinking and in the future of your organization, and in the following chapters we'll explore the why (Part 1) and the how (Parts 2, 3, and 4), digging much more deeply into the many critical issues you'll have to consider as you work to make your own company an innovation leader.

Action Steps:

1: **Audit the innovations your firm has introduced over the last five years and look for the patterns. Which types have you introduced, and what does that tell you about your firm's innovation practices?**
2: **Make an Innovation Table for your industry. Which companies introduced which innovations? What does this tell you about what the future might hold?**

Chapter 2

Innovation & Strategy:

The Nature of Change and the Necessity of Innovation

Permanent Innovation Principle #3:

The longer you wait to begin innovating, the worse things will get.

Companies that procrastinate usually pay a heavy price in the form of lost market share and lost profits, and ultimately the lack of innovation can significantly diminish their future prospects. The competition isn't waiting, and you shouldn't either. Create your action plan now, and starting implementing it now!

Given that the key facts of the marketplace are the acceleration of change and the intensification of competition, now it's time to examine these patterns in more detail and to explore the tight linkage between innovation, change, and strategy. Hence, this chapter examines the broad context in which innovation has to take place, and discusses the strategic role of innovation in the changing market.

It's organized around the following Key Questions:

1: **What's the relationship between innovation and change?**
2: **How is change changing?**
3: **What does innovation have to do with the knowledge economy?**
4: **What's the relationship between innovation and strategy?**

Innovation is a critical factor in the competitive marketplace, and the influence and impact of innovation in the global economy are unmistakable. Managers know this, and customers know it as well. Economists know it; employees know it; and so do you. But that doesn't make it any easier to accomplish.

- Managers recognize that developing innovations is one of their most important responsibilities; the competitiveness of their firms probably depends on it.
- Customers recognize innovations as new sources of value, and they shop for them enthusiastically and relentlessly. After all, most shoppers are out looking for the coolest new stuff - cars, iPods, cell phones, music, movies, games, clothes, and toys, we love them all when they're new because we love innovation!
- Economists know that innovation is essential to the well-being of every company and every nation, and in general terms they understand that companies which fail to innovate often fail to survive.
- Employees know it, because they know that when their organizations fail to innovate their jobs are at risk.
- And you know it too, because you've seen so many well-known companies disappear, companies that used to be household names but then failed to innovate, and eventually disappeared.

A list of recent failures includes some of the world's best-known brand names: AT&T (acquired by SBC in 2005), MCI, Nextel, and most of the Baby Bells are gone; Sears was acquired by K-mart in a merger of failing business models, while Montgomery Ward collapsed entirely; Chrysler is part of Daimler, Oldsmobile and Plymouth are gone, and Buick may not be far behind, while parts makers Delco and Dana are in bankruptcy. Digital, Compaq, and most of IBM's mainframe competitors are gone, while IBM's PC division was sold to China's Lenovo. Among the old oil giants, Philips,

Texaco, Unocal, and Conoco have all been acquired. Among the airlines, Eastern Airlines, Western Airlines, Southeast, North Central, Pan Am, Swissair, Sabena, and TWA are gone, as is America West, and many of the survivors are in bankruptcy. Bank of America was swallowed by NationsBank, while First Interstate and most of the regional banks have been swallowed into national conglomerates. A long list of notable internet pioneers have folded, among them Netscape, Napster, and Webvan. Peoplesoft and Seibel became part of Oracle, and of course the old rust belt is much different now that Bethlehem Steel and numerous mines, mills and factories have been closed down.

The same factors are being felt around the world, as new companies are rising while old ones fail in Europe, the Middle East, Asia, and indeed everywhere else. In India, for example, economic reforms initiated in 1991 by the government opened protected Indian markets to increased competition from global players, and that led many previously well-established Indian companies and brands to either extinction or being sidelined. Major change has come to the Indian auto industry, as well as sectors including appliances, soft drinks, consumer electronics, and telecommunications. Indian companies such as Bharti, Tata, Reliance, and Wipro are developing strong leadership positions, and competing well against global brands from Europe, North America, and Japan.

You might reply that many of the companies I mentioned above didn't fail, they were acquired, and that's certainly true. But few managers, other than those in early stage companies, would choose to be acquired if the option of remaining independent was seriously viable. The financial, operational, and psychological impacts are significant - layoffs, relocations, pay cuts, and reassignments - and so acquisitions are inevitably morale busters. They also fail quite frequently, because although acquisitions often look good on paper, in reality the track record of success isn't very good. Most of the time it costs more than anticipated to integrate an acquired company, and the returns are much lower than expected or promised. As James Surowiecki points out, "Roughly two-thirds of all mergers end up destroying shareholder value, meaning that the acquiring company would have been better off never making the deal."[7]

While the dynamics of the marketplace are so complex that innovation certainly doesn't guarantee survival, organizations that consistently lag in innovation may be heading for problems, because innovation is the primary mechanism by which companies adapt to change. And since tomorrow's markets will be changing even faster than today's, the necessity to innovate will inevitably become even more pressing. The sooner you do something about your innovation problem the sooner things can get better.

---

[7] James Surowiecki. *The Wisdom of Crowds*. Doubleday, 2004.

What's Coming Next: The Innovation Economy and the Threats of Change

Companies and those who manage them are measured and rewarded according to how they perform compared to other companies and other managers. A key metric is ROI; investors expect to earn a healthy return on capital, and that company profits will provide the capital for still more growth. When things are going well this becomes a self-sustaining process, and thus it is in the very nature of successful public companies to grow.

Conversely, public companies that don't find a way to grow become unattractive to investors, and may soon find themselves in play as targets for acquisition, or even breakup at the extremes of non-performance. The upshot of this story is that corporations that survive must grow, and in a somewhat perverse way they are also compelled to grow in order to survive. While the dynamics of this situation are not entirely healthy or perhaps even sustainable, as many critics of modern society have suggested, for the moment they are the harsh realities that senior managers must recognize.

Today's largest companies have been caught in this cycle for decades, and they have consequently achieved unprecedented size. They have access to enormous amounts of capital, and they are still compelled to look for new market opportunities to support continuing expansion. They are, in a word, voracious.

There are, however, some side effects to being very large, as illustrated by the following story about Hewlett-Packard. Throughout its forty year history, HP's research laboratory has created an impressive array of breakthrough technologies, including the ink jet printer, one of which is probably sitting somewhere nearby as you read this page. As HP grew, however, the very fact of its growth impacted on the kinds of projects that HP Labs could undertake. By 1993 HP was a $20 billion company, and since the compulsion to grow affected the entire corporation, the Labs needed to produce new products that would provide hundreds of millions of dollars of additional sales.

To attain these goals, Lab managers therefore had to focus on ideas that they *thought* had the potential for sales on the order of tens of millions of dollars. The problem was, and remains, that it's extremely difficult to estimate the value of an idea. You can guess, but you can never know. Who, for example, would have dared to predict the eventual market value of ink jet printing on the day when the idea first emerged? No one could, of course, yet today HP sells $25 billion of printers annually, while the test equipment operation that was HP's core business for its first four decades has been spun off as a separate company, Agilent.

So how do you choose which ideas to invest in, and which

ideas to abandon?

R&D managers are supposed to know how to make these decisions; but their task gets progressively more difficult because the compelling need for growth drives them toward ever-higher revenue targets, even as the technologies they're working with become ever more specialized, complex, and therefore unpredictable. Because of the need for big hits, basic research is constantly under pressure, and small projects routinely get dropped.

The dilemma is that in any portfolio of new ideas under development, a few will be very successful, some mediocre, and many will fail; but if you try to cut out the failures too soon, you risk making the wrong choices.

As an alternative to growth through R&D innovation, large companies constantly look outside of their established geographies for new markets in which to sell existing products and services, and as a result they now compete in every market of significant size everywhere in the world. (As we will see in Chapter 5, they're also looking outside for new ideas.) The reach of their activities - from the creation and processing of raw materials to the delivery and sale of finished goods - is steadily shrinking the world and drawing ever more people into the globalized economy. Over the years, multi-national companies have become massive undertakings that organize more people doing more things than any human activity in history, other than perhaps the great armies of the 20th century's massive global wars.

As companies grow larger still in a constant search for opportunities to invest, they find new ways to impact the market, which really means that they find still more ways to create change. Change begets still more change, and as long as a company wants to remain in business, it cannot escape the treadmill of growth and change, nor the need for innovation. The experience of acceleration is therefore not an illusion, but a potent driving force of economic reality, and thus of modern life. It is the critical context within which innovation is decisively important.

Creative Destruction

The great 20th century economist Joseph Schumpeter recognized the pivotal role of innovation as a relentless driver of change. Old ideas, old products, and old companies are constantly displaced by new ones, which led him to describe capitalism as a process of "creative destruction," a continual and massive churning of the market that brings new companies to the fore as it pushes others

aside. History is as littered with the remnants of fallen companies that were once great, as it is with fallen cities and empires.

But why should great companies falter? This is perhaps one of the greatest surprises in business, for if any organizations should succeed and endure, why shouldn't it be the ones with the most resources and the largest customer bases, not to mention most cash and the broadest global reach? The answer is that they may not be the ones with the best ideas!

Somehow in the process of becoming successful, large, and global, the policies, practices, and habits that worked so well in stable conditions, and which were quite necessary for largeness, also rendered these organizations non-adaptive. Confronted with rapid change, they are not organized to respond adequately; again and again we have seen companies grow huge and then struggle to sustain their market position because their very hugeness inhibits their ability to adapt.

Peter Hall's compelling study of creativity throughout history, *Cities in Civilization*, makes this point quite clearly, and while his subject is cities, he could just as well be talking about companies: "Cities that falter in the innovative process soon stumble, and their industrial base ides. Leaders in one generation will soon be harried by new competitors, coming up from behind; and unless they either develop new ways of producing old specialties, or better still derive entirely new products out of old traditions, they will be overtaken and disappear into industrial oblivion."[8]

When markets change and new ideas take hold, as they inevitably do, most large organizations can't and don't change as fast. Instead, newer, more nimble competitors capture market share by innovating where the entrenched giants cannot. Well, actually it may not be true to say that they *cannot*. But for whatever reason, and although they certainly could, they usually ***do*** not.

Thus, only a small percentage of companies persevere as industry leaders beyond a few decades, and most giants are unable to sustain their market position even that long. Many falter and disappear entirely, pulled down by their own lack of innovation.

Investors and analysts sometimes refer to this as "competitive fade," as they observe that few companies are able to rise above the average performance of their industries for much more than a decade. Investment professional Bartley J. Madden wrote a very interesting analysis of this

---

[8] Peter Hall. *Cities in Civilization*. Fromm International, 1998. p. 309.

phenomenon, in which he points out that, "High innovation stage firms turn innovations into successful business ventures and earn [returns] well above their cost of capital. At this stage, firms are opportunity rich and often seek external financing to more quickly exploit the abundant opportunities. Attracted by the superior opportunities, competitors attempt to duplicate the innovator's business model and/or improve upon it so that customers are served even more effectively. The tension between managerial skill and competition produces a fade of [returns] towards the long-term average of the corporate sector's return (which approximates the corporate sector's long-term cost of capital) and a fade of reinvestment rates towards the lower long-term average growth rate of the overall economy.

"Innovations in products, services, technologies, and processes overtake the advantages of earlier innovators, further reducing the opportunity for growth. **Firms that maintain well-above-average economic returns and reinvestment rates over decades must continually reinvent themselves in order to out-perform competitors.** The rate of fade thus is an indicator of managerial skill."[9] The link to innovation is obvious, and clearly there's a great opportunity to practice Permanent Innovation as an antidote to fade and a means of achieving above-average returns. Innovation as a way, in Maddens' words, through which companies can "continually reinvent themselves."

Constant change is a key feature of business, but it's not just business. If we look with a wider lens at five thousand years of civilization's extraordinary accomplishments in science, technology, the arts, politics, and commerce we find ourselves today at an exceptional moment when a global knowledge civilization is emerging upon a stunning foundation of technical and commercial know-how. A side effect of this ability to create new technology, new products, and new services - in a word, to innovate - is a global culture in constant change, an evolving culture that has largely outpaced the ability of managers to manage. Why hasn't management kept up? There a number of possible explanations, none of them necessarily definitive, but all of them intriguing.

The most compelling is that there's a gap between the reality of accelerating change and our understanding of what's really happening. Simply put, too many leaders have a flawed mental picture of the market because they don't grasp the magnitude and impact of change, and they underestimate its importance to their own organizations. They manage as though markets were stable when they're anything but; they create slow, hierarchical organizations that concentrate power, emphasize standardization, and seek conformity, when innovation and creativity would serve them - and their shareholders - far better. And these errors are compounded by an

---

[9] Bartley J. Madden. *Maximizing Shareholder Value And The Greater Good*. 2005. Available for downloading at: http://www.learningwhatworks.com/default.htm. Madden's calculation of returns is based on a metric that he invented called "Cash Flow Return on Investment," or CFROI.

analytical thinking style that promotes fragmentation, and causes them to lose sight of the big picture.

For a quantitative view, the history of the S&P 500 provides a concise picture of creative destruction at work. In 1930 the average lifespan of an S&P 500 company was 50 to 70 years; by 2000 this had shrunk by more than half, to 25 to 30 years. If current trends hold, by 2020 a full 75% of the companies listed on today's S&P 500 will not exist. [10] Change is reality; stability is utterly an illusion.

Let it therefore come as no surprise when your favorite blue chip stock turns into a fire sale candidate, for it is more likely that it will happen than it will not; no company remains immune from the effects of creative destruction, save by the effect of its own abilities to innovate.

Change and Exponential Change

When change happens, what actually changes? Here are some examples:

If your industry is like most others, product development cycles are getting shorter. Fifteen years ago, for example, companies in the auto industry took about four years to design and build a new car. Today it takes less than half that time, 18 - 24 months. Compression of the design cycle has fundamentally changed the nature of industry competition, but how has it been possible to make such drastic reductions? It is innovation that has made it happen, innovation in the *processes* of design, engineering, and manufacturing. Tools and methods such as computer-aided design, integrated management of design teams, platform architectures that enable firms to build many different cars on standardized chassis and engines, and lean manufacturing have all contributed.

At the same time, of course, countless innovations have been made in the actual product - the car. Many of them are profound improvements in safety (airbags, antilock brakes, better tires), performance, navigation (GPS), entertainment (DVD players and CD changers), and now with hybrids, fuel efficiency. The shape of the car hasn't changed much, but just about everything else has.

Like the development cycle, product life cycles in the marketplace are shorter too. New models come more frequently, and the time window in which a product must earn profits is shorter because its shelf life is compressed.

Globalization has also changed how companies operate. Manufacturing operations are disbursed around the globe, and the seas and

---

[10] Richard Foster and Sarah Kaplan. *Creative Destruction*. Doubleday, 2001.

airways are packed with work in process and merchandise moving between Asia, Europe, and the Americas. Software development and customer support functions followed manufacturing operations to Asia, and now when you call your credit card company or your phone company for support, chances are you're talking to someone in New Delhi instead of New Jersey.

Cell phones and the internet have brought universal mobility and 24/7 connectedness to the world's cities, and its hinterlands. American truckers use the internet to find loads; Asian farmers use cell phones to find out what prices their crops will bring; and Asian fishermen use the internet to get weather forecasts for the Indian Ocean,[11] while global currency exchange and securities traders move trillions of dollars at light speed around the world every day.

Fifteen or twenty years ago none of this was common. China was not the world's manufacturing hub; the internet was in its infancy; teenagers didn't have cell phones; and Asian farmers and fishermen had no connection to the broader markets or to the world's information stream. All of these examples, and countless others, show that across our society and around the world many social and economic processes are accelerating.

This is change from the inside, seen from the specifics. From the broader viewpoint we seem to have entered a period of change that has a rugged, fundamental quality. Economic globalization combined with technological advancement has brought the world to a different kind of change, exponential change.

According to Las Alamos National Lab scientist Norman Johnson, we have left the period of relative stability that prevailed during the mid-20th century and entered into a phase of much more chaotic change.[12] This is vitally important from a strategic standpoint, of course, because strategies that may have worked twenty or thirty years ago aren't at all relevant today, and may even be disastrous.

And of course the changes aren't going to stop. Computer chips will continue to get faster; biotechnology will permanently change health care and food production; nanotechnology will change materials and manufacturing; the store of recorded human knowledge will continue to grow without pause; and from all of this, accelerating

---

[11] Marco Visscher. "How one company brought hope to the poor." *Ode Magazine*, April 2005.

[12] Johnson describes three stages through which systems evolve: the formative early stages are chaotic; a middle fluid or cooperational stage; and a later condensed or stable stage. The economy from about 1960 through 1990 was predominantly stable, but Johnson suggests we have reentered a formative phase. Credit Suisse First Boston, Thought Leader Forum, 2000.

change will keep accelerating.

The trend of acceleration amidst a turbulent transition to the global economy is a vital fact of huge significance for managers, for companies, and for society as a whole, because it has enormous implications for all of the choices we have to make about the future. As former GE CEO Jack Welch noted, "When the rate of change in the marketplace exceeds the rate of change in the organization, the end is in sight." This brings us to the important question: **Do you manage with exponential change in mind?**

If the answer is, Probably not, it's because most of us operate according to beliefs that change is manageably slow, that markets are stable, and that the predictability and repeatability of a company's operations are the foundation of success.

Unfortunately, this clearly is not the case. Coping successfully with exponential change requires a different mental model, one that represents the world as it is - chaotic and complex - rather than as we wish or imagine it to be.

For when we take all of this together we understand that today's world of exponential change presents countless challenges, and if we select a single word to describe modern business then "complexity" might well be the best choice.

Not surprisingly, the problems of complexity are particularly important to the subject of innovation because the pursuit of innovation is itself a response to changing markets, and also because the process of innovation itself is also inherently complex. This partially explains, by the way, why innovation is so difficult, and it also helps explain why sound innovation methodology is so very critical.

The Forces of Change

As you consider the impact that exponential change will have on your markets and on your business in the coming years, it's also worth taking a broad view of the kinds of issues that you'll be dealing with. You might ask yourself, for example, what the impact of demographic change will be. Will the rapidly expanding number of retired baby boomers affect you? How will the increasing health care dilemmas change the attitudes of your customers?

Does immigration affect your markets? What about economic change? What role does globalization play in the operation of your business or the management of your supply chain?

Do changing social values affect the products or services you sell? What about the environment? Will global warming have a noticeable impact on your business, and what about the movement towards sustainability?

Some people suggest that sustainability could become a tremendously powerful factor in stimulating innovation throughout the economy; is your business positioned to take advantage of this possibility?

What role will rising energy costs play? New technologies?

Some of these trends and factors, of course, will not impact your business in isolation from one another. Health care, social attitudes, and technology are inseparable issues, and they're all linked to economic conditions around the world. Demographics and health care are closely linked, as are immigration and the availability of economic opportunities in poorer parts of the world.

As you think about these issues and the many others factors that the modern world confronts us with, you're working at the junction point between innovation and your organization's strategy. Managing this relationship well is going to be one of your most important challenges. While key innovations in any of these areas could provide your firm with the means to exploit change, or even to create change leading to significant competitive advantage, they will also constitute enormous difficulties.

The Innovation Portfolio

Strategy is about the future, and developing strategy is the process of thinking about the future, predicting it, making decisions about it, and taking action to create it. Since innovations are critical to the future, it's clear that the management of innovation is entirely strategic in nature.

The classical model of strategy development begins with an assessment of the future, a set of predications about what's going to happen, followed by the development of initiatives that align with that future.

The problem with this approach, of course, is that predicting the future is entirely risky. Given the reality of accelerating change and all the other complexifying factors of the modern world, the future is simply too uncertain to expect that a single reality is worth betting on. It makes much more sense to prepare for a multitude of possible futures by developing a strategic portfolio of initiatives and innovations.

The astute innovation strategy thus defines a range of initiatives that could become important under many different future states; in other words, a portfolio. The elements of such a portfolio - products, services, organizational approaches, etc. - will be applicable in a variety of different future conditions, and as events unfold some will prove to be invaluable while others will be irrelevant, remaining forever on the shelf.

With many projects under way at the same time, the typical, large R&D group is naturally managing a portfolio by default, so the for these organizations the question is not the existence of the portfolio, but its composition. The idea that the portfolio must be closely linked to the organization's strategy, however, is a surprisingly recent one, and has been labeled as the third generation practice in the long history of professional R&D.

The first generation, starting at the very beginnings of systematic R&D in the early decades of industrialism through the mid-1800s, was largely a randomized process of exploring basic science in the hunt for commercial opportunities. Thomas Edison's more focused approach was the prototype for the highly systematized process that was then perfected during World Wars I and II, mission-driven R&D.

Third generation methodology focuses on R&D portfolio management as a key element of organizational strategy, and it is recognized as a standard practice in the world of R&D management. It's described in the predictably-titled "Third Generation R&D,[13]" published in 1991, and includes a number of very sophisticated portfolio analysis techniques.

It is not, however, the last word. A fourth generation practice of R&D management has also been defined, which expands the scope of the third generation approach with a much greater focus on specific processes for creating breakthrough innovations. William L. Miller and I co-authored this book, now also a classic in the field, which was published in 1999.[14]

The essence of the portfolio principle is, of course, that when market changes happen and you have the right responses at hand you can save weeks, months, or even years, because you're prepared. Luck, therefore, is much more likely to be with you.

But if, on the other hand, you don't have a response in mind when the market changes, you may have to spend weeks or months figuring out what's really going on and deciding what you're going to do about it.

Which position would you rather be in? Of course.

The Internal Rate of Innovation

The history of the Dow Jones Industrial Average illustrates another important aspect of economic change. From 1920 to 1980 the Dow climbed from below 100 to about 1000, and throughout this period the combined value of the hard assets (property, plants, equipment, inventories, and cash)

---

[13] Philip A. Roussel, Kamal N. Saad, and Tamara J. Erickson. *Third Generation R&D*. Harvard Business School Press, 1991.

[14] William L. Miller and Langdon Morris. *4th Generation R&D: Managing Knowledge, Technology, and Innovation*. Wiley, 1999.

of the companies in the Index constituted between 95 and 98% of their combined value.

In 1980, however, this began to change, as investors began to shift their strategies. While the combined market value of the Dow's hard assets remained about the same, the market as a whole increased dramatically in value between 1980 and 2000 as investors began to recognize the significance of soft assets, intangible assets.

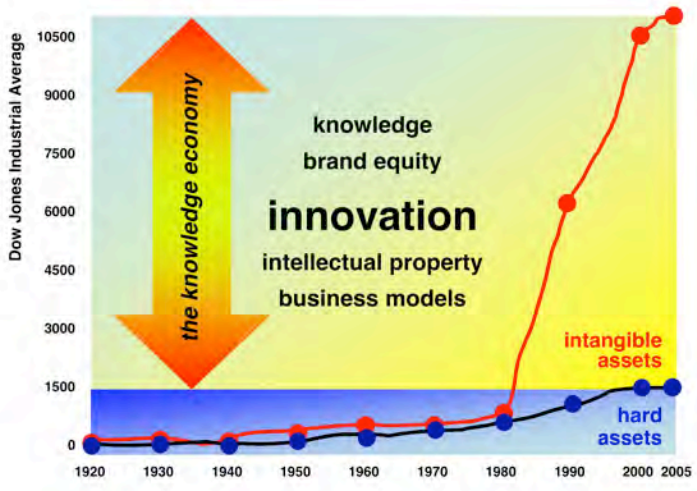

Figure 4.
The Knowledge Economy, 1920 - 2005
Beginning in 1980, investors recognized knowledge assets as much more important than hard assets.

Property, plant, inventories, and equipment now play a much smaller role in investment decisions, while factors including knowledge, brand equity, marketing expertise, intellectual property, and of course innovation are much more important.

Why the shift? Investors look for companies that generate the best returns, and whether they focus on CFROI, cash flow return on investment; free cash flow; ROE, return on equity; ROA, return on assets; ROTC, return on total capital, or any other metric, over the last 25 years hard asset companies have generated lower returns on capital while those concentrated on soft assets are generating better returns. Rapid change causes commoditization that drives hard assets down in value, while the key intangible qualities enhance adaptability and have far greater influence on the future prospects of every organization.

Innovation, creativity, and learning are correctly recognized as the key factors in competitive differentiation, so while capital-intensive, industrial era leaders in steel,

heavy manufacturing, farm equipment, and minerals have struggled to adapt, knowledge-intensive companies in software, high tech, pharmaceuticals, and financial services have created new markets and new value for shareholders.

Compounding the disparity in their business models is the fact that many knowledge intensive companies can produce additional products at nearly zero incremental cost. Hence, selling yet another copy of Microsoft Windows costs the company next to nothing and produces tremendous profits, while selling another car yields GM or Toyota only a small profit margin (or in the case of GM, perhaps a loss).

The evolving Dow thus gives us clear view of change at the macro level of the economy, and helps explain why, in the knowledge economy, innovation is not just a matter of finding a competitive edge, but a matter of sheer survival. And of course it's not a single magic innovation that's needed, but a process of permanent innovation that yields a continuing flow of them.

This highlights the need not just for innovations, but for reliable innovation *methodology* that achieves an internal rate of innovation that is comparable to or better than the rate of change in the marketplace, and thus overcomes the tendency to competitive fade.

This would be a good time to ask yourself this question: Is the rate of innovation in our organization sufficient to the demands of its markets?

Alternatives to Innovation

But perhaps you think that innovation is not the answer. After all, there are the other strategic options, aren't there?

Acquisitions, perhaps? But can you count on acquisitions to keep change at bay when, as I noted above, the failure rate is so high? Far too often, acquisitions yield disappointing results, and a great many are outright disasters. For example, US Airways recently warned that it's 2005 merger with America West may not achieve the expected benefits. In a filing with the SEC, the company stated, "We may not perform as well financially as we expected following the merger." The process, it warned, "will be costly, complex, and time consuming, and management will have to devote

substantial efforts to such integration that could otherwise be spent on operational matters or other strategic opportunities."[15] While there's nothing unusual about such a warning - companies make them all the time - the disclaimers here tell the real story that rarely gets mentioned in the giddy early stages of merger talk. The reality is that it usually takes too long and costs too much to integrate newly acquired companies into existing operations, and often the synergies that were expected turn out to be nonexistent.

When AOL bought Time-Warner, for example, the happy couple expected that the online world would leverage Time's print assets. In fact there was no synergy, and the disillusioned couple is now engaged in a messy divorce.

Cost controls? No amount of focus on cost control will sustain a business that's confronted by with rapid change, because cost control doesn't create the future, it only extends the past.

Downsizing and outsourcing aren't growth-creating options, and by now you've probably already done about as much of that as you or your company can stand. At some point you just can't get any leaner, because if you eliminate any more people operations will become dysfunctional and the decline in customer service could impact market share. When that happens you'll be on the slippery slope downhill, and God forbid you find yourself in a position as weak as Sears, where a merger with bankrupt K-mart looks like an attractive option.

Information technology? It isn't a panacea, and most companies already have all the ERP and CRM they can stand, and they're trying to figure out how to get value from the big software investments they've already made.

So what *do* you have to do to survive? You have to adapt to change, or better to initiate it. You have to create customer value that differentiates your company by meeting the needs of your customers better than anyone else can. You have to do what others can't do, or haven't thought of yet, and in the knowledge economy this really does come down to innovation.

In the end, it really is innovation that creates competitive advantage, and thus creates the future. So you can't talk about strategy without talking about innovation, and consequently innovation must have a central focus in

---

15 Associated Press. "US Air issues earnings warning." *San Francisco Chronicle*, November 24, 2005. D2.

your company's strategy. And at the same time, you can't talk about innovation with talking about strategy, because innovation must certainly be targeted toward strategic priorities. Thus, the two are inseparable and interdependent.

The rest of this book is about permanent innovation as a strategic priority: about *what* permanent innovation is from the strategic perspective, about *how* to define a systemic process of strategic innovation, and about the development of the enduring innovation culture.

Action Steps:

1: Study the rate of change in your industry by mapping the changes of the last 20 years. Can you from this where things are headed?

2: Compare the rate of innovation coming from inside your firm with that of the industry you compete it. Is it sufficient?

Chapter 3

The Essential Definitions

Permanent Innovation Principle #4

Innovation is a social art; it happens when people interact with one another.

People are the core of any innovation process. Their insights, concerns, and desires shape the pursuit of new ideas and the countless decisions to be made in the process of transforming these ideas into value. Consequently, managing innovation is largely a process of managing people and also managing the principles and practices according to which their work is organized. This requires a great deal of thought, planning, and preparation.

One of the surprising things about the word "innovation" is the many different meanings it carries. If you asked a hundred people to define it you'd be likely to get a hundred different answers. There would be some overlap, naturally, but also a great deal of variation. For a process that may determine the future of your organization, of course, this will never do.

Therefore, it's critical to the purpose of this book that we define what

innovation *is* with a good deal of precision, as well what it's not. We also have to distinguish innovation from a handful of related concepts, including creativity, knowledge, and learning. And we need to clarify each of them, and to differentiate them all from one another. Hence, this chapter delves into the essential definitions of innovation and its related concepts, definitions that will then be the foundation of all that follows.

Key Questions for this chapter:

1: What is innovation?
2: What is creativity?
3: What is knowledge?
4: What is learning?
5: What are the links between these key concepts?

If you happen to feel that this is excessively mundane or elementary, feel free to skip to the next chapter. But before you move on, let me just mention that although these terms may seem simple, the meanings that they disclose are in fact anything but. To a great extent, in fact, the failure of many organizations to innovate effectively can be traced directly to the failure of their managers to grasp some critical distinctions that are accessible only when we examine the deeper meanings of some of these key concepts.

Once you understand these distinctions, a lot of the items on your innovation to-do list will become a lot clearer and easier to accomplish, for hidden in the these concepts is a tremendous amount of power that you can harness.

We'll start with innovation itself.

Innovation

Innovation is a *process,* and when it goes well it's also the *results* of the process.

We thus distinguish between two meanings; a new computer, spoon, or business idea may *be* an innovation, and it probably was developed through an innovation *process*.

It's unfortunate that we use this important word in two different ways, but that's how the language has evolved and we're stuck with it. Thus, when you're talking with the people in your organization about innovation it's

important to distinguish between those different meanings.

We care a lot about the innovation *process* because this is the activity that creates new value and brings it to the market. We care about innovative products, too, but it's important to note that good ideas themselves are not innovations; instead, they *become* innovations when the have economic impact, when they add value. This happens only when they mean something to a *customer*, which means that it ain't innovation until a customer thinks so.

This view of innovation is particularly oriented to economics, business, and all organizations that have to compete to survive, including governments, NGOs, and non-profit organizations. So while an artist would look at it differently, that's not the story we're concerned with here.

In the business world, *ideas* are the raw materials that may become innovations, which happens as the result of an innovation process.

As we distinguish between the innovation process and its outcomes, we also must distinguish between different kinds of innovation. As we saw in chapter one, some innovations are minor improvements to existing products and services that we call incremental. Others are technology and product breakthroughs, dramatic revolutions that yield new products and services. There are also innovative business models, new ways to define the relationship between companies and customers, and there are innovations that become entirely new ventures.

Each of these types of innovation requires a different approach, so when we speak of "innovation methodology" we recognize that there's not just one way to go about this, but four.

Creativity

We also need to differentiate innovation from another concept that it's often confused with, creativity.

Creativity is the attribute or capability to see or do things in a new or different way, and the expressive ability to conceive of and make new and different ideas and things.

The key difference between creativity and innovation is that while any idea can be an expression of creativity, in order to be considered as an innovation it must, as I noted above, have economic value.

At root, then, creativity is inherently a behavioral or cognitive process whose outputs are ideas, while innovation is inherently an economic process whose outputs are products and services.

As a business process that involves work to be done, success at innovation therefore depends on creativity as critical component, but it also involves many other activities, including research, engineering, and prototyping. All of these are enhanced by creativity, of course, but they are not creativity itself.

To summarize this distinction we might say, as one of my clients recently commented that "creativity is when you use money to get ideas, and innovation is when you use ideas to make money,"[16] which sums it up very nicely.

A further difference between creativity and innovation is that creativity can be expressed or accomplished by individuals *or* groups, by organizations and even entire cultures, and it can happen consciously or spontaneously and unexpectedly. Innovation, however, and particularly in large companies, is almost always a process involving groups of people working together with specific intention. Hence, the tools and practices that you use to manage innovation-seeking groups are critical elements of both innovation methodology and the innovation culture, both of which will discuss at length in Parts 2 and 3.

Knowledge

And although they're different, the common root of both innovation and creativity is knowledge, itself an elusive concept that must be defined.

However, the dictionary definition of knowledge isn't very helpful, as it stumbles around attempting precision but never really arrives anywhere useful. The first suggestion from "Merriam-Webster online" is typical. Knowledge is "the fact or condition of knowing something with familiarity gained through experience or association."[17]

Defining knowledge with reference to knowing doesn't advance our process very far, and from there the dictionary wanders through suggestions related to awareness, understanding, information, and cognition, each of which is actually a quite distinct concept in and of itself, but none of them are really what we're after.

Fortunately, a much more useful definition has been developed by some of the 20th century's most important business thinkers, which include Wharton professor Russell Ackoff, the prolific business economist and writer

---

[16] My thanks to Eric Guillemin of Bouygues Immobilier.

[17] http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=knowledge

Peter Drucker, and the innovative business philosopher W. Edwards Deming.

By aggregating their work, and particularly relying on Ackoff's formulation, the following model emerges: Knowledge is concerned with "how," with the capacity to *do* useful things. Such capacity, in turn, comes about as a result of the integration of three other elements, information, theory, and experience. Information is the "what," the basic description; theory is the conceptual framework that explains how the world functions, and experience is the immersive and multidimensional process of doing and having done.

Some people may find the "theory" component too abstract or intellectual, but the intent here is not a retreat into a flighty ivory tower, but the cold awareness that unless you know how things really work deep down in the hidden parts you'll surely make serious mistakes. So you don't have to call it "theory," but you do have to have a rock-solid grounding at the very core of whatever you're doing.

This definition specifies that only knowledge is sufficient to perform complex tasks, and knowledge exists *only* when information, *and* theory, *and* experience have been fused together in the mind of an individual. The process of fusion is therefore essential; we call it learning.

To learn to perform any complex task or function, it is therefore necessary to both study and to practice, which is what airplane pilots, athletes, police officers, firefighters, doctors, lawyers, accountants, and even managers have to do; because it is *only* through practice that expertise is developed. Michael Mauboussin of Legg Mason has observed that it takes about 10,000 hours of practice to become expert at nearly anything, which only reinforces the old adage, Practice, practice, practice. Ironically, of all professionals it is managers who probably practice the least, and it is their organizations that certainly suffer the most because of it.

But even well developed knowledge is not sufficient for innovation. To innovate, it's necessary not just to know how, but also to know *why*. Another word for the why is *understanding*. And if we know "why" something is the way it is, then we are much more likely to make the right choices than if we just know the "what" or the "how."

And because innovation is focused on the future, it's important to also know what is the right thing to do, what's best, which is the attribute we call *wisdom*.

The progression from information to knowledge to understanding and then to wisdom is what occurs in any process of development, or maturation, so while novices have information, engineers have knowledge, managers have understanding, and leaders (we hope) have wisdom. The effective innovation process must therefore be guided by wisdom, and it also must be rich in information, as well as in the knowledge and understanding that lie between them.

Earlier I noted that ideas and innovations are both forms of new knowledge, but now that we have developed this theoretical framework in

detail, we can see that actually it's not the case. In fact, innovations are clearly expressions of knowledge in which information, theory, and experience have indeed been integrated. We know this because they have come about through a development process and have come to embody meaning in the market. But few ideas rest on such a firm foundation. Most ideas are concepts, a "what" that is in waiting, perhaps to become a "how." Consequently and appropriately, the process of turning an idea into an innovation will also be a process of *creating* knowledge.

In case this discussion seems excessively theoretical, let me hasten to remind you that according to this definition, there can be no such thing as knowledge without a solid grasp of theory, which can be illustrated with the following story.

My neighbor owns a beautiful jet airplane, and I would like to borrow his plane for my upcoming trip from New York to California. I walk over and knock on his front door; he smiles, invites me inside, and asks what I want.

"I want to borrow your jet," I reply. "I have to go to California tomorrow."

"Oh," he replies, raising his eyebrows. "I didn't know that you could fly a jet."

"Of course I can," I answer happily, and from behind my back I pull out a big, fat, 500 page book. "I read the instruction manual!"

He laughs, and he's nearly on the floor in tears as I trudge glumly home, rejected! Why is my neighbor so sure that I don't know how to fly the jet? Because obviously, reading the manual is not at all the same as knowing how to fly a jet. Perhaps I have the information, although even that is doubtful, but we all know that a lot more than information is required. I must have some *experience,* which I would typically obtain by practice flying in very safe simulators, and then in slow, small planes with an instructor by my side long before I move on to big, fast ones.

And I must also fully grasp the theory of powered flight before I will be competent to fly even a small plane, because if I have to react to anything unexpected I may have to improvise, and if I don't know why a plane can actually fly I'll probably crash it out of ignorance.

Experience is also required to be a safe driver, as the same dynamics apply to learning to drive a car as to learning to fly a plane. In fact, lack of driving experience (and thus lack of knowledge) is a deadly serious problem among teenage drivers, who are *four* times more likely to be involved in fatal accidents than drivers older than 21. Lacking experience, teenage drivers lack the pertinent knowledge, and their errors are responsible for more than 75% of all fatal crashes involving 16-year-olds. In the words of Russ Rader of the Insurance Institute for Highway Safety, "The simplest way to reduce

traffic accidents is to allow fewer teens to drive."[18]

But it's not just teenagers who lack experience. After Pittsburgh Steelers quarterback Ben Roethlisberger wrecked his motorcycle and landed face-first in someone's windshield while out riding one day without a helmet he suffered numerous fractures, and after apologizing for his poor judgment he promised that if he ever rode again it would be with a helmet on.

Information, experience, and theory are thus the three components of knowledge, and they're *all* required to be an effective pilot or a safe driver, as they are to be an effective manager or innovator.

When we talk about innovation methodology I'll point out once again that good theory is critical to success in that domain as it is everywhere else, and in fact you could substitute the word 'methodology' for 'theory' and the meaning would be essentially the same.

Learning

While "knowledge" is an outcome of the process of integrating information, experience, and theory, I noted above that "learning" is a name for that very process. It's a dynamic and largely mysterious process that occurs in the brain and in the body, one that applies equally to learning to ride a bicycle, learning to use a new cell phone, learning to fly an airplane, learning to do brain surgery, or learning to manage a corporation.

The pursuit of innovation, after all, is itself a great learning experiment shaped around whatever we need to know for our ideas to become successful in the marketplace.

And it's not just the fact of learning that matters, but also the pace or speed of it that we care about, because if you learn faster than your competitor you may create significant competitive advantage. Along these lines, Arie de Geus, a long-time manager at Shell and one of the inventors of the scenario planning method, has suggested that "learning faster than the competition is the only *sustainable* competitive advantage."[19]

To be more precise we would add that it's not enough to learn faster, because you must also apply that learning, but of course that's what he meant.

The success of Ford's Model T, the car that established Detroit as the center of the world's auto industry for the century that followed, was based precisely on such learning. In the 1890s and early in the 1900s, numerous small manufacturers around the country were competing in the fledgling auto

---

[18] Insurance Institute for Highway Safety, www.iihs.org. Jim Herrron Zamora. "A dangerous mix on the road - teen drivers with teen passengers." *San Francisco Chronicle*, December 15, 2005.

[19] Arie de Gues. *The Living Company*. Harvard Business School Press, 2002.

industry, and Detroit manufactured only 40% of the nation's cars. "Ford's Model T was based on a decade of experience and failure; Ford succeeded because he was in the middle of this trial and error process, and learned from it. It was this networking and the synergy between individual garage entrepreneurs, located in Detroit, each able to learn from the successes and failures of competitors, that produced the Model T."[20]

Learning and Creativity

A few pages ago we defined creativity as a process that's focused on ideas, as distinct from innovation's focus on economic value. Now we need to add some further distinctions between these two very closely linked concepts.

Learning is a process that is directed inwardly, a process by which you literally transform yourself and your own capabilities by integrating new knowledge. As a result of this you literally become a different person. When this same integration process is directed outwardly in the creation of new ideas, new stuff, or new possibilities, we call it creativity.

Creativity and learning are thus not mutually exclusive; in fact, they are mutually interdependent and entirely complementary. Although they aren't the same, they are reciprocal and parallel. You create when you learn, for as you learn you are literally creating *yourself*. You learn when you create, because creation involves expressing outwardly what you see or feel inwardly. Once you create something you inevitably compare what you achieved outside with what you envisioned inside, in your mind's eye, and the act of making that comparison enables you to discover that you did or did not attain your vision.

And the fact that there is, or is not, a difference between what you saw in your mind and what you now see in front of you is itself a source of knowledge, and thus the process of comparing the two is itself a learning experience no matter what the result has been. The simple fact that you had an idea, attempted to realize it in the flesh, compared the idea and the outcome, and thought or acted differently as a result is what learning is all about.

The fastest learners are therefore usually the ones who experiment, for the process of experimentation is a learning accelerator. The interesting thing about experiments is that you often learn more from the ones that fail than from the

[20] Peter Hall. *Cities in Civilization*. Fromm International, 1998. p. 404.

successes. Hence, you have to fail fast to learn fast, which means that you have to fail a lot to be a successful innovator. Now what kind of organization can tolerate that kind of behavior?

This obviously has significant consequences for innovation methodology, as we will see in Part 2.

Creative Tension

Because of the intimate linkage between creativity and learning, people who create - who make things - are usually very good at learning. They tend to spend a lot of their lives in the uneasy frame of mind that we call "creative tension," that difficult state when we can visualize a certain outcome but for whatever reason we are unable to attain the full flower of our vision.

Creative tension has driven more than a few people somewhat mad, but it's also a compelling force that inspires us to persist and to break through to new levels of expression, new concepts, new standards, new habits, and new principles. It may even be the prime driving force of history, the ultimate motivator upon which civilization itself has been brought forth from the raw materials of human existence, human experience, human learning, and nature.

For creativity and the tension that drives it are uniquely human capacities and attributes. Its deep sources remain elusive, hidden in the most subtle recesses of our consciousness, but nevertheless we do know a lot about creativity, how to foster it, and how to channel it. Unfortunately we also know a lot about how to suppress it, and so we see that many attributes of today's typical organizations suppress creativity with frightening effectiveness. We will explore these in Chapter 10.

We know, for example, that creativity is an attribute of people who naturally ask questions. A lot of questions. Hence, those who accept things in their current state are least likely to engage in creative expression, while those who question the nature of their own experiences, or the fundamental structures and processes of society, or even the nature of the products and services they use, are much more likely to create new ideas that improve the realities they confront.

As a result of persistent and perpetual questioning, creative people are often viewed as "outsiders," for they question established standards or common wisdom that others readily accept. From such questions they begin to see new possibilities and opportunities, and they may see the future. And in fact, in any given domain, true outsiders actually *are* often more creative than "insiders," for the simple reason that insiders deeply understand the

existing structures, the rules, and as a result their thinking is commonly bounded by their very knowledge.

After all, to be trained in a particular field is to learn its extent and its boundaries, the limits of knowledge and practice in that field. Knowing the existing rules is partly what defines someone as an insider in the first place. Insiders thus tend to be conceptually and intellectually constrained by their very knowledge. But outsiders don't know all the rules, and the ones they do know they generally pick up through experience. They often do, however, have intimate knowledge of a different field, a different domain, and when they apply their outsider's knowledge to insider problems the results are often new ideas that insiders could *never* have seen. It is for this reason that a substantial proportion of all innovations are made by people working *outside* of the field for which they were trained. Outsiders, who don't know the boundaries and therefore aren't inhibited by them, go beyond them without even realizing that borders have been passed.

You may be sick of the overused phrase "think outside the box," but we hear it so much because it actually does describe this aspect of reality. Thinking outside the box is especially challenging for insiders for whom the box constitutes "reality," while for outsiders whose reality is naturally a different one, and who therefore are inhabitants of a different box, thinking outside the box is natural. In the words of the great teacher of statistical process control and quality principles W. Edwards Deming, "Competent people, doing their best on jobs, know all that there is to know about their work except how to improve it. Knowledge necessary for improvement comes from outside."[21]

All of this has a great deal of importance for innovation and innovation methodology, and a couple of practical issues are worth delving into here.

For example, in recent years the need for people who think outside the box has manifested in unexpected ways. During the 50s, 60s, and 70s, companies tended to hire CEOs who had risen up through the ranks from within, but since the 80s they've been recruiting CEOs from outside precisely because they desperately need an outsider's perspective to help develop or maintain their innovative edge.

There are, of course, other, simpler ways to bring in outside perspectives, but the fact that outsiders are more and more being placed at the top of the hierarchy shows how critical top management leadership is to effective innovation. We will also explore the leadership dimension in more detail in Chapter 10.

Now, back to creativity. We know that creativity is more likely to thrive in diverse environments than in monochrome ones, so creativity and innovation are easier to attain in organizations of people from more diverse

---

[21] W. Edwards Deming. *The New Economics for Industry, Government, Education*. MIT, 1993. P. 2.

backgrounds, disciplines, or points of view than organizations where people are more similar to one another. Recognizing this fact will therefore have influence on recruiting and hiring, as organizations that strive for high levels of innovation and creativity seek much more diversity.

The hiring policy at Apple Computer, for example, is to select engineers with a "T profile," who also have extensive experience in other fields of endeavor, whether the arts, the sciences, or the humanities. By bringing diverse viewpoints and first hand experience to the work of creating computers, those computers become more useful for artists, scientists, and humanists.

Those who work in different parts of an organization also have different experiences and different points of view, so creating processes that enable or force people to interact across departmental or business unit boundaries can also stimulate creativity and innovation.

In most organizations, in fact, there's a tremendous latent opportunity to take advantage of this by bringing people from marketing, sales, and R&D to work together on innovation projects. But do not underestimate the challenges in doing so, for as Stu Winby, co-founder and managing partner of Sapience Group notes, these three groups come from "different planets." They have very different goals, metrics, and processes from one another, and they have very different views of customers and customer needs. But if they can collaborate effectively, share their different viewpoints, and craft customer-oriented solutions that address each of their different sets of concerns, then they may create compelling breakthroughs.

For example, in a project sponsored by the American Heart Association and managed by Stanford University Medical Center, a very diverse team of doctors, nurses, technology experts, hospital managers, pharmaceutical executives, heart care patients, and others designed a new education system that the AHA is now prototyping. The significant goal: to help 100 million Americans change their behaviors and live healthier lives. All of the groups represented by the participants have a significant stake in the outcomes, and all of their perspectives were needed to achieve a robust, systemic solution that could really work in a very complex and culturally-sensitive domain.[22]

•••

These are just a few of the practical payoffs available by carefully defining the key terms and looking deeply into the underlying aspects of innovation. In contrast, those who are impatient with this deep examination and fail to grasp it fully are likely to be *in*effective in whatever they attempt, and in this regard, we can thank the great mathematician Kurt Lewin for his remarkable insight that, "There is nothing so useful as good theory."

---

[22] Langdon Morris. "Heart of the Matter." *Learning and Training Innovations Magazine*, May/June 2003.

Do you see why this is so true? Because without a solid framework for your thinking, it's literally and utterly impossible to *know* - to know the right thing to do or the right thing to say. Sure, you might get good results, but if you do it may only be because you've been lucky, not because you really know what you're doing. And that's just not good enough to rely on.

A clear framework, a theory (and correct theory at that) is therefore absolutely essential if you're going to do the right thing with the confidence that you *are* doing the right thing. Dr. Deming explains it this way: "Without theory, experience has no meaning. Without theory, one has no questions to ask. Hence, without theory there is no learning. Theory is a window into the world. Theory leads to prediction. Without prediction, experience and examples teach nothing."[23]

Therefore, if someone complains that you're being "too theoretical," you can smile and gently remind them that without theory there simply is no such thing as knowledge.

So what theory have we found?

In Part 1, now complete, we have defined the four different types of innovation that compose the permanent innovation practice, explored the close connection between innovation and strategy, and sought to define the critical concepts that we will now rely upon as we examine the practical aspects of finding great ideas, choosing the best among them, transforming them into innovations and bringing them to market.

And recognizing the importance of methodology to success at innovation, we would also reshape Lewin's idea to note that, "There's nothing so useful as a good methodology." It is permanent innovation methodology that we will now explore.

Action Steps:

1: Make sure that everyone on your team, and across your organization, is using the same definitions of the critical innovation terminology.

---

[23] W. Edwards Deming. *The New Economics for Industry, Government, Education.* MIT, 1993. P. 106.

2: Consider the importance of creativity and see how your organization handles far-out ideas, far out people.

3: Find out if your sales, marketing, and R&D groups are really on different planets, and if they are then begin working to get them aligned with the same goals, language, and metrics.

Part 2

Permanent Innovation Methodology

Chapter 4: Innovation Strategy & Methodology
Chapter 5: Creativity: Methodology for Great Ideas
Chapter 6: Great Choices: Targeting
Chapter 7: Great Innovations: Transforming Great Ideas into Business Value
Chapter 8: Great Planning: Market Development

Chapter 4

Innovation Strategy & Methodology

Permanent Innovation Principle #5:

Innovation without methodology is just luck.

There are lots of creative people in your company, and given half a chance they'll probably create some great innovations. But if you rely on their random efforts then you're risking your success on chance, and that's not enough. You have to develop and apply methodologies, the right methodologies, to make the shift from luck to consistency, predictability, and sustainability. Without the right innovation methodology you're risking far too much - you're risking your future.

Why Methodology?

When the importance of innovation has been thoroughly embedded into the mind of the organization, when the

strategic intent is clear and the commitment to permanent innovation has been made, when people are enthusiastic and enabled, and their natural creativity is beginning to blossom, then the critical element to be added to the innovation process is methodology. Methodology's role is to simultaneously address two key requirements: it provides the means, the *capability* to create all four types of innovations, and the organizational culture it evokes becomes constancy of purpose and focus to attain a permanent innovation *practice*.

Key Questions discussed in this chapter:

1: What's the relationship between methodology and luck?
2: What are the four strategic innovation viewpoints?
3: What are the stages in the innovation process?

In the end it's what the people in your organization *do* that will produce the innovation results that your customers will believe in, much more than whatever your advertising says. Methodology will help them do the right things, and do them well.

Innovation is a social activity, one that happens because of interactions between people, so now it's time to take apart the simple innovation formula: great ideas, great innovations, great businesses, and look deeper inside to understand the many essential roles that good methodology plays in helping create the right kinds of interactions.

Innovation can occur anywhere, but permanent innovation generally occurs only in a special setting, an atmosphere, a culture in which it is intentionally support, thoughtfully nurtured, measured, and funded. It happens as a result of the interactions among the people throughout an organization, and it requires abundant interaction between insiders and those outside as well.

These interactions will lead to the insights, ideas, and outcomes that will be recognized as true innovation. The social character of innovation is so important that it's also principle #4: Innovation is a social art; it happens when people interact with one another.

A methodology is a structured, thoughtful, and organized approach to managing the complexity of any discipline or any intricate activity. Innovation methodology is based on proven frameworks and principles, and it consists of the appropriate strategies, practices, and tools that the people in your organization will use to solve the vast range of problems that the search for innovations entails, from the initial strategic concepts to the detailed operational realities of day-to-day work. In all of its nuances, innovation methodology is applicable from the most basic problems to the most complex, from incremental innovations to technology breakthroughs, to new business models and new ventures. Permanent innovation is then the application of these approaches on a consistent basis such that the pursuit and attainment of innovation become recognized as permanent characteristics.

Since the results of the innovation process are directly and inseparably related to the future of the enterprise, sound innovation methodology must by definition be grounded in sufficient and appropriate principles, informed by the right intentions, and executed as a strategic initiative. The need, therefore, for a *complete* methodology cannot be overemphasized, because among the significant obstacles to innovation, three involve methodology itself: incomplete methodology, methodology poorly applied, and the absence of methodology, any of which can cripple innovation efforts.

Four Strategic Innovation Viewpoints

Effective business strategy requires effective innovation, and thus innovation must be thought of as a critical component in all forms of strategic thinking and planning. And like all issues that are strategic, it's challenging.

The successful pursuit of innovation thus involves the development and application of many different kinds of principles, practices, and initiatives that together create a complete system that operates across the vast complexity that is inherent in most innovation projects.

All such projects exist within a larger framework, the framework of an organization, its customers and competitors, suppliers and regulators, of trends and technologies and global market dynamics. You might think of it as one part of an ecosystem.

In thinking about this organization, the ecosystem that it's part of, and the process of innovation that will take place within it, there are many different viewpoints that could offer useful perspectives. The complete innovation strategy encompasses four different ones, the four strategic vectors of innovation:

Top-down innovation,
Bottom-up innovation
Outside-in innovation

Peer-to-peer innovation.

Top-down Innovation

Many of the key elements of the successful innovation practice originate in the intents, policies, and communications originating from senior managers. They define the need and the scope of innovation efforts, provide the resources to make it happen, and insist on monitoring and measuring its progress. Without active senior management involvement, innovation simply cannot happen (this is the 9th Principle of Permanent Innovation, *There is no innovation without leadership)*, and thus top-down innovation concerns those critical actions that originate at the top of the hierarchy.

Bottom-up Innovation

But top managers don't and can't do it all. In fact, beyond establishing key parameters, they must rely on everyone else to create the actual innovations that will likely become the future of their organizations. Hence, people have to be enabled and empowered to innovate, and the right tools and methods have to implemented on a widespread basis for them to use. At the same time, the many obstacles that might otherwise impede innovation have to be removed. The methods are the subject of this section, Part 2, Chapters 4 - 8, and the Enablers and Obstacles are discussed in detail in Part 3, Chapter 10.

Outside-in Innovation

In the classical or traditional view of innovation, ideas, concepts, products, and services originate inside the organization, get developed, and then go out into the market. It's a company's job to innovate, so the common view is that "we take our great ideas and provide them to the world." This is the "inside-out" process, but that's not how it is any more.

Today the situation is getting much more complicated, because while a traditional view might see innovation as something that "we do," a process that begins and ends *inside* the organization, today a lot of the most effective innovation processes involve things that "they" do, *they* being customers, partners, vendors, regulators, competitors … and potentially many others as well. Hence, the complete innovation practice involves both "inside-out" innovation, processes that originate inside and then move outside, and also "outside-in" processes that harness ideas and energy that originate outside.

A good example of outside-in thinking is offered by the consumer goods giant Proctor & Gamble, which of course used to do everything related to R&D inside the company. But a major policy change was instituted in 2000 by new CEO A. G. Lafley, and now P&G researchers scour the world looking for outside inputs on new products. As a result, P&G reports that R&D productivity has increased by more than 60%, and during the last two years more than 100 new P&G products have been significantly influenced

by ideas provided by outsiders.[24]

Many other companies that maintain huge R&D departments are also leveraging outsider insights and capabilities. An online tool launched by Eli Lily and Company called Innocentive (www.innocentive.com) matches scientists from around the world with specific problems that large companies pay them to solve. There are more than 70,000 of these scientists in 150 countries, many of whom participate in vast, national networks of highly trained specialists in Russia, India, and China. Innocentive refers to this process as "**distributed innovation**," and Lily cites a case study in which a retired chemist solved a challenging problem for the company and was paid $25,000 for the solution, far less than it would have cost Lily to obtain the same result using internal resources. This sort of process is also referred to as "**open innovation**," and Henry Chesbrough's book of that title provides a detailed description.

The advent of the outside-in process has been driven largely by the internet, which makes it possible for individuals and companies to interact with a broad external community of people who are interested for their own reasons. Web sites, blogs, chat, instant messaging, and even old-fashioned email are making virtual communities into effective work teams that link insiders with outsiders, as Innocentive shows quite clearly.

Another compelling example of outside-in innovation is the South Korean cosmetics company Missha. Missha began in 1998 as a wholesale manufacturer of high quality cosmetics which sold at prices far lower than many of its competitors. Today the company has more than 500 products that sell for less than $5.00.

Missha built its business around its online portal for women, BeautyNet (http://www.beautynet.co.kr/), which it uses proactively to learn from its customers. BeautyNet has attracted more than 2 million members who give their feedback and ideas to guide the development of new Missha products. In effect, Missha has created a vast external network, and this enormous pool of customer knowledge has significant influence on the evolution of its product line. On the strength of this powerful and innovative business model, Missha expanded quickly into retail, and now has more than 250 stores worldwide.

This leads us to wonder why, aside from specific financial rewards, would anyone spend their time helping you? One of the key lessons from Missha is the answer, and it's a critically important one: **Customers want to be <u>part</u> of the business**, they want to be insiders with the companies and brands they trust.

---

[24] Larry Huston and Nabil Sakkab. "Connect and Develop: Inside Procter & Gamble's New Model for Innovation." *Harvard Business Review*, March 2006.

So savvy businesses are finding meaningful ways for customers to become involved. By using its customer network to help shape its own product line, Missha has assured itself a compelling source of market insight, ensured itself the long-term loyalty of a tremendous number of people, and also created a hugely effective volunteer sales force. This is why outside-in innovation is so important.

Let's take a minute to examine this idea of a "volunteer sales force." When you become the customer of a particular company or a particular brand, you're establishing a relationship that you hope will be a good one. And when that brand meets your needs, or exceeds your expectations, you're often quite willing to let others know about your positive experience. You become, that is, an "evangelist" for the brand.[25] These evangelists are the most effective sales people, because everyone knows that they don't have any conflict of interest - they're promoting products and services that they sincerely believe in. Instead of relying on advertising and spin, you benefit from word-of-mouth recommendations in the powerful, self-organizing dynamics of people who act on behalf of their own self interest.

And when you engage these people not only as a sales force, but a creative force that can influence the innovation projects and outcomes of the company itself, then you're exploiting the "economics of creativity" in a profound way.

All of these factors argue persuasively for the outside-in approach. After all, organizations that employ even hundred of thousands of the smartest and most creative people are still vastly outnumbered by the millions of very smart and very creative people who are outsiders. The idea of outside-in innovation suggests that when you harness the smarts and creativity of large numbers outsiders, you're leveraging the broader outside world to help you achieve your own organization's specific goals and objectives at little or no cost. So why wouldn't you? Of course you would! We'll discuss more specifics about outside-in approaches in Chapter 5.

Peer-to-peer Innovation

The fourth key vector is what I call "peer to peer" innovation, the process of working with partner firms to develop and offer co-branded products and services. Apple's partnership with Nike, for example, turned the iPod into an innovative training tool for serious runners. Information collected from sensors in your Nike shoes is displayed on your iPod, tracking your pace, distance, and time. After you finish your run you can sync your

---

[25] Ben McConnell and Jackie Huba. *Creating Customer Evangelists*. Dearborn, 2003. Their blog is pretty useful too: http://customerevangelists.typepad.com/.

iPod to your personal Nike web page (you have one, don't you? - and by the way, here's another instance of outside-in) at www.nike.com/nikeplus to track your training regimen (and also design your own custom products). Neither company, of course, could offer this product/service combination alone, so they are truly peers in this joint initiative.

Peer-to-peer innovation is a special case of the outside-in process.

The point ought to be crystal clear by now, and I will restate it here as the next principle:

Permanent Innovation Principle #6:

Four strategic innovation viewpoints are critical to innovation success.

You can't rely just on the innovation efforts of top managers, nor of your own people in the offices or in the field, nor of what only insiders can create. The complete innovation methodology has to leverage all four viewpoints: Top-down, Bottom-up, Outside-in, and Peer-to-peer.

Methodology & Luck

As I noted above, in the absence of methodology organizations are forced to rely on luck, but no manager in his or her right mind would accept this as a suitable choice.

Gamblers know a lot about luck, and about risk, and they know that the odds are always rigged in favor of the house. While on a given night anyone may hit the jackpot, over the long term the house wins simply by controlling the odds. In the innovation game, the house equates to the market, so while companies come and go, the dynamics of market competition decisively shape the game. The point of innovation methodology is to shift the odds in your own favor by moving away from the gaming tables (i.e., where the game is controlled by others) and shifting to a venue where you can make your own luck; that is, by using innovation methodology to increase your influence over the market.

Luck does play a role in innovation, but not the same one that it plays in gambling. Because while methodology is necessary to success at

innovation, it can also *be* a source of luck. This was the insight of the great French chemist and innovator Louis Pasteur, who remarked that "Luck favors the prepared mind." By this he meant that while two people may be confronted with the same information, the same opportunity, the same possibility, the same idea, or even the same discovery, the one who is best prepared, who recognizes the idea's potential, and is therefore able to take advantage of its significance, will appear to have been "luckier." In fact, "luck" blessed both of them; the one who is better prepared to recognize it, understand it, and act on it will benefit the most.

As Denise Sherkerjian points out in her fascinating study of 40 winners of the MacArthur "genius" prize, "There are a thousand accidents in a week in life, but to select among them is something else again. Certainly, there is no trick involved in recognizing those dazzling moments that are decisive in shaping one's future. The profound, the audacious, the startling, and the epiphanic rarely pass without notice. But what is more difficult is to detect the subtle happenstances and to appreciate, by turns, their providential thrust. Making enough room in our lives for accidents to happen and exercising wisdom in our selection among them affords us the room to try to encourage our luck."[26]

This is precisely the point of innovation methodology - **recognizing and exploiting the subtleties**, for these are likely to be the significant innovation opportunities that most will miss because they're either not sufficiently prepared, or they're hunting in the mainstream rather than in the fringes where novelty is more likely to be found.

Dancer and choreographer Twyla Tharp puts it this way: "Habitually creative people are, in E. B. White's phrase, 'Prepared to be lucky.' The key words here are 'prepared' and 'lucky.' They're inseparable. You don't get lucky without preparation, and there's no sense in being prepared if you're not open to the possibility of a glorious accident. In creative endeavors luck is a skill."[27]

Athletes, coaches, and commentators have the same insight in mind when they notice that "Good teams make their own luck." What they mean is that superior preparation before the game or superior talent on the field enables them to take advantage of opportunities that others do not see or cannot exploit. Tharp notes a comment by golfer Gary Player, who said, "The more I practice, the luckier I get."

Computer industry pioneer Alan Kay once made a similar comment

---

[26] Denise Sherkerjian. *Uncommon Genius*. Penguin, 1990. p. 147.
[27] Twyla Tharp. *The Creative Habit*. Simon & Schuster, 2003. p. 120.

when he observed that, "point of view is worth 80 IQ points."[28] By this he meant that if you found the right way to look at any particular problem, the right perspective, or the right vantage point, then you could see the problem clearly and know precisely the right way to respond. This would then make you appear to be very smart, perhaps even a genius! Hence the additional 80 points.

If, on the other hand, you're looking at any problem from a poor vantage point that does not clarify the key issues, then you're likely to misunderstand what's going on and make the wrong choices as a result. In this situation, you deduct 80 points, and you instantly become an imbecile.

Thus, the purpose of innovation methodology is to help the people in your organization to realize their individual and collective genius, to create new opportunities that were, perhaps just a mere moment ago, unknown and unrecognized. It enhances their efforts to accomplish the work of creating compelling new ideas, and transforming the best ones into new products, services, and business models that alter the structure of the marketplace.

Long after your luck runs out, methodology will still be delivering results.

Stages of Innovation Methodology

Every idea is born in its own distinctive moment of inspiration. Many are immediately discarded, while those that remain follow their own unique development pathways.

Effective innovation methodology shapes the pathways by which individual ideas will be developed, and just as important, it's a broader process which improves the odds that good and great ideas actually do arrive with regularity and that they are developed to their full potential.

Methodology also involves systematically filtering multitudes of new ideas, applying processes for turning the best ones into innovations, and using tools to help bring them to market, which in the case of breakthrough innovations is itself no simple accomplishment.

Broadly speaking then, innovation occurs in five stages:

1. Creating or finding great ideas;
2. Targeting, or choosing those worth developing further;
3. Innovation development, transforming great ideas into great innovations;
4. Applying great innovations to develop markets and

[28] http://pcworld.about.com/news/Apr082004id115590.htm

create great businesses.

5. Normalizing the innovation culture as Permanent Innovation.

We will address each of these themes in the following chapters.

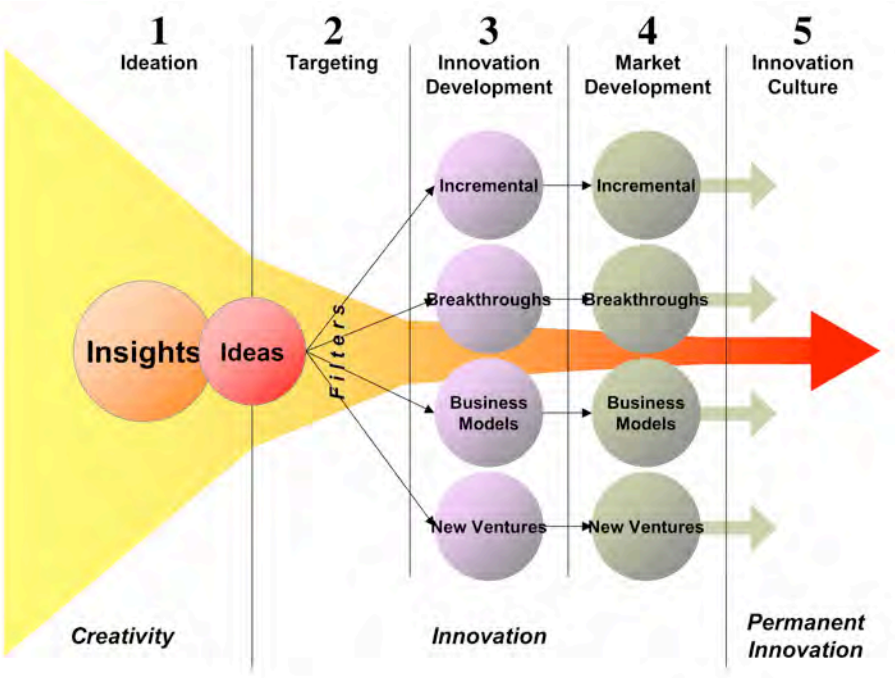

Figure 5.
Permanent Innovation Methodology
The four types of innovation shown across the 5 stages of the innovation process.

In describing innovation methodology, however, we face a challenge that's inherent in the need to describe a complex process, which innovation is. These five major stages have lots in common, and when you're working at innovation it's nearly impossible to actually go through a linear process from one step to the next in an orderly fashion.

In fact, creative and innovative processes such as this, like all problem-solving activities that involve complexity, are iterative. They loop around, meaning that in the process of searching for great ideas the mind leaps forward and back, stimulating new ideas while assessing old ones, planning detailed innovation roadmaps that stimulate still more new and raw ideas. You return again and again to the various phases in an unpredictable sequence, and each time you revisit a stage where you've been before your ideas are a bit more developed than they were.

This is not a bad thing; in fact, it's both natural and excellent, as

experience has shown that iterative processes yield results that are far better than linear processes because they build on natural a human attribute, the capacity to improve through learning.

So don't be deceived by the apparent order of the processes as I describe them here. In application they're very messy, properly disorderly and rich in nuance and ambiguity, and also rich in joy, discovery, pleasurable interactions, intense arguments, and insights, experiences that come in a fascinating interpersonal and intellectual process that is also a critically important one.

We might therefore compare innovation to a ball of yarn that the cat's been playing with. It's tangled and nearly knotted, but to be useful for our purposes it has to be untangled, and we will now begin to do so ….

Action Steps:

1: **Find out if the innovation process your firm is using is really a complete and substantive methodology, or just a loose set of policies and procedures.**
2: **Figure out the balance between the four strategic viewpoints that your firm is leveraging, and think about how to add any viewpoints that are missing.**

Chapter 5

Creativity: Methodology for Great Ideas

Permanent Innovation Principle # 7:

Great innovations begin with great ideas; to find them, identify unknown and unmet needs.

There are many different kinds of needs. Among the most significant for innovators are the ones that no one has recognized, for these offer the potential to create breakthroughs that bring significant competitive advantage. So how to find them? There are dozens of tools you can use to come up with new ideas. Experiment with these tools and you'll surely find some that work well in your organization.

If innovation is strategic, and it is, then ideas are also strategic, because ideas are the raw materials of innovation. But what is an idea really? It's a mental construct, an abstraction that tells a story or suggests a capability. At the

beginning of its life, an idea may be vivid and well-defined, or vague and poorly understood, but regardless of its initial degree of clarity, it may be important to the future of the organization since it is a seed from which the future may be created. The challenge, of course, is to find better than good ideas, great ones, and then to focus your efforts on developing them, transforming them into business value.

Key Questions discussed in this chapter:

1: How can we get more ideas, and better ones?
2: Where do you get the best ideas from?
3: What do the people in your organization do with new ideas?

From Insights to Ideas to Innovations

Where do ideas come from? And what do you do when you're hunting for ideas? Do you read? Many people do. Do you ride a bicycle, or play the violin? Einstein reportedly did so when he was wrestling with tough problems and the solution was somehow blocked. "Better sleep on it," you might say, planning to revisit the problem the next day. Others say their best ideas come in the shower or the bathtub, the garden, bookstores, on the beach, or in the forest ….

Wherever their specific genesis, we do know that whether people are working individually or in groups of any size, it's the sparks of insight that come about through their efforts to comprehend complex realities, and their musings, discussions, and daydreams, their analyses and hard thinking, the serendipitous awarenesses and inspirations that lead to new ideas.

These lead to the "What if …?" moments as we hear them murmur to themselves, forming the provocative questions that launch them on new voyages of discovery.

Insight is thus absolutely invaluable for innovation, and everything that's discussed in this book, the overall methodology as well as the specific tools and practices, is intended to help people generate more and better insights that become ideas, and then become business value. It's not

just managers, or just the research and development group, or "just" anyone who does this. It's everyone who needs to be involved in this process, so the "people" who are going to be working on the chain from insight to idea to innovation are "all the people."

The role of managers is to stimulate, to prod, to facilitate, and to demand, as well as to explore and create some themselves. And since insights and ideas are the raw materials of the innovation process, one of the key elements to manage is the process of creating new ones. I could even say that this ought to be managed aggressively, because although it can be highly inconvenient or annoying to have to deal with a nonstop flow of new ideas, a company must look beyond annoyance to develop an insatiable appetite.

OK, so now we go ahead and ask the next question … **How many?**

Considering that the enormous category that we're labeling as "ideas" includes incremental improvements as well as possible breakthroughs, just how many great ideas does a healthy business really need to sustain itself? Tens? Hundreds? Thousands?

Edison, for example, tested hundreds of materials when he was searching for the light bulb filament. Well, no - actually he tested *thousands*: "Before I got through I tested no fewer than 6,000 vegetable growths, and ransacked the world for the most suitable filament material."[29]

It probably takes hundreds of ideas to keep a small business in sync with the competition, while large organizations need literally *thousands* of ideas, or maybe even tens of thousands. You need so many largely because a lot of them don't turn out to be very useful. In fact, a study at DuPont showed that it took 3000 new ideas to attain one new business idea that actually made an impact in the marketplace.[30]

Three thousand to one isn't a very good success ratio, and it's likely that by applying the right methodologies you could do a lot better than that. Nevertheless, these numbers give you an idea of the surprising scope of the ideation problem you're facing.

Another reason you need so many ideas is that most of them - the good and the bad - will be incremental. Typically, 95% of new ideas relate to existing products and services, and only 5% are about breakthroughs. Hence, it usually takes a huge number of ideas to find the ones that are really important, the ones that represent investment opportunities for the future.

---

[29] http://www.ideafinder.com/

[30] Stevens, Greg A. and James Burley. "3,000 Raw Ideas = 1 Commercial Success!" *Research•Technology Management*, May-June 1997.

What Is an Idea?

What's the definition of a great idea? The answer will depend, of course, on what your aims are. It might be one that leads to the highest impact in the market; or the one that leads to an innovation that can actually be achieved. It might be the one that inspires a hundred other great ideas; or the single idea that happens to be brilliant all by itself.

It might be a simple concept, or a very complex formulation. Here's a great example of a simple idea from Taiichi Ohno, the man most responsible for developing the revolutionary Toyota production system, renowned throughout the world as a critical foundation of this great company's success. Ohno writes, "The two pillars of the Toyota production system are just-in-time and automation with a human touch, or autonomation. The tool used to operate the system is kanban, *an idea I got from American supermarkets*. A supermarket is where a customer an get (1) what is needed, (2) at the time needed, (3) in the amount needed."[31] How many people failed to notice this connection before Ohno saw that the rational supermarket contributes to our understanding of the rational factory?

But Ohno was prepared to see that connection because he already had the question of how to improve the factory firmly lodged in is mind. It was his preoccupation in fact, and unlike conventional thinkers, he was prepared to see solutions to his ongoing problem any and everywhere.

And this is one of the key factors that distinguishes those we consider to be innovative from those who I just labeled as "conventional thinkers." Innovators tend not to look in the conventional places, but on the fringes, on the edge. They bring ideas that others do not see from the outside, and understand how they can be applied inside.

Your definition of a great idea will change as your aims change, and depending upon the specific situation in which a new idea or two hundred may be particularly useful. Is your interest short term or long term? Incremental or breakthrough? What are your company's vulnerabilities? What's the rate of change in your industry?

The point of this should be clear - don't go looking for great ideas without first defining what constitutes greatness. And once you define what a great idea is, then it's time to go find some. Naturally, they come about in many different ways, and not as a result of a single activity or a single process. Sometimes they arrive spontaneously, but as we learned in making the distinction between preparation and luck, it's not enough to sit and wait for them to arrive on their own. It's far better to proactively and aggressively create them.

As you set out to do so, here are some of the questions you would probably ask yourself:

---

[31] Taiichi Ohno. *Toyota Production System*. Productivity Press, 1988.

- What information should we assemble when we're searching for a great idea? What experiences should we pursue? Experiences about our customers, our competitors, our own company, our suppliers, and about the external factors such as technology and globalization that will have an impact on our business. Information about them?

- Where would we find those experiences, and that information? We'd get it from a variety of public and private sources, many of which we would examine carefully and frequently.

- Or if it wasn't information we could find, but had to create, then what would we do? We'd learn about the process of creativity and then we'd do what creative people do when they're looking for great ideas.

- And what would we do to turn ideas into something that we will use in our business? If we had a lot of ideas, we'd choose the best ones and develop them.

When we've done all those things we will know that there are lots of ways to come up with ideas, and in the pages that follow I'll mention more than 40 of them.

Use Multiple Viewpoints

There's an important principle underlying the search for insights and ideas, which is that to succeed at it you have to come at it from multiple points of view. The flip side of this makes it obvious, as you know that you'll certainly fail to come up with any great ideas if you look at your problems or your markets with the same perspectives that you use in the day-to-day course of normal work. Why? Because the nature of day-to-day work actually hides the future from you by forcing you to focus on the here and now. This is, of course, precisely the same problem that degrades corporate strategy, namely that the pressure for current profits can erode the risk-taking that's necessary for companies to evolve. Thus, they tend to repeat the same patterns out of a progressive aversion to risk and change, and they miss the key signals of a changing market and then fly over the cliff that they didn't see coming because they were so short-term focused.

Hence, the goal here is to see differently, and adopting multiple differing perspectives is fundamental to doing so.

So in addition to your deep immersion in "our" point of view, you must

explore other viewpoints. For example, you could ask,

- "How do our customers view things? What's really bothering them?"
- Or you could examine what your competitors think, or your key suppliers.
- You should also ask, "What does the evolution of technology tell us about these issues? And what about changing demographics, and globalization?"
- You could also consider what the problem would look like if you were an Asian company, or a European one.

Edward de Bono is famous for the numerous methods he's developed to help people to be more creative, among which the process called "lateral thinking" is quite well known. The premise behind lateral thinking is as simple as it is effective: when you look at the same thing in a different way you are likely to be more creative, and if you can change perspectives at will then your creativity can be expanded enormously.[32]

The point is clear: you have to adopt multiple different viewpoints to grasp the full scope of the issues you're facing today, and those you'll face tomorrow. The means of doing so are equally clear: you have to help people to change their own perspectives, and at the same time bring multiple individuals with different viewpoints together and ask them to interact with one another.

Who's Doing It?

The goal of ideation is to come up with lots of great ideas, the more the better. But quantity is not enough. Ideas also have to be different from one another so that they'll be applicable in many possible different worlds (i.e., markets) that may exist today and in the future.

Differences are therefore sought along three different dimensions. First, by engaging in a variety of different types of activities - here presented in six different categories - and second by involving very diverse groups of participants in the activities you undertake. As I noted in Chapter 3, creativity in groups is greatly enhanced by the diversity of their members, so groups that are more diverse tend to be more creative than less diverse ones. A key reason for this is that diverse individuals tend to see things differently than one another, and from their different points of view they can conceptualize a much wider variety of possible solutions.[33]

---

[32] Edward de Bono. *de Bono's Thinking Course*. Facts on File, 1994.
[33] James Surowiecki. *The Wisdom of Crowds*. Doubleday, 2004.

To further enhance this process you should also engage outsiders, including customers, experts, consultants, and suppliers to participate along side the insiders.

The third dimension that you'll use to broaden your pool of ideas is to get a lot of people involved. In fact, you'll want the maximum possible number of people for the broadest possible input and participation. In various formats of participation there may be hundreds or thousands of people eventually involved, whether for ten minutes, ten days, or ten months at a time.

As you engage people in ideation, you'll quickly find interesting differences among individuals. Some, for example, are natural trend trackers, and they know a tremendous amount about what's going on because they like to think broadly. They regularly follow events and find the links which connect them. Others are highly focused on their own projects and think deeply on fewer issues, so they hardly pay any attention at all to outside trends. Some people are natural problem identifiers and can tell you what's wrong with just about anything that's going on inside or outside of their organization, while others hardly take note of the problems but often come up with good solutions effortlessly.

How to Create Ideas: The Six Ideation Processes

I've grouped these methods into six different categories corresponding to six different ways of thinking about thinking. As you develop your own ideation processes and preferences, it's easy enough to shift any method to another category if you prefer to group them differently. The point, of course, is that you have to define the right methods for your firm, and then USE THEM.

1. **The universal search methods,** three approaches whose applicability to the practice of innovation are exceptionally useful in nearly every conceivable situation.

2. **Trend gathering**, monitoring the external environment and thinking about the key patterns that are most important to your organization.

3. **Idea hunting**, proactively seeking out and creating new ideas.

4. **Problem and solution finding,** searching for previously unidentified weaknesses in current methods and processes using fresh eyes, searching for solutions to specific problems that have already been identified as important, or reexamining the way we do it now to find the hidden defects.

5. **Outside-in and peer-to-peer innovation**, processes that engage the broader world outside the organization in the search for insights and ideas.

6. **Future dreaming,** the process of exploring possible futures to imagine opportunities that do not exist, and to provoke insight into what could be, or what could be created.

Overall, the key differences between these approaches is that they involve different styles of thinking, and each therefore addresses the processes of insight and ideation with different types of questions, but all with the ultimate goal of maximizing the number of great ideas in your stock of useful possibilities.

It's worth noting that trend gathering and idea hunting are complementary, one oriented to *recognizing* change as it is happening, and the other to *creating* change. Problem finding and solution finding are also complements, as they consider existing realities from two very different points of view.

Having Fun: Divergent Thinking

One of the most important principles of creativity is that it's really hard to be creative unless you're having fun. Drudgery, boredom, conformance, and compliance are all creativity killers in the worst way, which means that all of the ideation processes listed below have to be pursued with some degree of whimsy and light-heartedness even as fundamental principles of business judgment will ultimately underlie all decisions.

One way to understand the open spirit that's required is to recognize that when it comes to dealing with ideas, there are two different types of thinking, convergent thinking and divergent thinking. Convergent thinking is

the focus that is required to organize and complete a task, narrowing options and moving forward toward decisions, actions, and implementation. Organizations tend to promote convergent thinking in the extreme, and to neglect its critical complement, divergent thinking. Divergent thinking is the thought process that leads to new ideas, because it is based on looking for differences (i.e., novelty) as opposed to similarities. Creativity is all about recognizing the differences that will make a difference to the future - different products, different services, different business models.

All of the ideation tools listed below, and any others for that matter, will work best in a setting where the importance of divergent thinking is appreciated and embraced.

Universal Search Methods

The three wonderful processes described here are powerful stimulants for effective ideation and innovation, and their application across all types of innovation is virtually unlimited.

1. **Questions.** In Chapter 3 in the discussion of Creative Tension I described how important it is to ask questions, and now we return to that most simple principle again, since asking questions is indeed the single most universal and effective tool for exploring and generating ideas.

Questions open doors to new possibilities, and a fine example of this is the invention of Polaroid camera. One day Edwin Land was in front of his house taking a picture of his young daughter. She smiled and he clicked the camera. She wanted to see the picture. He said that she had to wait because he had to develop the film, and then print it. "No Daddy," she insisted, "Why can't I see it now!" Humm, he wondered. Why not? This question, innocently asked by his daughter, set him on the path that led, eventually, to the Polaroid instant camera: "Why can't I … ?"

To repeat, questions open doors to new vistas, to new ideas that would not have been imagined if the questions had not been asked.

Coming at this issue from the opposite perspective, from the viewpoint of ideas you've developed, how do you figure out if an idea is a good one or not? You ask questions. Tough questions. Deep, probing, thoughtful, and stimulating questions. Lots of them.

Tough, probing questions express leadership, and the habit of asking questions is indeed one of the notable characteristics of great managers. They don't do it to put people on the defensive, but rather to expose and test their own thinking, and the thinking of everyone around them.

In the day to day practice of corporate life, questions can stimulate creativity and innovativeness, fostering and nurturing good thinking. Thus,

the Hewlett Packard management practice known as MBWA, management by wandering around, was just a term to describe a culture of questions and possibilities that served HP quite well for many decades.

Thus, if you think about the differences between good managers and great ones, you could identify many different qualities, qualifications, and characteristics. You might choose charisma, or brilliance, or experience, or perhaps compassion. But above all others the one that I would choose as the hallmark of greatness is the propensity to ask insightful and tough questions. Why?

Because a good question is itself a model; it embodies a concept and a point of view, and if it's well-crafted then by its very nature it gives structure to reality by framing a world view, bringing context and awareness, uncovering insights and possibilities that were formerly hidden. A good question makes you think.

To get a feel for this, consider your own experience, and remember a time when you were wondering about something. As a child you may have wondered, for example, why the sky is blue. Suppose you ask your mother, but instead of answering directly she responds to your question with another question, "Well, why do you think so?" You could probably have come up with five or ten great possibilities, and then you'd compare them in your mind, and perhaps select the most interesting one. And through all of this you may well have learned. This happens because questions make you think, and thinking makes you grow.

Good questions, tough questions, are often far more valuable than good answers, so managers - as well as parents and teachers - use questions as tools to expand engagement, creativity, innovation, and ultimately the options available to their organizations. The right questions focus attention on the right issues at the right time, and they are invaluable allies of thoughtful and careful management.

What can a question do for science? The art of asking questions, and particularly asking the ones that lead someplace useful, is a central element of the scientific method. Scientists use questions to frame their ideas, and present them in the form of concepts or hypothesis that are then tested via experiment. Throughout the history of science, those who framed their questions with great elegance, and who designed the cleverest experiments, gained the admiration of their peers, and they have advanced our collective knowledge and capability in the process.

Einstein reported that when he was deeply immersed in the thoughts that led to the revolution in physics, he asked himself what it would be like to ride on a photon. From this thought experiment he was able to grasp the meaning of the speed of light. A simple question opened him up to a new

view of the universe, and the resulting insights led to a revolution in our collective understanding of reality.

What can questions do for business?

They will lead to insights that shape the future. So while it may be fun to be the one that everyone else comes to for answers, real leaders are the ones who know the right questions. How good are the questions that you've been asking lately?

Questions about surprises, successes, and failures

One of Peter Drucker's best books is his compact treatise on innovation entitled *Innovation and Entrepreneurship*[34] in which he describes the pursuit of innovation as a practice and a discipline, a systematic questioning activity to be engaged in by senior managers and their teams.

One of the most valuable aspects of the book is the very simple structure that he provides, from which I have extracted the following nine questions that you can ask to expose new ideas that may lead to innovation opportunities.

1. What surprised us?
2. What caused the unexpected success?
3. What caused the unexpected failure?
4. In what ways did reality turn out differently than our expectations?
5. What did our customers value that was different from what we expected them to value?
6. Where is our process inefficient?
7. How do changing demographics create new needs?
8. How are people's attitudes and beliefs changing?
9. What impact will new knowledge have on our markets?

Among educators, a related field has emerged under the name of "critical thinking," whose intent is to help students learn important thinking skills. Critical thinking explores concepts such as reasoning, argument, interpretation, credibility, causality, and soundness of logic. Learning to ask better questions is a process of learning to think more clearly, which is

[34] Peter Drucker. *Innovation and Entrepreneurship*. HarperCollins, 1993.

obviously a critical attribute in any innovation process, and indeed in all aspects of management. There is profound power in the right question, simply posed. What questions have you asked today?

2. The second universal ideation method is **ethnography**, the branch of anthropology that's focused on the study of human culture. It was developed early in the last century when Western civilization first encountered indigenous peoples who had never had contact with the outside world. Since human culture is still the driving force that shapes the present and the future of every market, ethnography is an ideal method for studying many of the key issues that matter to your company's future.

The practice of ethnography is also an example of the power of questions, as at root ethnographic methodology is a systematic and sophisticated approach to question-asking that seeks to identify the "right" question that will expose hidden beliefs and realities. But why hidden?

The power of ethnography derives from the fact that conscious awareness brings to our attention only a tiny fraction of our experiences, of everything that our senses perceive. The reason for this, of course, is that if we were to become aware of everything that our senses pick up, we'd immediately be overwhelmed. So our brains filter reality into patterns and concepts that we can cope with, but with the side effect that a lot is eliminated from our awareness. What's left out is often particularly fertile ground for innovation, so we need a method of accessing the parts of experience that may be unconscious, and ethnography provides that.

Knowledge that we have, but about which we are not conscious, is sometimes referred to as tacit knowledge, and the distinction between tacit and explicit knowledge is important for innovation. While explicit knowledge can be shared through verbal and written expression, tacit knowledge is that which we feel, experience, and believe, but which we probably cannot express.

The differences between these two forms of knowledge are beautifully explained in Ikujiro Nonaka and Hirotaka Takeuchi's book *The Knowledge-Creating Company*.[35] They point out that while Westerners tend to value explicit knowledge most highly, there is great appreciation for tacit knowledge among the Asian cultures, and this has contributed enormously to the success of Japanese companies during recent decades.

In the design of their products, Japanese companies learned to pay careful attention to the tacit factors pertaining to how products are used, including the feel of a product in your hands and its ease of operation.

A simple example of tacit factors in design is your car key. Today it's an accepted standard that a single key both opens and starts the car. Since

---

[35] Nonaka , Ikujiro and Hirotaka Takeuchi, *The Knowledge-Creating Company*. New York, Oxford University Press, 1995.

the key is symmetrical, it works facing either direction, which assures 100% success with the key in the lock or the ignition. Until recently, however, American car makers provided two different keys, and neither was symmetrical. Hence, fumbling at random in the dark, the GM driver had only a 25% chance to get the right key in the lock correctly.

Why is this tacit knowledge? Because if you ask 100 drivers of Japanese or GM cars, 98 probably aren't aware of this detail even though they experience its consequences many times each day. Point out the difference and ask again on a dark and stormy night, and you can be sure that the drivers of the Japanese cars were happy with their choice, which is why all the other automakers copied it.

And why is there tacit knowledge at all? Why does so much of our experience lie beyond our conscious awareness? For an answer to this question we must turn to physiology and cognitive science. Studies of the human brain reveal that the sensory organs generate information at a prodigious rate, as the eyes, ears, skin, taste and smell systems send approximately eleven million bits of data per second to the brain. However, conscious perception lags considerably behind at a paltry forty bits per second.[36] This means that the brain is processing approximately 300,000 times more information than consciousness is aware of.

Knowledge, however, is more than sensory data. It is also the complex concepts that we synthesize from sensory data, combined with our memories. The field of cognitive science addresses this issue, and calls to our attention the fact that most of our concepts also remain at the tacit level. George Lakeoff puts it very simply: "One of the most fundamental results in cognitive science, one that comes from the study of commonsense reasoning, is that most of our thought is unconscious - not unconscious in the Freudian sense of being repressed, but unconscious simply in that we are not aware of it. We think and talk at too fast a rate and at too deep a level to have conscious awareness and control over everything we think and say. We are even less conscious of the components of thoughts - concepts. When we think, we use an elaborate system of concepts, but we are not usually aware of just what those concepts are like and how they fit together into a system."[37]

Since the gap between tacit and explicit processing is so great at both the sensory and conceptual levels, we begin to understand why face to face interaction is so dense and so important. Nuances of tone, inflection, timing, cadence, body language, attention, smell, and facial expression are all richly present in any encounter, but they are captured only partially - if at all - in interactions via telephones and computers. From our own experiences, we know that these factors contribute enormously to the completeness of human

---

[36] Zimmermann, Manfred, "Neurophysiology of Sensory Systems." *Fundamentals of Sensory Physiology*, Robert F. Schmidt, ed. Berlin, Springer-Verlag, 1986. p. 115.

[37] Lakeoff, George, *Moral Politics: What Conservatives Know that Liberals Don't.* Chicago, The University of Chicago Press, 1996.

interaction, to our ability to communicate effectively with one another. This is not to say that telephones and computers do not have their uses, but it does tell us clearly that there's something unique about encountering each other in the many dimensions of face to face contact.

And what of the common experience of interaction leading to new insight? Physiology and cognitive science also tell us that the brain in general and memory in particular work by association,[38] and that interacting with one another stimulates new associations, new connections that sometimes lead to breakthrough concepts. Face to face interactions also enable people to share experiences, which means sharing tacit knowledge and in the process creating new tacit and explicit knowledge. From this process we get the title of James Burke's best-selling study of innovation called *Connections*,[39] which we also call "creativity."

But since so much of what we are discussing happens unconsciously, how would you know what's actually occurring? You would have to turn some of that tacit knowledge into explicit knowledge, which you could do by studying the behavior of people using ethnographic methods, and indeed ethnography is just what many on the leading edge of research and product design are now doing.[40]

Because it turns out that ethnographic methods are as useful for studying tribesmen in New Guinea as computer programmers in Palo Alto or shoppers in Pittsburgh or Paris, as they expose the important tacit factors embedded in interactions. Product design firms use ethnography to find new needs and new markets that haven't already been recognized, and ethnography also helps companies to design better products and better buildings, and educators to design better curricula.

This is critically important in activities such as market research, because traditional tools focus on explicit knowledge and are therefore likely to miss the vital tacit dimension of the customer's experiences. Consequently, ethnographers in the consumer marketplace can tell us important things about customer behavior that customers themselves could not articulate.[41]

Among the key insights about the workplace that ethnographers have found is that there is frequently a huge difference between what people say they do, and what they actually do. This issue is important to architects, for example, because when they design buildings they rely on what their clients tell them. If a client, out of ignorance or unawareness, tells them wrongly,

---

[38] Calvin, William H., *The River that Flows Uphill: A Journey from the Big Bang to Big Brain*. New York, MacMillan, 1986.

[39] Burke, James, *Connections*. Boston, Little, Brown and Company, 1978.

[40] Jordan, Dr. Brigitte, "Ethnographic Workplace Studies and Computer Supported Cooperative Work." Institute for Research on Learning, Report No. IRL94-0026, 1994.

[41] Paco Underhill. *Why We Buy: The Science of Shopping*. Simon & Schuster, 1999.

chances are the resulting building will disappoint them in some important ways, perhaps failing to meet the true needs of its users.

Ethnographers have also developed some very useful theories about the behavior of people in organizations and how they develop new knowledge. A concept called "communities of practice" describes how new knowledge emerges in work groups as people gradually transform the tacit experiences gained doing their particular jobs into explicit shared methods and practices.[42] Such methods and practices define a group as a community, and provide the de facto context in which their aggregate knowledge grows and develops. It is through the progressive transformation of tacit knowledge into explicit knowledge via human interaction that groups develop their capabilities, become more productive, and add increasing value.

The discipline of ethnography was invented for the study of human culture, and its importance to us lies in the compelling insights it has provided into the behavior of people - customers, organizations, and markets. It exposes hidden assumptions and values, uncovering experiences that are important but unseen, helping researchers to see opportunities and to develop breakthrough products and services that address the sort of needs that may be the most valuable for any company to become aware of, namely unknown and unmet needs.

This is, in fact, so important for innovation that it reminds us of the sixth principle. The first half noted that, "Great innovations begin with great ideas." Now we can focus on the second half: "To find them, identify unknown and unmet needs."

Ethnography has proven to be an unparalleled method of generating such insights and ideas by exposing valuable tacit knowledge, addressing the entire range of possibilities to serve customers and improve organizations, and as such it truly is a universal tool.

3. The Innovation SWAT Team, or iTeam, is a powerful bottom-up method of carrying the spirit and the practices of innovation throughout any organization that's on the road to permanent innovation. This team is a group of roving innovation specialists who move throughout the company partly according to a plan, and partly directed by their own ears to the ground, looking for ideas to evoke and enrich, and for creative people to engage with. Their mission is to link top-level strategy, problem areas in the

---

[42] Wenger, Etienne, *Communities of Practice*. New York, Oxford University Press, 1998.

company, and innovation methods and tools with people at all levels, so that they become lively, engaged, and enthusiastic co-inventors of the future.[43]

iTeams find venues of activity anywhere and everywhere by engaging people in thinking and talking about what's happening inside and outside the organization, about what they do, how they do it, how the results of their work create experiences for customers, and how innovation in all its many guises can lead to improvements.

The tools at their disposal include an unlimited array of possibilities, including asking questions, ethnographic research, all the ideas and approaches you'll find the following pages, and more besides. In other words, they bring innovation methodology to the organization by interacting with people in rigorous, systematic, and persistent ways.

One of the most important reasons that the iTeam exists is that although the innovation process is much more than just a glorified suggestion box, the people who may have the ideas, and who certainly have the relevant day to day experiences, may not have enough knowledge about how to apply innovation processes to turn their own ideas into useful progress. The iTeam uses all forms of interaction to bring forth latent ideas and interests, to help people at all levels of an organization to give shape to their ideas in a useful framework so that they can contribute to the ongoing improvements that changing markets demand.

iTeam members are like Six-Sigma black belts for innovation, and when coupled with the practice of ethnography and the habit of asking excellent questions, you'll have three tools to give you an exceptional start on your quest for innovation.

Ideation Through *Trend Gathering*

It's easy to keep your attention focused on the issues that matter the most to you, so if you're like most people you regularly collect and integrate new information on topics you care about without even being aware of it. Trend

---

[43] The iTeam was pioneered by Brigitte Jordan and her colleagues at IBM's Hardware Networking Division. See also: Alan M. Webber. "XBS Learns to Grow." *Fast Company Magazine*, October-November 1996.

gathering therefore taps into what many people are already doing and turns this natural process into one that provides specific, focused value for their organizations.

For example, trend assessment is typically included as a step in every company's annual planning cycle, when managers pool information about what's happening in the market and decide what they ought to be doing about it. It also happens when people randomly scan through the piles of magazines, books, or newspapers sitting beside their beds. It can also be a more structured reading program that involves teams of people engaging in systematic review of magazines and newspapers, looking for early clues about the latest ideas.

There are many different ways to keep track of the external events that you already know are important or may become important to the future, and each of them can be the source of dozens or even hundreds of new ideas about what your organization can or should do differently in response to emerging trends and key events. Thirteen processes, or tools, are described below; the point of each one is to seek information and knowledge that you would not normally come across, to look outside of the usual sources for insights into how the market and society at large are evolving. Again, it is on the fringes that you'll likely find the future, so you have to go looking for it.

Thirteen Trend Gathering Tools

1. **Competitor intelligence** should be a formal process that tracks what your competitors do, assesses it, and determines how you're going to respond. Do you have a formal process? Do the people engaged in this process report regularly on what they've learned? Are they encouraged to deconstruct their findings into ideas and suggestions for your own organization? How do you share new insights about your competitors among those inside your organization?

2. **Economic forecasts** assess the future of the economy to help you consider how future conditions may affect your company. As outsiders, these analysts may have usefully different views on the key trends and events that are shaping the future, and on the specific industries that are relevant to your firm. Hence, studying their findings is a useful of way of gathering new inputs and perhaps seeing possibilities that you hadn't been aware of before.

3. **Trend safaris** are journeys into the mysterious jungles of local shopping districts and hang-outs where you'll look for evidence of

new trends, new ideas, new behaviors. These safaris can last two hours or two days, and they can reinvigorate the creative spirit in individuals and teams by exposing them too all kinds of new inputs.

4. **Market analyst reports** may have useful insights into the strengths and weaknesses of your firm and its competitors. They often have a point of view about the competitive market, and they're paid to have useful insights into the strengths and weaknesses of your firm and its competitors. Do you take their views into consideration? When they're wrong, what do you know that they don't know? When they're right, what are you doing to respond to their analysis?

5. **Think tank studies** explore aspects of the future that may have the greatest significance for your strategy.

6. **Advisory boards** of outside experts can be assembled as a source of valuable information on what's happening in the market and as a sounding board for your ideas and strategies.

7. **Conferences and trade shows** are a great source of information because there's nothing like wandering around on a trade show floor to pick up the gestalt of an industry. What are the hot issues? What's getting the most attention? How are various companies positioning themselves? Even better, have a team of people do this separately, and then compare notes. You can answer all these questions, and many more, in just half a day at the right event.

8. **Periodicals**. To learn about a different aspect of our culture, choose the magazines you read for maximum insight into change. Subscribe to publications that you wouldn't normally consider for a few months, and then switch to different ones to learn about other topics.

9. **Structured reading programs**, as noted above, involve small or large groups in systematic scanning activities by assigning reading assignments and then engaging in systematic debriefs to explore the new trends and ideas that have been exposed.

10. **Previous experiences and success stories** are a staple of organizational culture, and they can catalyze new ideas. Newsletters, emails, web sites, and even conferences can explore

what an organization's past successes (and failures) might mean for its future.

11. **Periodical scanning services** will provide articles from any publication on any subject, so you can use them to collect information that you'd never see otherwise.

12. **Google, online trend tracking services, and blogs** provide powerful tools for trend tracking that can bring information and insights in seconds. Despite the risk of overwhelm, the potential for rapid learning and the stimulation of new ideas makes these tools compelling. For example, couple of very different online trend watchers that we like are the very polished www.trendwatching.com and the quite simple but informative www.newsscan.com.

13. **Weak signal research** is an approach to tracking emerging trends that may warn you about great changes ahead. The underlying idea is that trends that are the most important to know about are the new ones that can only be perceived to as "weak signals." Recognizing and understanding the weak signals before the competition does could yield a considerable advantage. Hence, it can be very useful to engage in weak signal research, which necessarily entails looking on the fringes, beyond the usual for the unusual phenomena that may, through lateral movement, suddenly arrive in a new market space.

    For example, when digital music and the MP3 format were first developed it wasn't clear how they would affect the music industry. We know now that it's had a profound effect on both the computer industry and the traditional music business, and one of the first signals of this was the success of Napster. Napster achieved a stunning rate of growth, and within its first nine months of operation had more than 10 million users. The music industry succeeded in shuttering the company because of copyright issues, but then Apple developed the iPod MP3 player and the accompanying iTunes music distribution system, and now the company has more than 70% share of this huge and still rapidly growing market, while CD sales are dropping year after year. In the early days of MP3 it was hardly evident that any of this would happen, but grasping the early signs, together with great design, helped Apple achieve a dominant position.

•••

So what are the outputs of all this trend gathering likely to be? Well, for one thing, everyone who participates will gain a heightened awareness of the key trends and issues that are shaping the future. They'll also be engaged in an extremely useful exploration process that will surely affect their thoughts, expectations, plans, and strategies for the future in their own areas of responsibility.

And then there are the insight and ideas! What a treasure trove! These activities should stimulate countless ideas about how to improve, and if your organization applied even a handful of these ideation approaches on a broad scale the resulting torrent could provide a tremendous stimulus to everyone's thinking.

Although there's some risk that people will be overwhelmed with the resulting explosion of new ideas, the benefits would surely outweigh the costs. In any case, the subsequent steps of the innovation process are designed specifically to ensure that the sheer number of ideas doesn't lead to organizational constipation, and what a marvelous wave of creativity the innovation process would be riding upon!

And then imagine what could happen if processes like these were maintained with some degree of consistency over a period of years. What would happen? You could develop an organizational culture with an exceptional capacity to continually create future value based on a deep understanding of both the emerging trends and the processes of change itself: permanent innovation.

This is a magnificent start, but trend gathering is only the second of the six ideation methods. Let's continue on with idea hunting, the proactive complement to trend gathering.

Ideation Through *Idea Hunting*

Idea hunting is the aggressive pursuit of *opportunities to create change* by examining specific issues that a company and/or its customers are already facing or soon will be, and using this awareness as a stimulus for new ideas. While trend gathering focuses on information that's coming toward you in many different forms, idea hunting actively pursues a deeper awareness of the factors that are shaping the future; it brings the outside in.

Here are thirteen idea hunting approaches to consider:

1. **Customer surveys** tell you what your customers are thinking about (but be careful - customer surveys can be misleading because they focus on explicit knowledge rather than the more useful tacit knowledge, as noted above in the discussion about ethnography).

2. **Learning Expeditions** are structured learning programs for teams and groups that examine particular themes, and may involve a combination of activities including visits to interesting companies, factory tours, dialogs with key suppliers or customers, and university visits to explore the leading edge of change in a market or an industry. When properly designed and facilitated, such expeditions can yield dozens of ideas across a wide spectrum of topics. A world leader in Learning Expedition design and facilitation is WDHB Consulting Group (www.wdhb.com).

3. **Insight workshops** that are focused on specific themes enable teams of people to explore key issues in depth. Society's accelerating change presents numerous challenges and opportunities that are worthy of serious attention (and you may also expose these in a SWOT analysis; see below).

   By examining a broad range of research materials, groups can identify hidden sources customer value and then work backwards to design products and services that can meet hitherto unknown needs. For example, key external trends in Demographics, the Environment, Economics, Science, and Technology are all likely to have significant impact on your business, and every business, and detailed examinations of these themes in the framework of structured workshops should reveal valuable ideas.

   A workshop on Demographics would examine questions such as, "What will the impact of Baby Boomer retirement be on our customer base? And on our work force? What new products and services could we offer to retirees?" etc.

   A workshop on the environment might focus on the concept of sustainability, and would take a look at businesses that are developing products, services, or processes that leverage this growing trend. You'll certainly be able to stimulate some new ideas by using a theme such as biomimicry, the study of design

strategies from nature,[44] to explore the approaches that enable living systems to function in the huge diversity of ecosystems on the Earth.

The potential here is enormous, as exemplified by the new environmental focus at GE. Recognizing the growing importance of environmental issues, the company established an "Ecomagination" initiative in May 2005, and achieved sales of $10.1 billion on environmental conservation products and services in the first year alone.[45] How much revenue could your firm generate from the broad social movement toward energy efficiency?

And how much cost could you eliminate from your operations? At Wal-Mart, new store designs are in the works that will reduce energy usage by 30%, while the company plans to double the fuel efficiency of its massive fleet of trucks by 2015.[46] It wouldn't be surprising if GE was a major supplier to both initiatives.

4. **SWOT** analysis (strengths, weaknesses, opportunities, and threats), the trusty old SWOT, can reveal useful new insights. To get real value from it you have to be careful, though, to do it thoughtfully and not in a flippant or simplistic way. The insights exposed in a SWOT should be a first step, with much more detailed work following on the high-level SWOT perspective.

5. **Creativity techniques** can be used to develop the creative potential and the creative output of people throughout the organization, particularly if they are applied in conjunction with many of these ideation processes. (See also Chapter 9.)

   Creativity has always been a fascinating topic, leading many to wonder, Why are creative people creative? Where do new ideas come from? And how can we stimulate more of them? There are some aspects of creativity that remain deep mysteries, but others are well understood, and researchers such as Edward de Bono and Howard Gardner have written extensively on creativity and how to foster it. Here are some useful resources:

   - *de Bono's Thinking Course* describes dozens of useful

---

[44] Janine M. Benyus. *Biomimicry : Innovation Inspired by Nature*. HarperPerennial, 2002.
[45] www.ge.com/ecoreport
[46] Joseph Hart. The New Capitalists. *Utne Reader*, May-June 06.

techniques to enhance creativity and help people to think clearly.

- Howard Gardner has studied learning and creativity for decades, and among his many books is a fascinating study of creativity entitled *Creating Minds: An Anatomy of Creativity Seen Through the Lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi*.
- Denise Shekerjian has written a fine study of creativity as expressed through the stories of 40 winners of the MacArthur Genius Award in her book *Uncommon Genius: How Great Ideas are Born*.
- Psychologist Mihalyi Csikszentmihalyi's work on creativity is documented in two great books, *Flow* and *Creativity*.
- Auto designer Jerry Hirshberg, the head of Nissan Design International, has written a marvelous study of the essential role of creativity in the giant corporation in his book *The Creative Priority*.
- And finally, Sir Peter Hall has written a magnificent study of the power or urbanization as a creative force across the history of human civilization, *Cities in Civilization*.

6. **Scenario planning** is a powerful tool to help you see the world differently, and to consider possibilities that might otherwise never come to your attention.

   The purpose of doing scenarios is not necessarily to predict what's going to happen, but to understand what could happen, how it could happen, and what the early indicators might be that it is happening! In addition, by thinking about the possible conditions of the world of the future, we become accustomed to considering how things might change, and we get used to the idea that there are many possible outcomes, and that the actual outcomes may depend on events that seem quite inconsequential today.

   Two very useful books on scenario planning:

   - Paul Shoemaker's *Profiting from Uncertainty* is a comprehensive look at scenarios and how to use them as planning and thinking tools
   - Peter Schwartz is a former member of the Shell scenario planning team and later co-founder of Global Business Network, a consulting firm that offers workshops and consulting in scenario planning methodology. Schwartz wrote *The Art of the Long View* to explain the method, and additional information is available at *www.gbn.com*.

7. **Pattern Analysis** tools such as technology roadmaps, white space mapping, and profit pattern analysis are techniques for looking at critical elements of the market to understand the existing products and services that are available in the market, and finding segments that are ignored or underserved.

    - **White space mapping** seeks new market opportunities where competitors aren't established.
    - **Technology roadmaps** are used by many organizations to help them plan the expected future of technologies that are critical to current and future products and services. This helps them plot their investments in developing the new capabilities that they'll need to make use of new technologies, and thus helps them prepare for impending changes. It's also a vital source of new ideas about the future.
    - **Profit pattern analysis** looks at industry structures and competitive patterns to understand how various players are extracting profit from the marketplace. A deep understanding of the profit patterns in your industry may stimulate new ideas about positioning and strategy for your firm. See the provocative book *Profit Patterns* by Adrian Slywotzky for an interesting discussion of this topic.

8. **Brainstorming** is a high volume form of question-asking, usually organized around a particular theme, problem, issue, or topic.

9. **Drucker's tough questions,** derived from his insightful 1989 book *Innovation and Entrepreneurship* (and noted above in the discussion about "questions") will expose new ideas by exploring the key elements of a business, its markets, and its operations.

10. **Idea rooms** are physical spaces designed to help you develop and share new ideas. Ideally located near the center of your office, it's a place where people cannot avoid going and where they'll meet spontaneously to think about new possibilities. In the words of Carpet One co-founder Howard Brodsky, "If you don't bring ideas to the Idea Room you won't last very long in our organization."

11. **Idea vaults or repositories** are online databases linked to web sites that enable people to share and collaborate on new ideas. These can be clustered in many ways, to match with key strategic

themes and organizational priorities, or common challenges and problems. This tool is discussed in more detail in Chapter 7.

12. **After action review** is a powerful idea hunting practice that has been pioneered in the Army. As it turns out, innovation plays a very large part in military affairs, where soldiers are constantly struggling with the consequences of new technology that takes the form of new weapons, and with the battlefield strategies and tactics that they enable. Military history is filled with examples of battles won, and even wars won, because the leading generals on one side exploited a new technology more readily than their opponents. World Wars I and II provide many vivid examples. The invention of the tank proved to be the decisive factor in World War I; following the war, the French reacted to its horrors by building a massive fortification called the Maginot Line, which the Germans then merely by-passed at the outset of World War II simply by going around the end of it. The French had made the embarrassing mistake of preparing for the last war, not the next one.

    American commanders experienced the same problem in Vietnam, as a military force that had been designed to confront the Chinese in Korea and the Soviets in Europe found itself entirely ill-equipped (both psychologically, in terms of training, and in materiel) for guerilla combat in the jungles of Southeast Asia.

    This is the chronic problem that any military faces, and the nature of today's terrorist conflict shows that we may be no closer to solving the problem than we ever were. On September 11, commercial aircraft became weapons, a clever and frightening tactical innovation that the massive American military organization was quite unprepared to deal with even though the idea had indeed been suggested as a serious possibility.

    Because of the rapid advances in technology and the rapid change that technology brings to warfare, military leaders have always been attentive to the problems of learning and adaptation. Hence, the After Action Review is a process to accelerate learning, consisting of a detailed debriefing of what happened during a practice exercise: What worked? What didn't work? What would we do differently the next time? Soldiers play close attention to After Action Reviews, because the next time may not be an exercise, and their lives may be on the line.[47]

    Business rarely faces this kind of life-or-death challenge, but

---

[47] Thomas E. Ricks. Army Devises System To Decide What Does, And Does Not, Work. *The Wall Street Journal*, May 23, 1997.

there remains the opportunity to implement and apply learning strategies like the After Action Review to improve any organization's performance.

13. The last item on the list may be the most elemental, but also one that's often forgotten: **go and visit the customer**. Visit them on their own turf, in their own environment, where they actually use the products and services you sell. Recently teams of Matsushita engineers wanted to learn how customers felt about some of their products, so went out and visited people in their homes. Ten million homes.[48] You can even call them on the phone; they may be very happy to know that you care about them. During a slowdown in the auto industry a few years ago, the managers at a Mazda plant decided to keep the line workers occupied by calling up customers on the phone to learn how they felt about their cars, and they learned a lot. In fact, they learned so much that once the plant was up and running again the workers had a much more profound commitment to the quality of their work. However, many of their supervisors did not share their passion, which led to a surprising role reversal and some serious conflict as the workers insisted on higher quality, while the supervisors were pressing to keep the line operating at full speed. Eventually a fight broke out when workers, who really did understand the long-term stakes of the game, stopped the line and supervisors tried to restart it before the root cause was identified. Now that is commitment!

•••

Naturally, the ideas that you hunt up using these and other methods will be informed and complemented by ideas and trends you gather, just as trend tracking will stimulate ideas that you'll aggressively seek to refine and develop. These processes should become self-sustaining because they're interesting and useful across the organization.

Ideation Through *Problem and Solution Finding*

What's not working? How do we fix it? When you discover problems that haven't been identified before you can be the

---

[48] Fumio Kodama. *Emerging Patterns of Innovation*. Harvard Business School Press, 1991.

first to solve them and to create new value in the process. If you ask skillfully enough, chances are you'll discover an unlimited universe of possibilities to improve the customer's life, as well as the operation of your own business.

In the section above on the three Universal innovation tools the practice of ethnography was discussed at length, and it's worth noting that ethnography is also a powerful problem finding approach. In addition, here are eight additional problem and solution finding tools that you may also find effective:

1. **The learning curve** is an analytical framework that was originally developed in the quality movement. Its key insight is that through a complete cycle of any business process, diligent attention to detail should make it possible to identify numerous problems, barriers, and obstacles. Solving them typically enables you to achieve quality improvements of 10% to 30% in each cycle, which also confirms the principle of repetition as a learning strategy.

2. **Root cause analysis** is a thinking tool to use when you're confronted with any kind of breakdown or failure. By digging deeply and probing to identify the root cause, you look beyond the symptoms. In quality methodology, this is sometimes referred to as "the five whys," another method pioneered by Toyota. If you ask why a problem has occurred in five iterations of succeeding depth you're likely to arrive at a satisfactory root cause explanation; but if you only ask once you'll probably only learn about symptoms, and the real problems will remain hidden.

3. **Systems thinking** is a compelling enabler of innovation that examines complexity from the powerful viewpoint of the whole. Studying the whole first provides insights into key aspects of behavior that remain hidden when you look only at the parts.

4. **Collaborative design** is a structured process of engaging groups of people in collaborative efforts to understand complex business processes and problems, and to solve them as well. Collaborative design workshops are typically compressed in time - perhaps 1 to 3 days long, and they may be facilitated by a team whose primary purpose is evoking the highest possible levels of creativity from a group that could be 15 people, 150, or even 1500. The role of facilitation in collaborative endeavors is examined in Chapter 10.

5. **Design methodology** is the systematic pursuit of solutions to complex problems by following the discipline that those in the design professions are taught to use from the very beginning of their schooling. It's as valid for artists, composers, and architects as it is for scientists and managers, and it's described in much greater detail in Chapter 9.

6. **Ideation workshops** apply collaborative methods to enable groups to develop solutions to tough problems. These workshops are often facilitated by inside or outside experts to achieve the best results, and they're part of the New Venture game changer methodology which we'll explore in Chapter 7.

7. **Corporate strategy** is normally thought of as a process of exploring the future of the market and setting future goals, but when you look more deeply at what actually happens in the planning process, you may see that the highest value comes when you identify new issues and problems that will matter in the future, and that you're going to focus on understanding and solving this time around. The goal is to address the big problems, particularly the big ones that customers care about.

8. **Quality**. The pursuit of quality is a constant hunt for the problems that are preventing 100% success. It's usually easy in the early stages of problem finding because there are so many problems out there just waiting to be found. Living, you could also say, is a problem finding process, or maybe it's a process where problems find you! Either way, it's a great way to stimulate new ideas.

•••

Problems always exist in a context, in the framework of specific goals, needs, and intentions; something that someone is trying to accomplish. Solutions, likewise, are contextual; they always refer to a problem, and just as there are new solutions - that's what invention is, after all - there are also new problems that no one noticed before. Both contexts are well worth exploring.

Ideation Through *Outside-in and Peer-to-peer Innovation*

In Chapter 4 I described the four strategic innovation viewpoints, top-down, bottom-up, outside-in, and peer-to-peer. The key underlying insights for the latter two are the fact that customers *want* to be part of the businesses that they trust and admire, and that the creativity possible outside of the organization is always greater than the creativity possible inside simply because no matter how many smart people there are inside, there are millions more outside. Here are some of the key outside-in and peer-to-peer techniques and tools:

1. **Externalized research, or "open innovation,"** engages the broader world outside the organization in the search for solutions.

   By using web-based programs such as *Innocentive.com*, companies offer cash rewards for solutions to tough technical challenges in chemistry and biology. This approach enables large corporations to tap into the abundant technical skills of independent scientists and researchers located around the world.

2. **University alliances and partnerships** engage bright and motivated students in R&D work for a tiny fraction of the cost of hiring new researchers, so many organizations have established formal links with university departments that conduct basic and applied research on issues of importance. The results are often proprietary solutions achieved at very low cost.

   These relationships also enable companies to monitor emerging trends in many highly technical fields by leveraging the wide-ranging interests of faculty and students.

3. The very nature of the **customer relationships** you develop provide ample opportunities to get new ideas via outside-in innovation, if you're willing to open up and engage customers in serious dialog. Above I noted that Missha built a dedicated base of 2 million customers who give feedback on existing products, and play a significant role in the company's new products. The internet provides an unmatched tool for engaging in such dialog.

4. Speaking of **customers**, how well do you really understand yours? Do you know what they really think? What they really want? Do you know what they'll want differently tomorrow? Do they want service faster or better? Do they want more choice or easier selections? Do they want a lot of help or do they want to be left alone? It may takes some serious research to get answers to these questions, but it will certainly be worthwhile doing so.

5. **Joint Research** is the peer-to-peer process whereby vendors work directly with their customers to develop solutions to technical and organizational issues that affect them jointly. For example, during the early development of the Lexus, 3M engineers saved time by working inside Toyota's R&D labs to develop new adhesives that were used to join plastic car parts together.

6. **Idealized design** is an application of systems thinking, a process used with groups people to examine their needs and objectives in depth. Its underlying premise is that if you were to "start over" with a clean slate, you'd make different choices and do things a lot differently than you do them today. This is a pathway to learning exactly what employees, vendors, or customers would prefer, tremendously valuable knowledge that exposes what's not working now, and often suggests how it might be improved. The reference work on idealized design is a book entitled, *Idealized Design: How to Dissolve Tomorrow's Crisis... Today* by Russell L. Ackoff, Jason Magidson, and Herbert J. Addison.

Ideation Through *Future Dreaming*

Some of history's most creative thinkers were dreamers who weren't satisfied with the realities of their day, and they actively imagined what might be. Jules Verne, Arthur C. Clarke, and Isaac Asimov, for example, developed the art of science fiction, and many of the themes and concepts they imagined were subsequently realized in science.

Dreamers may also be dissatisfied with commonly-accepted explanations. This is often true of scientists who produce breakthroughs, as they're driven to find better theories to explain nagging gaps in existing knowledge. Thus, the great physicists of history, including Newton and

Einstein among many others, simply did not find that the prevailing and commonly accepted explanations of the world was correct, and they used both their imaginations and their analytical skills to find much better concepts. "Creativity," notes Jerry Hirshberg, "is the mastery of information and skills in the service of dreams."[49]

We also recognize dreamers who pursue their ideas as entrepreneurs, those who transform their dreams into new business ideas and then new businesses.

•••

In these last few pages we've discussed 44 different methods that you can use to generate new ideas, the raw materials of your company's future. When you engage in ideation you'll doubtless find some repetition and perhaps many ideas that you've already seen; these you can easily toss aside. You'll also find some good ones; and you can expect that some of these methods will result in ideas that do truly seem to be great. Of course it may take some effort to sort them out and know for sure, and as we consider *how* to sort them we will first revisit the nature of ideas themselves. In particular, we need to figure out how to help people express their ideas in a way that others can understand, and which supports the group collaboration that will be involved in filtering the best ones from the others.

Now What's an Idea?

Now that we've looked at a wide range of ideation tools, let's revisit the definition of a "great idea." What *is* a great idea?

The ideas we're looking for are the raw materials of the innovation process, so any idea that has a future is probably going to engage the interest of a great many people in the course of developing it into an innovation.

Thus, to manage the outpouring of ideas that these processes will generate (and remember that so far we've only discussed the ideation processes; there's a lot more to come since the subsequent phases of the innovation process will inevitably result in still more new ideas) they have to be adapted into a form in which they can be shared. So they need to be recorded, which means that from the outset you need to define what an "idea" is so that the people contributing them understand what's expected. Then it's necessary to describe each idea, and create a system to keep track of them in some kind of searchable database so that people can avoid recreating the same ideas over and over again. You also have to define what constitutes a "new" idea, which will help avoid the endless churning of old

[49] Jerry Hirshberg. *The Creative Priority*. HarperBusiness, 1998.

ground. These three steps will help:

1. Classification. Classifying is an important step in the ideation process, as it means transforming an idea into a concept that has a description, putting it in a context, and "packaging" it for future study and development.

Whoever comes up with the idea in the first place should have a lot to say about it, so they should prepare the initial description and commentary, and participate in its assessment so they can explain the original insights from which it emerged in their own experience.

Key classification factors to consider are as follows:

The **description** of an idea could be anywhere from a couple paragraphs to a couple pages long. It tells what the idea is, what aspect of a business it would impact, for whom it would add value, and what degree of value it might add.

To help others understand the idea it should also be **visualized** via a simple sketch, a Venn diagram, a process flow, a collage, or any other means possible.

An effort should be made to **quantify** the idea - what might it's value be in the market? And what is the order of magnitude of the cost involved in developing it?

These three elements, description, visualization, and quantification are the essential components of a robust model, and while at this stage they may be guesses that could prove to be ridiculously wrong, they will nevertheless be useful because together they tell the story that will launch the process of understanding the potential value of an idea and choosing the best ones.

A useful idea is a model of what might be in the future, and the more complete the model, the easier it is to evaluate its potential. Hence, there is a balance to find between a documentation process that's so formalized, bureaucratic, and demanding that it suffocates the ideas it's supposed to be supporting, and a process that's so vague and formless as to be useless.

Another classification theme concerns which type of innovation the idea implies. It is incremental or a technology breakthrough? Is it a new product, a business model, or a new venture? At this stage of discussion this classification, of course, will be tentative, and it may well change later on.

The primary criterion for determining which sort of innovation an idea could become is to consider what aspect of the customer experience the idea addresses. Incremental ideas are usually easy to spot because the improvement that they entail is entirely consistent with past and present product and service offerings.

More radical or surprising ideas may be more difficult to sort between breakthrough and business model innovations, so it may be helpful to think of breakthroughs as dramatically better new products or technologies that can be delivered through existing channels, while new business models are radical changes to the channels themselves, and new ventures are typically

called for when an existing organization simply wouldn't be capable of delivering or supporting the intended products and services effectively. Again, these are not rigid divisions, and they will certainly be adapted to your own organization's culture.

The Innovation Table presented in Chapter 1 also gives you a way to consider ideas based on whether they are new to the company, new to the industry, or both.

The pattern analysis tools mentioned above, market mapping, white space analysis, and technology roadmapping, can also help with the classification, because these maps help frame the discussion about whether you're continuing on the same path or heading off somewhere new.

2. Comparison with established references. Sometimes an idea that appears to be new may not be so new after all. As I noted above, to avoid constantly recreating the same ones over and over, it's essential to maintain a complete library of old and new ideas that's searchable by key words, and to compare the new ones with those in the library to see if it's really new.

This sort of library is sometimes thought of as an institutional memory, a systematic way to track and remember the ideas we had last year, or five years ago, and what happened to them. In this we can paraphrase Santayana, "He who cannot remember his old ideas is doomed to recreate them."

3. Strategic intent. The context that defines whether ideas are potentially more or less valuable is largely, but not solely, defined by an organization's strategy. Many ideas will fit within an existing strategic framework, and their value can be readily assessed in that context. Other ideas, however, will challenge existing frameworks and propose new options or possibilities. These ideas have the potential to be the most valuable, but they also require a different sort of process for evaluation and decision making. Here the integration of innovation and strategy becomes absolutely transparent.

The extent of the necessary structure for recording ideas depends on the organization itself, for a process that works well in one corporate environment can be a disaster in another. But in any case someone has to write each idea down, and it's usually easier if you have a template that asks all the key questions. The ideas should then be entered into some kind of database that can be sorted by key words, and also used as a means of stimulating further ideas.

Build Your Tool Portfolio

The fact that there are so many different approaches to ideation raises an interesting question, which is simply, "Which tool should I use when?" as among the 44 different ideation tools it's likely that you'll find many that are applicable to your company and your industry.

To choose well, you'll have to make an assessment of what, specifically, you need to accomplish:

- Is it **good ideas** that you lack? Then perhaps you ought to do some Idea Hunting.
- Are you swamped with **complex problems**? Then it might be a good time for Solution Finding.
- Are you concerned about long-term **stagnation**? Then a Trend Gathering initiative might be right for you.
- Have you had some highly painful and highly visible **failures** recently? Then try an After Action Review.

Whatever your situation, pick a handful of tools and begin to apply them. Do it well, and the output could be a stream of useful new ideas, some of which will seem stunningly good while others might be appallingly mediocre. Work with the best ones, filter out the bad ones, add more tools to your repertoire, and your stream becomes a torrent. This is precisely what you want: people coming up with ideas, sharing them, discussing them, and refining them; this is the beginning of permanent innovation.

Next you'll apply a process for choosing which among them are worthy of additional exploration and development, the process we call targeting.

Action Steps:

1: Use these tools to get more ideas into your pipeline.
2: Then get more.

Chapter 6

Great Choices: Targeting

Permanent Innovation Principle #8:

Ready, Aim, Aim, Aim, Fire.

Yes, it's a cliché. But it's also true. Effective innovation requires very careful targeting. Why? Because there are so many possibilities to chase that you have to make sure that you're going after the right ones. Besides which, innovation is expensive both in terms of cash and time, and good aiming enables you to use your resources wisely.

So now you're inundated with new ideas. Bravo! Now what?

The innovation field encompasses a tremendous range of different activities, and although a great many people immediately associate "innovation" with "new technology," such technology is really only one type of innovation outcome among dozens of possibilities.

In a typical large company, for example, there are at least 40 distinct

aspects of the business where innovation could make a difference.[50] All aspects of operations, from the design of its organization and the structure of its supply chain, to its marketing, customer support, products, and services could be innovation targets.

Figure 6.
40 Innovation Opportunities

business structure alliances & partnerships capital formation administration information flow automation insourcing / outsourcing services organization structure type facilities infrastructure IT infrastructure employee / contractor mix employee experience decision making processes facilities effectiveness process to improve processes education & training customer experience communication process CRM brand / image advertising feedback	customer service service process communication supply chain distribution system manufacturing communication automation product product offering product availability technology (hidden) technology (evident) manufacturing R&D user interface packaging functionality life cycle model sales model sustainability after-sale service distribution style

But no company could possibly deploy sufficient resources to mount innovation efforts across such a broad range of possibilities. So what to do? What's the best way to go about choosing the areas in which you're going to focus your innovation efforts? This is innovation targeting, and it's a critical element of innovation methodology as well as an important topic for management to consider carefully, as done well it's a powerful enabler of future success.

---

[50] Langdon Morris. *Business Model Warfare: The Strategy of Business Breakthroughs*. An InnovationLabs White Paper, prepared & published jointly with the Ackoff Center of the University of Pennsylvania, 2004.

Key questions for this chapter:

1: What's the relationship between innovation and strategy in our own organization?
2: What should be in our innovation portfolio?
3: Which sorts of ideas could contribute the most to the future of our organization?
4: What process should we use to filter the huge mass of ideas into the ones we want to focus further effort on?

So now that you've got the ideas, it's time to figure out which ones are the good ones and which are the dreck, because if you can't sort the winners from the losers then you're no better off. The goal is to identify the best, and to do it as fast as possible. How are you going to do it, and who's going to do it? You need a process, and people to do the many types of thinking that are needed.

The point is to aim, and aim carefully, and it leads us to a business cliché and innovation principle #8: Ready, Aim, Aim, Aim … Fire! Cliché it may be, but in a situation like this it actually says what needs to be said. Innovation is expensive, and unless you target carefully you'll end up with a lot of frustration and a lot of wasted resources.

The targeting process consists of the following steps:

1. Understand the strategic priorities
2. Define the innovation portfolio
3. Define the targeting criteria
4. Define the targeting process
5. Apply this process to identify the best ideas.

Understand the Strategic Priorities

It's your organization's strategy that will define its attitude toward the many different kinds of innovation that you could engage in. That strategy will be shaped largely by an understanding of the market and how it's evolving.

There are many different ways to develop that understanding, concepts and principles that can illuminate the key issues that will shape your strategic

decisions. Or expressed differently, you could ask, "Which of the 40 innovation opportunities should we, or must we pursue."

Here are some key issues to consider.

How do markets evolve? To compete successfully in any market over even the medium term, you have to anticipate what's going to happen. Obviously, different markets evolve in different ways - the markets for perfume, groceries, pharmaceuticals, office buildings, ships, cars, and cell phones, to take some randomly different examples, will follow different patterns, so the real question is, "How do *your* markets evolve?"

Many markets, particularly high tech markets, evolve in cycles. For a while a particular product or type of product dominates, and then there is a period of transition to a new cycle, at which time a different product or type of product is dominant. Harvard professor James Utterback describes this evolutionary process with the label "dominant design."[51]

When an industry is in the transition phase at the beginning of a new cycle, many different product or service concepts compete for attention in the market. For example, in the early decades of the car industry there were electric, steam, diesel, and internal combustion vehicles; there were three and four-wheeled versions; and countless different body configurations. But once Henry Ford combined the key elements into a design that became a standard, the "mind of the market" was fixed on a dominant concept, which then endured for a century.

Once such a dominant design has emerged, it is "locked in," and only a significant shift of some kind will enable a different dominant design to emerge. In the PC business, Microsoft Windows is locked in, and most organizations cannot even consider an alternative because the cost to switch thousands of computers and computer users to a new operating system is prohibitive. Windows will be a standard until something very dramatic happens.

Companies are aware of how dominant designs get locked-in, and they try to achieve it with strategies that lock out their competition. This explains why, for example, American cell phone companies were reluctant to let customers take their phone number to new service providers, because it meant that they would lose the lock-in advantage. It also explains why computer operating systems (before Linux) were closed systems.

Your understanding of the evolution of your markets, the prevailing dominant designs, and how your customers might become locked-in, will have profound influence on your views of innovation, and on the types of innovation targets you pursue.

These targets will be addressed not just through isolated innovation projects, but through a portfolio strategy that seeks to spread risk across a

---

[51] James M. Utterback. *Mastering the Dynamics of Innovation*. Harvard Business School Press, 1994.

number of development efforts that are pursued in parallel.

Defining the Innovation Portfolio

And why a portfolio? For two reasons. The first has to do with the nature of strategy, and the second with the nature of innovation and innovation risk. From the strategic perspective, there are two quite different ways to look at the future of your company and the strategies you'll choose to get there. Either you think you know what's really going to happen in the future and you pick one strategy and put everything on the line for it; or you believe that the scope of possible futures is broad and unpredictable, and you develop a portfolio of options that could be applied as appropriate depending on what actually happens.

When you consider the nature of accelerating change and accept the principle that it's foolish to try to predict the future, then you'll see that it's equally foolish to base your company's strategy on a single prediction of the future. Now it's obvious that you're better off with a portfolio of options that could be implemented as needed under a wide variety of different future market conditions. As events unfold and you see what's actually happening in the market, as new trends and patterns reveal themselves, then you're in position to choose the right responses. This illustrates, by the way, why scenario planning can be so useful as a tool both to prepare your thinking, and to learn to identify and recognize the key indicators that will likely shape the future.

The other rationale for a portfolio has to do with the nature of innovation risk, and the fact that you simply cannot *know*, at the early stages of development, whether or not an idea is a good one. In the words of Hylan Lyon, a former member of the White House Science Office, you can't manage any individual idea with certainty of success, but you can manage a portfolio of well-chosen ideas and reasonably expect many to be highly successful. This is also why venture capital investors develop portfolios, and why the average stock market investor knows that diversification is important as a strategy to reduce risk.

What this means in terms of innovation targeting is that your portfolio should consist of many different sorts of options that might turn out to be applicable if and when appropriate market conditions emerge, or if those conditions can be created as a result of your own strategic initiatives.

As I've noted a couple of times already, this connection makes it clear that innovation can't be separated from strategy because innovation is precisely the process of *creating* the futures that strategy identifies as important. Strategy must therefore consider what's possible for the innovation process to achieve, even as innovation works to make real what strategy has targeted as wanted or needed. The attentive strategist may

realize that the possibilities which innovation enables may also *define* what's important, because these very possibilities may definitively shape the nature of future competition.

Hence, you must ask yourself what kind of portfolio you're going to have: How will you balance between incremental and breakthrough innovation? What will you target? And how will you choose?

Defining the Targeting Criteria

As you define the appropriate contents of your innovation portfolio most of the factors to consider are related to change, the nature of competition, and the expectations of your customers, as these are the issues that will significantly shape the future.

1. The criteria that you'll use to select the ideas of greatest merit are based on what matters the most to your company *and* your customers, which is to say, your corporate strategy. **What do your customers care about most?**

2. You also care about **the rate of change in your industry**, and the areas in which your competitors are focusing. The faster things change, the more ideas you'll need to come up with just to hold your existing position, much less to gain on your competitors, and thus the more ideas you'll need to have in development. If change is slower, on the other hand, you may not need as many possibilities in the hopper. Then again, your company's efforts may actually accelerate change in your industry and enable you to take or enhance a leadership position.

3. And wouldn't it be interesting to know exactly where your **competitors** are putting their innovation efforts? The Chicago-based innovation strategy firm, Doblin, (www.doblin.com) has developed a great tool called the Innovation Landscape that examines the dispersion of innovation efforts across ten different types of innovation in four major categories, including Business Model, Product Performance, Product System, and Brand. By determining which types predominate in your industry, you can more easily see patterns that may also expose interesting opportunities that others have missed.

4. **Who drives change?** Does it come from insiders, whose innovations tend to work incrementally to alter the competitive landscape? Or does it come from outsiders, who parachute into the market unexpectedly and

force everyone else to scramble for position in a significantly altered market structure? Insider-driven change implies a greater need for incremental innovation, while outsider-driven change could warrant a greater investment in possible breakthroughs - recognizing that the latter will be higher-risk, higher-reward propositions.

5. Is change **technology-driven or is it customer-driven**?

- If change in your industry is technology-driven then you're certainly already doing massive amounts of R&D because you have to keep up with your competition. On the other hand, if your R&D group is proficient at me-too R&D, then maybe you're a fast follower. Which is your organization's style?
- If change in your industry is customer-driven then the key sources of new ideas should be found wherever you can capture the customer's voice, and your innovation portfolio will reflect this. What processes do you use to get deep into the minds of your customers? To understand their spoken *and* unmet needs and expectations? Ethnography would be a good option here.

6. Is your industry **capital-intensive?** If access to capital is a barrier to competitive entry then how can you deploy your capital to protect your advantage?

7. **What kind of company do you want to be** in five years? In ten? The contents of your innovation portfolio should be closely aligned with your future goals.

8. What **other dimensions or themes** are important to your business, your markets, your industry?

...

Assessing these eight dimensions will tell you a lot about the right composition of your portfolio.

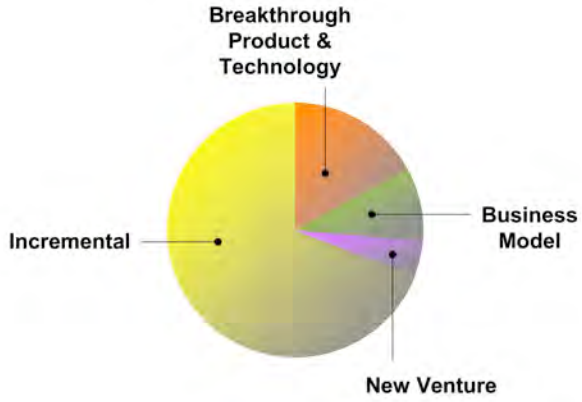

Figure 7.
The Innovation Investment Pie
Showing a hypothetical proportion of investment in the four areas.

Another key issue to consider when you design your portfolio is the relative investment to make between the four types of innovation - incremental, breakthrough, business model, and new venture. In most organizations the majority of ideas are incremental, and the majority investment goes into incremental projects. Your design can be depicted on a pie chart so the weighting between the various types is easy to see.

Naturally you'd like to compare your ideal portfolio with those of your competitors, and perhaps you'd like to benchmark some other companies that you admire. The problem, of course, is that the contents of such a portfolio should be a carefully guarded secret, and you wouldn't want to share yours any more than you can expect to see what's in theirs. So you'll have to rely on whatever you can glean from your competitor intelligence program and use all the thinking tools at your disposal to pick up on the important weak signals.

Once you define the intended structure of your portfolio you've also created a map to guide the filtering of ideas. The structure you define for your innovation portfolio defines by implication the criteria that will be most pertinent and useful for assessing individual ideas, so now you turn the implicit into explicit to define the targeting criteria.

The best ideas will enable your firm to be effective in a (fast) or (slowly) changing market. The will have the following characteristics:

- List the characteristics here that are most significant in your industry:

- Describe the key drivers of change in your markets:
  - Inside forces:

  - Outside forces:

- Additional key factors to consider are:
  - The potential future impact of each idea.
  - The degree of difficulty you're likely to encounter if you decide to start developing it.
  - And they type of innovation that it is (incremental, technology breakthrough, business model, and new venture).

Defining the Targeting Process

Targeting, like ideation itself, is a deceptively involved process. You could simply get a committee together, lay out a bunch of ideas, rate them on a scale from 1 to 10, and then get on with the 8s, 9s, and 10s.

Well, you could do that, but actually you wouldn't want to, because although your first instinct might be to put the responsibility for targeting in the hands of a single manager or a single committee, that's probably not the right thing to do.

There are two basic reasons: the first reflects what we know about creativity, the second concerns decision making and behavior in organizations.

Targeting as Creativity

Targeting itself is not just an activity of assessment, but one of creativity. Like ideation and all of innovation, targeting is iterative, looping, and messy. It's *never* a straight line from insight to idea to innovation, so don't get caught up expecting quick success or simple, straightforward logic. You have to live with ambiguity and you have to accept that there may be a lot of apparent detours along the way. That's how great ideas are born, and that's how they get made into great innovations. So this process is not rigid

and deterministic, but flowing, and it could include a great many digressions.

This is partly because ideas can be deceptive. While you think a particular idea means one thing, you start thinking about it and before you know it, it's morphed and changed into something else. Thus, when a diverse group of people is charged with making an evaluation, their natural process of dialog will range far and wide, across known and unknown territory, and it is from such discussions that new ideas can arise.

Thus, the process of assessing ideas surely ought to lead to more new ideas - after all, most ideas come from other ideas, so it's not just choosing that you're going to do here, but also a lot of refining, adding, extrapolating, and embellishment as well. Consequences that you hadn't considered one moment suddenly become appealing, or appalling, once you focus on them.

Targeting and Decision Making in Organizations

It's been shown conclusively that when you're dealing with areas of great uncertainty, such as predicting the future value of an idea, the collective input of many people from diverse backgrounds is much more likely to be right than the best guess of even the most intelligent and highly trained individual expert. James Surowiecki puts it this way: "If you put together a big enough and diverse enough group of people and ask them to 'make decisions affecting matters of general interest,' that group's decisions will, over time, be 'intellectually [superior] to the isolated individual,' no matter how smart or well-informed he is."[52]

These insights have led to the development of a new field that goes, at the moment, by three different names - "prediction markets," "decision markets," and "information markets." One of the oldest of these markets is the Iowa Electronic Markets (IEM), operated by the University of Iowa, where traders buy and sell futures on political and economic events. For example, with about 3100 traders participating, the market as a whole did well in predicting the outcome of the 2004 Presidential election: "At midnight on Nov. 1, the IEM's vote share market had Bush earning 50.45 percent of the popular vote, compared to 49.55 percent for Kerry. The actual vote count as of Nov. 4 showed 51.54 percent for Bush and 48.55 percent for Kerry. The IEM's average absolute prediction error for this election was 1.1 percent."[53]

Decision markets are also well-suited for companies, as Surowiecki explains, because "they circumvent the problems that obstruct the flow of information at too many firms; political infighting, sycophancy, and a confusion of status with knowledge. The anonymity of markets and the fact that they yield a relatively clear solution, while giving individuals an unmistakable incentive to uncover and act on good information, means that

---

[52] James Surowiecki. *The Wisdom of Crowds*. Doubleday, 2004.

[53] http://itsnt166.iowa.uiowa.edu/uns-archives/2004/november/110504iem_wrap.html

their potential value is genuinely hard to overestimate."[54]

The underlying principles of these markets is that under the right circumstances, large groups can make better decisions than small groups or individuals, and thus decision markets are one tool among many that can involve lots of people in decentralized, fast, and multifaceted decision processes to evaluate new ideas.

Why decentralized? Any centralized process is susceptible to the dangerous traps that plague the hierarchy, particularly the fact that decision making often becomes distorted by internal politics. The hierarchy always imposes its own logic, and sooner or later choices get made based not on what's best for the customer or for the company but to please those who happen to be in positions of authority. The possible future value of any idea may not be the primary criterion.

Another reason not to centralize this aspect of decision making is that doing so might derail an emerging creativity explosion that good and widely-diffused innovation methodology can bring forth. If people see that their creative ideas are being funneled into yet another exercise in hierarchical authority they will become demoralized, as this will suggest to them that the innovation program has been a hollow exercise, another fad that only confirms their worst fears about a fad-chasing management team; the possibility of permanent innovation will probably be dead before it gets started.

Since creativity comes more readily to groups that are diverse than to homogenous ones, targeting ought to involve lots of people, and people from different backgrounds and different parts of the company How many? Well, we can ask a slightly different question and the right answer may become more obvious. That question is:

Who should *not* be involved in the search for new ideas? Can you think of anyone in your organization who should be excluded from this process? I can't either.

And as a practical matter of creative thinking, it's not only senior managers who need new ideas; many people throughout the organization could possibly make good use of lots of different ideas, and all of them can contribute as well, clarifying, debating, and improving them. Thus, disseminating ideas as broadly as possible will help engage people in the creative conversation about the future of the organization, and will also support the subsequent steps in the innovation process.

Anyway, as we're talking about potentially thousands of ideas that you'll have to deal with, there's no way that any centralized group could

---

[54] James Surowiecki. *The Wisdom of Crowds*. Doubleday, 2004.

begin to do justice to that many. So the more people who are involved in gathering and assessing ideas about change, the external environment, the future, and about innovation, the better.

And this process should include outsiders as well as insiders. One reason is that it's likely, if not inevitable, that you'll have to consult with outside experts in order to fully understand the implications of many of these ideas. A healthy working relationship between insiders and outsiders should lead to many very interesting conversations that might begin with the phrase, "What would you think if ….?"

Timing also matters. The earlier you get new ideas and begin to develop them, the more valuable they're likely to be. Conversely, the value of any idea is likely to degrade over time since many people in many different organizations are also searching for great ideas, and today's brilliant insight may become tomorrow's commonplace. Thus, fine ideas are not like fine wines, for they rarely get better when left alone in the cellar; the sooner you identify which ones are really good and get to working on them, the better.

Targeting Processes

Targeting is thus a multifaceted, parallel process rather than a simple, linear one. Pasteur has helped us to understand that careful preparation facilitates luck, so how do you prepare the targeting process?

A very general brief should lay out in very broad and non-specific ways the sorts of input and feedback that you're looking for. You could provide some process guidelines, a set of simple rules to follow, and you might also engage a facilitator to keep the flow going.

Ideas can be assessed in many different forums. Here are eleven possibilities for you to consider:

1. You can convene **ad hoc innovation teams** consisting of insiders & outsiders to work with sets of ideas. Hold 4 hour workshops with 20 people and have then identify the five ideas they think are the best among 100. But make sure to clarify what you mean by "best" before you turn them loose.

2. You could hold an **"Idea Conference"** once or twice a year, and invite a couple hundred people to brainstorm together. Have 20 or 30 individuals or teams prepare table-top displays for their ideas, and arrange them like a trade show. Ask the participants to work on the idea they find most compelling to see how much further they can develop it in an hour.

3. Give a pile of ideas to an **R&D** group, and ask them to work them over. For example, give them 50 ideas and two weeks to come back to you with detailed technology plans for the 5 they think are the best.

4. If you're going to hold **collaborative design workshops**, focus on a specific theme, set of ideas, issues, or questions. Pick some big customer problems that you've already identified and see how many different ideas a group of ten people can come up with. Then ask them to pick the best one and work on it for half a day.

5. You can delegate upward to senior management, and ask their input on bunch of ideas. Give them a stack of 100 ideas and ask them to pick three that they think are really worthwhile. A 3 hour meeting should be enough.

6. You can delegate downward to a group of twenty **front line** people who really know what it's like in the day to day business. Again, give them 100 ideas and 3 hours and ask them to tell you which ones would add the most value for customers.

7. You can delegate outward to a panel of **advisors**, experts who know a thing or two…. Send them 20 ideas via email and ask for their inputs on the 3 they think constitute the best out-of-the-box new business model ideas.

8. You can also set up **decision market** systems. For example, the pharmaceutical giant Eli Lilly set up an experimental market inside the company to see if its employees could accurately predict which new drugs would be approved and which would not. They were 100% successful. A Chicago start-up, www.inklingmarkets.com, would be happy to help you set up your own decision market.

9. If you have defined **communities of practice** in your organization, you could ask a few of them to evaluate a handful of ideas. For example, ask ten people to meet for two hours to work on a set of ideas that relate specifically to their expertise area.

10. You could convene a customer **focus group** to solicit feedback, but be careful, as focus groups can be really deceptive. As I noted above, they tend to stay at the level of explicit knowledge, so their outputs are usually relevant only for incremental innovations.

11. And you don't have to give all these groups different ideas to work with.

You could give **the same set of ideas to three or four different groups** to see how similar or different their views are. You'll learn a lot from the points of agreement and disagreement.

The Black Box

You may have noticed that something important just happened: as a result of these various collaborative activities it's likely that targeting choices have been made, but a specific decision making mechanism hasn't been identified by which those choices were actually reached. Sometimes processes like this are referred to as black boxes, and a bit more needs to be said about them.

In case you're not familiar with the block box concept, it goes like this: In any process there are inputs, something happens to them in the process itself, and then there are outputs. If you can't see what the process is, and you only see what the inputs and outputs are, then the process is described as a "black box," one that you cannot see into. Closed-source software is an example of the black box; open source software is a transparent or white box, since anyone can look inside.

When you're in the midst of choosing which ideas are best, you've put a bunch of them into the box, added some people, something happened, and what you hopefully got out was a prioritized list of the best ideas. But how actually did that happen?

The eleven processes listed above rely on the ability of people to sort through complex masses of concepts and data - ideas, in this case - and organize them according to some criteria. Perhaps you used the Change Menu, as described above, to set your priorities and provide the needed context.

The good news is that people can do this sort of filtering and choosing, and do it very well. Whether it's voting, a matter of individual choice, or dialog and collaborating in a specific design process, people are quite capable of working with very complex sets of information to reach valid conclusions. To help them, you'll need to get inside the black box yourself to get a better understanding of how creativity works and how you can both support it by intent, and avoid impeding it by mistake. This is the subject of Chapter 9, "Creative Methodologies in the Innovation Process: Inside the Black Box." By using the methods described there you'll significantly improve the odds of reaching successful or very successful outcomes.

The Outcomes

After all this is done, where will you end up? You should have discarded a lot of ideas; the majority, in fact. But you'll have many that you or someone you trust really believe in, and still others that are intriguing but are perhaps incomplete, possibilities rather than fully formed propositions. This is great news, since your goal is develop a portfolio of possibilities that you'll now start to work on as Innovation Projects, the subject of the next chapter.

You should also have a lot of people who continue to be engaged in the creative process, thinking about today's needs and how they might be different tomorrow, coming up with ideas, and taking them seriously.

What else have you accomplished? You've given hope to the "idea people," demonstrating that this organization is one that they can survive in, and you've encouraged others to perhaps become idea people themselves, at least part of the time. You've thought carefully about what you could do and what you should, and now you're ready to take action. You're building a culture of permanent innovation.

•••

As you and many others went through and examined multitudes of ideas, pushing and prodding them, exploring what they really mean, and imagining what value they could bring to your firm and your customers, in the end you asked yourself a single question - and of course you also requested many other people to ask it as well:

In the words of former Shell scientist and GameChanger manager Math Kohnen, "Is this an idea we can afford to lose?" When you come upon an idea that's so good that you decide that you cannot let it go, then it's a race to transform idea into innovation and bring it to market. Your competitors are working hard at it, and now so are you.

Action Steps:

1: Take a look at the match between your strategic priorities and your innovation portfolio. Think about how to evolve the portfolio to achieve a better fit between them; consider, also, what the portfolio says about strategic priorities that may never have been articulated clearly.

2: Prepare a detailed statement of the targeting criteria that your firm is going to follow.

3: Make sure that the targeting process you firm is using are sufficiently broad-based and that the participants are optimally diverse.

4: Find out which targeting processes you're using, and expand your repertoire.

Chapter 7

Great Innovation Projects:

Transforming Great Ideas into Business Value

Permanent Innovation Principle #9:

Prototype rapidly to accelerate learning.

The goal of any innovation process is to come up with the best ideas and get them to market as quickly as possible. Thus, the innovation process is a learning process, and learning faster has enormous advantages. Among the methods for learning that you can choose, prototyping is one of the most valuable because it so effectively condenses the learning process. Rapid prototyping is therefore central to most forms of effective innovation methodology.

Not very many ideas become innovations, but some of them will.

Others that you put aside today may prove useful in the future, as it may just be a matter of timing or a matter of finding the compelling need. The story of 3M's Post-It notes illustrates the importance of timing.

3M researcher Dr. Spence Silver had been working to develop a new

glue, but in the end it didn't actually adhere things together strongly or permanently, since whatever you glued with it you could later pull apart. Thus, it was a failure, and although it was a big disappointment, Silver soon realized that the unusual properties of the almost-glue could be valuable … if only someone could come up with the right application. So he marketed his adhesive inside 3M for more than five years, searching for useful applications. Eventually he came upon fellow 3M employee Art Fry, who happened to be looking for a glue that he could use to stick and then unstick things, a non-permanent glue. Why? Fry wanted to put paper flags into his church hymnal and then remove them later. For this he needed a semi-glue that stuck things together temporarily. As it turned out, Silver's failed glue was perfect for that, and voila, Post-It notes were born.

The Post-it story is so widely told because the 3M PR department publicizes it relentlessly, and also because it so vividly illustrates many important nuances of the innovation story. It's about how failure can become success when an idea that failed its originally intended purpose finds new life by meeting an unfulfilled need that was hitherto unrecognized. This marriage is brought about by someone who happens to be in just the right place at just the right time, the quintessential prepared mind à la Pasteur, who learns about the failed the technology (glue that didn't stick) and knows about the need (because it's his own need). The story also illustrates how newly-defined customer needs (a glue that doesn't stick) defines new possibilities for new products and services that never existed before. And finally it's about the rare moment when you combine new needs and new means to arrive at your destination, innovation!

Key questions for this chapter:

1. **How do we manage the innovation process for each different type of innovation?**
2. **What are the three types of incremental innovation?**
3. **Why is business model innovation so important?**
4. **What's different about new venture innovation?**

So here we are with ideation processes yielding an abundance of new ideas, a targeting process that has brought forth the most promising ones, and now we turn to the difficult and important work of transforming ideas into innovations.

Ideas that have made it this far have already been categorized as one of the four types, incremental, breakthrough, business model, or new venture, and from this point forward each of the four different types will be developed by different teams.

Which groups get which ideas?

- **Incremental ideas** usually become the responsibility of product management and marketing teams.
- **Breakthrough product & technology ideas** become the responsibility of technology groups that are typically part of a research and development organization.
- **New business model ideas** become the responsibility of new business model teams that could be part of research and development, marketing, or strategy.
- And **new venture ideas** are probably developed by a corporate-level venture group as part of a corporate initiative that seeks to create new markets and new futures.

Each has a separate budget, and the authority and capability to carry the work through to the point where either an innovation is ready to launch or the project is stopped. And make no mistake, many projects will definitely be stopped, because failure is an inherent part of the innovation process.

In this detailed chapter, we will look in turn at the methodologies and ways of thinking that apply to each of the four different types of innovation.

Incremental Innovation

With a focus on market share, short-term competitiveness, and on existing products and services in existing markets, incremental innovations improve processes, products, or services by improving performance or appearance, eliminating cost, or reducing waste. There's an infinite variety of incremental innovation possibilities to consider, and that variety itself contributes to the complexity of innovation and the great difficulty of doing it well.

On the innovation continuum, incremental innovation is located on the left side, at the far opposite extreme of new ventures, but to better understand the incremental possibilities we can further subdivide this portion of the continuum to identify three different sub-types: spontaneous innovation, product management, and the incremental innovation culture.

Spontaneous Innovation. You discover and implement some innovations spontaneously (hurray!). Pasteur's dictum about luck and preparation is relevant here, because if you're thinking about the effectiveness of what you're doing and keeping your eyes open for ways to do it better, ideas should appear before you as if spontaneously. You could also call this "paying attention."

Figure 8.
The Incremental Innovation Continuum

All that's required is an idea and the capacity to implement it, traversing from insight to idea to completion in a single move. Through individual initiative or resulting from the work of a team, new ideas can be born, refined, and then applied in moments or minutes. This happens all the time in all kinds of operational, process, or service settings - a clerk shifts a display of products around at the check-out counter and sales suddenly jump; a worker on the factory floor moves an assembly table to make his job easier, and immediately productivity increases.

We could also call this "common sense," although it does take a certain alertness to be sensitive to these possibilities; preparedness together with intention, again, are mandatory.

The existence or non-existence of intention, of an innovation-seeking attitude, is an important factor that differentiates the innovation culture from a stagnant or anti-innovation culture, one of conformity and narrow compliance. Further thoughts on the innovation culture are presented below, and a major emphasis on this theme is carried throughout Chapter 10.

Product Management. Incremental innovations that involve changes to products or services usually follow a path to realization through product management.

This is the midpoint of the continuum, where a thoughtfully managed program of upgrades and refinements can be designed and executed over a period of months or years. Marketing managers or product managers decide which innovations should be developed and which shouldn't, and they organize the resources to make it happen. A product roadmap guides them as they design and manage a progression of product and service improvements, incorporating new generations of technology and new models of customer communication.

The information that shapes these decisions is gathered from customers via letters and emails, focus groups, customer visits, and other kinds of market research. When marketers talk to customers, they typically ask, "What do you want?" and customers tell them about the problems they have and the improvements they'd value the most. Other insights come by paying careful attention to what competitors are doing as revealed in the press, at

trade shows, across the supply chain, and through the grapevine, and once they've targeted a particular improvement, they prepare a requirements document that guides the R&D and engineering teams.

When this all works smoothly it's because incremental innovations build on knowledge and capabilities that have already been created. The products and services themselves already exist, and the tougher early-stage developmental process was completed long ago, so a great deal is already known about the technical issues. Existing products may even have been through previous iterations of incremental improvement, and they're out there in the market generating customer feedback as well as transactions that provide a steady stream of relevant experiences from which to learn. And every day the organization gains more experience in making and selling them.

Many examples are listed in the Innovation Table in Chapter 1:

Auto Industry: Remote-controlled door locking and unlocking makes cars much more convenient, but doesn't change the basic configuration or concept of the car.

PCs: Increasing hard drive capacity, increasing processor speeds, and bigger memories provide better performance in the same package.

Financial services: Zero points home loans enable more people to qualify for larger mortgages, but the principles of mortgage lending are unchanged.

Food/Grocery: Organic produce broadens the options available to customers.

Airline: Frequent flyer programs enhance customer loyalty, while e-tickets and online check-in simplify the process for customers and airlines.

Telecommunications: Push button phones are easier to use than rotary phones.

Retail: Self-checkout gets you out of the store faster while reducing labor costs.

Media: Live remote newscasts bring more news to your TV.

None of these innovations was Earth-shattering, but all of them added value in a small or large way, and eventually became accepted as part of the standard offer that customers came to expect. Because once an idea is established in the market, you simply aren't a credible competitor unless your company offers it. If your company introduces such innovations first, then you might gain a temporary market advantage, but if your competitor introduces them first then you're normally obliged to follow suit. Speed matters here (as it does throughout the innovation universe), and tools that can accelerate the process can be quite valuable. A standard reference on new product introduction is Robert Cooper's *Winning at New Products*, now

in its third edition.

Constant Incremental Innovation. An advanced degree of capability to create and apply incremental innovations constantly, where improvements are achieved in an organizational atmosphere that strives for and attains innovation in all of its many manifestations.

Figure 9.
Key Elements of the Permanent Innovation Culture: Leadership, Intent and Methodology

These three forms of incremental innovation are key elements of the Permanent Innovation Culture, where leadership, intent, and methodology merge together, where people are alert to innovation possibilities and they are adept at executing innovation projects. They are rewarded for innovation, and they are not punished for the inevitable and necessary failures that the quest for innovation must necessarily bring; they may even be rewarded for particularly intelligent failures.

Perhaps the world's permanent innovation exemplar is Toyota, where the quest for quality improvement has been fostered for more then five decades, and has resulting in a global manufacturing system that is unparalleled. As a result, Toyota is about to pass General Motors as the world's largest automaker, and its well-deserved reputation for high quality is a significant contributor to its success.

In all phases of incremental innovation, the overriding metric is the ratio between cost and benefit, and because this work is done in relation to existing products and services it can be quantified with a high degree of reliability. Unexpected changes can, of course, make any product roadmap completely obsolete, but within the framework of an established market, the logic of incrementalism is sound. However, markets rarely remain stable for long, so incremental innovation is clearly not sufficient unto itself. The other

three types of innovation thus play a critical role in long term viability.

Breakthrough Technology and Product Innovation

Although they're rare, breakthroughs are of course entirely desirable because they lead to fundamental, structural change in the market. Breakthroughs alter both the perceptions and the expectations of customers, and thus they shift the balance of power between companies in favor of innovators. Since changing the market structure usually changes the distribution of profits as well, there can be a significant financial reward.

The definition of a breakthrough is an innovation that solves an existing problem significantly better than it's been solved before, and it's the precisely the "significant" that distinguishes breakthroughs from incremental changes. Since "significance" is a matter of perception, there is naturally a gray area between incremental and breakthrough innovation, but we can further clarify the distinction by considering the impact on the customer:

The differences between the four innovation types can be clarified by looking at the intersection between two factors, one externally driven and one internally driven.

The **external driver** of innovation is the customer's experience. Does an innovation improve something that a customer is already doing? Then it's probably incremental. Or does it enable the customer to do something that was not possible before, or to do it in a profoundly easier, simpler, or more elegant way? Then it's probably a breakthrough.

The **internal drivers** of innovation are an organization's identity and its capabilities. Is the proposed innovation going to be developed, marketed, and sold by the organization as it is today, or as it could be with minor changes? Then it's probably an incremental innovation. But if the successful development or marketing of the innovation will require fundamentally different organizational capabilities or an entirely different brand, then it's probably a breakthrough, possibly a new business model, or perhaps new venture.

Hence, breakthroughs solve problems that haven't been solved, or even better, problems that haven't been recognized before. Starbucks, for example, entered a market in which there was essentially no competition at all, and its massive global market penetration was accomplished so fast

largely because no one was already there. How fast is fast? There are already more Starbucks locations in London than in New York (200 vs. 190 as of late 2005), and the underlying trend that Starbucks is both contributing to and benefiting from shows that English tea consumption declined 12% between 2000 and 2005.[55]

The most desirable innovation opportunities are the ones where there isn't any competition, markets that business professors W. Chan Kim and Renée Mauborgne call "blue ocean," where no one is already competing, instead of red ocean where existing competitors are getting bloodied in the fight for market share. Hence their title, *Blue Ocean Strategy*.[56] It is, of course, much easier said than done; innovation methodology as described here can certainly accelerate the process of identifying blue ocean opportunities. Successful blue ocean strategies address what we referred to above in the section on idea hunting as "white space strategies," addressing market segments that are ignored or unserved, or even needs that were previously unknown, and therefore unmet. In this situation innovation literally creates new markets that did not exist before.

The history of telecommunications shows how this happens. Before cell phones you simply couldn't make a call unless you were near a phone, or what we now call a "land line." And before Mr. Bell's invention most communication occurred face to face or in writing, while the telegraph was used only for special situations. Before the telegraph all long distance communication happened in writing or in print; before print there was just writing, and before writing all messages were carried as drawings or by memory and transmitted orally.

Each step forward exploited new capabilities, enabled new behaviors, and created new markets. Each step also challenged conventional thinking. Thus, when Mr. Bell offered to sell his invention to Western Union, the telegraph company, it was rejected based on the opinion that a telephone wouldn't be very useful. Similarly, when AT&T needed to assess the prospects in the US for the cell phone in the early 1980s, consultants McKinsey and Company foresaw a market of only 900,000 units by year 2000. Unfortunately for AT&T, which largely missed the market due to this singularly bad advice, the market had already reached 17 million by 1994 and instead of being a dominant player the company was an also-ran.

Overall, progress in telecommunications has been an additive process rather than a matter of replacement, as new technologies became new capabilities and created new markets, but did not eliminate most of the old markets. Despite the explosion in telecommunications, for example, the US

---

[55] *The Week*. November 4, 2005. p. 22.

[56] W. Chan Kim and Renée Mauborgne. *Blue Ocean Strategy*. Harvard Business School Press, 2005.

Post Office still delivers about 705 million pieces of mail *each day*.[57] Thus, telecommunication innovation has added new capability and created new demand across society, giving us another example of the broader process by which economies grow, which it is another reason why economists are indeed so fond of innovation.

Developing Breakthroughs

The process of developing breakthroughs is usually much more difficult than developing incremental innovations, and the reasons are probably obvious. While incremental innovations exist in a known world, breakthroughs venture into new territory for which there's rarely a map. They're riskier, often more expensive to develop since there is so much more trial and error involved, and they can be much more challenging because the nature of the problems that have to be solved across the many steps required to create a breakthrough and then bring it successfully to market.

Speaking of bringing breakthroughs to market, it should be noted here that market development and commercialization are both very challenging in and of themselves, which the following story illustrates very well.

During the 1930s Chester Carlson invented a process for dry copying, and he offered to sell the technology to IBM, RCA, GE, and just about every other big company in the US. None of them were interested, and six long years later Carlson persuaded the Batelle Memorial research lab to work with him. It took yet another decade before Batelle finally persuaded a small company called Haloid to get involved. Haloid perfected the technology and took it to market as Xerox.[58]

Once it finally got to market, Carlson's intuition proved to be entirely correct - there was a market for copies, and it was both huge and global. Xerox quickly developed a worldwide organization and rocketed to the top echelons of the corporate world, becoming a high flying blue chip stock in a matter of only a few years. Xerox was indeed a breakthrough.

To its credit, Xerox's top management recognized early on the vital importance of advanced technology for the future of the copy industry, and so the company provided generous funding for one of the most renowned high-tech R&D labs of all time, the now-infamous Xerox Palo Alto Research Center (PARC).

A tremendously talented and diverse group of scientists and

---

[57] According to usps.com, the Post Office delivered 211 billion pieces of mail in 2005, which is an average of 705 million per day if we assume 300 delivery-days per year. http://www.usps.com/history/anrpt05/

[58] David Kearns and David Nadler. *Prophets in the Dark: How Xerox Reinvented Itself and Beat Back the Japanese.* HarberBusiness, 1992. See Chapter 2.

technologists gathered at PARC, and together they produced a series of remarkable breakthrough technologies that contributed to the continuing success of Xerox, and also blazed new paths. Among the inventions to emanate from PARC were laser printing, Ethernet, and a whole host of innovative ideas that were brought together to make one of the very first personal computers, the Xerox Star.

At the time, Xerox Computer Systems was a subsidiary in the mainframe timesharing business, and since in the view of Xerox top management a computer was a computer, the timeshare division was given responsibility for selling the new technology. But if ever there was a breakthrough technology that begged to be managed differently, the Xerox Star was it. Because the new technology was fundamentally different from its existing business, the nascent PC business didn't work out for the company at all. Eventually a warehouse full of unsold Star computers was disposed of at garage sale prices.

Along the way, however, a Silicon Valley entrepreneur who was at that very time developing an innovative computer company happened to tour PARC, and he saw the amazing thing Xerox had done. The Star had a graphical user interface and a mouse, which made it by far the most user friendly computer ever built, and that entrepreneur, Steve Jobs, took those ideas and put them to use in a breakthrough new computer that became the foundation of another world leader, Apple Computer.

Eventually Microsoft copied Apple's copy of Xerox, and Bill Gates became the world's wealthiest man because the Windows operating system became the locked-in choice of corporate computing managers. So while Apple, IBM, and Microsoft have made billions from these remarkable inventions, Xerox hasn't made a dime. The full, sad story of the Xerox PC is so compelling that an entire book was written about it, with the provocative but very accurate title "Fumbling the Future."[59] Xerox certainly did drop the ball, because they didn't understand that the incredible breakthrough which came from PARC wasn't just a me-too product, but rather one that foretold an entirely new industry.

In the words of John Warnock, "None of the main body of Xerox was prepared to accept the answers. So there was a tremendous mismatch between the management and what the researchers were doing and these guys had never fantasized about what the future of the office was going to be. When it was presented to them they had no mechanisms for turning those ideas into real live products and that was really the frustrating part of it. You were talking to people who didn't understand the vision and yet the vision was getting created everyday within the Palo Alto Research Center and there was no one to receive that vision." Warnock is now Chairman of Adobe, and in this explanation for the failure of Xerox he notes three key elements that

---

[59] Douglas K. Smith and Robert C. Alexander. *Fumbling the Future: How Xerox Invented, Then Ignored, The First Personal Computer.* William Morrow, 1988.

constitute strategic impediments to innovation:

- Lack of preparation by the decision makers;
- Lack of context to understand the breakthroughs; and
- Lack of vision about the future of the industry.

This difference, then, between incremental innovation and breakthrough technology, and the risks and challenges associated with each of them, is really at the center of the "innovation problem" and they are at the core of the issue when it comes to every organization's leadership. In your market, in your industry, in your era, what is the right mix of innovation strategies? This is one of the most important questions you can ask, and it's well worth spending a great deal of effort to find good answers.

However, as a result of the costs, the complexities, and the difficulties, most companies put the majority of their innovation investments into incremental innovations by default, and they risk make a token effort looking for breakthroughs. Even worse are the many companies that don't invest in looking for breakthroughs at all, and put all of their innovation resources into incremental innovations and entirely forego the search for fundamental change. Which may be OK until things really change, and then ….

Those who play only in the incremental domain usually base their decisions on the unspoken assumption that serious, radical, or big change just won't come to their markets, but as we have seen, capitalism's relentless creative destructiveness all too often puts this belief into the category of "famous last words." Hence, to forego the effort to make breakthroughs is actually a greater risk than that of trying and failing. To remain viable, companies are obliged to pursue breakthroughs in some form, or risk the possibility that breakthroughs introduced by their competitors will eventually erode their prospects entirely. There's no shortage of examples available to anyone who reads the business press.

The reasons for this are obvious by now - exponential change, technological obsolescence, and the rapid evolution of the market can all leave a laggard too far behind to ever catch up. We know that no company is an island, and that sooner or later change does indeed come to *all* markets.

Existing Needs and New Needs

Breakthrough technologies are successful in one of two situations: Either they meet an existing need in a way that's substantially better than it's been met before, or they address a need that was previously unknown, and therefore unmet.

Meeting Existing Needs. It's not so difficult to quantify the potential value of breakthrough innovations that are targeted at existing needs. To be adopted on a widespread basis, a breakthrough either has to be *so much better* or *so much cheaper* than the prevailing solution that customers are willing to incur the cost required to switch. If, however, it fails to offer enough value to justify the switching cost then it will never succeed.

Which means that innovators are constantly trying to understand what the switching costs really are, and these include not only the obvious factors, but also the subtle ones. In the IT industry it used to be said that "You can't get fired for choosing IBM," because the company was so effective at creating barriers to switching. Often IT managers were forced to choose between a "safe" career choice above reproach that offered low computing performance, IBM, and a competing company that may have offered better value, but whose future prospects were less certain.

Switching costs can thus be embedded in emotional attachments, fears, and personal relationships, as well as in more rational business reasons.

Meeting Unknown, Unmet Needs. We've already considered unknown and unmet needs in the discussions of ethnography, white space mapping, and blue ocean strategies, and now we'll discuss the problem of valuing potential breakthroughs, which are usually much more difficult to quantify. Here the problem is not the customer's switching cost, but rather the vendor's cost and time required to develop what will be by definition a new market, in addition to the cost of developing the product or service itself.

As with many great breakthroughs, could anyone have said on the day that the Wrights first flew what the future value of air travel would be? The same statement could be made, of course, for any major breakthrough - the telephone, automobile, electrical generation and distribution, the laser, the computer…. Thus, a great deal of the development work relating to breakthroughs is focused on understanding the real applications that real customers will or would have - how would someone actually use this? - and then testing those applications in realistic situations to learn how much value a proposed solution could really add.

In addition to the development costs, it can also be very expensive to deliver breakthroughs to the market, as we saw with Xerox. If the existing organization is not be competent to market, sell, or support it, then new

organizational capabilities may have to be developed, which is usually expensive. It takes ten of millions of dollars, for example, just to create a new consumer brand with strong brand recognition.

But back to the technology for a moment. The capability to develop new technology is a technical competence that R&D groups normally have, but technical competence alone is not sufficient. The subtle nature of the needs that are being addressed is as important as the technology, if not more so, and hence, the development of breakthroughs is often a form of creative dialog between the process of developing technology and the process of understanding how its applications will benefit potential customers. The nature of this dialog is one of the most mysterious elements of innovation methodology because it embodies learning and creativity, two of the most intricate activities that people engage in, and because it involves sharing ideas, dialog, awareness and self-awareness, and indeed all of the factors that make humans human. Hard engineering is of course critical to success, but this aspect of innovation has a soft, conceptual side that is just as important.

Since only a small percentage of the breakthrough projects that your firm work on will probably ever make it to the market, it's also important to recognize that whether or not they're successful, there's another kind of value that your organization will receive from the effort to make breakthroughs: the search for breakthrough innovations results in other kinds of benefits, particularly the learning that happens along the way.

Thus, it's important to recognize that the pursuit of breakthrough innovation is the pursuit of competitive advantage along two dimensions. It is both a strategy to directly create advantage through the hoped-for new products and services, and just as importantly it is a strategy to enhance and accelerate learning and improve innovation capability across the entire organization. This comes about, of course, because the processes of working to master new technologies and to envision the future of the products, services, and markets that they enable can be such a compelling learning experience. Knowledge gained here will be productively applied elsewhere - in the strategic thinking of managers, in the process of targeting future incremental innovations that often spin off from the search for breakthroughs, and in the spin-off of related innovations that might sprout in any corner. The search for innovation is indeed a profound learning process, one that is compressed in time and laser-focused on the future of the organization.

Of course there's a key element needed to achieve this learning payoff, and that's abundant and excellent communication between and among the many individuals and teams who are working on all aspects of ideation, targeting, and innovation through both informal and formal channels, so that learning attained in one part of the organization brings benefits across the entire organization.

At the informal level, self-organizing networks must be encouraged so that people with a reason to seek or share information can do so easily. They must be supported by appropriate methods and tools, which include software for dialog and collaboration online, and the right kinds of meeting spaces for all types of face to face collaboration involving from 2 to 200 (or more) people.

At the formal levels, there should be regularly scheduled innovation conferences, gatherings of people to share the fruits and frustrations of their ongoing work, to examine new trends and technologies, and to work together developing ideas (never neglect opportunities for ideation) assessing ideas, and discussing solutions.

It's not uncommon that new applications of old technology or knowledge developed in another field can be the basis of a breakthrough. As I noted above, GPS systems and satellite mapping are changing the way that farmers plow and fertilize their fields. And as NASA Astrobiology pioneer Lynn Harper notes, "Few people know that procedures used in all intensive care wards worldwide are based on the technologies pioneered by Apollo. This is because intensive care wards rely on telemetry - the transmission of medical data from the patient to nurses and doctors in a way that alerts caregivers to life-threatening changes in patient condition. Perfection of these technologies was achieved because NASA doctors needed to monitor astronaut health remotely. Even fewer know that the Micro-Electro-Mechanical Systems industry (MEMS) owes a significant fraction of its wealth and its products, currently yielding more than $5 billion per year in revenue, to breakthroughs achieved by Dr. Lynn Roylance in developing a device to measure blood flow in the hearts of rats in space. Pacemakers, airbag crash sensors, and fetal surgery monitors are among the fruits of this research. Implantable insulin pumps, shock trousers, telemedicine, remote surgery, 3D observations for diagnostic and reconstructive medicine, implantable medical devices, and many, many more advances have resulted from the study of life in space."[60]

Some breakthroughs aren't dependent on technology at all, but on simply changing our way of looking at the problem. The minivan is a great example, as its underlying technology has always been no different than in any other car; but the size and shape define a new value proposition.

---

[60] Lynn Harper. "Biotech: A Near Future Revolution from Space." *Beyond Earth: The Future of Humans in Space*, Bob Krone, editor. Apogee Books, 2006.

•••

When you're looking for innovation what are you really looking for? You want to see what has not been seen before, and you want to understand what has not been understood before. Now you're entering into a world that's not a matter of technology at all, but of human perception, cognition, and behavior. What do we really know about ourselves? About our needs and desires? About our perceptions, and the obstacles we face?

Questions like these are fundamental to innovation, and you can stimulate this way of thinking simply in how you ask questions, because while incremental innovation opportunities may emerge when you ask existing customers what they *want*, the issues that underlie breakthrough innovations are often discovered when you ask what they *want to do*. The "doing" evokes experience, and a significant portion of anyone's experience is unconscious. The fact is that most people can't, of course, describe what they're not conscious of, but they can describe what they *do* and how they *feel* about what they do. This explains why so many aspects of innovation are difficult to accomplish: people are unreliable at predicting their own future choices, that is, they can't actually tell you what they want! But in describing their present-day experiences they expose many hidden factors that can lead in useful new directions.

Developing a systemic capability inside of your organization to understand the customer's experience at a deep level is therefore not a nice complement to the capabilities your organization already has, but an absolute requirement for success at all forms of innovation beyond the incremental.

Business Model Innovation Methodology

A significant percentage of all the companies that are leaders today are business model innovators, which suggests that business model innovation is becoming more and more important as a competitive factor. But defining business models that provide customers with distinctively better experiences is rarely straightforward.

Thus, business model innovation is different than the search for technology and product breakthroughs because although a new business model may incorporate new technology, technology itself rarely *defines* the business model or the breakthrough. Rather, technology does often enable a company to *deliver* a new kind of experience that either meets a need much better than it's been met before, or it meets a need that was previously unknown and therefore unmet.

Perhaps the easiest way to understand the growing impact of business model innovation is to consider some of the most successful business model innovators of the last few decades. On Fortune Magazine's list of the top 10 most admired companies of 2004, for example, business model innovators sit in the top 6 positions:

1. Dell
2. General Electric
3. Starbucks
4. Wal-Mart Stores
5. Southwest Airlines
6. FedEx
7. Berkshire Hathaway
8. Microsoft
9. Johnson & Johnson
10. Procter & Gamble

In Chapter 1 we briefly discussed the business model innovations of Home Depot, Wal-Mart, Charles Schwab, and Southwest Airlines, and now let's look at the others, including Dell, GE, Starbucks, and Fedex; we'll also discuss Saturn, Nike, and Visa, which illustrate interesting aspects of business model innovation as well.

Dell

Dell sells technology products, but its innovations are not in technology. In fact, the company has been ridiculed by its competitors because it invests so little in R&D or product development. So what is the basis of its success? It's the business model, of course, which has enabled Dell to achieve elite status in the computer industry and indeed across the entire economy.

The key differentiators of its business model are found on two dimensions. First is the relationship with customers, and second is management of the manufacturing supply chain. Dell is number one in its industry because the company has pioneered customization - every computer is custom-made to the specific requirements of the buyer, while at the same time the company keeps its prices among the lowest because it has nearly eliminated inventory; Dell buys parts for its products only after it completes the sale, so inventory is limited to only a couple days of work in progress.

Like Wal-Mart and Home Depot customers, Dell customers can be pretty sure that they're getting the best price.

Thus, it's not technology that differentiates a Dell computer, it's customization and price, and by controlling these two factors the company has now outlasted its former two main competitors, IBM, which sold its PC division in 2004 to a Chinese manufacturer with an Italian name (Lenovo), and Compaq, which was forced to seek refuge in a merger with HP.

And what about the underlying needs? Clearly Dell has satisfied enormous demand for cheap, reliable, customized PCs better than its competitors.

General Electric

GE was founded by Thomas Edison in 1878, and when Jack Welch took over as CEO 103 years later in 1981 it was still primarily an industrial company. Jet engines, appliances, diesel locomotives, plastics, and of course light bulbs formed the core of the company. But Welch transformed GE into a much different company, and by 2004 the majority of its business was in services and finance, while only 36% of the company's revenues came from the sale of products.

Between 1992 and 2004, revenues from the company's products increased by 185%, but revenues in the finance divisions increased by 465% and became the largest of GE's three major lines of business. In fact, the 2004 revenues of the finance division were $67 billion, a full $15 billion more than the revenues that the entire company earned in 1992.

In essence, then, between 1981 and 2004 GE transformed itself into a knowledge age company, shifting from an industrial concern to … a bank.

Jack Welch's leading role in this transformation made him a cult figure in the business press, and is well documented in his own writings, countless magazines, and a slew of books about GE's managerial themes and philosophies.

Fedex

Fedex founder Fred Smith wrote a version of his business plan as an MBA project. His professor thought the concept was implausible and gave him a low grade, but Smith went on to establish a business that successfully charged almost 50 times more than its main competitor, the post office, to provide nearly the same service.

Or was it the same service? To Fedex customers, the answer is obviously No. What's the difference? Is it guaranteed next day service, the ability to track the exact location of any package, proof of delivery, reliable pick-up, or accounts and billing? Actually, it's probably all of the above combined, which together constitute a new and different business model, a breakthrough that enables Fedex to provide a much different customer

experience.

To realize its business model Fedex also became one the world's largest trucking companies and one of the largest airlines, and the company certainly uses a lot of technology in making its business a success. But none of these is the core of the business - that's all about the customer experience.

And the unmet need? Reliability and feedback top this list - people willingly pay fifty times more to feel confident that it really does arrive, and that it does so the next day.

Starbucks

Speaking of the customer experience, why would so many people pay 10 times more for a cup of coffee? Starbucks developed a new business model that delivers a compelling experience to customers, transforming the fifty cent cup of coffee into a five dollar one.

All of this, it turns out, was not an original idea. Coffee houses are of course a staple throughout Europe, and in fact, some key elements of the American version of the business model were originated not by Starbucks, but by a Berkeley, California coffee retailer called Peet's Coffee and Tea that specialized in roasting high quality coffee. The original founders of Starbucks were Peet's customers, and with the support of Alfred Peet they copied Peet's business model in Seattle.

Howard Schultz was the one who saw the potential for Starbucks to become a global brand. He was a Starbucks supplier (his company sold drip coffee makers), and then later he became a Starbucks employee. Schultz believed that Starbucks could combine high quality coffee roasting with a Milan-style coffee house, but his expansive vision was far grander than the 3 Starbucks founders wanted to attempt, so with their blessing Schultz started a separate company. A few years later his new company acquired Starbucks itself, and launched the growth spurt that put a mermaid on every corner.

Today there are almost 10,000 Starbucks locations worldwide, and more than one is being opened each day. As I noted already, there are more in London than in New York, as the influence of the new coffee house culture gradually draws even British tastes away from tea. There are even Starbucks in Paris. Peet's is doing well, too, and now it's also expanding quite rapidly with the same business model.

What's the hidden need behind this breakthrough business model? It is, perhaps, a brief experience of luxury that's now available on every corner, a combination of the smell, the taste, the music, and the setting that has transformed a fifty cent commodity into a five dollar indulgence.

Saturn

GM created its Saturn subsidiary in 1985 to become an entry level brand while also addressing the fact that people universally loathe buying

cars from auto dealers. GM leaders recognized that if a company could transform the sales process into a positive experience, a win-win cooperation instead of win-lose competition, then the company could have a big impact in the car market. And they were right.

Thus, the focus of business model innovation at Saturn was in defining a system that created and maintained a positive relationship between the seller and the buyer. Here the emphasis was clearly not on the car at all, and while quality standards were reasonably high, the design of the Saturn car itself was and is average and undistinguished, almost an afterthought.

So what was different? Saturn pioneered a number of unique practices that certainly did enhance the relationship between the company and its customers. The price of a Saturn was fixed so there was no price haggling, and no one ever got a better deal, or a bad deal. Because everyone always got a fair price, a huge barrier that had existed between the company and prospective customers was eliminated. To ensure that the old adversarial relationship was kept out of the company, Saturn refused to hire people who had sold cars before, based on the astute observation that they probably couldn't overcome bad habits they had learned in the old style business. As it turned out, a significant percentage of the Saturn sales force were people who had bought Saturns, and who had so appreciated their buying experience, and were so enthusiastic about their cars, that they chose to join the company.

What did they love? The feeling that new owners were joining a club, as when you bought a Saturn the dealership staff came to welcome you to the Saturn "family," and even they took a picture of you with your new car to post on the showroom bulletin board (the car sales equivalent of the family refrigerator). Saturn's brand identity was reinforced with low-key, homey advertising that was all about people and relationships, and they even cleaned your car for you: when you brought your Saturn in for service they'd wash it for you before you came to pick it up (and in some cases they still do).

GM targeted the new company at the entry portion of the market, hoping to establish a budget brand to compete effectively with the Japanese manufacturers (and later, Korean ones) that produced high quality, low cost models so consistently. From the outset the business model worked, and it worked well. Saturn owners were enthusiastic ambassadors for the company, and a surprising number of them came to the "homecoming" reunions/campouts/barbecues that the company sponsored each summer at its Tennessee manufacturing plant.

In recent years, however, things have deteriorated, and a number of factors have conspired to dilute the brand equity that Saturn built in its early years. GM's shortage of cash prevented the company from investing in new Saturn models, so the product line got stale and sales declined. Some Saturn dealers that had once thrived in the new car market were forced to revert instead to used cars because new models didn't come often enough. Then GM reined Saturn back in, significantly reducing its independence, and

eventually Saturn was tossed into the same division with Chevrolet and Pontiac, terminating its independence entirely. And then to the dismay of many still-loyal customers, the company first scaled back, and then cancelled the summer reunion entirely.

Now that GM is caught now in a struggle for its own survival, it has largely ignored the lessons of Saturn. While Saturn's unique qualities actually did create a different kind of car company, and its business model did have significant impact on the industry, neglect of the actual car undermined the company's success. But perhaps not forever. There clearly was, and remains, a need to transform the car buying experience, and for a time Saturn filled that need brilliantly. Meanwhile, other companies are now stepping forward to take advantage of ideas that Saturn pioneered.

Nike

When Nike was established in the 1960s, the world leader in sports shoes was unquestionably Adidas. The company was born in a 1962 research paper by runner and Stanford MBA student Phil Knight, who would soon become a co-founder of Nike. Knight proposed that high quality sports shoes manufactured in Japan could compete with more expensive Adidas, and soon Knight and his former track coach at Oregon launched the business and transformed the sports shoe and apparel business by developing, as you know, a new business model.

The difference was simple. While Adidas made great shoes for athletes, Nike learned to make great shoes for superstars and for the spectators who loved them and longed to be superstars as well, people who admired athletes and wanted to wear the same shoes as runner Steve Prefontaine, the first Nike celebrity, or Michael Jordan, Bo Jackson, or Tiger Woods.

This was a new marketing message, one that had never before been promoted: you too can be like a world class athlete. This positioning quickly left Adidas in a distant second place, and having built a foundation on its shoes, Nike added complementary lines of clothing and thus transformed sports clothing into a matter of lifestyle.

It took many years for Adidas to adapt to the new market dynamics that Nike had created, but today, of course, every sports shoe and apparel company follows the approach that Nike pioneered.

And the innovations have continued. When the company decided that its products were not being properly showcased in sporting goods stores, it took the bold initiative to create a signature showcase and store in its home city of Portland, Oregon. That store soon became the most popular tourist attraction in the city, and Nike opened NikeTown stores around the world, and in the process pioneered an entire retail genre that was subsequently copied by Disney, Warner Brothers, Levi's, Speedo, Apple, American Girl, Hershey (yes, a store selling only Hershey's chocolate, right there in Times

Square), and even the Metropolitan Museum of Art.

Nike has benefited enormously from fortuitous timing, as the last three decades have seen a massive expansion in spectator sporting events due to the explosion of sports broadcasting on cable TV. The company has played its opportune timing well, and has showed a profound understanding of the deep psychology of its customers in defining a new business model to address the hidden needs of the superstar within each of us.

Visa

When banks first began offering credit cards in the 1950s they had finally found a way to compete with the global financial reach of American Express. But initially each bank set up its own credit card operation, and very soon the losses began to mount due to rampant fraud and non-payment of bills. What started out as a promising new line of banking services was quickly turning into an industry-wide disaster.

The solution to this problem was created in the late 1960s by setting up a single business entity, Visa, to aggregate the risk for all the members. By scaling up infrastructure and risk protection they found a strategy that significantly reduced the exposure of each bank and transformed the money loser into a big money maker. Despite this huge success, however, you can't invest in Visa stock since it's not a public company; only if you're a bank can you join the Visa joint venture, along with 21,000 other banks.

Around the world there are about 1.3 *billion* Visa cards in circulation (Visa's competitor MasterCard, which has copied Visa's model in detail, has another 700 million in use) and they're accepted at more than 24 million merchant locations in more than 160 countries. Visa generates more than $3 trillion in global card sales volume, making it the largest processor of financial transactions in the world. The company can process more than 6,200 transactions per second, and can provide you cash at more than a million ATMs.

The key to Visa's business model innovation is the very structure of its business, the joint venture that serves the needs of its members in a unique and powerful way that has proven to be a formidable competitor to American Express. Certainly the company relies on advanced technology to process the incredible volume of transactions it handles, but technology itself is not the point; it is the nature of the joint venture itself that made the credit card industry a success.

Visa thus has fulfilled two entirely different but complementary sets of unmet needs. The first is the need of the banks to have an effective credit and risk management system, which was absolutely lacking before the joint venture was formed. The second is the need that consumers have for credit that is easy to use, reasonably priced, and universally accepted.

•••

These stories have a lot of **elements in common**, but the first thing that stands out above all others is that each organization pioneered a new business model that provided customers with **a new and a better experience**. The success of each from the first day to now has been based on the capacity to provide a consistently high quality of experience, and all of the obvious and hidden factors that go into sustaining such a positive relationship. Among these, perhaps the most important are the intention to do so, and the insight concerning how to do it.

The second element that all of these businesses have in common is very strong executive leadership, **a visionary at the helm**. And what's the core of the vision? The new, improved experience that the customer will have, of course. In fact, all of the top eight most admired companies are (or were) clearly led by visionaries who exemplify the characteristics of innovative thinking, and whose careers show their determination to transform ideas into innovations.

1. Dell - Michael Dell
2. General Electric - Jack Welch
3. Starbucks - Howard Schultz
4. Wal-Mart Stores - Sam Walton
5. Southwest Airlines - Herb Kelleher
6. FedEx - Fred Smith
7. Berkshire Hathaway - Warren Buffet
8. Microsoft - Bill Gates

Their successes also have another factor in common, which is that the new business models came about by combining two very different ways of thinking into one. **Breakthrough business models typically fuse a deep insider's knowledge of the business with the fresh look at that outsiders often have**. The insider's knowledge is crucial, because without that knowledge it's almost impossible to understand the needs and expectations of customers; the outsider's perspective is crucial because the core of any innovation is something different, and it's usually easier for outsiders to see what can, could, or should be different - and better.

Hence, it is the insider's perspective that typically illuminates the "how," the capability to effectively provide a different sort of service model, and the outsider's vision that attains the realization that something should be different, the "what."

In essence, then, business model innovation is all about fusion,

bringing in new ideas from elsewhere and fusing them with knowledge of this industry or this market. A great example of this is Taiichi Ohno's work in the Toyota manufacturing system, and the inspiration that he got from American supermarkets that he used to rationalize Toyota auto assembly plants.

Fred Smith saw the package delivery business as an airline fused with a trucking company; Michael Dell fused a made-to-order manufacturing system with a zero inventory supply chain.

Fusion, in fact, is no longer merely a concept, but it has been recognized as a broad principle of innovation by Japanese scholar and professor Fumio Kodama. Kodama has written two carefully-reasoned and highly influential books on fusion innovation, and he has this to say about it: "For years it has been said that innovation is achieved by breaking through the boundaries of existing technology. Recent innovations in mechatronics and optoelectronics, however, make it more appropriate to view innovation as a fusion of different types of technology rather than as a series of technical breakthroughs. While technical breakthroughs become possible when a prominent corporation in a specific industry takes a leadership role, fusion is made possible by joint operations among related industries. … Second, while breakthrough innovations bring rapid growth for a particular corporation, fusion contributes to gradual growth in all the industries concerned."[61]

While Kodama is generally referring to fusion as a technical and technological process driven by engineering disciplines working in peer-to-peer relationships, in fact the same dynamics are at work in the broader conceptual realm of business model innovation. For example, fusion innovations in business models are also opening up new industries, as we have seen with eBay (fusion of the auction and the internet) and the emergence of a broad subculture of dropshops who will sell stuff for you, and dozens of books promoting the new careers that exist only because eBay exists.

Another example is KB Home, a builder of tract homes that could be the Dell of homebuilders. Like Dell, KB starts construction only after completing the sale, and like Dell, KB is able to offer a much greater degree of customization than its competitors as a result of building to order rather than building to inventory. Buyers visit KB's elaborate and very profitable showrooms to choose their kitchens, bathrooms, and floors, and most of them end up spending more money than they otherwise would while getting an end result that is more fitting of their individual preferences.

Your organization may or may not have a visionary like Ohno, or Fred Smith, or Michael Dell at the helm, but as the principles of innovation become clear, tools such as fusion thinking become accessible to anyone. Furthermore, all great companies depend on the efforts of a lot more than one

---

[61] Fumio Kodama. *Emerging Patterns of Innovation*. Harvard Business School Press, 1991. See also, Fumio Kodama. *Analyzing Japanese High Technologies: The Techno-Paradigm Shift*. Thomson, 1991.

creative individual to transform even a great business idea into a great business. The very point of innovation methodology is to empower the creative potential in tens, or hundreds, or even thousands of people. How? By enabling them to combine their own insider's knowledge of the market with a healthy dose of outsider perspective, which may be generated through the dozens of ideation methods such as those discussed in Chapter 5. Because at root, all useful methods are simply the thoughtful application of techniques that can help people to see and accomplish what no one else has seen before. Facilitating this process - making it as easy and as fast as possible - is what innovation methodology is all about no matter which type of innovation it ultimately becomes.

And that's precisely what visionaries do - they see problems and opportunities that others do not see, and they somehow find the means to turn what they see into a successful business. With a lot of skill and persistence, and sometimes a heavy dose of luck as well, they build their businesses by providing customers with experiences that are positive and memorable, and making a profit at the same time.

A fourth factor that all these companies have in common is that although they all use and certainly depend on advanced technology, they are not (except for the industrial segments of GE) actually selling technology per se. They are *using* technology to deliver exceptional products, services, and customer experiences, but **the differentiator is the experience**, not the technology. These are business model innovators first, and they apply technology innovation in service to the business model, not the other way around.

The fifth common element is that while a founding innovation was the core of each original business model concept, the innovations didn't stop there. All of these companies are characterized by a **continuing commitment to innovation** in service to the customer, and taken together they demonstrate how impressive and how effective the commitment to innovation can be when it's realized as an organizational value.

In the end, business model innovation is all about the customer's experience. Thus, you can ask yourself and your colleagues what your customer's experience is, and if you probe deeply perhaps you may see what others have not seen.

You can also apply ethnography, for example, to uncover the hidden dimensions of customer experiences, and you must ask questions, and do so relentlessly. You must never accept the answer, "That's how we've always done it," or "There's nothing we can do about it," or that thoughtless service killer, "I'm sorry, but the computer says …" These are all excuses, and indeed whenever you hear them your ears should perk up because they're

often red flags indicating innovation opportunity!

> Going forward, your new best friends are going to be,
> "Why did you …?"
> "Why can't you …?" and
> "What if you could…?"

New Venture Innovation Methodology

Some great ideas don't fit the character, requirements, or risk threshold of an existing business, but they're definitely worth pursuing anyway. In these situations, new venture innovation enables a company to expand into new markets without having much impact on existing operations or markets.

New ventures can take many different forms, and the decision to create one rather than launching a new idea within an existing company is a complex issue that will be influenced by factors including brand risk, organizational capabilities, and market segmentation.

Brand Risk

A new venture can be a low-risk way to develop new ideas that might otherwise dilute the identity of an existing brand.

For example, when The Gap founder Donald Fisher saw an opportunity for a budget version of its own product lines he chose not to introduce less expensive products into existing stores, but instead established a separate company with a new brand identity, Old Navy. This protected The Gap brand from dilution, and also enabled the new venture management team the freedom to define their own risk profile and exert their own entrepreneurial talents unconstrained by the Gap's branding, product concept, and store identity.

It's also interesting to note how Fisher got the idea. It was a competitor who suggested it, pointing out in an interview that it would be easy to undercut The Gap with a less expensive line of clothing. Fisher realized that if the competition could do it, then The Gap could do it, and they did.

Organizational Capabilities

Does the existing organization have the capability to understand a new concept, and to serve the new market or the new sort of customer? To deliver the new products and services? To master the underlying technologies? To move faster than competitors? All of these capabilities are crucial to the success of a breakthrough product or technology, but if the current organization isn't capable of handling all of them well, then a new venture

may be the best way to ensure that the new business receives sufficient attention.

Markets and Market Segmentation

Old Navy also demonstrates a strategy for market segmentation, but rather than segmenting lines within an existing company, each line is constituted as a separate company with its own identity. Alfred Sloan pioneered this concept early in the 20th century when he assembled General Motors from a collection of separate companies, and organized their product lines as a progression from Chevy on the bottom to Cadillac on the top. The brand identities of GM's major divisions still attempt to conform to Sloan's concept, now 80 years later.

But today's auto market is much different than it was even 20 years ago, and GM is under tremendous pressure because its North American operations are losing so much money. During the first six months of 2005, in fact, every car GM sold in North America made an average loss of more than $1200. While Toyota, Honda, and Nissan are making profits and gaining share, GM and Ford are losing money and market share.

Part of GM's problem is that the company is still following Sloan's market segmentation model although it's clearly obsolete. GM has already shut down Olds because the brand had failed in a changing market, and its Buick and Pontiac brands are also in deep trouble because they no longer have natural market niches. Hence, it appears that after seventy years, Sloan's innovation has reached the end of its life and GM is going to have to do something completely different.

And actually this has already begun. Hence, 80% of GM's 2004 profits of $2.5 billion came not from the sale of cars, but from financing them. In other words, even though we think of GM as a car company it's already made the same transition as GE, which is to become a bank. GM's bank, GMAC, is a separate business, in effect a new venture.

So is banking the future of GM? Perhaps. But GM has also created another option for its future, a mobile telephone company called OnStar. OnStar turns your car into a phone, and provides a 24 hour a day connection to live operators who are available to help with a wide assortment of needs, from locating restaurants to locating your car if it's stolen. If OnStar is successful its revenue potential is intriguing because it operates on a monthly subscription model, so aside from the need to scale up OnStar operations as more subscribers join, the free cash flow should be enormous.

GM sold about 4.5 million cars in North America in 2005 (and 9 million globally), and if every North American sale included OnStar, and if OnStar service cost $20 per month, then OnStar revenue would be $1.1 billion. That's a respectable number, but it gets even better when you consider that the subscriptions should continue year after year. By the end of the fifth year even if GM's car sales are flat, there would be 22.5 million OnStar subscribers generating $5.4 billion of very profitable cash flow every

year. With these very attractive numbers in mind, GM has announced plans to make OnStar a standard feature on all its North American cars by 2007. Thus, GM was a car company that became a bank on its way to becoming a telecom company.

So why should OnStar be a separate venture? As with Gap and Old Navy, independence gives OnStar managers the freedom to operate without the need to protect the parent brand, and if it's successful, eventually OnStar will be sold to owners of all brands, Ford and Toyota and all the rest, so in that respect it doesn't make sense for it to carry the GM label.

New Venture Forms

As a growth and development strategy for established companies, the pursuit of new venture investment enables existing companies to reduce the risk of uncertainty by creating possible future options. The most common forms that new ventures take are:

- Spin-offs, which are usually undertaken when an individual or team is enthusiastic about an idea that just doesn't fit into the existing operation, and is willing to venture outside the existing corporation.

- Systematic corporate new venture innovation programs, sometimes called "game changers," which are generally ongoing programs that seek new ideas from inside the organization which have the potential to become significant new businesses.

- Corporate venture capital, a portfolio approach to the investment in new ideas originating from outside the organization.

Spin-Offs

There are countless examples of business spin-offs, and the process hardly needs explaining here. For our purposes, a spin-off is a new venture that has been given a separate identity for any of a countless number of specific reasons that may be related to the strategy of a parent organization or the dynamics of an emerging market, or both. Only rarely, however, do spin-offs reflect innovation. When HP spun out its instrument division as Agilent in order to focus on the faster-growing computer business, or when AT&T spun out Lucent, they weren't motivated by a focus on innovation, but by a strategic assessment of the core market and a need to simplify the challenges that their top managements faced in difficult times. In effect, they unloaded their problem children onto a naïve public market.

What's notable for our purposes are the rare occasions when spin-offs do reflect innovative thinking. For example, while United Airlines failed with its low-cost Shuttle subsidiary, it's trying again with Ted to compete with the discount airlines in the commodity short-haul market. Other examples are Saturn, Lexus, Scion, Acura, and Infiniti, all created to enable established Japanese car makers to compete in new markets. Visa was an innovative new-venture strategy that did indeed solve the problem of increasing losses in the credit card businesses.

Promoting New Ventures Inside: GameChanger

There's another way to promote new venture innovation, which is to encourage people inside the company to come forth with ideas that have the potential to become significant business opportunities.

The GameChanger approach was pioneered at Royal Dutch/Shell as a process and a structure whose intent was to begin shifting the company toward a culture of innovation. Its method was to help employees transform their innovative ideas into business value, and through this process to bring better investment options to the company's board. Hence, the goal of GameChanger is not ideas that merely differentiate, but **big ideas that address the strategic level** of customer concerns and opportunities.

GameChanger is a powerful synthesis of top-down and bottom-up perspectives. It's top-down in that senior management defines the intent, provides the financial resources, and engages a project team to make the GameChanger initiative happen. It's bottom-up in that its root purpose is to help people throughout the company to transform their ideas into business value. In the words of Dr. Math Kohnen, a Shell manager who participated as a member of the GameChanger team from the outset, "The biggest problem in a company is not the lack of ideas, but the failure to provide the opportunity for ideas to be expressed and developed, to be grown into something that will add value." Hence, the underlying principles are that it's important to encourage people to contribute their ideas, and even more effective to create a system of infrastructure to support them in actually *developing* their ideas.

The GameChanger web site (www.shell.com/gamechanger) describes the intent a bit more effusively as, "to dramatically improve Shell's business by stimulating and sponsoring the development of radical ideas that either fundamentally reshape one of our primary existing businesses, or allow us to explore wholly new directions. To do this, we operate a process by different rules that are outside the constraints and priorities of Shell's day-to-day business. We have teams in each business sector, and we work together to develop ideas that are 'between and beyond' our existing enterprise."[62]

A critical factor in GameChanger's success is that the people who bring

---

62 http://www.shell.com/gamechanger

forth the new ideas gain a stake in those ideas in two ways. First, they will continue to work on them so that they see their ideas through the entire development process, which can be tremendously satisfying, and second, they many also become co-owners with a modest financial stake and thus the opportunity of financial gain. The odds aren't great that this will happen for any individual idea, but the fact that it is a realistic possibility still provides significant incentive. Furthermore, since GameChanger is both an investment program as well as a cultural initiative, the positive power of its influence on peoples' beliefs and attitudes will be significant.

And then there's the learning, for there's no form of learning more powerful than intelligent failure, and thus the investment in learning will pay big dividends, even for ideas that don't ultimately make it.

Kohnen now consults with companies outside of Shell to help them set up their own GameChangers, and he describes his work as a seven stage process:

1. **Idea submission** happens any time via a simple online database system. Individuals and teams throughout the company are encouraged to submit their ideas. Ideas may pertain to new products or services, or radically new technologies or delivery systems, or even core technical or operating processes. **Ideation workshops** can also be held to stimulate new insights and new ideas, and these may of course utilize many of the ideation methods listed in Chapter 5.

2. The first tollgate for all ideas is **peer review**, a process through which all of the proposals are filtered. Composition of the peer review boards is obviously a critical factor, as is the composition of the review boards at steps 4 and 5.

3. When ideas are accepted, the person or people who submitted them are invited to participate in a 3 - 5 day **New Venture Workshop** in which they learn how to transform their ideas into a complete new venture concept. In essence, employees learn how to become entrepreneurs. The workshop approach has a number of advantages, not the least of which is that it gives the participants the opportunity not just to offer up ideas that then disappear into the hidden depths of the org chart, but they themselves have the pleasure (and the very hard work, to be sure) of carrying ideas through as far as their merits can carry them, working in a supportive environment whose specific intent is to develop both the ideas and the people.

4. The venture concepts are then evaluated by an **expert review panel**, and the best ones are selected for incubation**.**

5. **Incubation** is a period of 3 - 6 months during which a full **New Venture Plan** is prepared. The individual or team that submitted the original idea remains with the project, so it is here that the organization has begun to make a significant investment, in the form the time required for the Venture Plan to be prepared. Most important at this stage is some degree of proof of concept, in the form of acceptance or enthusiasm by customers. Hence the question, "Would you buy this?" In addition, detailed work is done on technical and organizational feasibility.

6. Completed Venture Plans are the submitted to the **Venture Board** for evaluation.

7. The next step is the preparation of a complete **Business Plan,** with all of the detail that this entails. Careful analysis of the potential market, along with assessment of capital investment, organization development, marketing, and ROI projections are all prepared. For ventures that involve the development or application of new technology, this step also includes a detailed study of technical feasibility.

8. The final tollgate is the individual or group of executives who will evaluate all the business plans and make the **final investment decision** to invest or not invest in each idea. This could be the company's executive committee, business unit managers, or an internal venture or investment entity. The key questions that they're probably asking are, "Is the customer value proposition described in this plan unique? Is it defensible? And can we deliver it profitably?" If the answers are yes, then GameChanger has delivered on the promise to bring forth solid investment options from the people working inside the company at the grass roots level.

Like all of the tools and processes described in this book, there's obviously an art to creating and managing a process like this beyond merely following these seven steps, including a lot of detail at each stage and in the entire surrounding set-up and implementation. One of the most crucial of these is to set realistic expectations; another is to keep the focus on entrepreneurial insight and drive while working consistently to keep "convention wisdom" and the innate conservatism of the organizational establishment as far away as possible. In step 7 the established hierarchy will have the final say, and since the end point calls for the rigors of substantiated business plans, it would be counterproductive to blunt or dilute the creative spirit during the intermediate stages.

In this regard, Kohnen notes one innovative project that made it all the

way to the last step at Shell before being killed, but then it resurfaced a couple years later when the leaders of a different business unit saw strong potential in the plan.

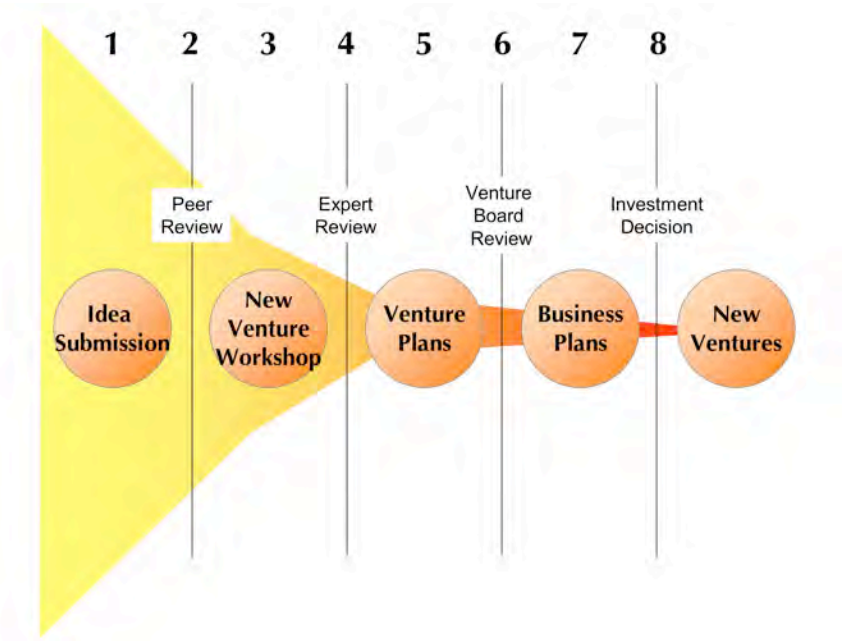

Figure 10.
The Game Changer Process
The process is naturally similar to the more general Permanent Innovation Methodology shown in Figure 2, page 24.

Like most development processes that go all the way from insight and ideation through to introduction into the market (including the Permanent Innovation Methodology described in this book) it's easy to visualize GameChanger as a funnel, with ideally hundreds or thousands of ideas at the front end leading to tens of ideas that actually make it to market. Remember, though, that the target here is full-fledged new ventures, significant business opportunities that could themselves become multi-billion dollar companies. Hence, the stakes are high and the investments can be significant.

While most ideas will ultimately not become new ventures, many great ideas exposed and nurtured in the game changer process can still add significant value as more modest incremental or even breakthrough products and technologies. The new business ideas that emerge through this process may also become part of existing business units, or products and services that are absorbed into existing business units to augment or transform their current products, services and processes.

A key virtue of the program is that it re-orients senior and mid-level management toward a culture of innovation because they're involved in the creation of policies and performance management practices to support the

game changer process. A key element is the creation of the peer review and internal venture boards that learn to evaluate the ideas and business models as they emerge, and to provide continuing support to the best ideas via structured rounds of development funding.

The targeted financial return on a game changer project should be at least 10:1 and many achieve even higher returns. To date Shell has invested tens of millions of dollars, and found new business valued at more than $2.5 billion.

The targeted cultural or organizational return may also be essential if you're going to create a culture of permanent innovation, as it may take an initiative of game changer's scope and visibility to convince people that you're absolutely serious about innovation.

In the ideal organization, the one in which people by the dozens and hundreds are contributing new ideas, the number of plausible ideas could far exceed the investment capacity of the firm. Just as we identified 40 potential areas for innovation, hundreds and thousands of employees can surely identify hundreds and thousands of ideas that might be valuable. This means that there are filters at many stages of the process, which ensure that the best or most promising ideas are developed through this system.

Based on its early successes Shell then took the next step and expanded GameChanger into an outside-in process as well, recognizing that the process which worked inside could also work outside. The company opened up GameChanger to the public and thereby became another example of externalizing the innovation function. The web site targeted at the general public uses nearly the same language as the internal message, but with an even more seductive tone, asking first of all, "Are You a GameChanger?" It continues, "Most people go through life playing by rules other people wrote. We believe some people can't stop dreaming about how things could be better under a different set of rules. Once in a while, a dreamer succeeds against difficult odds to truly change the rules of the game on her own. However, often it takes a few things the dreamer doesn't have to show that the idea will work. For lack of money, a few connections, and perhaps a bit of guidance, many great ideas never get off the ground. Shell GameChanger is designed to provide funds, introduce you to the right people, and perhaps provide some useful advice. We invest in radically novel, early stage ideas in the 'energy and mobility' industry to help you get them from your mind to 'proof of concept.' Perhaps we can help you convert your idea into reality?"[63]

This is a powerful method of developing an organization and the

[63] http://www.shell.com/gamechanger

broader network around it, enhancing its capability to innovate effectively by training generation after generation of imaginative workers to contribute their ideas as part of the detailed process of turning ideas into business value.

On a much smaller scale, but certainly in accordance with exactly the same principles, Cambridge Consultants, a US-UK innovation and engineering design consultancy with a staff of 250 and about $40 million in annual sales, invests in an average of one spin-out company per year based on ideas generated within the company, and has earned millions from successful acquisitions and IPOs.

Doubtless there are hundreds of other examples, because new ventures are a normal and natural way that the economy and the marketplace evolve, and indeed part of the opportunity of new venture innovation is to retain the innovative spirit and entrepreneurial talent of individuals who might otherwise leave the organization to pursue their own innovation dreams.

Promoting New Ventures Outside

Sometimes the purpose of a new venture is to gain access to promising but as yet unproven new technologies, or to support the development of emerging markets. Intel's venture arm Intel Capital, a very advanced example of this approach, describes itself as a means of targeting innovation: "Finding and supporting innovative companies is the mission of Intel Capital. Ours is a global commitment aimed at investing in profitable enterprises that will drive the growth of the internet, enable new usage models, and advance industry standards."[64] By this they mean "grow the industry to sell more of our chips." This model of investing is not so much a matter of financial gains, but rather an approach to developing a market by leveraging entrepreneurial capacities beyond the company's own doors, another type of outside-in innovation. It's as important that these investments lead to expanded chip sales as it is that they earn a profit as investments.

"What sets Intel Capital apart is our ability to bring added value to every deal. We are uniquely capable of building companies using our worldwide customer base, our depth of technological knowledge, unlimited access to capital, and the power of the globally recognized Intel brand. While financial return is imperative, our greater mission remains to spur innovation and inspire the entrepreneurial spirit to thrive."

Did you notice the line "unlimited access to capital?" So if you were thinking that they invest a few dollars in a few companies to create some relationships, this might clue you in that their investment operation is massive. As of early 2006 there are more than 250 companies in the Intel Capital portfolio, managed in four different funds totaling $900 million of invested capital, and the company recently announced that it will invest another $50 million in technology companies developing innovative

---

[64] http://www.intel.com/capital/

hardware, software and services in the region covering the Middle East and Turkey, bringing its total to almost a billion dollars. This is new venture investment on a grand scale!

New venture innovation is a tremendously powerful tool for creating compelling options for the future of the organization. It's a driven by top-down logic, funded by board-level decisions, and rightly expected to extend the firm's reach into new markets. It's also a great learning strategy, a means to get people thinking in fundamental terms about the business and the roles they play in creating new generations of profitable products and services.

Coda

The four types of innovation have quiet different characters, and they are developed through different processes. Each one may be relevant to the future of your own organization, and taken thoughtfully together they will enable you to deploy the considerable power of your organization's intellectual resources to adapt to changing conditions, and to create change as well. Applying an innovation methodology that includes all four also builds the innovation culture, and mitigates the risk of narrow thinking.

Progress in all four innovation types can be significantly expedited by the iTeam, the SWAT team that has mastered all four, and works to catalyze innovation opportunities and energies throughout the organization and its broader network of partners and suppliers.

Throughout the development of any innovation, the people involved in the work will be thinking about the market for their end product or service. Who's the buyer? What do they need? What do they want? If the focus is on the customer's experience, they will be searching for unknown and unmet needs, and they will find many ways to validate their concepts through tests that lead to breakthroughs and new business models. If the ideas imply vast markets and huge capital outlays, they will seek connection with large pools of internal or external capital to facilitate these new possibilities.

And when they reach the end of the innovation development process, when new products and services are ready for the market, then the emphasis shifts to another type of development work, market development. Now it's time to bring products, services, and customers together through careful planning and thoughtful execution.

Action Steps:

1: The thoughtful pursuit of all four types of innovations is really the heart of this book, and the chapter you've just finished is, from the standpoint of methodology, by far the most important. Now you must decide how to balance your efforts in all four types, and of course the financial resources at your disposal will be a significant factor. Nevertheless, I cannot emphasize enough the need to expand your innovation efforts beyond incremental innovation.

2: Study the innovation projects currently under way to assess the balance between the four types, and shift resources as necessary to achieve the right balance. What is the right balance? That's something that you have to design.

Chapter 8

Great Planning: Market Development

Market development is usually critical to the success of any innovation, of course, and it's a well understood process that, unlike innovation itself, generations of MBA students have grappled with in detail. There are, however, some nuances that are worth exploring here.

The key insight for our purposes is to recognize that there are two very different kinds of market development. Accelerating adoption applies to individual products, services, and business models, while creating new markets is a more fundamental process that supports the success of revolutionary business ideas.

Here are the key questions that this chapter explores:

1: What are the keys to accelerating the adoption of new products and services?
2: How is accelerating adoption different from creating new markets?

Accelerating Adoption

When market development refers to the process of introducing a single innovation to the marketplace, firms often rely on proven techniques such as advertising, public relations, and trade shows to persuade potential customers that the new products or services are worth paying attention to. But the more innovative a product or service is, and the more it expresses breakthrough thinking, the more sophisticated this education process will have to be.

One of the reasons for the increased sophistication is that many breakthroughs require that their users make fundamental change to how they function or how they behave, changes that involve switching costs incurred by the end user to make use of the new product or service. This cost is the most significant factor in new product adoption: Is the value great enough to justify the hassle?

Remember when cassette tapes first came out, and you had to decide whether you'd stop collecting records? And then CDs came out, and you were faced with the same decision again. Each time the old collection was made obsolete by the new one, so you had to start over again, which was a huge barrier to adoption. Now we're switching from CDs to MP3 players like the iPod, but the difference is that we can still play our CDs! Plus now you can buy just the song you want instead of an entire album or CD, so it gives consumes more flexibility. Ergo, switching cost is low, which greatly enhances the value proposition and has driven Apple stock to new highs as the iPods fly out of stores, while Apple's competitors try to peel off a piece of the market for themselves.

Ironically, switching cost was the same problem that Apple could not overcome in the computer business, because even if you were tempted to switch from a PC to a Mac, in addition to the cost of the hardware and software you were buying you'd have to invest time in learning how to use the interface of a new operating system and perhaps also buying and learning new software programs. For most people this was and is entirely unattractive, and they simply wouldn't consider it.

The development of these principles has been significantly influenced by Everett Rogers, a Stanford professor whose book *Diffusion of Innovations*[65] pioneered the study of the critical relationship between innovations and the customers who adopt them. Rogers showed that the rate of new product adoption commonly follows a bell curve, and defined different groups within a total population according to how quickly or slowly they tended to adopt innovations. He also explored issues such as opinion leadership, diffusion networks, change agents, and innovation in organizations, all of which are significant factors in market development.

Consultant Geoffrey Moore subsequently applied Rogers' ideas in a model that has become widely used in high tech industries. Moore's book,

---

[65] Everett Rogers. *Diffusion of Innovations*. The Free Press, 1983.

Crossing the Chasm,[66] explains how the adoption curve can be applied to understand how and why new high tech products succeed or fail in the market. It also examines how differing psychological factors affect different groups of buyers, and therefore how marketing, advertising, and sales have to be adapted at each different phase of the adoption curve.

Moore identifies four groups of adopters: early adopters who in the technology world tend to be technology enthusiasts, and then visionaries, pragmatists, and conservatives. The mass market that is your goal begins with the pragmatists, so ultimately they are the ones who have to believe in a product, and be willing to incur switching costs to adopt it.

However, you develop a business by relying on the willingness of early adopters and visionaries to buy your product. The chasm is that great divide between the visionaries and the pragmatists, as these two groups have very different ways of looking at the world, and very different messages will appeal to them. Marketing that makes complete sense to early adopters and visionaries is entirely lost on pragmatists, and vice versa; it may even alienate them entirely.

Advertising designed to appeal to early adopters, those who want or need the newest and coolest products, and for whom a product is a fashion or identity statement, will sound like this Motorola web site: "Motorola's new RAZR V3 is the essence of advanced technology and superlative design. At only 13.9 mm thin, 53 mm wide (the width of a credit card) and 98 mm long, it is one of the slimmest phones on the market yet still rich in functions, performance excellence and design innovation. It provides the user with a total sensory experience – from the innovative metallic finishes and use of materials to a truly revolutionary, chemically etched keypad created from a single sheet of nickel-plated copper alloy. The Motorola RAZR V3 is the ultimate, beautiful slim-phone."[67]

This is not language that will appeal at all to someone who's looking for basic functionality, which will be by far the largest segment of the market. But in the fast-moving and hyper-competitive phone market, Motorola uses the Razr to establish its own leading edge credentials, and leaves the job of reaching pragmatists to the retail phone distributors, the wireless stores and providers.

Malcolm Gladwell's concept of the "tipping point," described in his book of the same name, also explores the factors underlying the adoption of new ideas and new products and explains many concepts that are intuitively obvious to anyone who's been involved in market development.[68] The book shows how contagious behavior—like a fashion trend or the sudden emergence of a bestselling book—starts in an organic fashion and then

---

[66] Geoffrey Moore. *Crossing the Chasm*. HarperBusiness, 1991.

[67] http://www.motorola.com/motoinfo/product/details/0,,69,00.html

[68] Malcolm Gladwell. *The Tipping Point*. Back Bay Books, 2002. This discussion is based on Bryan S. Coffman's summary of *The Tipping Point*, available at http://www.innovationlabs.com/tipping_point.html.

suddenly takes off exponentially, much like a virus, without any central control or master plan.

The idea from which the book takes its title is that moment in a system's development when a small change leads to a huge effect in a very rapid time frame, and spreads contagiously. Not all systemic change is like this, but for those who want to instigate rapid change, the principles of the tipping point model are important.

Contagious expansion of ideas or systemic changes doesn't rely upon thousands or millions of people all rising up as one to create the change. Instead, the rapid growth is usually started by a handful of people who exhibit some kind of exceptional behavior. In the propagation of infectious diseases, some people, who by the nature of what they do or the lifestyle they lead, allow the growth of the disease to tip so that it becomes an epidemic. The same can be said for many other trends—a small number of people (like skateboarders) have the ability to infect a large number of other people with a new idea (like a style of clothing or shoes). Gladwell suggests that there are three types of exceptional people whose disproportional influence can make a change tip and become a trend. They're Connectors, Mavens and Salesmen.

Connectors are people who seem to know everyone. As information travels through networks it's highly likely to come in contact with a connector, and if the information engages the connector's interest, he or she will distribute it to a huge number of other individuals in a short period of time, creating a tipping point. Only a small number of connectors are needed in any system to propagate a new trend.

Mavens are information specialists. They're the people who seem to know everything there is to know about a certain topic, and they have one additional characteristic that makes them different from ordinary experts: they love to share what they know with others. They're not necessarily a hub in a network like a connector is, but they are eager to share what they know. Mavens are important as tipping points because they're on the leading edge of acquiring new information. They know things that the rest of us don't, and in a network of individuals, they're likely to be the first to know of a potential system change. If they're in touch with a connector, then change can get communicated very rapidly.

Salesmen are the quintessential persuaders who can get people to make decisions and take actions that they ordinarily wouldn't take if left to themselves. But these salesmen are not like used car salesmen, people who are reviled in popular culture. Instead they're individuals who have the ability to persuade in part because they can get another person to root for them in the same way that an audience roots for a performer on stage. Their ability to persuade makes them strong

carriers of infectious ideas, concepts, trends and changes.

Creating New Markets

When new markets or industries emerge, it's often because someone has been able to catalyze the connectors, mavens, and salesmen in a community, although this doesn't necessarily happen quickly. For example, it took decades for the airline industry to mature, as the manufacturers developed better aircraft and the public gradually developed confidence in the safety of airline travel and switched away from trains.

One of the most significant steps in the development of commercial aviation was the Ford Tri-Motor airplane of the 1920s, which brought new capabilities to the industry and was used by pioneering companies including Pan Am and United. Ford himself recognized that broad public acceptance was essential for him to sell his airplanes, and he launched an advertising campaign directly targeted at the public that promoted the flying experience in lofty prose: "Beautiful as a jewel, it spreads its wings like burnished silver, to fly with the smooth grace of an albatross over sea, over land, over deserts or Arctic wastes. Here, truly, is a yacht worthy of the modern man of spirit and imagination."[69]

The challenges of the Great Depression forced Ford to abandon his aircraft business, but the vision he defined was taken up by other manufacturers such as Douglas and Boeing, which went on to develop and succeed in the new industry with a significant boost from the explosion of demand for aircraft caused by World War II.

Another interesting example of market development is NikeTown. Nike's Gordon Thompson explains why Nike established its own chain of stores as a market development strategy: "We want to be in retail, but we don't want to be in retail like a retailer is in retail. We want to make money, but we also have a lot of communication and storytelling and educating of consumers to do. The bigger thing is getting people to interact with the brand firsthand."[70]

Getting people to interact with a brand is the essential challenge of creating a new market, and the many other manufacturers that followed Nike's lead and established their own stores to support their own market development efforts have understood the importance of a direct connection with the public.

---

[69] Michael Maxtone-Graham. "The Ford Tri-Motor." *Hemispheres Magazine*, May 1996.

[70] William L. Miller and Langdon Morris. *Fourth Generation R&D: Managing Knowledge, Technology, and Innovation*. John Wiley, 1999.

•••

If you look down the list of breakthrough technologies on The Innovation Table, you'll notice that just about every breakthrough, and many of the new business models, was supported by focused market development efforts that articulated new needs and defined new possibilities for meeting them.

Autos: Minivans
Computer: Personal Computers
Banking: ATMs
Food: Genetic Engineering (still an ongoing development process)
Airlines: Online reservations
Telecommunications: Cell phones
Health Care: MRI / CAT Scan
Retail: Bar codes
Office Supply: Post-it Notes
Media: BLOGs

Early adopters bought the first versions of nearly all these products, and gradually the value was proven as more and more users were satisfied. Mainstream buyers eventually became interested, leading to the development of a large customer base. All this was supported by advertising, and constant effort to gain favorable (and free) media publicity.

In some situations market development takes on a more fundamental character, as it can refer not merely to promoting new products or services, but to developing entire industries by engaging large numbers of people in the search for new needs. This is Intel's challenge, and it's why the company has created such a massive investment portfolio.

While only the largest companies can consider creating billion-dollar portfolios as Intel has done, the principle of outside investment that taps into creativity and innovation outside of your organization may be an effective strategy for learning, as well as for extending the reach of your operations. For Intel this form of investment is an absolute necessity, as few companies face the dual challenges of creating branded products that are nevertheless fully embedded into someone else's products, and few companies rely so heavily on creative geniuses outside to create new demand for Intel's chips by inventing new products and even new product categories that utilize ever more computer chips.

Intel thus stimulates demand by defining new end-user needs that are addressed at least one step removed from Intel's own operations. This is, in effect, a massive and permanent process of developing the market using a capital portfolio as the tool for market development, investing in companies that create new uses and thus new demand for Intel.

These investments are also a form of externalized R&D, through which Intel gives outside entrepreneurs the financial means to succeed gloriously,

while retaining for itself the right to reassert control by acquiring the companies that find a large market.

Most large companies, and especially those in technology-related fields, have some form of corporate venture capital portfolio such as Intel's, but for many of these companies the bigger problem is finding good ideas to invest in. For example, despite making hundreds of investments and acquisitions over the last few years, and despite engaging in $500 billion of stock buy-backs since 2004, the companies of the S&P 500 are still sitting on a combined hoard of $643 billion, a massive pile of retained earnings.[71] A huge army of financial officers must be spending their days shuttling this hoard around between various financial instruments while they wait for top management to find more companies to acquire.

•••

These two types of market development, accelerating adoption and creating new markets, are critical factors in the success of all innovations, and at root they really address two simple questions: Who's going to buy this? And how are you going to sell it?! The challenges inherent in these questions bring abundant opportunities to apply creative thinking and great planning.

In fact, in every stage of the innovation process, from ideation through targeting, creating business value, and market development, the greater degree of creativity your organization is able to muster, the better the results are likely to be. Hence, Part 3 examines key aspects of the creative process and its infrastructure as they apply specifically to the search for and development of innovation.

Action Steps:

1: Assess your past market development efforts to get a better understand of the strengths and weaknesses of your process.

2: Make sure that market development planning is included in all innovation initiatives that are already under way and all future projects as well.

---

[71] Joe Bel Bruno. "Big companies sitting on cash." *San Francisco Chronicle*, May 30, 2006.

Part 3

Innovation Culture & Infrastructure

Chapter 9: Creative Methodologies in the Innovation Process: Inside the Black Box
Chapter 10: Great Businesses: The Innovation Culture, the Innovation Organization, and High Performance
Chapter 11: The Innovation Infrastructure

Chapter 9

Creative Methodologies in the Innovation Process:

Inside the Black Box

Innovation is an art and perhaps also a science, one that's fueled by unpredicted and unpredictable insight, and its very unpredictability is one reason why the concept of the black box is so apt a description for it. How do you choose, which is to say, how do we know which ideas are better and which are not?

While the deepest workings of the human mind remain beyond our comprehension, we know quite well that we can readily improve both thinking and decision making by using tools and methods that help people grasp the nature of complex topics, and which help them work together to reach agreement about what makes sense and what doesn't.

Thus, each of the four types of innovations will be developed by different teams of people, and each team will use different criteria to assess the likelihood of success for the ideas that they've created. Nevertheless, there will be many similarities in the activities they do; in the end success at innovation relies on how people think about things that are simply new.

The deep similarities therefore have to do with the inherent nature of novelty and of creativity as they apply to the innovation process, for transforming ideas into useful products and services, business models, and enterprises is essentially a creative endeavor, one that should draw on the creative talents of dozens if not hundreds of people. These talents need to be organized and directed using tools - methods - that bring out the best from each individual while supporting positive group dynamics.

This type of work, innovation, falls into a particular category of creativity that deals with solving complex problems, and while there are many traps that impede progress here, there are also many approaches that can accelerate success.

Here are four key questions that are discussed in this chapter:

1: What are "wicked" problems, and what do they have to do with creativity?
2: What is the design process, and what part does rapid prototyping play in it?
3: What's collaborative design?
4: What role does facilitation play?

People

People are the heart of the innovation process. It is people who have insights, ideas, inspirations; who are curious and persistent; who recognize problems and opportunities, and then figure out how to solve the problems and realize the opportunities; it is people who dream about doing it a better way, and make the mental leaps that become the future of companies, communities, societies, and indeed of all human civilization. To create knowledge, to learn, and to apply that knowledge individually and

collectively, these are the capabilities upon which all innovation depends.

People are naturally creative and innovative, and they want to contribute, for we are all in our nature innovators to the core. As I noted in Part 1, people have an unquenchable thirst for novelty, whether it takes the form of new products, new movies, new music, the daily news (that we watch, read, and listen to), or new experiences. Individually and collectively we are driven to learn, to create, to discover, and to invent new stuff.

Properly conceived and managed, people, knowledge, and learning therefore come together in organizations that practice permanent innovation, and that embody the "innovation culture." Wherever this happens, innovation is both an identifying characteristic as well as a consistent output, resulting in the sort of company that *Fortune* magazine might eventually recognize as one of the world's most innovative, and be right about it.

And as they work to apply their native skills in creative problem solving, there are specific concepts, tools, and methods that can accelerate their progress. These elements are all part of the black box of creativity, and by applying them we can improve critical factors pertaining to how people work and think.

Wicked Problems[72]

Berkeley professor Horst Rittel developed the very useful concept of "wicked problems" in the 1970s, and later it was taken up by consultants Jeffrey Conklin and William Well in a provocative and widely-circulated white paper.[73] Conklin and Weil suggested that while most problem-solving approaches are designed to address simple or static problems, what managers are really dealing with most of the time are wicked problems, problems that are tough, hard to handle, and do not lend themselves to simple or simplistic solutions.

These are some of their key characteristics:

- Wicked problems must be solved for an organization to operate effectively, or even to operate at all, to survive. Finding good or excellent solutions to these problems does matter for the future, but

---

[72] This section is adapted from the InnovationLabs white paper *High Performance Organizations in a Wicked Problem World* by Langdon Morris with Bryan Coffman, Michael Kaufman, and James Smethurst. http://www.innovationlabs.com/high_performance.html.

[73] Conklin, E. Jeffery and William Well. "Wicked Problems: Naming the Pain in Organizations." Group Decision Support Systems, 1999.

attempting to solve them using conventional analytic means is almost certain to fail.

- Wicked problems are highly unpredictable, can erupt from nowhere without warning, and can quickly turn into a major crisis. They interrupt the regular course of business and they usually have to be dealt with *right now*.

- Wicked problems cannot be fixed with old solutions. Outside-of-the-box solutions are often required, so it's going to take new insights, new ideas, creativity, and innovation to deal with them.

- Wicked problems consequently can't be solved in a simplified, static, or sequential manner. If you put together a committee that works on them for a few hours a week, you probably won't get the results you need.

- Wicked problems can't usually be solved by one person working alone because they're just too complex. Solving them requires the blending of many different kinds of knowledge and different points of view, and structured problem-solving methodologies can often help enormously.

Does this sound familiar? Of course it does, because it describes all the issues associated with innovation. Wicked problems therefore present not just operational challenges for every company, but also thinking challenges for every leader and every manager. And actually the thinking challenges are the more critical ones.

A common wicked problem in innovation is the shift from one product generation to the next in any industry. This situation is so challenging, in fact, that it's very common for companies that were market leaders before a market shift to find that they are no longer leaders afterwards, because their competitors seized vital market share. This is precisely what happens when a new business model takes over, and those trapped in the old model sadly and apparently helplessly watch their market share erode. In fact, nearly all companies that got big built their initial success on a shift during which they took market share from older competitors that subsequently struggled or even failed because they're unable to adapt to the next big wave of change that came along. Examples are Sears, GM, AT&T, Bethelhem Steel, United Airlines, TWA, Compaq, etc. etc., and countless others who have suffered the fate of non-adaptation.

So the concept of wickedness describes the sort of problems that all innovators are concerned with, and the following sections describe some tools that you can use to deal with - and master - wickedness in all its nasty forms.

The Design Process[74]

Design is the process of systematically responding to current and future needs by defining how things ought to be different, predicting[75] and planning how to realize *vision*. We could also refer to this as the "creative process," and the meaning would be the same. It is a process of creating and selecting, of determining the characteristics of a thing or of an idea. It's a uniquely human undertaking: architects design buildings; engineers design products; generals design military strategies; entrepreneurs design companies and industries; teachers design curricula; scientists design investigations and experiments; legislators design policy. As a method, design makes explicit what was once hidden in the black box, as it gives us a specific set of questions to ask and steps to follow to transform ambiguity into concreteness.

In one form or another, design is practiced by people of all backgrounds and in all cultural contexts, and thus in a broad sense, *design is the application of learning to human life*. As such, it's fundamental to the economy that is based on technical information, our economy, for design is the method to transform information into useful products and services. Thus, design is a systematic approach to learning, to discovering whatever it is that you must to accomplish whatever it is that you're inspired to do.

In this context, the distinction between design and engineering is sometimes confused. If you already know what the specific desired outcomes are and how they can be achieved technically, then what you're doing is probably engineering. **Design, in contrast, is a venture into the unknown** that is rich with discovery; risk; uncertainty; and the possibility of failure. It's trying new things, testing to find out what works and what doesn't work, and why. Design, creativity, and innovation are thus inseparable.

As described here, engineering is a subset of the broader process of design, so while design explores the possibility of something entirely new done in a new way, engineering will provide the certainty that is based on

---

[74] This section is adapted from: Langdon Morris, *Managing the Evolving Corporation*. Van Nostrand Reinhold, 1995.

[75] Deming, W. Edwards, *The New Economics for Industry, Government, Education*. Cambridge, MA, Massachusetts Institute of Technology Center for Advanced Engineering Study, 1993.

past knowledge that it will work properly. Both have important roles in the creation of value for companies and for society.

Although each individual may approach design differently, there is an archetypal *process* of design beneath these differences, a disciplined series of steps that together constitutes a generalized model.

This proposition that design is a discipline suggests something far different than the common stereotype of the wild-eyed creative (mad?) genius working in a cluttered laboratory on a dark and stormy night. Einstein with a tidy haircut just doesn't inspire the same awe, but with his hair exploding in all directions, surrounded by the apparent chaos of papers piled high, standing in his frumpish sweater beside rows of unintelligible blackboard scribblings, *this* is the creative genius. But design, interestingly, is a combination of both discipline and wild-eyed creativity. It brings out this creative genius hidden in everyone, and at the same time it's a process consisting of these steps, which can be managed with great clarity and considerable precision:

1. Create the Problem
2. Create the Solution Context
3. Create Solutions, while prototyping as fast and as much as you can
4. Define the Details
5. Implement
6. Use and Feedback.[76]

As a discipline, design provides an approach to the wicked problems that society and its organizations are facing more and more frequently, for it is a thinking tool that enables you to simultaneously reduce complexity, improve performance, and shift resources to optimal strategies. As Peter Drucker points out, "... the ability to connect and thus to raise the yield of existing knowledge (whether for an individual, for a team, or for the entire organization) is learnable. ... It requires a methodology for *problem definition* - even more urgently perhaps than it requires the currently fashionable methodology for 'problem solving.' It requires systematic analysis of the kind of knowledge and information a given problem requires, and a methodology for organizing the stages in which a given problem can be tackled - the methodology which underlies what we now call 'systems

[76] This model of the design process is adapted from a guidebook to creativity and problem solving called *The Universal Traveler*, by design professors Don Koberg and Jim Bagnall. Many of the refinements to Koberg and Bagnall's model as reflected here were developed by management consultant Matt Taylor (unpublished). Koberg, Don & Bagnall, Jim, *The Universal Traveler: a Soft-Systems Guide to Creativity, Problem-solving, & the Process of Reaching Goals*. Los Altos, CA, Crisp Publications, Inc. 1991.

research.'"[77]

What Drucker refers to as 'system research' is what is meant here by 'design,' a broad and systematic process of looking comprehensively at questions, ideas, and issues. This process can be applied in all kinds of situations, including the transformation of the organization itself. For whatever reason or in whatever context it is applied, design always begins with a problem, so let's take a more detailed look inside.

1. Create the Problem

The formulation of a problem is by no means a given, for it is in fact a creative act. And as this formulation has significant implications for the types of possible solutions that may eventually emerge, it cannot be taken lightly.

Csikszentmihalyi points out, "Creative individuals do not rush to define the nature of problems; they look at the situation from various angles first and leave the formulation undetermined for a long time. They consider different causes and reasons. They test their hunches about what really is going on, first in their own mind and then in reality."[78]

Design sometimes begins with vision. When Martin Luther King, Jr. proclaimed, "I have a dream!" he condemned the reality of his day and simultaneously expressed determination to fulfill his vision. President Kennedy proclaimed the vision of humans on the moon, and eight years later Neil Armstrong and Buzz Aldrin stepped from the Eagle and extended the reach of humanity further into the universe. The protesters of Tiananmen Square proclaimed a vision of society that compelled them to risk their lives to create a new society, and today individuals throughout the world persist in the quest to fulfill the visions of Dr. King, NASA, and Tiananmen Square. None of these visions was devised hastily, but quite to the contrary, as the result of long and perhaps tedious thought and discussion.

A compelling vision, well expressed, is one of the most powerful of forces in human society. It completely reframes the problem, changing the context of reality and setting up a stark contrast between what is and what could be. In this contrast emerges a driving force, a compelling motive.

This contrast is the source of ***creative tension***, as I discussed in Chapter 3, the relentless energy that drives visionaries, whether they're artists, scientists, or entrepreneurs or educators; missionaries or presidents or revolutionaries, or parents.

Great leaders define great visions that express the spirit

[77] Drucker, Peter, *Post-Capitalist Society.* New York, HarperBusiness, 1993. p. 193
[78] Mihaly Csikszentmihalyi. *Creativity*. Harper, 1996. p. 365.

and the potential of their times, infecting others with a compelling anxiety, a creative tension that suffuses the atmosphere and begs for action. Such visions contrast so strongly with the current condition that the idea of *what could be* is overwhelmingly powerful. It is motivating and magnificent, so much so that personal sacrifices are made willingly in the quest for its fulfillment. It becomes the defining element of a professional life or perhaps a personal life, and gives meaning to an otherwise mundane existence.

But what do you do with vision? How do you translate its breadth and scope into specific and coherent actions that constitute progress? Somehow you must *bring the future into the present,* transcending time to transform that which *could be* into that which *is*.

If you don't somehow take action to fulfill the vision it will remain in the vague and distant future, inconsequential. Or your competitor may do it. But once the quest for fulfillment is begun, this vague future is given distinct shape and form in the present, and offers possibilities that once were only dreamed of. In this regard the fulfillment of a vision also transcends time.

The vision and its contrast with the current condition has, in effect, *created a problem*. The current condition is undesirable or even unacceptable, and the vision offers a solution. But caution is needed here, for although the act of defining a vision has led directly to the creation of a problem, it is important to discern if it's an appropriate vision, and therefore a problem that is worth solving.

The recent struggles of General Motors illustrate this point. During the 1970s and '80s, GM worked to bring efficiency to its auto manufacturing efforts by standardizing on a certain look for its cars. An entire generation of Chevrolets, Buicks, Oldsmobiles, Pontiacs, and Cadillacs looked so similar to one another that customers couldn't tell them apart. Sales declined, and GM's market share plummeted, and it's still declining.

In fact, this misguided choice could as well as any other single event mark the beginning of GM's long, sad decline. Because the cars that looked similar on the outside were very different on the inside, and consequently there were no significant economies of scale in their manufacture. What GM should have done, of course, was to make the cars look different on the outside but be the same, or similar, on the inside, but it took a very long time for the company to figure this out. How could they have gotten it so wrong? What strange vision must have inspired GM's leadership to formulate the problem precisely backwards?

Ford made a similar mistake a few years later. During the 1980s,

Ford's Taurus model was a big success for the company, and became the number one selling car in the US from 1992 to 1996, an important distinction for the Ford brand and a source of tremendous profits for the company. However, Ford shot itself in the foot when the car was totally redesigned for 1997 and its sales plummeted, falling to 6th place behind Toyota's Camry, Honda's Accord, and some pickup trucks. By 2005 the car was taken off the market entirely, and *Forbes* magazine said this in 2004: "Poor Taurus. It used to outsell the Camry, then it fell behind. Then it *really* fell behind, as Ford needlessly tinkered with its exterior styling and countered the Camry's seamless interior with an outdated, funereal cockpit in the Taurus. Its trunk is as big as the Grand Canyon, but the Taurus isn't much fun to be in."[79] Talk about mis-creating the problem, and mis-identifying the key factors underlying your own success. Ouch!

While GM and Ford are losing customers, Toyota, Honda, and Nissan are achieving success, motivated by visions of steadily increasing quality, marketplace variety, and nearly perfect manufacturing. They gained market share by introducing new cars that were assembled with great efficiency around a few basic chassis and engine configurations.

Vision is also fundamental to the creation of customers, as robust marketplace competition is an expression of differing visions of products and services. But a mis-directed vision creates the wrong problem, one that customers don't find compelling.

While advertising is designed to influence the process by which customers choose, it's really the attempt to influence the customer's own vision: drink this beer and you'll be attractive; drive this car and you'll be successful; wear this clothing; smoke this cigarette; eat this food; use this product. Products that fail don't inspire the customers' vision, for if the difference between the way things are now and how they would be different after the purchase is not compelling, then there's no reason to switch and there are no customers.

If you are in a situation where there doesn't happen to be any vision, all is not lost, because through ideation and targeting it's quite possible for visions to emerge.

2. Create the Solution Context

Solving the problems defined by or resulting from a vision happens by transforming ideas into reality, and this requires resources. So what resources are available? The scope of ambition must be adjusted to fit the

---

79 http://www.forbes.com/lifestyle/2004/07/30/cx_dl_0802featslide_8.html?thisSpeed=6000

resources until a balance is established. This fit *defines the context* in which solutions (there may be more than one) can be achieved.

History offers countless examples of context mis-fit, including under-funded visions, projects abandoned before they were completed because the money ran out or the magic of the vision was lost, or both. In our times, the Superconducting Super Collider began with promise of advancing fundamental science, and ended billions of dollars later as a giant hole in the ground that one entrepreneur suggested may be a good place to … grow mushrooms. Yes, we've all seen highways that lead nowhere, shells of buildings half-completed, projects abandoned because the funding ran out or the priorities changed, monuments to a misfit between the problem and the context.

3. Create Solutions

Solutions, real solutions, can be inspired by questions about the status quo and how it came to be, and also from visions of what should be. Both sources carry with them the possibility of innovation. However, solutions derived merely from assumptions are often based on old knowledge, and they're likely only to recreate the past, in which case they're not really solutions at all. As the acceleration of change throughout the economy means that everything you knew yesterday may need to be thoroughly examined today, proposals based on old knowledge and assumptions carry significant risks.

An interesting dimension of this problem occurs in all fast-moving fields. For example, the Dean of a leading medical school was in the habit of pointing out to the incoming class of would-be doctors that, "Half of what you will learn during the next four years is <u>not</u> true." This got everyone's attention, of course, and then the Dean continued. "Unfortunately, we don't know which half."

Thus, the process of creating solutions begins with vigorous questioning of a newly created problem. Why is it the way that it is? What decisions from the past have influenced the way things are now? What were the assumptions that led to the existing situation?

In effect, this process explores not just solutions, but a much broader realm that we might call the "solution space," a huge universe of possibility that surrounds the specific issues at hand. This distinction is important because if the solution space is drawn too narrowly, then any proposed solutions may fall short of full satisfaction.

Hence, one of the important reasons that trained facilitators add so much value to the innovation process is because they push beyond the limits of conventional thinking and enable (or cajole, if necessary) a group to craft the largest possible solution space. (More on facilitation below.)

Along with a vast solution space comes the possibility of digressions and side trips, and this is generally not a bad thing. In fact, a robust solution-seeking dialog will thus be complete with many parallel conversations, additional questions, and promising tangents, and at its best it results in a thorough understanding leading to *insight*, from which *new options* can be developed: We could do it this way, or this, or this! The leap to insight constitutes the essential power of the design process, for at this vital moment clarity and synthesis create the capability to make the future different than the past.

Consequently, the structure of the dialog, and a diversity of points of view that are introduced are critical to success. Diversity among those participating is important, as their differences will lead them to different options and concepts, thereby enlarging the pool of possible solutions.

Rapid prototyping

In Chapter 7, I introduced the 9th innovation principle, *Prototype rapidly to accelerate learning*. The core of innovation methodology is learning; the objective is to learn as fast as possible; and prototyping is a powerful learning tool. With any concept, any idea of a solution, the fastest way to find out if it could really work is to prototype it, test the prototype to discover what worked and what didn't, and then refine the prototype by applying what you learned in the valuable process of iteration.

At Stanford University's Design School ("D-School," www.stanford.edu/group/dschool/), a bastion of committed prototypers, they point out that enlightened trial and error will always succeed over the designs of a single mind, because through trial and error you'll learn more and you'll learn it faster than you will by trying to think any idea through in abstraction. This doesn't mean, of course, that you shouldn't think about it, but it does mean that as soon as you know enough to begin prototyping, you should. The faster you shift from conceptualizing and thinking to making and testing the faster you're likely to learn, and the better the results are likely to be.

4. Define the Details

Eventually, after many questions and iterations, solutions have emerged that you believe embody significant and demonstrable value. Now there's a shift in the thinking process as the focus moves from understanding the problem and solving it, to understanding how to implement it.

We ask again, *Precisely* how much will it cost? How long will it take?

How much will it weigh? What color? How will it be assembled and delivered? How will we develop the market? These are the questions of *defining the details*, the fourth step in the design process.

Much of this work is engineering, a discipline that has achieved two thousand years of technological advances which have been applied in the creation of civilization and its infrastructure.

So, here we assign project teams to develop detailed specifications and blueprints; we prepare extensive management models, marketing campaigns, budgets, and together these provide the capability to implement solutions.

5. Implement

Implementation is the translation of the vision into reality. Materials are obtained and fashioned to match the engineered design, or in any case to match as closely as possible. Tests are run. Drawings are consulted; progress is assessed; money is spent. And then *...voila!* ... something new emerges.

Although some would suppose that the design process is completed once the implementation phase begins, new information is still waiting to be discovered, information that may have a substantial impact on the final solution. New materials with new performance characteristics become available, offering the possibility of unforeseen cost savings or performance enhancements. Sudden shifts in the marketplace emerge, making features that were once considered as options suddenly mandatory. Competitors influence the perceptions of customers, or parts don't fit together correctly, forcing design teams ‘back to the drawing boards.’

6. Use and Feedback

Throughout the design process, learning has occurred that is directly and indirectly related to the project at hand. The assessment of this learning, and the application of its consequences, means that even a finished, built solution is *still* in the design process.

In addition, users will express their own creativity by finding new ways to use a product that its designers may never have imagined.

Thus, from an inspiring vision and its implicit condemnation of conditions at the time has come an end product which has brought the future into the present. Does this new reality measure up to the expectations that drove the process? Do customers appreciate the benefits that they were imagined to favor so strongly? Is the creative tension resolved?

The experience of use is the ultimate assessment of a vision and its implementation, and from this experience a new condition emerges. Life is different. But is it as it should be? Or is there a gap between the new reality and a new vision that is dawning, against which today's condition is suddenly inadequate? If a new vision comes into focus, creative tension grows, and there is a problem, a new problem. The design process begins again. How can it be done better? What resources are available... ?

•••

This sequential description of the design process is intended to help you understand the black box of creativity as a systemic discipline, but in practice designers and managers rarely (never, actually) follow the steps in any particular sequence in terms of how they think about problems. In fact, if you look at the process in hindsight what you see really appears to be a mess. That's because the human mind doesn't work like a computer; it's not linear at all. Instead, the mind works by association, so you can breeze through all six stages of the creative process instantaneously, and then race through them again in a different order in the next instant.

Hence, a vision may arrive accompanied by detailed engineering ideas, images of a new design in use, and a sense of what it will cost. The designing mind and design teams jump forward and backward from step to step, answering the call of the vision and following wherever inspiration leads regardless of the sequence on the diagram.

Likewise, each step may require differing degrees of precision and completeness in different situations. But what makes the design process model so useful is its generality, the guidance it provides to individuals and teams of designers who are faced with complex challenges. No matter how much detail is eventually accomplished at each step, and no matter in what sequence the steps are accomplished, each step is part of a complete process and must be addressed to some extent, however much or little.

Collaborative Design & Facilitation

To innovate people have to work together to apply their intellectual abilities to situations of novelty.

"Collaboration" is many people working together so that their different points of view, bases of experience, and knowledge of the problem and its context can be blended together to yield actionable solutions.

At the same time, more and more of this work involves creating high technology, so much so that the people who do the work know more – possibly much more – than the managers who supposedly supervise them. So what does it mean to manage people when they know more about the work than the managers do? It means that the function of management is something other than directing, controlling, approving, or deciding.

Instead, the necessary function is facilitation, helping people to work more effectively, more creatively, more productively, and with greater satisfaction.

To **"facilitate"** means to make it easy, to remove obstacles, to smooth out the rough road, or otherwise prepare the way in advance.

Collaboration can involve two people, ten, one hundred, or an entire organization, and it can occur in many settings:

- Online, using structured software programs
- Online, in unstructured instant messaging, email, and chat rooms
- In structured face to face workshops
- In entirely unstructured encounters at a white board, the water cooler, or a coffee machine.

Facilitated collaboration is particularly important when we consider how easy it is for people to develop sub-optimal solutions to difficult problems, which happens so often simply because people don't understand the full complexity of the systems they're dealing with. MIT professor Jay Forrester pointed out that we often design so-called solutions to complex problems but end up with undesirable unintended consequences because true solutions to complexity do not conform to our simple ideas of cause and effect. Solutions to complex problems are often counter-intuitive, meaning that they're not the ones we would normally think of, and they're often ones that we normally reject.[80]

Hence, facilitated collaboration can help people to understand the nuances of complex whole systems by structuring the creative process in a way that encompasses all relevant factors, not just the obvious or convenient ones. Carefully designed and facilitated collaborative processes can thus lead to much more comprehensive solutions, and in much less time, compressing months down to days or weeks.

At the core of facilitation methodology that supports innovation is an understanding of how people solve problems, and how they can do so

---

[80] Forrester, Jay. "Counter-intuitive Behavior of Social Systems." *Technology Review*, January 1969.

favoring innovation rather than anti-innovation. Murakami and Nishiwaki point out that in the typical organization there are three different kinds of people, "idea generators," "idea promoters," and "idea killers."[81] Unfortunately, the vast majority of people in most organizations are idea killers, which is why GameChanger leader Math Kohnen comments that "the biggest enemy of innovation is inside the organization."

So the goal of facilitation is to enable 100% of the people to be idea generators and promoters, and to leverage the critical insights of idea killers as healthy skepticism and constructive criticism, rather than sucking all the energy out of the creative process. Facilitation does this by creating structured learning pathways that allow people of all temperaments to explore problems and the larger context in which they must be solved.

In the search for solutions, however, one of the worst things that can happen to a group that's dealing with a complex problem is getting an answer too quickly. Since easy answers can cut off exploration, a key principle of facilitation is to ask compelling questions through the very structure of group process and actually *prevent* people from getting answers too soon. While this may indeed be counter-intuitive, it's been shown again and again that ideas which emerge very early on in the design process are rarely robust enough to constitute effective solutions. Elements of first concepts may indeed be important, but in complex situations it usually requires that many layers of ideas be integrated to reach a sufficient and satisfying degree of robustness.

Sometimes it's even necessary to put a problem aside for a while, giving potential solutions time to incubate. Jerry Hirshberg notes, "Disengaging from an involving task, one with which we are not yet finished, does not amount to abandoning it. Quite the contrary. While conscious focus shifts elsewhere, the subconscious continues grinding away, considering anything that comes its away as grist for the mill. And that grist, defined as anything that that can be turned to an advantage, might be found anywhere. Our preoccupied minds will mine any new activity, sifting continually through it for previously unseen connection, for bits and parts to fill the nagging void of an unfinished, unresolved question."[82]

It's also important to overcome the tendency of people to avoid controversy in group settings, which Irving Janis has called "groupthink."[83] Controversy is important in creativity, but group dynamics normally suppress it in favor of congenial interactions because there is strong group pressure not to "rock the boat." When you're dealing with complexity, however, rocking the boat is often absolutely necessary, so skillful facilitation can stir things up sufficiently to actually prevent a group from settling for easy

---

81 Murakami, Teruyasu and Takashi Nishiwaki, *Strategy for Creation*. Woodhead Publishing, 1991.

82 Jerry Hirshberg. *The Creative Priority*. HarperBusiness, 1998.

83 Janis, Irving L. *Groupthink*. Houghton Mifflin, 1982.

solutions that … don't work.

In fact, one study of the group process in a complex problem-solving situation showed that while the group came to a solution very quickly, they almost immediately discovered that it wasn't really a solution at all, so they kept working. In total, they oscillated between dialoging about the problem and considering alternative solutions for some time, and along the way they eventually had considered eight possible options before finally deciding on the ninth.[84]

•••

The three dimensions of creativity that I've described here - the design process, collaborative design, and facilitation - are all central to innovation methodology and central to the permanent innovation culture, and thus essential to the work that you're engaged in to turn great ideas into great innovations.

Are you dealing with wicked problems? Without a doubt! Will you follow the creative process? Certainly you will, even if you're not a student of design methodology, because the design process is the natural way that humans respond to problems; it's simply a model of how we think, powerfully augmented in collaborative settings by a detailed understanding of effective group dynamics. So can you use the collaborative design approach to facilitating groups of people? You probably should.

There are, of course, many other aspects of creativity and its management that we could talk about here. Like me, you may have a shelf or two in your library dedicated to this topic. Hence, my intent here has been to call your attention to some key themes and important principles; as you engage more deeply in the process of managing the innovation process, and as you gain experience and find out what works for you and what works best in your organizational culture, you'll have occasion to call upon those books, and other resources, and you'll improve and refine your approach. This is all part of the road to innovation leadership and permanent innovation.

Action Steps:

1: Think about how the design process and facilitated collaborative design can be applied throughout your innovation projects to enhance the depth and quality of the work, and accelerate it as well.

---

[84] Raymonde Guindon. "Designing the Design Process: Exploiting Opportunistic Thoughts." *Human-Computer Interaction*, 1990. Vol. 5, pp. 305-344.

2: Find out who in your organization has received professional training in design, and put them together in a task force together to adapt the generic design process to your organization's specific needs.

Chapter 10

Great Businesses & Permanent Innovation:

Normalizing the Innovation Culture, the Innovation Organization, and High Performance[85]

Permanent Innovation Principle #10:

There is no innovation without leadership.

Companies are amazing expressions of human society. The fact of organizing thousands of people to create and deliver products and services around the world to thousands or millions of customers is a remarkable thing.

---

[85] Portions of this chapter are adapted from Bryan Coffman's white paper, "Building the Innovation Culture." InnovationLabs 2005.

But the ability to do this brings some unique challenges. In particular, the impact of the organizational hierarchy has tremendous influence on the culture of any company, on its ways of working, and the results it achieves. Thus, top managers can be powerful champions of innovation, or dark clouds of suppression. It's up to leaders to ensure that their words and their actions support and enhance innovation efforts and methods, and that at the same time they work diligently to eliminate the many obstacles that otherwise impede or even crush both creativity *and* innovation.

You start with great ideas and apply the right methodologies to turn them into great innovations, but then what? Well, if the organization that's supposed to market and sell these future wonders isn't capable of understanding them, managing them, or delivering them in the right way, then as we saw with Xerox and the first PC it's probably all for naught.

The ideal situation, of course, is an organization whose culture expresses and embodies innovation as a indisputable characteristic and attribute, one that delivers innovations into the market as gracefully as innovativeness is expressed throughout every department and every office. Thus, innovation *methodology* and the innovation *culture* are complementary and mutually reinforcing, the two critical sides of a permanent innovation coin.

This is the organization in which innovation has been normalized, an organizational culture where people ask thoughtful questions, and take these questions seriously enough to search for great answers to them. How do we create such a culture? That's the subject of this chapter, and it involves these key questions:

Key Questions:

1: **What enables innovation, and what are the obstacles to innovation?**
2: **What are the risks of innovation?**
3: **What is an innovation culture?**
4: **How can organizations be designed to enhance creativity and innovation rather than stifling it?**

Specific innovations are created by individuals, teams, or departments, but innovation itself is a generative and transformative quality when it's an attribute of entire organizations. It's generative in the sense that it literally generates, or creates the future, and transformative in the sense that it defines a capability that transforms something average into something extraordinary. Thus, the development of an innovation culture is central to the development of long term competitive advantage.

While people are by nature creative and they love to innovate, far too often in work settings they don't seem to be innovative at all. They resist change; they kill innovative ideas; they are stubborn and even hostile to change. Frequently, the very idea of an "organization" reminds people of negative experiences, companies they've worked in that stifled creativity, and people they've worked with who are negative idea killers rather than creative or innovative. In a world driven by innovation and change it is no small irony that so many organizations tolerate this.

So when we realize that people are naturally innovative but that organizations tend not to be, then the obvious challenge is to understand the critical factors that enable innovation, as well as to identify and remove the obstacles to innovation. The goal, of course, is to create the conditions in which abundant and natural creativity and innovativeness come forth to be expressed and harnessed. What follows is therefore a detailed discussion about both the important enablers of innovation, and then a discussion of its significant obstacles.

Enabling Innovation: The Critical Roles of Senior Management

These key enablers are critical factors that make it possible for innovation to blossom in organizations.

1. Great Leadership
2. Trust
3. Great Models
4. Systems Thinking
5. The Right Methodology

6. Managing Innovation Risk

Enabler #1: Great Leadership

Leaders define and create the organizational culture in which innovation blossoms, ensuring that the right set of tools helps everyone organize their thoughts and their actions to support and enhance innovation. Thus, innovation begins at the top of every organization, and **without the right leadership, companies just don't innovate**.

Why not? Because unless there's constant support, assessment, and occasional pressure from the top that's focused on innovation and that expects innovation, the pressure of day-to-day operational concerns takes over and there's little time or money left to think about much else.

Public companies are under constant pressure to achieve quarterly revenue and profit targets, but innovation is nearly always a short-term cost that rarely provides short-term cash flow, so its immediate impact is to reduce profitability. This makes it entirely unattractive to managers who are measured on the profitability of their businesses.

Most managers who are caught in this trap realize that they're sacrificing the long term health of their organizations, but frequently the short-term pressure is just too great to overcome. Caught in this vise, organizations and individuals get locked into "the way we do it now," and the only way to get unlocked is for top management to set a tone that overcomes the daily grind, and also to reward behaviors that lead to innovation. Innovation budgets must be established, and innovation work-in-progress cannot be measured according to standard ROI calculations. How many times have you heard that innovative spirit was demolished when someone on the executive committee innocently asked what the ROI would be on a project that was far too young to know, and in doing so effectively killed it. From the perspective of innovation killing, it should be noted, "ROI" stands for "restraint on innovation" rather than "return on investment."

When management's behavior is anti-innovation, whether intentionally or not, then there's little hope for struggling innovators-to-be who may be trapped in the ranks. But when managers are enthusiastically pro-innovation, not just in rhetoric but in their daily interactions, then creativity and innovativeness can be unleashed. Here are some of the questions you can ask to probe the situation in your firm:

- What is management's general attitude toward innovation? Lip service or genuine commitment?
- How clear is management support for innovation? Ambiguous or absolute?
- What happens when you fail? Punishment or learning?
- Give examples of management support for innovation.
- Give examples of management detracting from innovation.

There are subtleties here, as it's common for managers to advocate innovation in their communications, but then suppress it in their actions. To avoid a double message, managers need to examine their own beliefs and attitudes about accelerating change, near-term profits, and the importance of innovation to ensure that they're not inadvertently undermining the innovative spirit. They must expose and evaluate their own assumptions and expectations, recognize and overcome their own fears about uncertainty, the future, and risk, and overcome the fear of failure while developing consistent enthusiasm for the learning that failures can bring.

At Amazon.com, for example, people are actually rewarded for intelligent failure. In the words of Amazon founder and CEO Jeff Bezos, "We have a couple of different awards that are given out. One is the "Just Do It" Award, which is designed to fight the bias of bigger companies to do even small things in a very process oriented way. The Just Do It Award is given for someone doing something that was well thought out – it has to be well thought out – but they can't have asked permission, and it doesn't have to have worked. We have given out the award for well thought out things that don't work. We give out a door-desk award for folks who find the best savings of money, and they get extra points if the way we were spending the money was especially stupid."[86]

And then they have to put in place policies and practices that will overcome the obstacles and make innovation methodology a reality. Leadership intention, clearly communicated, is supported by implementation of the right tools, methods, principles, and processes, i.e., methodology, that transform the importance of innovation into the realization of innovation.

Enabler #2: Trust

Trust is a critical element of the innovation culture. And while trust is a two-way street, if an organization is based on command and control then it's incumbent upon management to take the initiative to establish it. This

---

[86] Jeff Bezos, Presentation to the Legg Mason Conference, November 3, 2003.

will have to be done over and over, and at every turn people will look to management to demonstrate what trust is. Why? Because command and control management is far more able to inflict pain or the threat of pain on employees, and thus to suppress their innovative spirit.

Trust in the innovation culture, however, doesn't mean a guarantee of success or a guarantee of freedom from pain and suffering. Innovations make change, and change affects companies, families, homes, and lives, even as innovation also supports companies, lives, homes, and families; trust means that whatever happens, we are committed to facing it together, perhaps even at the cost of some personal sacrifice.

Here is a simple questionnaire that will help you assess the issue in your organization.

On a scale of 1 to 10 with 1 being low and 10 being high:

1. How much do you trust your co-workers to support you?
2. How much do you trust your management to support you?
3. How much do you trust your employees to support you?
4. How much do you trust yourself to support the organization and the people in it?
5. How confident are you in your ability to survive organizational change, no matter what?
6. How self-reliant are you—how much can you depend on your own skills and abilities to help you navigate a world of change?

Begin with honest assessments of the trust in your organization, and then find ways to improve it.

Enabler #3: Great Models

Models are condensed versions of multifaceted realities, simplified or shorthand expressions of broader ideas and complex realities. Each of us carries an uncountable multitude of them in our heads, and we use them to grasp and manage all of the complexities of life, work, and love. For example …

- A corporate strategy is a model, a simplified expression of what hundreds or thousands of people are planning to do, or expected to

do, over an extended period of time.

- A financial statement is a model that condenses the enormity of a business's finances into a few rows and columns of carefully structured numbers that represent a much broader set of actions and events which may have taken place over days, weeks, months, or even years.

- A map is a simplified version of three-dimensional reality, highly useful for navigating in a city or across the countryside to places you've never been before.

- An innovation methodology is a model that describes how to develop innovations, an innovation culture, and a permanent innovation organization.

- And even a recipe is a model, which describes how to prepare the meal.

Models are critical to the function of management, because without models that describe what an organization is doing, and why, there can be no frame of reference, no standards for measurement, no way to compare expected results with actual results, no way to correct when there is a discrepancy, and thus no actual function of "management" at all.

So it's *literally* true - there is no management without models, and it is impossible to talk about complex topics like business without talking about models.[87]

Quality also matters. Better models help you see important elements of complex realities because they reveal relationships, patterns, linkages, and connections, and they may also expose gaps, omissions, or contradictions. In contrast, poor models often lead to failed strategies. Earlier I mentioned a comment by Alan Kay, in which he suggested that the right point of view is worth 80 IQ points. The point of view he's referring to is, of course, a model.

Managers often rely on outside consultants to help them make important decisions, and often the consultant's role is to devise a decision-making framework, a model, and then to apply the known data to come up with a recommendation. I already mentioned that in 1986 AT&T hired

[87] See for example Stafford Beer. *The Heart of Enterprise*. Wiley, 1975.

McKinsey and Co. to forecast the future of what at the time was the emerging cell phone market. After what we assume to be a careful study, McKinsey predicted sales of 900,000 units by year 2000. In hindsight, this

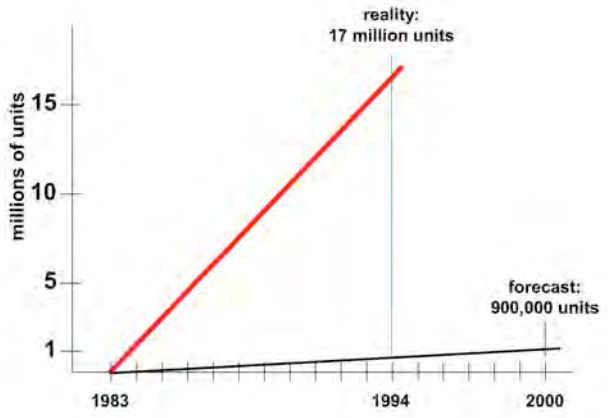

Figure 11.
The Danger of Prediction
Forecast of the future of the US cell phone industry made by McKinsey & Co. for AT&T.

proved to be a very poor model, as the actual market had already passed 17 million units by 1995. Fast forward to 2005, when the weakened AT&T was acquired by SBC Communications, putting an end to a company that, in hindsight, missed the most significant new telecommunications market of the past thirty years. Did the McKinsey forecast doom AT&T? No one can say for sure, and although it's certain that many other factors contributed to AT&T's demise (not least being the forced divestiture of the Baby Bells), it also shows how bad models lead to bad decisions that lead to bad outcomes.

Models and modeling also have hidden traps, for while we inevitably use models to help us deal with complexity, very often we aren't conscious of the assumptions and attitudes upon which our models are based. Unspoken assumptions are also usually untested, and subsequent events frequently show them to be untrue.

So, for example, let's return to the issue of ROI. In assessing any proposed innovation there's certainly a legitimate reason to raise the issue of ROI, which is to expose hidden assumptions. Hence, if the response is anything like, "We don't know, but we're sure it'll be good," then the red flags fly, and fuzzy or bad thinking is on display that will lead to a slew of tough questions, beginning with, "What's your evidence?"

A mismatch between model and reality is particularly likely to occur in periods of rapid change, like today. Established beliefs and conceptual reference points that were true last month or last year can be invalidated by subtle changes long before anyone realizes it, and then things go wrong unexpectedly. "It surprised us because it never did *that* before." Such

surprises present a great opportunity to expose assumptions that were once hidden, and to reconsider their validity.

Since management requires models, and since better models can contribute significantly to better management, it's worth putting serious effort into clarifying the models that you're using. In the competitive marketplace better models win, and worse models usually lose.

How good are your organization's models? How systematically have you tested them?

Enabler #4: Systems Thinking

There is a discipline and a science that has been growing over the last seventy years that is focused on improving models, the science of "systems thinking." Its purpose is to help us know precisely what questions to ask at what time, to help us really understand the complex behaviors of complex systems.

Some of our era's most skilled managers and consultants invented this field while dealing with some particularly complex and interesting issues concerning the behavior of complex systems, many of which remain pertinent to the modern worlds of technology, science, government, and psychology.

One of the first technologies that systems thinking made a significant contribution to was radar, which required very sophisticated modeling in a new generation of electronic systems. The results, of course, proved essential to the defense of Britain during World War II, and are now essential to every industry, because they are the basis of computing.

Systems thinking was formalized as a discipline after the war by many of the same scientists who were involved in the development of radar, and they went on to make vital contributions to the development of all kinds of electronics, including of course computers. Its contributions have also been essential to our understanding of complex social systems such as large organizations and families, and have been applied to challenges such as the effective display of complex information and decision making.

Today systems thinking is integral to many disciplines, including operations research, cybernetics, and complexity. Even economics and sociology have large systems thinking components, and for those who are interested in the underlying concepts that support effective management, systems thinking is an important enabler that's well worth detailed study.

Enabler #5: The Right Methodology

Speaking of models, innovation methodology is a model too. You have to have one, and it's senior management's job to ensure that one exists, that

it's being applied, and that it's a good one. When you do, it's also a powerful enabler.

How good is your organization's innovation methodology?

Enabler #6: Managing Innovation Risk

Innovation is risky, and you could even say that innovators normally operate in a sea of risk. But risk is not limited to innovation alone; in fact, uncertainty of many types surrounds all organizations, which is why former Intel CEO Andy Grove titled his first book "Only the Paranoid Survive."[88]

Business is all about risk - recognizing it, managing it, and overcoming it - and among the innovation risks four deserve particular attention:

1. The risk of not innovating

The most dangerous risk associated with innovation is actually the risk of not innovating. If you choose to remain at the status quo and fail to evolve in pace with the marketplace you have made the choice to allow the competition to shape the future, and you therefore increase the possibility that the future of the market will not include your organization.

While occasionally a company makes the fatal mistake of risking too much, a great many more business failures provide ample evidence that the risk of non-innovation is usually a greater and more deadly one.

2. Risk of wasting money

At the other extreme, of course, is the reality that the work of innovation can be very expensive.

Consequently, at Proctor & Gamble's huge R&D center outside of Cincinnati, innovation development is guided by the stated intent to "kill'em quick," which is in fact a risk reduction strategy.[89] The goal is to identify as soon as possible if an idea is a good one or a bad one; and to immediately shift resources to better ones. There is simple logic behind this, of course, and any company might make the same statement. However, there is also a tendency for bureaucratic motives to set in with R&D projects as with any others, and for dead-end projects to endure long past their useful lives because people keep them alive to preserve their jobs or their fiefdoms, or due to fear of admitting failure. Kill'em quick managers willingly admit failure and move on; and if they worked at Amazon they might even win an award for it.

---

[88] Andy Grove. *Only the Paranoid Survive*. Currency Doubleday, 1996.

[89] Harrington, Jeff. "P&G set up for discovery." *Cincinnati Enquirer*, July 16, 1995.

Thomas Edison's attitude toward risk is typical of the type of thinking required to be successful at innovation, and of course he was one of the most successful American inventors of all time. He was once asked how he felt about his many failures during the search for the best light bulb filament, to which he replied that he didn't consider them failures at all, but useful experiments that eventually led to the best solution.

To innovate successfully he knew that he had to be willing to try new things, which meant and still means that "failure" is inevitable because innovation proceeds largely by trial and error. Hence, one of the great paradoxes of innovation is that you have to fail in order to eventually succeed; thoughtful failure is a compelling learning strategy, and innovation is all about learning. Paradoxically, the faster you fail, the faster you learn, and the faster you then succeed.

So how do you draw the line between useful failures and useless waste? It's inevitably a subjective judgment, but one that can be informed by rational thinking and sound methodology. Those who learn fastest are better prepared to recognize the arrival of opportunity; those who fail more often (provided they learn from the failures) may be in the best position to succeed next time. From a management perspective, we therefore recognize that the purpose of innovation methodology is to *accelerate* learning.

3. Risk of only incremental innovation

Incremental innovations keep pace with evolving markets through small changes and improvements that anticipate or respond to customer requests. It's a natural process to pay attention to what's going on in the marketplace and then do something about it.

Consequently, most companies are reasonably good at it: their marketing groups solicit customer feedback, and their product managers filter the feedback they collect into upgrade plans labeled as product roadmaps.

But if you invest only in incremental innovation and don't think about the breakthroughs that could radically change the very structure of your market or your industry, then you're also taking a big risk, and an unnecessary one, because breakthrough innovations, when they happen, leave incremental thinking in the dust.

What's the balance of investment in incremental innovation versus breakthroughs in your organization?

4. Risk of betting too much on breakthroughs

Finally, while investing in breakthroughs is important, there's also a risk of relying too much on a breakthrough to come when it may not, since this type of innovation is certainly a high-risk endeavor.

The portfolio approach practiced by venture investors reduces risk and often achieves satisfying returns. The underlying insight, of course, is the principle discussed in Chapter 2: while it's impossible to predict which company, idea, or business model will eventually be a winner, a well-assembled portfolio increases the likelihood of success by preparing many different possibilities for many different future conditions, not all of which will of course emerge.

Venture investors hope that out of every ten investments they will have at least one big winner and two to four moderate successes, and they also expect five or six total failures. The process of composing the portfolio thus becomes a key success factor, just as financial advisors construct balanced investment portfolios.

The concept of ROI is also useful here, inasmuch as it's relevant and indeed a good idea to consider the ROI of a portfolio as a whole, even as it's the kiss of death to promise a specific ROI for any particular early stage idea.

Summary of the Innovation Enablers: Opportunity and Clarity

Strong leadership is essential to innovation, while weak leadership is a tremendous detriment to it. The enablers described here are all within the reach and squarely within the responsibility of senior managers, and they are powerful tools to help create the conditions that make innovation happen.

One way to visualize their importance is to consider a persistent paradox that affects all innovation efforts. This dilemma, described by innovation consultant William DeGenaro[90] is illustrated by two curves, one representing "clarity" and another representing "opportunity."

The value of a new idea is represented by the opportunity curve: at the moment an idea is born it's rich with possibility and perhaps it's even unique in the world. But over time, and perhaps very quickly, the opportunity curve gradually declines because the world is not standing still, and sooner or later every idea loses its uniqueness as others chance upon the same or similar concepts.

They may even grasp the value of the opportunity before you do, and if you wait too long they may beat you to the market. The longer you wait the less value the idea is likely to have, as every opportunity degrades.

The reciprocal curve is labeled "clarity," and it refers to the depth of

---

[90] William DeGenaro. Business Intelligence Workshop for the Industrial Research Institute, 1991.

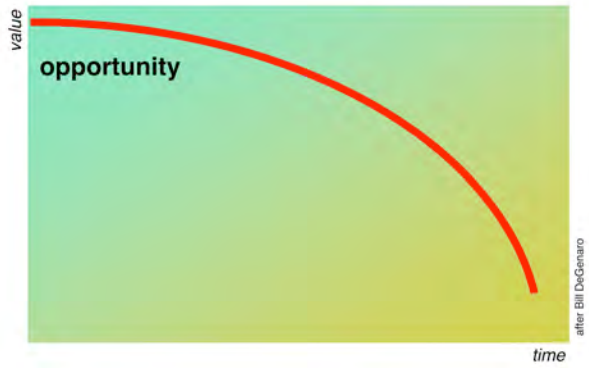

Figure 12.
The Opportunity Curve
Over time all opportunities degrade.

your understanding about the idea and its implications. At the outset clarity is low because you have no idea how good the idea really is. You think about it, and perhaps you develop it and find ways to test it. Due to your efforts clarity gradually rises, and perhaps further work reveals that the idea is indeed worthwhile.

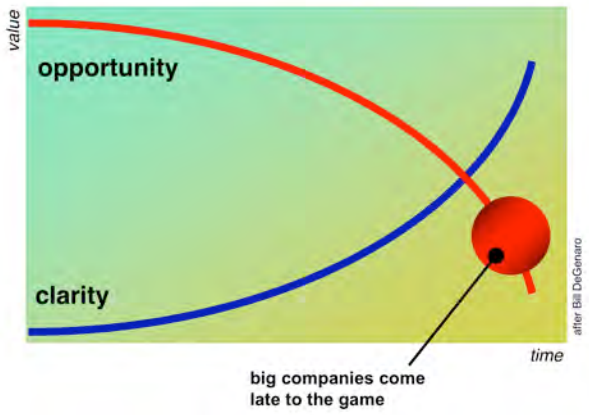

Figure 13.
The Clarity Curve
Clarity increases while opportunities degrade, but large organizations usually wait too long to act because they're averse to risk.

Small companies usually operate close to the market because they don't have layers of middle managers between top managers and customers, and they're accustomed to taking risks with new ideas since it's usually a matter of survival. Large companies, however, are usually adverse to risk because their existing markets are providing reliable cash flows that seem to be threatened by innovation. As a result they commonly come later to the game,

hoping to imitate the success of the upstarts before it's too late to catch up. But sometimes they pay the ultimate price and they're left behind entirely, as we've seen with laggards in every industry.

To avoid the dilemma you have to accelerate the learning process so that you can accurately assess the potential value of the idea. This, again, is the purpose of innovation methodology - to accelerate the learning process, and thus accelerate the clarity curve, so that it intersects the opportunity curve higher up while there's still significant value to be realized. All of the enablers described in this chapter can contribute significantly to such an acceleration.

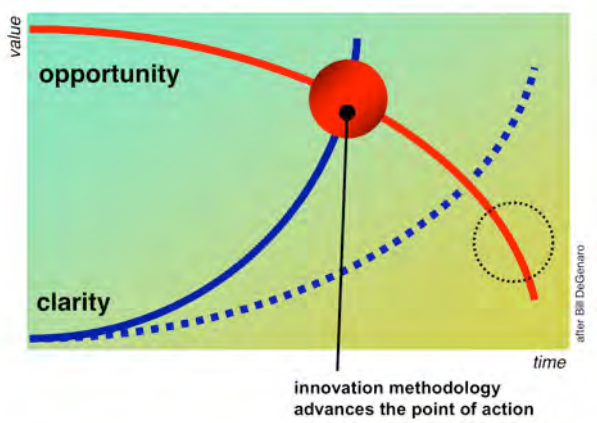

Figure 14.
Accelerating the Clarity Curve
The goal of Innovation Methodology is to accelerate the clarity curve and advance to the point of action while opportunities are still significant.

Obstacles to Innovation

I've already noted that people are naturally innovative, and they love innovative products and innovative services. It's true that occasionally people choose classic products, antiques, and nostalgia, but most often what they're looking for is the newest and coolest stuff.

So why is a process that's so natural for people - innovation - so difficult for organizations, which are, after all, just collections of people? Strange.

And why aren't people more innovative at work? If we love innovation, but it doesn't come out when we're working, then there must be something about the way we work that impedes what would otherwise come naturally.

Jerry Hirshberg of Nissan Design International puts it this way: "It is

striking how even companies (or departments) capable of innovation rarely extend the principles of the creative process to their organizational management or design. Many of these companies speak with great pride about the way some of their best ideas are generated by renegade bands of 'outlaw" talent formed to 'buck the system,' without considering the possibility of removing the needs for outlaws be eliminating the creative prohibition in the first place!"[91]

And this is exactly the problem. In fact, the typical organization is filled with obstacles to innovation, which is why Kohnen commented that the big enemies are inside, and the best way to help people express their own innovative spirit at work is to remove the obstacles that impede innovation while simultaneously putting the enablers in place.

There are five major types of obstacles:

- **Learning** obstacles are policies, practices, and habits that inhibit or prevent people from learning, from sharing their learning, or applying solutions they have learned.
- There are many **organizational** obstacles to innovation, some that originated as solutions to complex business problems, but that have themselves become serious impediments.
- **Methodology** for innovation, as I have discussed, is critical to success. The absence of the right methodology can therefore be a significant obstacle.
- **Infrastructure** also plays an important role in supporting the people who are engaged in creative work, and the absence of the right infrastructure can be a significant detriment. This is the subject of Chapter 11.
- Inappropriate management **behavior** is perhaps most significant obstacle of all.

Learning

The problem of innovation is a learning problem, so if learning is inhibited then innovation is also inhibited. Ignorance is the primary learning barrier to innovation. Many managers fail to grasp the nature of change, and they have made the badly mistaken assumption that the way things were is the way they will be. As ignorance of the law is not a valid defense for lawbreaking, ignorance of change is no excuse for managers.

---

[91] Jerry Hirshberg. *The Creative Priority*. HarperBusiness, 1998.

Organization

Large companies commonly apply a set of accepted solutions to problems that are surely complex and difficult ones, but many of these solutions tend to be anti-innovation. Some of these problems are related to sheer size, as companies must coordinate the activities of thousands or even tens of thousands of people; they must hire, train, administer, equip, and manage them; they must market and sell products and services in dozens of countries in different cultures on many continents; they must track all of this activity accurately and quickly in accounting systems of unimaginable complexity; and they must allocate investment resources across competing businesses and business units, each selling perhaps billions of dollars of goods and services every year or even every quarter. All of these problems are made more difficult by ambitious and aggressive competitors, and the very fact of accelerating change across the economy.

As organizations grow in the face of these challenges, they therefore develop policies and practices to ensure standardization. These may serve well in times of stability, but they often become obstacles to change. Hirshberg comments, "A traditional bureaucratic structure, with its need for predictability, linear logic, conformance to accepted norms, and the dictates of the most recent 'long-range' vision statement, is a nearly perfect idea-killing machine."[92]

In particular, major organizational obstacles to innovation are organization design itself, committees, decision making methods, lags in project review, and as I noted above, metrics and reward systems.

Organization design. The organizational structure of most modern companies is based on the command and control hierarchy that seems to have originated with the paternalistic family, the monarchy, the Roman army, the Catholic Church, and in business perhaps the Medici banking empire. The nineteenth and twentieth century's great businesses adapted and then evolved the principles of hierarchy to solve numerous problems, for these massive enterprises had suddenly become global in scope, and needed to organize on an unprecedented scale.

The hierarchy s easy to understand, convenient to draw up, clear to explain, and it concentrates power in the hands of top managers. But in more and more cases, in these times of rapid change, it doesn't work the way it should, and as the decades have passed it's proven too be less and less effective.

Thus, although there are laws that govern many aspects of a corporation's existence, by far the majority of the decisions that are made in the process of creating one are a matter of choice. A corporation is something that should be *designed*, with all of the opportunities and risks

---

[92] Jerry Hirshberg. *The Creative Priority*. HarperBusiness, 1998.

inherent in this uniquely human process, but the standardized hierarchical model has been taught to and implemented by generations of executives, now more of an instinct than a reasoned choice.

The corporate pyramid is described as an organizational structure, and one of the most important attributes of this structure, as with all structures, is its durability. It's valued for strength and rigidity, its ability to resist change and to stand unscathed by the passage of time and the most powerful of storms. A command and control structure is meant to be as rigid as a building, and to resist change by defining behavior patterns through which authority, responsibility, and blame are allocated. The patterns that are perhaps most pervasive are rewards for success and punishment for failure, and since these two kinds of feedback are also the most powerful, their continuing influence sustains the corporate structure.

Because these rewards and punishments come from within, they do not necessarily pertain to anything that an individual might have accomplished in the marketplace: organizational structure is designed to minimize the impact of whatever happens outside.

Although ignoring external reality has the benefit of protecting an organization from ephemeral shifts in the wind, it also isolates people from real feedback about what they're doing and hides opportunities for innovation. Since the important feedback that they do get is from higher corporate authorities, their responses are conditioned according to the needs and perceptions of those in the hierarchy itself. Thus, events in the marketplace are often tuned out, while events in the hierarchy are amplified in importance as corporate politics takes over.

This is why command and control hierarchies lose their focus on the market and begin to confuse their own perceptions of the world with reality, as Noel Tichy remarks here about GE in the 1970s: "Many of GE's best managers devoted far more energy to internal matters than to their customers' needs. As GEers sometimes expressed it, theirs was a company that operated, 'with its face to the CEO and its ass to the customer.'"[93]

The pattern of relationships that leads to this kind of behavior is known as 'corporate culture,' and it's the very embodiment of an organization's resistance to change. After all, a culture *is* a culture precisely because it resists change in order to reproduce itself ad infinitum, maintaining its cohesiveness and its identity despite the challenges. But this is inherently problematic in a changing marketplace, because a corporation's very rigidity suppresses its ability to adapt.

So what's the alternative?

---

[93] Tichy, Noel M. and Stratford Sherman, *Control Your Destiny or Someone Else Will.* New York, Currency Doubleday, 1993. p. 6

Innovation Networks[94]

Although there seems to be an important role for command and control organizations because they can muster resources, delegate, and divide work with exceptional precision, they rarely move fast enough or create sufficient new options to respond to snowballing change. While each level of authority helps to direct and manage resources efficiently, it also acts as a bottleneck for ideas and a straitjacket for flexibility.

Networks, however, readily maintain options. In fact, most effective organizations are a combination—however uneasy—of centralized command and control and distributed networks of semi-independent but connected nodes.

Command and control is effective for top down, large scale, piloting and implementation programs, while networks are good for proliferating multitudes of experiments, testing them in ad-hoc fashion, and distributing the best in self-organizing cascades across the permanent innovation organization. A *culture* of innovation works more like a network, and it is composed of many people from throughout the organization, and quite a few from outside of traditional boundaries, such as customers, students, suppliers, community members, and even competitors. In successful and vibrant innovation cultures, the number of members from outside is likely to be much greater than from inside.

But the two types of structure are often in conflict. Command and control-only organizations (on both the management and labor sides) respond to networks as if they were viral infections and attempt to destroy them. By the same token, some networks are quite good at subverting the goals of the command and control organizations that are their hosts.

Networks are built of nodes (or agents) and connections between them. Connections can be direct and ephemeral as when people are talking; and they can be facilitated through a technical infrastructure such as the Internet (which is itself of course a very sophisticated network).

Connections must happen for a reason, as without sufficient need networks simply do not coalesce. Providing a mechanism for people to interact doesn't guarantee that interaction will take place, because people need a burning *reason* for being and for staying connected. Whatever gets

---

[94] The following section is adapted from the white paper by Bryan Coffman entitled *Building the Innovation Culture*. InnovationLabs, 2005.

shared across a network will therefore have perceived *value* by network members.

When building the innovation culture, it can take some time, experimentation, and dialog to uncover the sources of value that will motivate people, so you must be patient and persevere.

Further, there are different types of networks, and some work for creating the innovation culture while others don't. Amazon.com is a hub and spoke network because all users are connected to the center where they can shop, but they aren't connected very well to one another. Amazon provides the value, but the individual users don't really contribute value to the network other than by providing product reviews.

A different sort of network is eBay—a user-to-user marketplace. Users are connected directly to one another, while eBay plays the role of a facilitator. The company makes the basic rules for a market and provides the mechanism for trading.

A third example is Wikipedia, an open source collaborative project that is the largest online encyclopedia, all created and supported by users. At wikipedia.com you can post an article on whatever subject you fancied, or view an existing article and make changes to what someone else wrote. The software behind the scenes allows for the interaction, and although users are working with one another through the medium of the web pages they create, collectively they are building something that none of them could create alone.

There are also well-run project management networks, usually intranets, in which groups of people access information about a project asynchronously and remotely. The software keeps track of updates and warns users of potential scheduling and resource problems.

Thus, the four common types of networks are: (1) hub and spoke; (2) user-to-user marketplace; (3) open source collaborative; and (4) project management intranet. However, the ultimate network that supports the innovation culture is a fifth type that borrows features from all of them.

Like Amazon, some aspects of the innovation network should come from the center and pervade outwardly. Organizations can experiment but they can't move in all directions at once, so if a network doesn't achieve a cohesive outcome on its own, top-down structures will legitimately intervene with some degree of control.

Like eBay, it allows individuals to interact directly with one another and is set up so that they exchange with one another.

Like Wikipedia, it allows everyone, insiders and outsiders alike, to contribute as peers in an asynchronous way to the creation of something larger, and the product is something that all of the users can examine and

gain value from.

And the network enables subsets of users to form sub-networks to focus for longer durations of time on specific projects, so it takes on some of the characteristics of a project management intranet.

Creating innovation networks that don't exist but should, and facilitating existing networks to become more effective, are two key roles for the iTeam, the SWAT team that's roving throughout your organization to build an innovation culture.

Networks coalesce around the *exchange of something of value*, and while trust and self-reliance are the foundations of the innovation culture, the results are built on exchange. In the game changer process, projects draw on networks for input and feedback, and some of the value they receive is further development funding. But the value must also be intrinsic, as the members of a network must find something inside themselves that compels them to belong. If the value equation relies too much on extrinsic motivation, such as setting idea quotas or paying people for their ideas, its success is less likely.

To be effective, network users apply tools to *evaluate ideas and idea makers*. On eBay, any buyer or seller can see how other buyers and sellers rank—whether they're trustworthy or not. The community thus evaluates its own members, and the quality of the services and products that they each provide to one another. Amazon enables shoppers to rate products and the value of each other's reviews.

With tools like these it's easier to find popular ideas based on their interest rating. But popular ideas then become more popular, so to allow backwater ideas a chance in the spotlight, innovation networks also need to employ a capability for randomness. As users browse through idea lists and user profiles, they should be presented not only with the most popular ones, but also with a random selection of new or not-so-popular ones as well, to bring forth obscure ideas that may have merit.

This is because the most useful information in a network is *densely interconnected*, so if someone comes up with an idea for an innovation, others must be able to see how this idea connects to other ideas and other people. This tells us, among other things, that innovation databases should be built using these network principles, with visible linkages that can help expose patterns of thought. Users must be able to easily add their thoughts to ideas that others originate, and simple voting capabilities must be included as well, recognizing that the purpose of voting is not necessarily to choose, but to learn.

Networks also require a simple set of *rules of engagement.* Sometimes these are rules of behavior; other times they are rules for how to use the network and its supporting software. In better networks, these rules emerge from the community of users themselves.

In the innovation culture, networks stimulate the

generation of ideas, the testing of these ideas, the sharing of the results of these tests, the scaling up of successful experiments, and the recombination of ideas, experiments and tests with one another to spur the creation of yet more and better ideas.

Individual users are thus not only posting ideas for other people to try out, but sharing ideas that they intend to experiment with themselves, or ideas they've experimented with already. The network isn't some big suggestion box, but a living, learning record. And the final destination for ideas is at not the feet of senior management, but other members of the network, which includes senior managers not as spectators or judges, but as users and participants.

When ideas have become innovations and they're ready for implementation, some will become system-wide changes. These projects require the building of coalitions of support and resources. Some members of the coalition will likely be managers with discretionary budgets, or internal innovation game changer and venture capital groups that scan the network regularly for investment opportunities.

But some ideas are difficult to test without implementing them. For high magnitude ideas, a portion of the network may again form into a coalition to employ a more formal piloting approach.

Employees in the innovation culture must also be supported by policies, practices, and resources that acknowledge the risk of failure, and provide space for experimentation. At companies such as 3M and Google, many employees work up to a day per week on projects of their own choosing.

Everyone in the innovation culture strives for success and learns from failures by documenting them and hearing about them from others. This aspect of the network is difficult for people with sensitive egos, but we must learn to share what doesn't work and what works. Successes will naturally attract more imitation and adoption, but failures can often be slightly modified and successfully adopted by others in slightly different situations, as the story of Post-its shows so nicely. Here again, self-confidence, self-reliance, and trust play significant roles in the success of the network and the sharing of information.

•••

This section began quite a few pages ago with a discussion of the innovation-suppressing characteristics of the command and control hierarchy, and proposes as an alternative that thoughtfully-managed networks are innovation promoting. Now we return to consider the remaining obstacles.

Committees are often innovation inhibitors because they represent a form of centralized authority whose deliberations are typically slower - much slower - than the changing markets they are set up to address.

For example, during the 1980s, HP was making the transition from being a maker of electronic instruments to a computer company, and managers throughout the company saw opportunities to develop new computer products. Soon, however, HP's name was on a confusing array of different and incompatible machines, so committees were set up to ensure sufficient coordination. What happened then was unexpected, as the committee process brought the pace of new product development to a crawl, and HP quickly slipped behind the market. In the words of HP co-founder David Packard, "By 1990, we faced a crisis. Committees had taken over the decision-making process at HP, and decision cycle times had ballooned. For example, one central committee, the Computer Business Executive Committee, was intended to achieve better focus and coordination for computer activities. Instead, it was slowing vital decisions just as our company entered the lightning-fast competitive world of computers in the 1990s. In fact, the paralysis was spreading to areas of the company that had nothing to do with computers." The committees were scrapped, and the divisions were freed once again to innovate and compete on the merits of the value they could create.[95]

Decision making methods. As we've discussed, proposed breakthrough innovations present a challenging problem for managers who have to make investment decisions. It's often difficult to determine a framework for decision making, particularly in the absence of reliable sales forecasts, which of course breakthroughs by definition must lack. If managers insist on quantitative approaches, especially in the earlier stages of development, then they are dooming most innovation efforts to an early grave.

Part of the solution is to develop a portfolio approach to innovation, or as former White House Science Office staff member Hylan B. Lyon put it, "No one can predict the success of an individual innovation, but you can certainly manage an innovation portfolio."

Lag in project review. If projects are delayed because it takes too long to get the necessary approvals to proceed, then the pace of innovation slows and there is always the danger that the market will move on.

Metrics and reward systems. The hierarchy persists so tenaciously in part because companies have set up measurement and reward

---

[95] David Packard. *The HP Way*. HarperBusiness, 1995.

systems to ensure that activities enforce the status quo. It's a well-known truism of management that people do what they are measured on and rewarded for, and as long as they're measured on their performance as part of the hierarchy, and rewarded likewise, the hierarchical organization will be impregnable.

Part of the antidote is to measure and reward innovation. In addition to tracking and appreciating intelligent failures, many organizations track how long the products they sell have been around, and it's expected that new products will constitute a significant percentage of sales and profits each year. Reward systems are calibrated accordingly.

Further, since innovation is usually a collaborative effort, it's important to recognize and reward team behaviors, not just individual results.

The flip side, of course, is to avoid rewarding behaviors that are anti-innovation, which sounds simple but can actually be quite difficult to achieve. For example, conflict between short term profits and innovation investments is a chronic problem, and if you're going to reward profitability then you also need to reward innovation efforts that necessarily cut into short term profits.

Methodology

The Wrong Methodology or Lack of Methodology. As I already noted, if you're using the wrong innovation methodology, using it poorly, or lack one entirely then you can hardly expect to be successful.

Inconsistency. If innovation initiatives are started with great fanfare but then later neglected or altogether abandoned, then of course the results will disappointing, and people throughout the organization will also be demoralized. It's critical to success to maintain momentum.

Risk Analysis. If managers concentrate excessively or exclusively on managing for today instead of for tomorrow, it's either because they don't recognize the prevalence of change, which leaves them entirely unprepared to face it, or because of that pressure for profits again. They may have followed a strategic planning process, but they probably didn't challenge themselves to think constructively about change and the future, and they left important work unfinished. It's a poor job of risk analysis that doesn't recognize the events and trends that could hurt them (or help them) until it's too late to do much about it.

Behavior

Fear of failure, resistance to change, and management attention in the wrong place are the key behavioral obstacles to innovation.

Fear of failure. If intelligent failure is career-threatening then people will work carefully to avoid taking risks. Out of fear they will choose only sure things, and consequently innovation and its many risks will be entirely shunned. Failure is inherent in the innovation process, and unless the likelihood of failure is accepted and even embraced, then other companies will be the innovators.

Resistance to change. Change, for many people, is a frightening thing, as it disrupts their accustomed patterns and frequently threatens their sense of security. In a world that seems to consist of stable companies and predictable competition, people become deeply entrenched in their ways of working. But when markets change and organizations must change in response, resistance takes hold and it seems that everything becomes a struggle.

Consequently, lots of books and articles exhort readers to "embrace change," but what, exactly, does that mean? I believe it means to build a *culture* and associated organizational *structures* and *processes* that make innovation a daily way of life and normalize it. Innovation, by its nature, embraces change because it's the very stuff and process of change. Innovators use change as fuel for thought and as food for action. When something new happens in the external or internal environment, innovators see the potential for doing things differently, uncovering new ideas much as a landslide might reveal a new source of gold on a hillside. Regardless of how catastrophic the change, or how adverse it may seem to an organization, change holds the potential for a renewed capability to thrive.

Therefore, instead of just creating a capacity to *respond* to change, an innovation capability *creates* the type of change that simultaneously allows an organization to adapt to the world, and also influence the world around it. An innovation capability is therefore not just a change neutralizer—it's a change maker.

Innovation requires a certain frame of mind, one that tolerates change, and even one that thrives on it. This frame of mind can be easier to attain than many people think, because although we commonly hear that people resist change, the truth is that people are simply smart enough to resist the things they *believe* will lead to pain or discomfort.

However, there are many kinds of change that all of us really *want*. We want to earn more money, provide better for our families, become a better person, become healthier, or perhaps to stop smoking. We're constantly in search of changes that will make our lives better. So you can abandon the idea that people are hardwired to resist all kinds of change; it simply isn't true.

Now let's look at the kinds of changes that we actively do resist. As I noted, we resist anything that we *believe* will cause us pain or discomfort, the key being the word *believe.* We're all aware of the many dangers of modern life, and we protect ourselves from them in our daily lives by simple learned behaviors (not walking into traffic), by design (putting up guardrails), or by laws (cross only with the light).

Beyond the obvious examples of change to avoid there's a vast gray area of potential changes that many of us become afraid of over the course of our lives. We have learned through hard experiences that many kinds of organizational changes will ultimately be to our detriment; we fear we will lose our position, or some privilege or advantage that accrues to our position.

Thus, it's the first responsibility of managers to mitigate fear, to instill and support trust and fearlessness throughout the company.

Management attention in the wrong place. Managers are constantly confronted with the dilemma of how best to use their own time. There's always far more to do than they can ever have time for, so where should they put their efforts?

Ed Roberts studied the patterns of management focus and found that managers habitually put a great amount of attention on the tail end of the innovation process, on marketing and sales issues, even though they had much more overall impact on results when they put their efforts in the early stages.[96] But by ignoring the early stages they miss important opportunities to influence the strategic direction, and they end up tampering with the organization instead of shaping it.

How much of your attention goes toward innovation?

Tunnel vision can also cripple innovation efforts if managers or project team participants are not able to look beyond the interests dictated by their day-to-day concerns, or by the parochial concerns of their department or their division.

•••

You may have noticed that most of these problems are variants on a

[96] Edward B. Roberts, "Generating Effective Corporate Innovation." *Technology Review*, October-November 1977.

single theme, which is simply that there's often a big gap between reality and what people believe it to be. When managers understand the real issues they naturally focus their efforts effectively, but when they're deceived by the illusion of permanence or stability in their markets, they often make poor choices.

It's precisely because of this gap that the rate of turnover among CEOs and top managers in major corporations is increasing. Today the average tenure of a Fortune 500 CEO is shorter than at any time in than 70 years, and while some of this may reflect an unhealthy obsession with short term profitability, it also reflects a growing awareness that many managers simply aren't adequately prepared to deal with accelerating change, or with promoting and managing innovation efforts that will enable their organizations to create the future.

A key factor in responding to all of these problems can be summed up pretty easily, which is to remove the obstacles to innovation. This is easier said than done, of course, but the necessity is absolutely clear so the action must follow. One way to begin is to assess which obstacles are most significant in your organization, and then to focus on removing those first.

And as the obstacles to innovation are removed, one by one, in their place come policies, practices, and methods that support innovation and the organizational characteristic that many people call "high performance:" the innovation culture is emerging as the normal state of affairs.

Such organizations are those in which the natural creativity and innovativeness of people find many productive outlets, one in which people and teams learn quickly and apply their learning to achieve small and large improvements everywhere as ongoing expressions of the innovation culture.

Working in the Innovation Culture

Innovation happens through a process of exploring, trying, and adopting. New solutions, products and services are only found through exploration, often from far afield in the fringes.

As new ideas are uncovered or created, it's incumbent on innovators to *try* them in a low-risk, localized experiments. Innovators take successful ideas and build networks of support around them to improve their chances of being *adopted* and scaled up to full implementation.

- Exploration is a difficult process of teaching ourselves to see the unfamiliar in the familiar.
- Trying is just hard work punctuated by bouts of frustration and episodes of elation.
- Adoption is a social process of marketing, selling, and politics.

Within these processes, individuals in the network engage with each through five different activities: exploring, prototyping, testing, exchanging, and documenting. They explore ideas, prototype them by building them into experiments, test the results, and then seek to interest others in what they have achieved through some medium of exchange. Everyone is trying new ideas and testing them. Everyone is documenting what they have done. And all of this is happening simultaneously.

People can add to one another's work, so that over time some ideas, some models, are shaped up and made more robust.

Exploring for new ideas requires three states of mind. The first is direct expertise: the explorer needs to be familiar with the subject matter under consideration. Few innovations in any field are uncovered by someone who is totally uneducated in that field, as, for example, innovations in chemistry require at least some background in chemistry.

The second requirement is innocence, what some call the "beginner's mind," or the inquiring mind. This is the ability to look at something familiar from a new perspective as if seeing it for the first time. It also includes the practiced ability to ask good questions that open the doors of inspiration. There are a number of techniques for doing this, some of the most popular developed by Edward deBono.

The third state of mind is lateral expertise. Sometimes it's possible for a physicist, for example, to uncover an innovation in the social sciences by bringing insight from her own domain into another. Sometimes there's a direct attempt at application and other times it's simply a different way of thinking that becomes the catalyst of a new idea.

Exploration can be aided through the use of intentional searches, or expeditions. Chances are that someone else out there has already wrestled with the same questions, and if you can find out who they are and what they've done you'll gain time, so it can be invaluable to talk with people in areas linked to the area you're exploring. If you're trying to innovate in the classroom, talk to students, former students, drop-outs, college graduates, and even people who never went to school. Fill yourself up full with the exploration, so don't just read: get out there and interact with other people in dialog. Listen. And log your expeditions so that others can benefit from what you've learned.

Prototyping comes after exploration. Build a prototype or simulation of the idea before the full implementation, and as we noted in the last chapter, rapid prototyping is a powerful method to rapidly advance an idea from rough to refined. Some ideas will be prototyped by actually being put into practice. Teachers, for example, can innovate at the classroom level; administrators at the school level, experimenting to try new ideas and to test the capacity to execute them.

Some innovative ideas, however, are bigger than local experimentation

can accommodate. These will require more formal planning, application of resources and perhaps a pilot program.

After experimenting it's natural to ask, "Well, did it work?" Thus, it's time to **test**. Usually this requires some sort of quantification or measurement. Anything can be quantified, but not everything can be measured. I can measure your core body temperature with a thermometer, but I can't measure whether you're having a good day or not. I can, however, quantify it by asking you to rate your day on a scale of 1 to 10. So choose the parameters of your tests carefully, because you may need to use them to convince others that your experiment is worth trying (why should we do this?) and to also help you understand whether you've really made any improvement (did it actually work?). Some types of data are good for selling ideas and some are good for understanding what actually works.

Exchange is often the trickiest part of the innovation process. Most people who work in organizations are well versed in their jobs—they know what to do every day. But they may not know how to promote a new idea to others. There's a role for training and education while building the culture of innovation, but in a network-based, distributed system focused on local experimentation it's important to teach people how to share and promote their own ideas. After all, the long term health of any organization depends on good ideas finding broader acceptance. Thus, avoid funneling all ideas through individual managers. Instead, let the network decide using tools like game changer and collaborative design.

It's usually better if successful experiments are replicated on a limited scale to validate the results before pursuing a broader adoption. Innovators will learn a great deal by trying to transfer successful experiments to the control of others, and without this learning a broader adoption process assumes unnecessary risk.

•••

Throughout all five of these activities, each individual is responsible for **documenting** their work. Without the documentation and without the other members of the network using the documentation, grass roots efforts are largely wasted because they remain isolated from one another. Every new idea then has to be invented from scratch, which is a terrible waste of resources. Furthermore, new ideas cannot benefit from thoughtful combination with existing ideas, and people across the system can't spontaneously build experiments of their own based on the work of others. The innovation culture is thus a network culture.

Coda

The innovation culture is the fifth element of innovation methodology. It both requires and empowers the others, and when they are all present the likelihood of positive synergy is very high.

In this chapter we've discussed the key enablers and obstacles to innovation, and some of the ways that such obstacles can and must be overcome. We've discussed some of the principles of creativity in organizational settings, and the nature of the innovation culture as a form of network. These are all practical, implementable approaches that you can institute in your own organization.

These approaches are process-based, in the sense that they involve activities that you *do:*

- Processes to help people find and create great ideas.
- Processes to help them figure out which are the best ones.
- Processes to direct ideas toward the various groups who will be responsible for developing them further and transforming them into innovation.
- Processes for organizing the work of creating innovations, recognizing that there are four different types of innovations and that the development of each will follow a different pathway under the guidance of different people, all of whom need to know a lot about innovation and innovation methodology.
- Processes to create the teams of people who work on innovation, including the iTeam that leads and guides innovators toward success.

And then there is the innovation culture, where obstacles to innovation are eliminated as the necessary infrastructure is put in place, and networks coalesce around initiatives that may well define the future.

These are often difficult processes to accomplish, or to accomplish well, but if they weren't after all, every company would be a renowned innovator! Even today with all the talk about the need for innovation, the actual delivery of innovation remains the exception, and companies do indeed have a high mortality rate. So if the strategic analysis in Part One of this book is correct, if innovation is indeed an absolute requirement for the

future survival and success of every organization, then difficult or not, this is a path you must begin to travel upon. Hopefully the concepts in this book will contribute to your future success.

There is a sixth and final element of innovation methodology, which is the system of infrastructure that supports the creative endeavors of all the people, every day. We take up that topic in the next chapter.

Action Steps:

1: **Study the enablers and get to work implementing them.**
2: **Assess the innovation obstacles that are present in your organization and begin eliminating them.**
3: **Begin moving away from command and control management approaches, and at the same time being designing and implementing innovation networks around key product and services lines. Put the communication tools in place to help these networks expand organically.**

Chapter 11

The Innovation Infrastructure

The innovation culture, the permanent innovation organization, can be inhibited or it can be supported. One of the critical support elements is infrastructure, which consists primarily of the processes people use to do their work, and a work place that itself helps people to work effectively to meet the challenges of rapid learning and high creativity that's required for innovation to thrive.

Key questions for this chapter include:

1: **What's the importance of the work process for innovation?**
2: **What role does the design of facilities play in collaboration and innovation?**

Work Process, Collaboration and Work Design

The concept of a "work process" is that to accomplish the tasks at hand in any activity that involves creative thinking, collaboration, or what is often referred to as "knowledge work," people have to choose how to get the work done. Is this an individual task or a group task? Is it a meeting, a brainstorming session, a workshop, or a conference? Many of these decisions are easy to make because they're intuitively obvious, but some require deeper thought.

To assess the importance of "work process" let's compare two hypothetical companies that compete with one another in the same industry to see, at an abstract level, how a return on capital is generated.

Productivity of capital is achieved by productive operations. Making and selling of products and services create customer experiences, and internal functions like marketing strongly affect differentiation. Can your company provide a superior experience for your customers?

And what supports productive operations? Given rapid change as well as structural shifts across the economy, organizational effectiveness is supported by the constant application of creativity and the development of innovations that make a difference.

Figure 15.
The Productivity Tree
The key factors that result in the productivity of capital. The factors below support those above; collaboration is thus the foundation that may ultimately result in productive capital (and high market values).

The key capabilities that enable creativity and innovation are learning and leadership. Through learning we recognize when and why new

information and knowledge are important to the present and future of the organization. And as we have discussed, support for knowledge-creation, learning, creativity, and innovation are very much a function of an organization's leadership.

At the base of this productivity tree there is a single quality which supports everything else that distinguishes outstanding companies from the mediocre ones, and that is the ability of the people inside the organization to work well together with others inside and outside, to learn together, to create together. Thus, collaboration is in a fundamental way the very foundation of business success. It is also a key foundation of innovation, because success at innovation requires massive amounts of effective collaboration.

By collaboration I don't just mean that meetings are well run, but rather that there is a spirit of openness that leads people to ask probing questions, to come up with innovative solutions by sharing knowledge between departmental silos, to look deeply even though it might be easier to look only superficially. There are teams working effectively, problems grasped and solved quickly, and pervasive networks through which many problems are dissolved before they ever manifest. In other words, the prevailing work process in the company favors collaboration, and the means are at hand to ensure that such collaboration is effective.

Could it really be true that companies in which people collaborate more effectively generate better returns on capital? Although it may be impossible to measure, the logic of the knowledge economy, the preeminence of soft assets, and the importance of competitive differentiation through innovation and creativity all tell us that these relationships are critically important.

And as these dynamics operate over the long term, the consequences become evident. Toyota, renowned for its innovation system and for its collaborative culture, is now one of the most admired companies in the world; while its global rivals GM and Ford continue to slip further behind. Burdened by rigid organizational structures and adversarial relationships between "management" and "labor" that stifle innovation and flexibility, the American firms are lagging badly in innovation, and the differences are clearly evident in the GM's losses and Toyota's profits. The difference is due largely to GM's rigid labor structure, and also to rapidly escalating health care costs, a critical factor that will soon be impacting across the American business landscape.

Poor collaboration is only one of GM's headaches, but it's a telling one that influences every aspect of the business. Ironically, only good collaboration will solve the company's labor mess, but if the past is any indication then we should not have high hopes. Labor and management may decide that they'd rather jump over the cliff together à la Thelma and Louise than actually work together to redesign a sustainable company.

So what can you do about it in your company? Recognizing that the quality of collaboration is important leads to insights in many different areas. For example, how long does it take to reach decisions, and who's involved in

the decision making process? How broad is the participation in ideation and decision making processes? Facilitated collaborative process can help groups - even large groups - to come up with innovative designs, launch new initiatives, or reach decisions in days rather than weeks or months.

The Work Place: Social Design and the Innovation Milieu

While it's quite possible to create and enhance the conditions that support creativity by supporting effective collaboration, the actual arrival of creative ideas is entirely unpredictable. Innovation, on the other hand, is a social and managerial process because it requires that people with complementary expertise and viewpoints work together. Hence, most people working as innovation professionals, particularly those in R&D, firmly believe that successful social interaction is critical to the success of the innovation process.

Here's a story that illustrates this importance. Many years ago, when Hewlett-Packard was recognized around the world as a leading high tech company and an innovator in a wide variety of electronics markets, and before it shed its test equipment division (now Agilent) to become a printer and PC company, and long before it acquired Compaq, the company ran a robust R&D laboratory under the direction of co-founder Bill Hewlett.

In those days, from the early 1960s through the 1980s, coffee was brewed in big urns down in the basement. A couple times a day someone would load an urn onto a cart and wheel it through the lab, and researchers would stop working and congregate with their own mugs and chat. In other words, the classic coffee break.

They chatted about the usual stuff - sports, weather, family, and naturally they also talked about whatever they happened to be working on, about the breakthroughs they had made and the problems they were encountering. Since they shared a coffee break a couple times a day, everyone was soon familiar with the projects everyone else was working on, and in these conversations the collaborative nature of innovation would be in full evidence as they helped each other.

This is the social character of innovation, and everyone involved in R&D believes that informal contact, social contact, among researchers is very important. Hence, big companies routinely spend millions and billions

of dollars to build R&D centers that encourage - or even force - R&D personnel to interact with one another in casual settings.

The HP story now encounters an interesting twist, however, because change came to the world of coffee when the personal coffee pot was invented, and it suddenly happened that people could brew their own coffee exactly to their own taste, and they could do it any time of the day. (This was also long before Starbucks.)

Naturally enough the researchers at HP Labs got coffee pots, and pretty soon it no longer made any sense to send around the big urn at predetermined times twice a day.

The unfortunate and largely unrecognized side effect of the end of the coffee break, however, was the loss of the important opportunity for scheduled but spontaneous collaboration.

This story was told to me by someone who had worked at HP Labs over the course of three decades, and he was absolutely convinced that the advent of the personal coffee maker marked the beginning of the end of the great HP that he knew and loved. Yes, there might have been other factors and forces involved too, but he was convinced that the personal coffee pot was as significant as any of them, because once the formal coffee break went away the quality of informal collaboration at HP Labs was significantly diminished.

As I noted above, innovation is undoubtedly a social art, and although it can occasionally be the province of a unique or exceptionally talented individual, it's more commonly a group effort. In modern organizations it is commonly the fruit of people who work together effectively, applying their diverse talents and experiences to complement one another and provide the depth of experience and capability that enables them to transform ideas into useful products, services, and business models.

All of these issues come together in a compelling way in the physical setting that is designed specifically to support the work of innovation, namely the research laboratory. A few years ago I had the opportunity to study nine new R&D labs built by pharmaceutical and high companies, and this process illuminated a number of principles that, taken together, describe many key aspects of the ideal physical infrastructure for innovation.[97] Each of these companies had invested heavily in facilities that encouraged and even forced researchers to interact with one another, and this led me to

[97] This section is adapted from the white paper "Social Design" by Langdon Morris, InnovationLabs, 1999. http://www.innovationlabs.com/soc_puba.html

understand that these facilities represent a new dimension of architecture that I now refer to as "social design," the application of architectural principles to promote social interaction and effective innovation.

Social Design Theory in Practice: The Design of R&D Labs

The term "social design" refers to that aspect of architecture which takes as a priority the creation of environments for effective and positive human interaction, and therefore poses the question:

Can better buildings make for a better quality of interaction?

The short answer is Yes, facility design does indeed offer a strategic opportunity. As we saw in the last chapter, organizations are subject to design just as much as buildings are, and as you will discover below, organizational innovations can spawn new and ingenious approaches to innovation-promoting architecture. Since the design of both facilities and organizations are entirely complementary to one another, these two aspects of design can literally define and reinforce effective corporate strategy in this age of "intellectual capital."

One of the underlying reasons has to do with the nature of creativity. As Mihaly Csikszentmihalyi points out, "An idea or product that deserves the label 'creative' arises from the synergy of many sources and not only from the mind of a single person. It is easier to enhance creativity by changing conditions in the environment than by trying to make people think more creatively."[98]

Hence, well designed work environments can contribute significantly to the effectiveness of innovation, and there are few work environments more complex than the research laboratory, and hence none that better exemplify the complex issues surrounding the innovation infrastructure. Thus, the solutions that have been found effective in these labs can be applied with great results throughout the offices of any organization where the innovation culture is being developed.

In a typical laboratory, scientists, engineers, and technicians design and conduct experiments whose purpose is to create useful new knowledge that may pertain to the uncharted physical world of chemistry or biology, to the behavior of man-made products, or to how people interact with each other and with physical artifacts.

The number of scientists and engineers doing all this work is steadily

---

[98] Mihaly Csikszentmihalyi. *Creativity*. Harper, 1996.

increasing, and in fact it was recently noted that 90% of all the scientists who ever lived are still alive, and still working.[99] Partly as a result of their aggregated work, the role of knowledge itself has become a central fact of our economy, and as a result we care more and more about the insights that scientists and engineers generate in their labs.

But from the perspective of the architect, it turns out that the design of many types of research laboratories is quite a difficult problem. Numerous factors must be taken into account, some of which require conflicting or contradictory responses. Hence, it is the architect's job to find the best balance between these factors, taking into consideration the client's needs, culture, and organization.

The most immediate issue is that in a typical lab facility where the work is biotech, chemistry, or biology, researchers work in two different settings, the lab itself as well as their separate offices. Ideally, these two work locations should not be too far from one another, but they also should not be isolated from other offices and labs so that researchers can easily interact. Then again, there are budget considerations which suggest that separating lab and office functions is more cost-efficient.

And what is the client's view of interaction? There a universal belief that optimizing interaction is critical, and that buildings must be designed with features that are most effective at promoting interaction.

An interesting aspect of the interaction question shows up in the design of larger facilities. Building complexes meant for thousands of people are commonly used to bring researchers into proximity of each other, and the key questions inherent in designing these complexes go beyond architecture and into the domain of urban design. Since the urban experience is precisely about fostering safe and enriching interactions between people, the field of urban design is a relevant guide for one floor of a building as it is for "company towns" of 3000 people, and for communities of tens of thousands or millions.

For example, Glaxo Wellcome chemist Dan Sternbach had this to say about collaboration in the corridor that runs through his building. "The 'people corridor' that connects all the offices actually forces everyone to walk by every office. That's good for communication. You know when people are in and you can stop by their offices. The whole argument about proximity means a lot when you're collaborating with people."

This is quite important in chemistry, where visualizing the molecule is critical to progress. Sternbach says that, "Chemists require a lot of graphical communications - they're usually showing someone else drawings of molecules. It's not text information. Nothing replaces two people standing at the board and drawing, which is the way we communicate a lot. It's an interactive situation where when somebody's drawing something up, the other guy says, 'Well that reminds me of ….' As soon as you try to do that

---

[99] Peil, Gerald, *The Acceleration of History*. Knopf, 1972.

by email it takes more time. You can do some of it that way, but the same conversation would happen in a day online versus 20 minutes face to face, because of the give and take that goes on."

MacArthur Fellow J. Kirk Varnedoe, former Director of Painting and Sculpture at New York's Museum of Modern Art puts it this way: "Creativity is not solely a brain function, but a social function as well."[100]

•••

Genentech's corporate campus in South San Francisco consists of many buildings that were built at different times, and the progression shows the evolution of laboratory designs from the earlier buildings to the later ones offering many insights into lab configurations.

As with the most other companies that rely heavily on R&D, Genentech believes that informal communication improves the possibility of doing something new and innovative, and this belief has significant influence on the design of Genentech's facilities.

For example, the location of offices, toilets, mail rooms, copiers, coffee machines, and stairways within individual buildings is intended to force interactions by bringing people to these shared spaces and functions. In addition, special "interaction spaces" have been included in many facilities, with varying degrees of success. Subsequent observations at Genentech (and confirmed at Sun Microsystems) revealed that the psychology of these spaces can be complex.

In Genentech's Process Science Center, comfortable spaces for informal interaction were located at the end of long hallways so that people could easily see if anyone else was using the space. However, the easy visibility had the opposite of the desired effect, and the rooms are rarely used. It turns out that in Genentech's intense corporate culture, people feel guilty if they are seen relaxing, so the very visibility of the interaction space makes it unusable. It's clear in retrospect that the spaces would have been much more useful if they were private. The difficulties Genentech has had in designing effective interaction spaces led facility manager Scott Hoag to observe that, "A lot of people can tell you what interaction space is not. Few people can tell you what it is."

In all of Genentech's buildings, the issue of crowding persists. The growth of the company, combined with changing research activities and functions creates constant pressure to reconfigure spaces, and to add more people. In one building, this meant that spaces designed as conference rooms quickly became offices, resulting in an acute lack of meeting space.

But crowding is not an entirely bad thing. During the design phase for one new building, an R&D director drew a graph correlating "researcher happiness" with "laboratory crowding."

---

[100] Denise Shekerjian. *Uncommon Genius*. Penguin, 1990. p. 55.

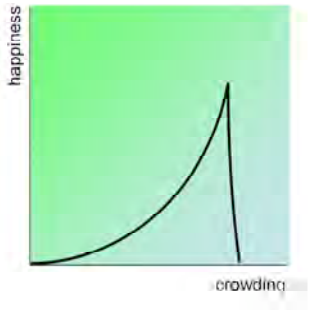

Figure 16.
The Genentech Happiness Graph
Happiness increases as more people join a lab, until that point at which there are suddenly too many people and everyone becomes miserable. The abrupt shift from happiness to misery highlights the great challenge facing everyone who must deal with the human dimensions of management, which is, of course, all of us.

Although the threshold may vary for each individual, there was general agreement that such a threshold did indeed exist, beyond which further crowding quickly leads to reduced happiness. Since Genentech believes that the "right" crowding correlates with productivity, determining the appropriate degree is critical.

This graph also illustrates an interesting consequence of architecture that often affects start-up companies. Hoag observed that when start-up companies finally become successful enough to move out of the garage or skunkworks and into nice, new facilities, they often lose something important that cannot be replaced. A sense of camaraderie is lost, and many of these companies never achieve the potential that they showed in the crowded conditions of the skunkworks.

Another interesting phenomenon discovered at Genentech is the value of being naive. Early on, a relatively inexperienced Genentech facility staff worked with a relatively inexperienced architect and came up with innovative solutions to facility problems, solutions that they realize in retrospect they might not have the courage to attempt now. Institutional barriers to innovation crop up in all parts of a growing, successful business, as functions that were once done by experimenting amateurs are taken over by professionals who "know better," and who stifle innovation by their very knowledge.

Research into these issues and questions concerning interaction and design go back many decades. In 1977, Tom Allen, Professor of Organizational Psychology and Management at MIT's Sloan School of Management, wrote what is still a very useful book on interaction in the

laboratory, *Managing the Flow of Technology*.[101] The book presents the results of many years of research into the factors affecting human interaction in the R&D process.

One of Allen's key discoveries was that the probability of interaction between two people declines precipitously if their offices are more than fifty feet apart. Once the importance of face-to-face interaction is accepted as a design goal for an R&D lab, and it is now accepted universally, the obvious implication of Allen's research is that everyone should be close to everyone else. This is, of course, quite impossible in organizations with more than about a hundred people. Nevertheless, there are strategies that can be applied to optimize interactions, and Allen explores many of them in his book.

When he applied the lessons of proximity to the design of the laboratory, he developed an ideal floor plan and one of his clients then built a lab according to this design. Subsequent analysis showed significant improvement in communication between many groups using the facility (as well as an unintended consequence of reduced communication between occupants of this lab and the rest of the organization). The concepts discovered and developed by Allen remain strongly influential among architects and R&D managers. In fact, the recently-built, massive new lab facility at Proctor & Gamble followed Allen's design quite closely, but the huge investment was undermined by the decision to give the scientists cubicles instead of offices. The lack of privacy and quiet became a significant barrier to their productivity, and workers also complained of an oppressive organizational rigidity.

This brings up another key theme concerning the innovation infrastructure, the psychology and sociology of shared spaces. Cultural norms about privacy and individual behavior become very important when work spaces are shared, and the greater the sharing, of course, the more poignant the issue is likely to be. In some organizations, it's understood that everyone will have a private office, while others have standardized on cubicles.

A team at HP pioneered the design of a "team cluster," where groups of 7 - 10 people share a space, and found that it clearly enhanced collaboration, and contributed to a significant reduction in the total time required to complete their work. However, even though they demonstrated huge cost savings and a massive productivity improvement by reducing the time needed to complete their project by literally months, their approach was almost uniformly rejected elsewhere in the company because people were afraid to give up their cubes for the team work areas. Resistance to change shows up in so many ways when change is perceived as a threat!

Overall, managers and architects continue to give considerable thought to the role that facilities design plays in supporting (or inhibiting) interactions

---

[101] Allen, Tom, *Managing the Flow of Technology*, Cambridge, MA, The MIT Press, 1977, 1995.

between people, and whether this happens on a serene 70 acre campus or in a small building, there are four primary dimensions where collaboration and architecture interact. These areas are closely interrelated, and there are enormous possibilities for experimentation and innovation in each.

1. Organize for Interaction

It's universally accepted that organizational hierarchies suppress important and desirable qualities such as innovativeness, creativity, adaptiveness, etc. Indeed, the Dilbert parody provides a steady diet of absurdity to remind us of this. In response to the painful truth behind the parody, many companies are attempting to reduce the influence of the hierarchy and shift to network based organizations, as we discussed in the last chapter.

2. Design for Interaction

Facilities are designed to increase the frequency and quality of interactions, to support meaningful dialog, not just bumping shoulders in the hallway or the elevator.

3. Design for Flexibility

Many of the features that are intended to increase interaction also serve to reduce cost by increasing the flexibility of the work environment while simultaneously reducing square footage requirements.

4. Design for Aesthetics

Features that address aesthetics are difficult to value, but managers at many facilities cited competition for talented individuals as one reason for the continuing effort to bring beauty to the workplace.

Collaboration Centers

In addition to facilities that support spontaneous collaboration and small gatherings, there is also a need for larger spaces to accommodate larger groups. We call these facilities Collaboration Centers, and over the years we've seen many great examples.

For example, when Bell Canada needed to bridge the separate universes of their R&D and marketing groups and promote faster commercialization of new products, they developed a new collaboration center, the "Delta Centre" at their corporate headquarters in Toronto, where they now hold large-group collaborative sessions.

In addition to a very large workload in commercialization, what quickly emerged was a huge demand for collaborative activities for many other

functions and departments in the company, from executive-level strategic planning to relationship-building experiences with partners and key customers.

Another example is the Epicenter in St. Petersburg, Florida, an innovative new facility developed by St. Petersburg College and shared as a community resource. The building houses the Economic Development Department of Pinellas County, the local arts council, corporate training facilities for the College, and its most unique feature, the Collaborative Labs, a 10,000 square-foot facility used by local, regional and national groups to explore and solve complex issues.

Local businesses hold planning retreats there, and the College convenes regional groups to tackle tough issues such as economic development and regional transportation. The innovative layout of the facility can support three groups of 50 people working simultaneously in collaborative design, large-group presentations, or small-team breakouts.

•••

Many factors contribute to the sense of richness we experience in human interaction, and through such interactions we literally build new knowledge that is critical to the success of innovation projects.

In the early 1990s the National Research Council addressed many of these issues in their report on the "productivity paradox," which discussed the linkage between interaction and productivity, and suggested that increasing the number and ways through which people could work together was the remedy.[102]

So how can we assess the effectiveness of interaction? Here are four critical dimensions.

1. Cycle time: Great infrastructure enables firms to reduce the cycle time from initial insight to application in new ideas and new products. High-performance facilities contribute significantly to the productivity of knowledge.

2. Quantity: Great collaboration centers result in an increased quantity of raw ideas and products, and of refined ideas and products.

3. Quality: They also support an increase in the quality of raw ideas and products, as well as refined ones.

4. Staff retention and recruiting: Staff retention and an

---

[102] Harris, Douglas H., Editor, Org*anizational Linkages: Understanding the Productivity Paradox*. Washington D.C., National Academy Press, 1994.

increase in the ability to recruit top level staff is often a consequence of great facilities, where people can interact easily and effectively with one another.

•••

When the right innovation infrastructure is in place, it can make a significant contribution to the effectiveness of the overall innovation process, and consequently it's an important element of innovation methodology. After all, if you have a kitchen then you don't cook dinner in the garage: you use the space that's actually designed to help you complete the complex activity you're engaged in, preparing a meal.

Similarly, traditional meeting and conference rooms aren't designed to support creativity or innovation, and although there are millions of these rooms around the world, they really don't work for innovation. In fact, more often than not they inhibit innovation, adding unnecessary time and cost to innovation projects, and inhibiting the innovation performance of the organizations that rely on them.

In a competitive marketplace, extra work, more time, and higher cost are precisely the opposite of what's needed, which makes the investment in the right infrastructure such a good idea. Designing the work process and the work place to support and enhance innovation is a very worthwhile endeavor.

Action Steps:

1: **Think about how the design process and facilitated collaborative design can be applied throughout your innovation projects to enhance the depth and quality of the work, and accelerate it as well.**
2: **Find out who in your organization has received professional training in design, and put them together in a task force together to adapt the generic design process to your organization's specific needs.**
3: **Apply the logic of social design to create a new collaboration environments and a collaboration center.**

Coda

Summary of Permanent Innovation Methodology

Permanent innovation methodology, as you have seen understand, is rich with detail. The five major steps we have examined are great ideas, filtered through a targeting process, transformed into great innovations, and then introduced into carefully developed markets, leading finally to the emergence of a permanent innovation culture. These steps are supported and enhanced by methods and tools that address the continuing need for creativity, and an infrastructure that supports the complex and difficult thinking that underlies every aspect of innovation.

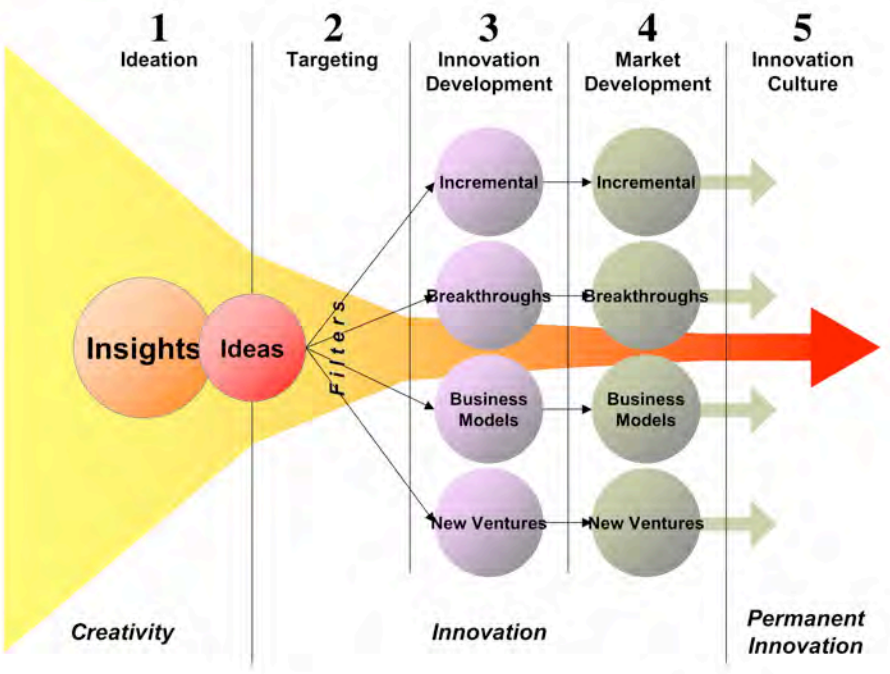

Figure 17.
Permanent Innovation Methodology
The four types of innovation shown across the 5 stages of the innovation process.

All of these elements work together, reinforcing a positive dynamic in organizations where creativity and innovation are valued and rewarded as vital to the innovation culture, the culture that applies its now-advanced capabilities to both adapt to change introduced from without, and to create change from within.

In this approach we see the integration of innovation and strategy as a single unified force of permanent innovation that creates the future.

There is another critical aspect of innovation methodology that should never be overlooked, and this is the social nature of the innovation process. Innovation happens because people have experiences, insights, ideas, and most of all because they interact with one another. They have a natural enthusiasm to make things better, to improve the products and services they make and provide, and the companies they work for. When they're working in a positive environment in which they're recognized for their efforts, and when they're not afraid to make mistakes, they will interact joyfully and richly with one another, and in the course of their interactions they will challenge and inspire one another to new levels of productivity and creativity.

This way of working is a joyful condition, because it supports and invokes an upward spiral of positive reinforcement for the qualities that make

companies great. There is no genius in fear, or intimidation, or mediocrity. But there is genius in dreams, in creativity and innovation, and in breakthrough thinking!

Innovation methodology is thus the practical foundation of organizational genius, and when it is operating with vitality in organizations where sincere respect for each individual is a deeply-held value, then the potential for greatness readily becomes the realization of greatness.

Part 4

Your Innovation Action Plan

Permanent Innovation Principle #3 (again):

The longer you wait to begin innovating, the worse things will get.

Companies that procrastinate usually pay a heavy price in the form of lost market share and lost profits, and ultimately the lack of innovation can significantly diminish their future prospects. The competition isn't waiting, and you shouldn't either. Create your action plan now, and starting implementing it now!

Chapter 12

Doing it!

38 + 2 Great Ideas to Get Started With

We've covered the essential ground, and now it's time to put these concepts into action. But how? The enormous scope of innovation as the focus of important, new organizational initiatives can be as intimidating as it is intriguing. So where do you start?

The Action Steps listed at the end of each chapter can help, of course, and as you consider the decisions you need to make about the role of innovation in your own work and perhaps for your company, here are 40 additional suggestions to help you think creatively and productively about how to make permanent innovation a reality in your organization.

1. **Study.** Innovation is a vast topic with countless nuances and subtleties to master, and there are many sources of great information. If you've read this book, or any other good innovation materials recently, go back and look at the ideas you've highlighted. Make your own list of innovation initiatives and get working on them.

2. **Evaluate your company's innovation results** over the last five years and compare them with your top competitors. In what areas have they done better, and in what areas has your firm done better? Which competitor has been the most innovative over the last five years? Initiate a competitor intelligence program to figure out how they've done it.

3. Conduct a detailed **audit** of your own firm's innovation methodology. Assemble a diverse team of 25 people and do the audit as a workshop. Solicit their ideas for improvements, and have them prepare five initiatives to address the most important shortcomings.

4. Think about **the four different types of innovation** and evaluate the last 25 innovations your firm produced to see what categories they fall into. What does that tell you about your existing innovation process?

5. Start asking **questions**. Talk to five front-line people each day whom you wouldn't normally encounter, and learn from their point of view what's working, what's not working, and where your products or services are falling short.

6. If your firm is large enough you may want to consider designating a **Chief Innovation Officer** and giving that person the responsibility to lead innovation efforts across the company. If your firm isn't so large, perhaps the head of marketing or research should also carry the this responsibility.

7. Establish an innovation SWAT team, an **iTeam**, to develop your firm's innovation methodology and to carry the message and the methodology throughout your organization. Make sure to set specific performance goals for the iTeam so they know what you're expecting.

8. Assess the **rate of change** in your industry and determine the rate at which new companies emerge and old companies are displaced. Identify the key factors that caused formerly leading companies to decline, and then assess your own company's performance on these same variables.

9. Start an ideation process using any of the **ideation tools** listed in Chapter 5. Then add a second method, and a third.

10. Develop your organization's **idea vault**. Put it to use and invite users to make suggestions to improve the database and its interface so that it is optimally useful.

11. Create an **Innovation Advisory Board** and invite five outsiders who know your industry to give you their candid feedback about your firm and it's innovation initiatives.

12. Assess your current **business model** by determining which elements of your business are most important to your customer's experience, and then deciding how well you're doing in each area and what you need to do to improve.

13. Take a diverse team of 25 people on a **learning expedition** half way around the world with the expectation of coming up with 100 new ideas and five concrete initiatives.

14. Assess the role of innovation in your organization's strategy over **the past five years,** and then consider what will be needed over **the next five.** The next time you have a meeting on strategic planning spend half the time discussing innovation.

15. Identify some key themes that you think are very important to your relationships with your future customers, and engage in detailed **ethnographic research** to learn more about customer attitudes, values, beliefs, and motivations.

16. Set up or improve your systems to gather **customer feedback**.

17. Conduct a **scenario planning** exercise and see what unexpected things you can learn about the emerging future.

18. Start a **game changer** process. You'll have to persuade someone, perhaps the CEO (if that's not you) to put up the necessary capital to fund the communications process, the workshops, and the projects themselves.

19. Focus your next **strategy meeting** on innovation, and ask each person attending to propose three new ideas that have never been discussed before in such meetings.

20. Hold a **business model innovation workshop** and invite 25 people from different parts of the organization to come together for a day to brainstorm new business model ideas in the morning, and then

develop 3 or 4 of them into real proposals in the afternoon.

21. Go to a magazine stand and buy five **magazines** that you've never looked at before that are not ostensibly about your own field. See how many pieces of information you can find that are pertinent to your industry or your company.

22. Set aside a space at the crossroads of your office as an **idea room**. Invite everyone to prepare and post ideas, and structure it so that others can give feedback on any idea they find interesting.

23. Prepare a study on the ten most important **social trends** affecting your company or your industry, and evaluate how well you're currently prepared to deal with them.

24. Prepare a study on the ten most important **technological trends** that will affect your industry over the next five years, and assess your firm's capability in each area. Prepare a plan to develop competence in any area in which you have shortcomings.

25. Do an assessment of top management's innovation **leadership** in your organization, and identify the top three weaknesses. Come up with a plan to overcome them, and implement it.

26. Study your firm's existing capability to **prototype** new ideas, and institute five improvements to accelerate the prototyping process and improve the learning that prototyping yields.

27. Institute innovation **awards** that recognize both successes and failures. The key criterion for winning a prize is the degree of learning that the effort provided to the organization. Consider presenting awards that are not monetary, but rather symbolic and which carry status within the organization. Hold a luncheon to celebrate ten great ideas that didn't work, and ten that did.

28. Measure the **return on innovation** that your organization achieves by evaluating the revenues and profits each year from new products and services from each of the past ten years. Compare your results with your competitors.

29. Create **innovation sabbaticals** that give employees from outside of R&D a three month time period to work on a new idea.

30. Establish a linkage with a **local university** by funding a professor and graduate students in social or technical areas that are important for your firm's future. Ask them to prepare and present an analysis of your industry and an evaluation of your firms positioning, and to propose five research areas they could work in that would add significant value to your positioning over the next three years.

31. Conduct an anonymous survey in your firm to assess **trust**. Do employees trust management? Do they trust each other? What can be done to improve trust?

32. Study the **risk profiles** of the last 25 innovations your firm developed. Determine the degree of risk associated with each one to find out if you're taking too much innovation risk, or too little.

33. Identify **a company that you admire** that's outside of your industry. Study that company in detail to learn why it's so good, and figure out how to emulate its strengths in your own organization. Have each member of your team look at a different company, and compare your findings.

34. Create a new **hiring profile** that targets new employees with the "T profile" for both breadth of experience across many fields, and depth in at least one.

35. Create a **collaboration center** where 100 or more people can work together to identify and solve complex problems.

36. Set up networks of **communities of practice** for people who are widely dispersed across the nation or around the world, and ask each one to prepare a plan to maintain your firm's competence at the highest levels.

37. Send teams of researchers to **meet with your top 25 customers** to learn more about how they use your firm's products and services. Have all the teams meet together afterwards to debrief and prepare an analysis of what they've learned, and what they think ought to be done differently going forward.

38. Do an **obstacles audit** on your own firm and find out what's blocking people from innovation. Then remove the obstacles.

•••

Hopefully this book has given you a lot to think about, and perhaps also some clarity about some of the next steps that you'll take to achieve Permanent Innovation in your own organization.

Those steps will inevitably require the involvement of many others, as the complexities of innovation mean that it's going to take a lot of people to achieve the results you're after. Since you're going to bring a lot of other people into this process, you'll need to prepare clear definitions of the goals, the process, and the guidelines.

Thus, I have two final recommendations:

39. **First, take some quiet time to think.**

40. **And lastly, start now.**

•••

We began preparing our map across the innovation landscape about 250 pages ago, and now it's now drawn in considerable detail. The strategic dimensions, the risks, the many human factors, the management challenges, and the opportunities should all be clearer. Still, there's much more to add, but since your innovation journey will be unique to you and your company, it's up to you to fill in the rest of the story as you progress.

So I wish you good luck, and I will also add that for the best results I strongly suggest that you create your own luck by meeting whatever fate has in store for you with your own robust methodology. This, the philosophers and the evidence agree, is the path to excellence. Bon voyage!

Acknowledgments

Numerous people contributed significantly to this book, and first and foremost among them are our many clients. In recent years we've had the pleasure and privilege of working with great people and great organizations on projects relating to innovation, strategy, organizational development, and developing solutions to various wicked problems. Thanks to you all!

I would also specifically like to express my gratitude to Mohammed Al-Ansari, Michael Barry, Pascal Baudry, Bryan Coffman, Léopold Demiddeleer, Robert Gregory, Brigitte Jordan, Michael Kaufman, Math Kohnen, Avnindra Sharma, Jay Smethurst, Stu Winby, and Keegan, Elizabeth, and McKenna Morris, for their many contributions to my understanding of innovation and the preparation of this book.