

GEOFFREY A. MOORE

Author of Inside the Tornado and The Gorilla Game

"For the most astute companies this book provides the blueprint for success, for the others it is a manual for their survival, and for all it is a great read."

—William Davidow, general partner, Mohr Davidow Ventures

A
Business Week
Bestseller

REVISED EDITION

CROSSING THE CHASM

MARKETING AND SELLING HIGH-TECH
PRODUCTS TO MAINSTREAM CUSTOMERS

CROSSING THE CHASM

*Marketing and Selling High-Tech
Products to Mainstream Customers*

Revised Edition

Geoffrey A. Moore

with a foreword by Regis McKenna



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*To
Marie*

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Preface to the Revised Edition

“Obiwan Kenobi,” says Sir Alec Guinness in the original *Star Wars* movie—“Now there’s a name I haven’t heard for a long, long time.”

The same might well be said of a number of the companies that served as examples in the original edition of *Crossing the Chasm*. Reading through its index brings to mind the medieval lament, “Where are the snows of yesteryear?” Where indeed are Aldus, Apollo, Ashton-Tate, Ask, Burroughs, Businessland, and the Byte Shop? Where are Wang, Weitek, and Zilog? “Oh lost and by the wind-grieved ghosts, come back again!”

But we should not despair. In high tech, the good news is that, although we lose our companies with alarming frequency, we keep the people along with the ideas, and so the industry as a whole goes forward vibrantly, even as the names on our paychecks slide into another seamlessly (OK, as seamlessly as our systems interoperate, which as marketing claims is... well that’s another matter).

Crossing the Chasm was written in 1990 and published in 1991. Originally forecast to sell 5,000 copies, it has over a seven year period in the market sold more than 175,000. In high-tech marketing, we call this an “upside miss.” The appeal of the book, I believe, is that it puts a vocabulary to a market development problem that has given untold grief to any number of high-tech enterprises. Seeing the problem externalized in print has a sort of redemptive effect on people who have fallen prey to it in the past—it wasn’t all my fault! Moreover, like a good book on golf, its prescriptions give great hope that just by making this or that minor adjustment perfect results are bound to follow—this time we’ll make it work! And so any number of people cheerfully have told me that the book has become the Bible in their company. So much for the spiritual health of our generation.

In editing this revised edition, I have tried to touch as little as possible the logic of the original. This is harder than you might think because over the past decade my views have changed (all right, I’ve become older), and I have an inveterate tendency to meddle, as any number of my clients and colleagues will testify. The problem is, when you meddle, you get in deeper and deeper until God knows what you have, but it wasn’t what you started with. I have plenty enough opportunity to do that with future books, and I have enough respect for this one to try to stand off a bit.

That being said, I did make a few significant exceptions. I eliminated the

section on using “thematic niches” as a legitimate tactic for crossing the chasm. It turns out instead they were a placeholder for the market tactics used during a merging hypergrowth market, a challenge covered in a subsequent book, *Inside the Tornado*. Also I have substituted a revised scenario process for the original to incorporate improvements that have evolved over the past several years of consulting at The Chasm Group. Elsewhere, I took a slightly new angle on creating the competition and, when it came to the section on distribution, I have done my best to incorporate the emerging influence of the Internet.

But the overwhelming bulk of the changes in this new edition—representing about a third of total text—simply swap out the original examples from the 1980s with new ones from the 1990s. Surprisingly, in the majority of cases this swap works very well. But in other cases, there’s been a little force-fitting, and I want to beg your indulgence up front. The world has changed. The high-tech community is now crossing the chasm intentionally rather than unintentionally, and there are now competitors who have read the same book and create plans to block chasm-crossing. The basic forces don’t change, but the tactics have become more complicated.

Moreover, we are seeing a new effect which was just barely visible in the prior decade, the piggybacking of one company’s offer on another to skip the chasm entirely and jump straight into hypergrowth. In the 1980s Lotus piggybacked on VisiCalc to accomplish this feat in the spreadsheet category. In the 1990s Microsoft has done the same thing to Netscape in browsers. The key insight here is that we should always be tracking the evolution of a technology rather than a given company’s product line—it’s the Technology Adoption Life Cycle, after all. Thus it is spreadsheets, not VisiCalc, Lotus, or Excel, that is the adoption category, just as it is browsers, not Navigator or Explorer. In the early days products and categories were synonymous because technologies were on their first cycles. But today we have multiple decades of invention to build on, and a new offer is no longer quite as new or unprecedented as it used to be. The marketplace is therefore able to absorb this not-quite-so-new technology in gulps, for a while letting one company come to the fore, but substituting another should the first company stumble.

Finally, let me close by noting technological changes do not live in isolation but rather come under the influence of changes in surrounding technologies as well. In the early 90s it was the sea change to graphical user interfaces and client-server topologies that created the primary context. As we come to the close of the century it is the complete shift of communications infrastructure to the Internet. These major technology shifts create huge sine waves of change that interact with the smaller sine waves of more local technology shifts, occasionally synthesizing harmonically, more frequently playing out some discordant mix that has customers growling and investors howling.

Navigating in such uncharted waters requires beacons that can be seen above the waves, and that is what models in general, and the chasm models in particular, are for. Models are like constellations—they are not intended to change in themselves, but their value is in giving perspective on a highly changing world. The chasm model represents a pattern in market development that is based on the tendency of pragmatic people to adopt new tech-

nology when they see other people like them doing the same. This causes them to hang together as a group, and the group's initial reaction, like teenagers at a junior high dance, is to hesitate and watch. This is the chasm effect. The tendency is very deep-rooted, and so the pattern is very persistent. As a result, marketers can predict its appearance and build strategies to cope with it, and it is the purpose of this book to help in that process.

But fixing your position relative to the North Star does not keep water out of the boat. As the French proverb says, "God loves a sailor, but he has to row for himself." And in that act of rowing the work is huge and the risks high, and every reader of this book who is also a practitioner of high-tech market development has my deepest respect.

With that thought in mind, let me turn you over now to Regis McKenna, author of the original Foreword back in 1991, and then to a fledgling author writing his first acknowledgments.

Acknowledgments

The book that follows represents two years of writing. It also represents my last 13 years of employment in one or another segment of high tech sales and marketing. And most importantly, it reflects the last four years I have spent as a consultant at Regis McKenna Inc. During this period I have worked with scores of colleagues, sat in on innumerable client meetings, and dealt with myriad marketing problems. These are the “stuff” out of which this book has come.

Prior to entering the world of high tech, I was an English professor. One of the things I learned during this more scholarly period in my life was the importance of evidence and the necessity to document its sources. It chagrins me to have to say, therefore, that there are no documented sources of evidence anywhere in the book that follows. Although I routinely cite numerous examples, I have no studies to back them up, no corroborating witnesses, nothing.

I mention this because I believe it is fundamental to the way in which lessons are transmitted in universities and the way they are transmitted in the workplace. All of the information I use in day-to-day consulting comes to me by way of word of mouth. The fundamental research process for any given subject is to “ask around.” There are rarely any real facts to deal with—*not* regarding the really important issues, anyway. Some of the information may come from reading, but since the sources quoted in the articles are the same as those one talks to, there is no reason to believe that the printed word has any more credibility than the spoken one. There is, in other words, no hope of a definitive answer. One is committed instead to an ongoing process of update and revision, always in search of the explanation that gives the best fit.

Given that kind of world, the single most important variable becomes who you talk with. The greatest pleasure of my past four years at RMI has been the quality of people I have encountered as my colleagues and my clients. In the next few paragraphs I want to acknowledge some of them specifically by name, but I know that by so doing I am bound to commit more than one sin of omission. From those who are not mentioned but who should have been, I ask forgiveness in advance.

Several of my current colleagues have offered ongoing input and criticism of this effort in its various conversational and manuscript forms. These include Paul Hodges, Randy Nickel, Elizabeth Chaney, Ellen Hipschman, Rosemary Remade, Page Alloo, Karen Kang, Karen Lippe, Greg Ruff, Chris

Halliwell, Patty Burke, Joan Naidish, Sharon Colby, and Patrick Corman.

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Clients and friends—not mutually exclusive groups, I am happy to say—have also been extremely supportive of this effort, both in critiquing drafts of the manuscript and in contributing to the ideas and examples. In this regard, I would especially like to acknowledge John Rizzo, Sam Darcie, David Taylor, Brett Bullington, Tom Quinn, Tom Loeb, Phil Vertin, Mike Whitfield, Bill Leavy, Ed Sterbenc, Bob Jolls, Bob Healy, Paul Wiefels, Mark and Chuck Dehner, Doug Edwards, Corinne Smith, John Zeisler, Jane Gaynor, Bob Lefkowitz, Camillo Wilson, Ed Sattizahn, Jon Rant, John Oxaal, Isadore Katz, and Tony Zingale.

From the hoard of interesting remarks of independent consultants and occasional competitors, many of whom are also good friends, I have pillaged cheerfully whenever I could. These include Roberta Graves, Tony Morris, Sy Merrin, Kathy Lane, Leigh Marriner, Dick Shaffer, Esther Dyson, Jeff Tarter, and Stewart Alsop.

Then we come to that core group of friends whose importance goes beyond specific contributions to this or that idea or chapter and lodges instead somewhere near support of the soul. These exceptionally special folk include Doug Molitor, Glenn Helton, Peter Schireson, Skye Hallberg, and Steve Flint.

Beyond that, there are three more people without whom this book would not be possible. The first of these is Regis McKenna, my boss, founder of my company and funder of my livelihood, and in many senses the inventor of the high-tech marketing practice I am now trying to extend. The second is Jim Levine, my literary agent, the man who took a look at 200-odd pages of manuscript a year or so ago and allowed as how, although it wasn't a book, it might have possibilities. And the third is Virginia Smith, my editor, who has been guiding me this past year through the bizarre intricacies of the book publishing business.

There remains one last group of people to name, those who have been at the center of almost anything I have ever undertaken: my parents, George and Patty; my brother, Peter; my children, Margaret, Michael, and Anna; and my wife, Marie. I am particularly indebted to Marie, for many reasons that go well beyond this book, but specifically in this instance for making the countless sacrifices and giving the kind of emotional and practical day-to-day support that make writing a book possible, and for being the kind of person that inspires me to undertake such challenges.

PART I

DISCOVERING THE CHASM

Introduction

If Bill Gates Can Be a Billionaire

There is a line from a song in the musical *A Chorus Line*: “If Troy Donahue can be a movie star, then I can be a movie star.” Every year one imagines hearing a version of this line reprised in high-tech start-ups across the country: “If Bill Gates can be a billionaire. . .” For indeed, the great thing about high tech is that, despite numerous disappointments, it still holds out the siren’s lure of a legitimate get-rich-quick opportunity.

But let us set our sights a little more modestly. Let us say, “If in the 1980s two guys, each named Mike Brown (one from Portland, Oregon, and the other from Lenexa, Kansas), can in 10 years found two companies no one has ever heard of (Central Point Software and Innovative Software), and bring to market two software products that have hardly become household names (PC Tools Deluxe and Smartware) and still be able to cash out in seven figures, then, by God, we should be able to too.”

This is the great lure. And yet, as even the Bible has warned us, while many are called, few are chosen. Every year millions of dollars—not to mention countless work hours of our nation’s best technical talent—are lost in failed attempts to join this kingdom of the elect. And oh what wailing then, what gnashing of teeth! “Why me?” cries out the unsuccessful entrepreneur. Or rather, “Why *not* me?” “Why not us?” chorus his equally unsuccessful investors. “Look at our product. Is it not as good—nay, better—than the product that beat us out? How can you say that Oracle is better than Sybase, Microsoft Word is better than WordPerfect, Cisco’s routers are better than Bay Networks’, or that Pentium is better than the Power PC?” How, indeed? For in fact, feature for feature, the less successful product is often arguably superior.

Not content to slink off the stage without some revenge, this sullen and resentful crew casts about among themselves to find a scapegoat, and whom do they light upon? With unfailing consistency and unerring accuracy, all fingers point to—the *vice-president of marketing*. It is marketing’s fault! Oracle outmarketed Sybase, Microsoft outmarketed WordPerfect, Cisco outmarketed Bay, Intel outmarketed Motorola. Now we too have been outmarketed. Firing is too good for this monster. Hang him!

While this sort of thing takes its toll on the marketing profession, there is more at stake in these failures than a bumpy executive career path. When a high-tech venture fails everyone goes down with the ship—not only the investors but also the engineers, the manufacturers, the president, and the

receptionist. All those extra hours worked in hopes of cashing in on an equity option—all gone.

Worse still, because there is no clear reason why one venture succeeds and the next one fails, the sources of capital to fund new products and companies become increasingly wary of investing. Interest rates go up, and the willingness to entertain venture risks goes down. Wall Street has long been at wit's end when it comes to high-tech stocks. Despite the efforts of some of its best analysts, these stocks are traditionally undervalued, and exceedingly volatile. It is not uncommon for a high-tech company to announce even a modest shortfall in its quarterly projections and incur a 20 to 30 percent devaluation in stock price on the following day of trading.

There is an even more serious ramification. High-tech inventiveness and marketing expertise are two cornerstones of the U.S. strategy for global competitiveness. We will never have the lowest cost of labor or raw materials, so we must continue to exploit advantages further down the value chain. If we cannot at least learn to predictably and successfully bring high-tech products to market, our counterattack will falter, placing our entire standard of living in jeopardy.

With so much at stake, the erratic results of high-tech marketing are particularly frustrating, especially in a society where other forms of marketing appear to be so well under control. Elsewhere—in cars or TVs or microwaves—we may see ourselves being outmanufactured, but not outmarketed. Indeed, even after we have lost an entire category of goods to offshore competition, we remain the experts in marketing these goods to U.S. consumers. Why haven't we been able to apply these same skills to high tech? And what is it going to take for us to finally get it right?

It is the purpose of this book to answer these two questions in considerable detail. But the short answer is as follows: Our current model for how to develop a high-tech market is almost—but not quite—right. As a result, our marketing ventures, despite normally promising starts, drift off course in puzzling ways, eventually causing unexpected and unnerving gaps in sales revenues, and sooner or later leading management to undertake some desperate remedy. Occasionally these remedies work out, and the result is a high-tech marketing success. (Of course, when these are written up in retrospect, what was learned in hindsight is not infrequently portrayed as foresight, with the result that no one sees how perilously close to the edge the enterprise veered.) More often, however, the remedies either flat-out fail, and a product or a company goes belly up, or they progress after a fashion to some kind of limp but breathing half-life, in which the company has long since abandoned its dreams of success and contents itself with once again making payroll.

None of this is necessary. We have enough high-tech marketing history now to see where our model has gone wrong and how to fix it. To be specific, the point of greatest peril in the development of a high-tech market lies in making the transition from an *early market* dominated by a few *visionary* customers to a *mainstream market* dominated by a large block of customers who are predominantly *pragmatists* in orientation. The gap between these two markets, heretofore ignored, is in fact so significant as to warrant being called a *chasm*, and crossing this chasm must be the primary focus of any long-term

high-tech marketing plan. A successful crossing is how high-tech fortunes are made; failure in the attempt is how they are lost.

For the past decade and more, I, along with my colleagues at The Chasm Group, have watched countless companies struggle to maintain their footing during this difficult period. It is an extremely difficult transition for reasons that will be summarized in the opening chapters of the book. The good news is that there are reliable guiding principles. The material in this book was born of hundreds of consulting engagements focused on bringing products and companies into profitable and sustainable mainstream markets. The models presented here have been tested again and again and have been found effective. The chasm, in sum, can be crossed.

Like a hermit crab that has outgrown its shell, the company crossing the chasm must scurry to find its new home. Until it does, it will be prey to all kinds of predators. This urgency means that everyone in the company—not just the marketing and sales people—must focus all their efforts on this one end until it is accomplished. Chapters 3 through 7 set forth the principles necessary to guide high-tech ventures during this period of great risk. This section focuses on marketing, because that is where the leadership must come from, but I ultimately argue in the Conclusion that leaving the chasm behind requires significant changes throughout the high-tech enterprise. The book closes, therefore, with a call for new strategies in the areas of finance, organizational development, and R&D.

This book is unabashedly about and for marketing within high-tech enterprises. But high tech can be viewed as a microcosm of larger industrial trends. In particular, the relationship between an early market and a mainstream market is not unlike the relationship between a fad and a trend. Marketing has long known how to exploit fads and how to develop trends. The problem, since these techniques are antithetical to each other, is that you need to decide which one—fad or trend—you are dealing with before you start. It would be much better if you could start with a fad, exploit it for all it was worth, and then turn it into a trend.

That may seem like a miracle, but that is in essence what high-tech marketing is all about. Every truly innovative high-tech product starts out as a fad—something with no known market value or purpose but with “great properties” that generate a lot of enthusiasm within an “in crowd.” That’s the early market. Then comes a period during which the rest of the world watches to see if anything can be made of this; that is the chasm. If in fact something does come out of it—if a value proposition is discovered that can predictably be delivered to a targetable set of customers at a reasonable price—then a new mainstream market forms, typically with a rapidity that allows its initial leaders to become very, very successful.

The key in all this is crossing the chasm—making that mainstream market emerge. This is a do-or-die proposition for high-tech enterprises; hence, it is logical that they be the crucible in which “chasm theory” is formed. But the principles can be generalized to other forms of marketing, so for the general reader who can bear with all the high-tech examples in this book, useful lessons may be learned.

One of the most important lessons about crossing the chasm is that the

task ultimately requires achieving an unusual degree of company unity during the crossing period. This is a time when one should forgo the quest for eccentric marketing genius, in favor of achieving an informed consensus among mere mortals. It is a time not for dashing and expensive gestures but rather for careful plans and cautiously rationed resources—a time not to gamble all on some brilliant coup but rather to focus everyone on making as few mistakes as possible.

One of the functions of this book, therefore—and perhaps its most important one—is to open up the logic of marketing decision making during this period so that everyone on the management team can participate in the marketing process. If prudence rather than brilliance is to be our guiding principle, then many heads are better than one. If marketing is going to be the driving force—and most organizations insist this is their goal—then its principles must be accessible to all the players, and not, as is sometimes the case, be reserved to an elect few who have managed to penetrate its mysteries.

Crossing the Chasm, therefore, is written for the entire high-tech community—for everyone who is a stakeholder in the venture, engineers as well as marketeers, and financiers as well. All must come to a common accord if the chasm is to be safely negotiated. And with that thought in mind, let us turn to Chapter 1.

1

High-Tech Marketing Illusion

As the revised edition of this book is being written, it is 1998, and for this time we have seen a commercial release of the electric car. General Motors makes one, and Ford and Chrysler are sure to follow. Let's assume the cars work like any other, except they are quieter and better for the environment. Now the question is: When are you going to buy one?

The Technology Adoption Life Cycle

Your answer to the preceding question will tell a lot about how you relate to the *Technology Adoption Life Cycle*, a model for understanding the acceptance of new products. If your answer is, "Not until hell freezes over," you are probably a very late adopter of technology, what we call in the model a *laggard*. If your answer is, "When I have seen electric cars prove themselves and when there are enough service stations on the road," you might be a middle-of-the-road adopter, or in the model, the *early majority*. If you say, "Not until most people have made the switch and it becomes really inconvenient to drive a gasoline car," you are probably more of a follower, a member of the *late majority*. If, on the other hand, you want to be the first one on your block with an electric car, you are apt to be an *innovator* or an *early adopter*.

In a moment we are going to take a look at these labels in greater detail, but first we need to understand their significance. It turns out our attitude toward technology adoption becomes significant—at least in a marketing sense—any time we are introduced to products that require us to change our current mode of behavior or to modify other products and services we rely on. In academic terms, such change-sensitive products are called *discontinuous innovations*. The contrasting term, *continuous innovations*, refers to the normal upgrading of products that does not require us to change behavior.

For example, when Crest promises you whiter teeth, that is a continuous innovation. You still are brushing the same teeth in the same way with the same toothbrush. When Ford's new Taurus promises better mileage, when Dell's latest computer promises faster processing times and more storage space, or when Sony promises sharper and brighter TV pictures, these are all continuous innovations. As a consumer, you don't have to change your ways

in order to take advantage of these improvements.

On the other hand, if the Sony were a high-definition TV, it would be incompatible with today's broadcasting standards, which would require you to seek out special sources of programming. This would be a discontinuous innovation because you would have to change your normal TV-viewing behavior. Similarly if the new Dell computer were to come with the Be operating system, it would be incompatible with today's software base. Again, you would be required to seek out a whole new set of software, thereby classifying this too as a discontinuous innovation. Or if the new Ford car, as we just noted, required electricity instead of gasoline, or if the new toothpaste were a mouthwash that did not use a toothbrush, then once again you would have a product incompatible with your current infrastructure of supporting components. In all these cases, the innovation demands significant changes by not only the consumer but also the infrastructure. That is how and why such innovations come to be called discontinuous.

Between *continuous* and *discontinuous* lies a spectrum of demands for change. TV dinners, unlike microwave dinners, did not require the purchase of a new oven, but they did require the purchase of more freezer space. Color-TV programming did not, like VCRs, require investing in and mastering a new technology, but they did require buying a new TV and learning more about tuning and antennas than many of us wanted to learn. The special washing instructions for certain fabrics, the special street lanes reserved for bicycle riders, the special dialing instructions for calling overseas—all represent some new level of demand on the consumer to absorb a change in behavior. Sooner or later, all businesses must make these demands. And so it is that all businesses can profit by lessons from high-tech industries.

Whereas other industries introduce discontinuous innovations only occasionally and with much trepidation, high-tech enterprises do so routinely and as confidently as a born-again Christian holding four aces. From their inception, therefore, high-tech industries needed a marketing model that coped effectively with this type of product introduction. Thus the Technology Adoption Life Cycle became central to the entire sector's approach to marketing. (People are usually amused to learn that the original research that gave rise to this model was done on the adoption of new strains of seed potatoes among American farmers. Despite these agrarian roots, however, the model has thoroughly transplanted itself into the soil of Silicon Valley.)

The model describes the market penetration of any new technology product in terms of a progression in the types of consumers it attracts throughout its useful life:

As you can see, we have a bell curve. The divisions in the curve are roughly equivalent to where standard deviations would fall. That is, the early majority and the late majority fall within one standard deviation of the mean, the early adopters and the laggards within two, and way out there, at the very onset of a new technology, about three standard deviations from the norm, are the innovators.

The groups are distinguished from each other by their characteristic response to a discontinuous innovation based on a new technology. Each group represents a unique *psychographic* profile—a combination of psychology

and demographics that makes its marketing responses different from those of the other groups. Understanding each profile and its relationship to its neighbors is a critical component of high-tech marketing lore.

Innovators pursue new technology products aggressively. They sometimes seek them out even before a formal marketing program has been launched. This is because technology is a central interest in their life, regardless of what function it is performing. At root they are intrigued with any fundamental advance and often make a technology purchase simply for the pleasure of exploring the new device's properties. There are not very many innovators in any given market segment, but winning them over at the outset of a marketing campaign is key nonetheless, because their endorsement reassures the other players in the marketplace that the product does in fact work.

Early adopters, like innovators, buy into new product concepts very early in their life cycle, but unlike innovators, they are not technologists. Rather they are people who find it easy to imagine, understand, and appreciate the benefits of a new technology, and to relate these potential benefits to their other concerns. Whenever they find a strong match, early adopters are willing to base their buying decisions upon it. Because early adopters do not rely on well-established references in making these buying decisions, preferring instead to rely on their own intuition and vision, they are key to opening up any high-tech market segment.

The early majority share some of the early adopter's ability to relate to technology, but ultimately they are driven by a strong sense of practicality. They know that many of these newfangled inventions end up as passing fads, so they are content to wait and see how other people are making out before they buy in themselves. They want to see well-established references before investing substantially. Because there are so many people in this segment—roughly one-third of the whole adoption life cycle—winning their business is key to any substantial profits and growth.

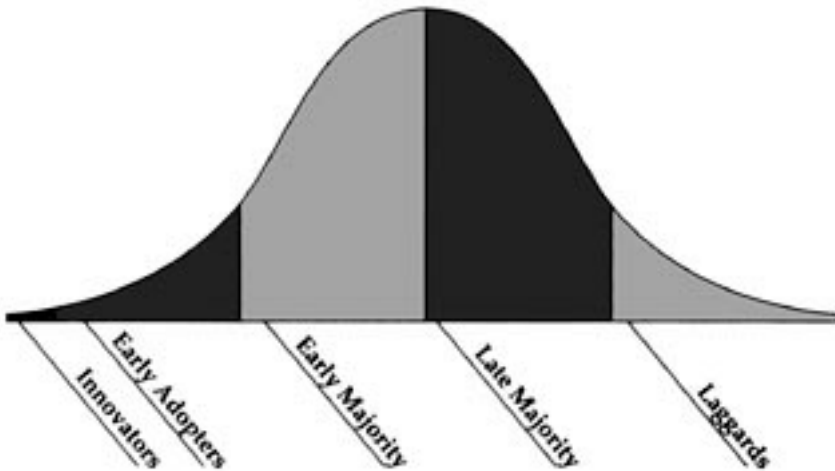
The late majority shares all the concerns of the early majority, plus one major additional one: Whereas people in the early majority are comfortable with their ability to handle a technology product, should they finally decide to purchase it, members of the late majority are not. As a result, they wait until something has become an established standard, and even then they want to see lots of support and tend to buy, therefore, from large, well-established companies. Like the early majority, this group comprises about one-third of the total buying population in any given segment. Courting its favor is highly profitable indeed, for while profit margins decrease as the products mature, so do the selling costs, and virtually all the R&D costs have been amortized.

Finally there are the *laggards*. These people simply don't want anything to do with new technology, for any of a variety of reasons, some personal and some economic. The only time they ever buy a technological product is when it is buried so deep inside another product—the way, say, that a microprocessor is designed into the braking system of a new car—that they don't even know it is there. Laggards are generally regarded as not worth pursuing on any other basis.

To recap the logic of the Technology Adoption Life Cycle, its underlying thesis is that technology is absorbed into any given community in stages cor-

responding to the psychological and social profiles of various segments within that community. This process can be thought of as a continuum with definable stages, each associated with a definable group, and each group making up a predictable portion of the whole.

Technology Adoption Life Cycle



The High-Tech Marketing Model

This profile, in turn, is the very foundation of the High-Tech Marketing Model. That model says that the way to develop a high-tech market is to work the curve left to right, focusing first on the innovators, growing that market, then moving on to the early adopters, growing that market, and so on, to the early majority, late majority, and even to the laggards. In this effort, companies must use each “captured” group as a reference base for going on to market to the next group. Thus, the endorsement of innovators becomes an important tool for developing a credible pitch to the early adopters, that of the early adopters to the early majority, and so on.

The idea is to keep this process moving smoothly, proceeding something like passing the baton in a relay race or imitating Tarzan swinging from vine to well-placed vine. It is important to maintain momentum in order to create

a bandwagon effect that makes it natural for the next group to want to buy in. Too much of a delay and the effect would be something like hanging from a motionless vine—nowhere to go but down. (Actually, going down is the graceful alternative. What happens more often is a desperate attempt to re-create momentum, typically through some highly visible form of promotion, which ends up making the company look like a Tarzan frantically jerking back and forth, trying to get a vine moving with no leverage. This typically leads the other animals in the jungle just to sit and wait for him to fall.)

There is an additional motive for maintaining momentum: to keep ahead of the next emerging technology. Portable electric typewriters were displaced by portable PCs, which in turn may someday be displaced by Internet terminals. You need to take advantage of your day in the sun before the next day renders you obsolete. From this notion comes the idea of a *window of opportunity*. If momentum is lost, then we can be overtaken by a competitor, thereby losing the advantages exclusive to a technology leadership position—specifically, the profit-margin advantage during the middle to late stages, which is the primary source from which high-tech fortunes are made.

This, in essence, is the High-Tech Marketing Model—a vision of a smooth unfolding through all the stages of the Technology Adoption Life Cycle. What is dazzling about this concept, particularly to those who own equity in a high-tech venture, is its promise of virtual monopoly over a major new market development. If you can get there first, “catch the curve,” and ride it up through the early majority segment, thereby establishing the de facto standard, you can get rich very quickly and “own” a highly profitable market for a very long time to come.

Testimonials

Lotus 1-2-3 is a prime example of optimizing the High-Tech Marketing Model. No one has ever argued that it was the best spreadsheet program ever written. Certainly it wasn't the first, and many of the features people appreciate about it most were in fact derived directly from VisiCalc, its predecessor that ran on the Apple II. But Lotus 1-2-3 was the first spreadsheet for the IBM PC, and its designers were careful to tune its performance specifically for that platform. As a result, the innovators liked Lotus 1-2-3 because it was slick and fast. Then the early adopters liked it because it allowed them to do something they had never been able to do before—what later became popularized as “what if” analysis. The early majority liked the spreadsheet because it fell into line with some very common business operations, like budgeting, sales forecasting, and project tracking. As more and more people began to use it, it became harder and harder to use anything else, including paper and pencil, so the late majority gradually fell into line. This was the tool people knew how to use. If you wanted to share a spreadsheet, it had to be in Lotus format. Thus it became so entrenched that by the end of the 1980s well over half the IBM PCs and PC compatibles with spreadsheets had Lotus 1-2-3—despite the fact that there were numerous competitors, many of which were, feature for fea-

ture, superior products.

Astounding as this accomplishment is, many other companies have achieved a comparable status. This is what Oracle has achieved in the area of relational databases, Microsoft in PC operating systems, Hewlett-Packard in PC laser and inkjet printers, and IBM in mainframe computers. It is the position that Netscape is clinging to in Internet browsers, Autodesk holds in PC CAD, ESRI has in GIS software, Cisco has in routers, and Intel has in microprocessors.

Each of these companies holds market share in excess of 50 percent in its prime market. All of them have been able to establish strongholds in the early majority segment, if not beyond, and to look forward from that position to continued growth, wondrously strong profit margins, and increasingly preferred relationships as suppliers to their customers. To be sure, some like Oracle and, more dramatically, Netscape have fallen on hard times, but even then customers often bend over backwards to give market share leaders second and third chances, bringing cries of anguish from their competitors who would never be granted such grace.

It should come as no surprise that the history of these flagship products conforms to the High-Tech Marketing Model. In truth, the model was essentially derived from an abstraction of these histories. And so high-tech marketing, as we enter the next millennium, keeps before it the example of these companies and the abstraction of the High-Tech Marketing Model, and marches confidently forward.

Of course, if that were a sufficient formula for success, you would need to read no further.

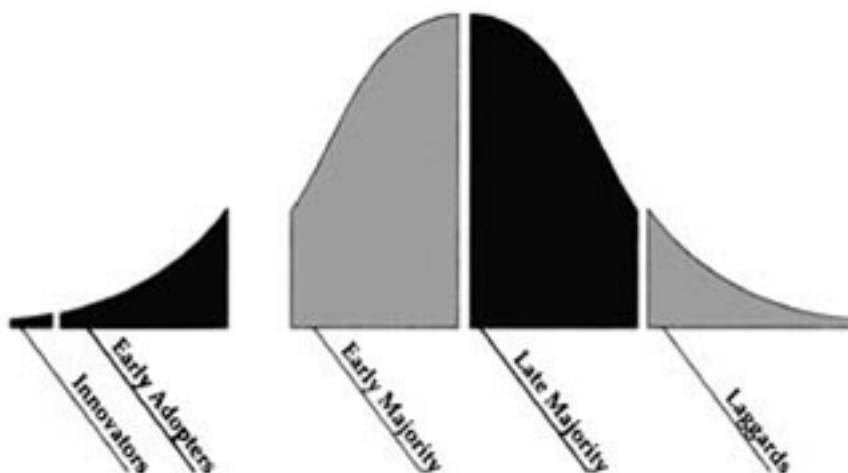
Illusion and Disillusion: Cracks in the Bell Curve

It is now time to advise you that there are any number of us in Silicon Valley who are willing to testify that there is something wrong with the High-Tech Marketing Model. We believe this to be true because we all own what once were meaningful equity stakes in corporations that either no longer exist or whose current valuation is so diluted that our stock—were there a market for it, which there is not—has lost all monetary significance.

Although we all experienced our fates uniquely, much of our shared experience can be summarized by recasting the Technology Adoption Life Cycle in the following way:

As you can see, the components of the life cycle are unchanged, but between any two psychographic groups has been introduced a gap. This symbolizes the dissociation between the two groups—that is, the difficulty any group will have in accepting a new product if it is presented in the same way as it was to the group to its immediate left. Each of these gaps represents an opportunity for marketing to lose momentum, to miss the transition to the next segment, thereby never to gain the promised land of profit-margin leadership in the middle of the bell curve.

The Revised Technology Adoption Life Cycle



The First Crack

Two of the gaps in the High-Tech Marketing Model are relatively minor—what one might call “cracks in the bell curve”—yet even here unwary ventures have slipped and fallen. The first is between the innovators and the early adopters. It is a gap that occurs when a hot technology product cannot be readily translated into a major new benefit—something like Esperanto. The enthusiast loves it for its architecture, but nobody else can even figure out how to start using it.

At present, neural networking software falls into this category. Available since the 1980s, this software mimics the structure of the brain, actually programming itself through the use of feedback and rules to improve its performance against a given task. It is a terribly exciting technology because, for the first time, it holds out the possibility that computers can teach themselves and develop solutions that no human programmer could design from scratch. Nonetheless, the software has shown little commercial success because there has not yet emerged a unique and compelling application that would drive its acceptance over other, more established alternatives.

Another example of a product that fell through the crack between the innovators and the early adopters is desktop video conferencing. At numerous R&D labs from Xerox to Intel to PictureTel to IBM, versions of this capability have surfaced throughout the 1990s, and the inventors who develop it swear by it. But nobody else does. It is not a bandwidth problem. It is a business process problem. Marketing groups keep on forecasting business situations where the application would be compelling—loan application processing, customer service in general, executive communications—but the dogs keep on refusing to eat

the dog food, and marketing teams keep getting, well, “recycled.”

The market-development problem in the case of both neural networking software and desktop video conferencing is this: With each of these exciting, functional technologies it has been possible to establish a working system and to get innovators to adopt it. But it has not as yet been possible to carry that success over to the early adopters. As we shall see in the next chapter, the key to winning over this segment is to show that the new technology enables some strategic leap forward, something never before possible, which has an intrinsic value and appeal to the nontechnologist. This benefit is typically symbolized by a single, compelling application, the one thing that best captures the power and value of the new product. If the marketing effort is unable to find that compelling application, then market development stalls with the innovators, and the future of the product falls through the crack.

The Other Crack

There is another crack in the bell curve, of approximately equal magnitude, that falls between the early majority and the late majority. By this point in the Technology Adoption Life Cycle, the market is already well developed, and the technology product has been absorbed into the mainstream. The key issue now, transitioning from the early to the late majority, has to do with demands on the end user to be technologically competent.

Simply put, the early majority is willing and able to become technologically competent, where necessary; the late majority, much less so. When a product reaches this point in the market development, it must be made increasingly easier to adopt in order to continue being successful. If this does not occur, the transition to the late majority may well stall or never happen.

Programmable VCRs are currently in this situation, as are high-end office copier systems, and a whole slew of telephones which offer call forwarding, three-way conferencing, or even just call transferring. How many times have you been on the phone and heard—or said—“Now I may lose you when I hit the transfer button, so be sure to call back if I do.” The problem is that for people who are not frequent users of the system the protocols are simply too hard to remember. As a result, users do not use the features, and so companies in mature markets find it harder and harder to get paid for the R&D they have done because the end user cannot capture the benefit. Instead, they bemoan that the product has become a commodity when in fact it is the *experience* of the product that has been commoditized. This truly is marketing’s fault, particularly when companies have ceded marketing the right to redesign the user interface and thus control the user experience.

Other examples of products in danger of falling through the crack between the early and late majority are scanners for adding images to PC presentations and desktop publishing software. The market leaders in these two areas, Hewlett-Packard and Adobe respectively, have been quite successful in capturing the early majority, but their products still give conservatives in the late majority pause. And so these categories are in danger of stagnating although neither market is in fact saturated.

Discovering the Chasm

The real news, however, is not the two cracks in the bell curve, the one between the innovators and the early adopters, the other between the early and late majority. No, the real news is the deep and dividing *chasm* that separates the early adopters from the early majority. This is by far the most formidable and unforgiving transition in the Technology Adoption Life Cycle, and it is all the more dangerous because it typically goes unrecognized.

The reason the transition can go unnoticed is that with both groups the customer list and the size of the order can look the same. Typically, in either segment, you would see a list of Fortune 500 to Fortune 2000 customers making relatively large orders—five figures for sure, more often six figures or even higher. But in fact the basis for the sale—what has been promised, implicitly or explicitly, and what must be delivered—is radically different.

What the early adopter is buying, as we shall see in greater detail in Chapter 2, is some kind of *change agent*. By being the first to implement this change in their industry, the early adopters expect to get a jump on the competition, whether from lower product costs, faster time to market, more complete customer service, or some other comparable business advantage. They expect a radical discontinuity between the old ways and the new, and they are prepared to champion this cause against entrenched resistance. Being the first, they also are prepared to bear with the inevitable bugs and glitches that accompany any innovation just coming to market.

By contrast, the early majority want to buy a *productivity improvement* for existing operations. They are looking to minimize the discontinuity with the old ways. They want evolution, not revolution. They want technology to enhance, not overthrow, the established ways of doing business. And above all, they do not want to debug somebody else's product. By the time they adopt it, they want it to work properly and to integrate appropriately with their existing technology base.

This contrast just scratches the surface relative to the differences and incompatibilities among early adopters and the early majority. Let me just make two key points for now: Because of these incompatibilities, early adopters do not make good references for the early majority. And because of the early majority's concern not to disrupt their organizations, good references are critical to their buying decisions. So what we have here is a catch-22. The only suitable reference for an early majority customer, it turns out, is another member of the early majority, but no upstanding member of the early majority will buy without first having consulted with several suitable references.

Bodies in the Chasm

What happens in this catch-22 situation? First, because the product *has*

caught on with the early adopters, it has gotten a lot of publicity. In networking, consider gigabit Ethernet, optical switching, cable modems, and Digital Subscriber Loops; in PCs voice processing for dictation, interoperability with television, and specialized devices like the electronic book; in peripherals, personal digital assistants for email and Internet access, keyboards with built-in scanners, and “table-free” gyroscopic mice that operate in free space; in enterprise software, applications for data mining, target marketing and end-to-end supply chain visibility; and on the Internet itself, 3D worlds genned up of VRML, IP telephony, and following that, IP video conferencing. We have all read a lot about these types of products, yet not one has achieved to date a mainstream market leadership position, despite the fact that the products actually do work reasonably well. In large part this is because of the high degree of discontinuity implicit in their adoption by organizations, and the inability of the marketing effort, to date, to lower this barrier to the early majority. So the products languish, continuing to feed off the early adopter segment of the market, but unable to really take off and break through to the high-volume opportunities.

The classic example of this scenario for the 1990s was client-server computing for enterprise applications. In 1987 it was proclaimed by The Gartner Group as the enterprise architecture for the coming decade, and indeed every IT department genuflected in agreement. Every year thereafter there would be articles about breakthroughs in client-server hardware, the arrival of mission-critical RDBMS software, new tools for GUI front ends, but at the end of the day, all that sold was server-centric mainframe and minicomputer packages. It was not until 1992—five years into the making—that client-server finally emerged as a viable software category, and it wasn’t until 1995—eight years later—that it finally overtook its server-centric ancestor.

Why so long? Client-server computing required, among other things, a standard client with GUI capabilities. In 1987 the standard client was a DOS computer. There were four graphical alternatives—Unix, Macintosh, OS/2, and Windows. The announced intent of IBM and Microsoft was to make OS/2 the replacement platform. But that floundered, and both Unix and Macintosh thrived, while Windows lagged—and so the whole market lagged until finally Windows 3.0 emerged as the new de facto standard. At that time PeopleSoft introduced its client-server package for Human Relations with Windows clients—and the market was launched.

Let’s look at another example. One of the great cover stories of the early 1980s was artificial intelligence (AI)—brains in a box. Everybody was writing about it, and many prestigious customer organizations were jumping on the bandwagon of companies like Teknowledge, Symbolics, and Intellicorp. Indeed, the customer list of any one of these companies looked like a Who’s Who of the Fortune 100. Early AI pioneers, like Tom Kehler, the chairman of Intellicorp, routinely got coverage everywhere from *Inc.* and *High Technology* to *Time* magazine to the front page of the *Wall Street Journal*, and among other things, were able to ride that wave of enthusiasm to take their companies public.

Today, however, AI has been relegated to the trash heap. Despite the fact that it was—and is—a very hot technology, and that it garnered strong sup-

port from the early adopters, who saw its potential for using computers to aid human decision making, it has simply never caught on as a product for the mainstream market. Why? When it came time for the early majority to absorb it into the mainstream, there were too many obstacles to its adoption: lack of support for mainstream hardware, inability to integrate it easily into existing systems, no established design methodology, and a lack of people trained in how to implement it. So AI languished at the entrance to the mainstream, for lack of a sustained marketing effort to lower the barriers to adoption, and after a while it got a reputation as a failed attempt. And as soon as that happened, the term itself became taboo.

So today, although the technology of AI is alive and kicking, underlying such currently popular manifestations as so-called expert systems and object-oriented programming, no one uses the phrase *artificial intelligence* in their marketing efforts. And a company like Intellicorp, which had struggled desperately to be profitable as an AI firm, has backed completely away from that identity.

In sum, when promoters of high-tech products try to make the transition from a market base made up of visionary early adopters to penetrate the next adoption segment, the pragmatist early majority, they are effectively operating *without a reference base and without a support base within a market that is highly reference oriented and highly support oriented.*

This is indeed a chasm, and into this chasm many an unwary start-up venture has fallen. Despite repeated instances of the chasm effect, however, high-tech marketing has yet to get this problem properly in focus. Indeed, that is the function of this book. As a final prelude to that effort, therefore, by way of evoking additional glimmers of recognition and understanding of this plight of the chasm, I offer the following parable as a kind of condensation of the entrepreneurial experience gone awry.

A High-Tech Parable

In the first year of selling a product—most of it alpha and beta release—the emerging high-tech company expands its customer list to include some technology enthusiast innovators and one or two visionary early adopters. Everyone is pleased, and at the first annual Christmas party, held on the company premises, plastic glasses and potluck canapés are held high.

In the second year—the first year of true product—the company wins over several more visionary early adopters, including a handful of truly major deals. Revenue meets plan, and everyone is convinced it is time to ramp up—especially the venture capitalists who note that next year's plan calls for a 300 percent increase in revenue. (What could justify such a number? The technology adoption profile, of course! For are we not just at that point in the profile where the slope is increasing at its fastest point? We don't want to lose market share at this critical juncture to some competitor. We must act while we are still within our window of opportunity. Strike while the iron is hot!) This year the company Christmas party is held at a fine hotel, the glasses are crystal, the

wine vintage, and the theme, à la Dickens, is “Great Expectations.”

At the beginning of the third year, a major sales force expansion is undertaken, impressive sales collateral and advertising are underwritten, district offices are opened, and customer support is strengthened. Halfway through the year, however, sales revenues are disappointing. A few more companies have come on board, but only after a prolonged sales struggle and significant compromise on price. The number of sales overall is far fewer than expected, and growth in expenses is vastly outdistancing growth in income. In the meantime, R&D is badly bogged down with several special projects committed to in the early contracts with the original customers.

Meetings are held (for the young organization is nothing if not participative in its management style). The salespeople complain that there are great holes in the product line and that what is available today is overpriced, full of bugs, and not what the customer wants. The engineers claim they have met spec and schedule for every major release, at which point the customer support staff merely groan. Executive managers lament that the sales force doesn't call high enough in the prospect organization, lacks the ability to communicate the vision, and simply isn't aggressive enough. Nothing is resolved, and, off line, political enclaves begin to form.

Third quarter revenues results are in—and they are absolutely dismal. It is time to whip the slaves. The board and the venture capitalist start in on the founders and the president, who in turn put the screws to the vice president of sales, who passes it on to the troops in the trenches. Turnover follows. The vice-president of marketing is fired. It's time to bring in “real management.” More financing is required, with horrendous dilution for the initial cadre of investors—especially the founders and the key technical staff. One or more founders object but are shunted aside. Six months pass. Real management doesn't do any better. Key defections occur. Time to bring in consultants. More turnover. What we really need now, investors decide, is a turnaround artist. Layoffs followed by more turnover. And so it goes. When the screen fades to the credits, yet another venture rides off to join the twilight companies of Silicon Valley-enterprises on life support, not truly alive and yet, due in part to the vagaries of venture capital accounting, unable to choose death with dignity.

Now, it is possible that this parable overstates the case—I have been accused of such things in the past. But there is no overstating the case that year in and year out hundreds of high-tech start-ups, despite having good technology and exciting products, and despite initial promising returns from the market, falter and then fail. Here's why.

What the company staff interpreted as a ramp in sales leading smoothly “up the curve” was in fact an initial blip—what we will be calling the *early market*—and not the first indications of an emerging *mainstream market*. The company failed because its managers were unable to recognize that there is something fundamentally different between a sale to an early adopter and a sale to the early majority, even when the company name on the check reads the same. Thus, at a time of greatest peril, when the company was just entering the chasm, its leaders held high expectations rather than modest ones, and spent heavily in expansion projects rather than husbanding resources.

All this is the result of high-tech marketing illusion—the belief induced by the High-Tech Marketing Model that new markets unfold in a continuous and smooth way. In order to avoid the perils of the chasm, we need to achieve a new state-high-tech marketing enlightenment—by going deeper into the dynamics of the Technology Adoption Life Cycle to correct the flaws in the model and provide a secure basis for marketing strategy development.