strategy+business

The Innovator's Prescription: The Art of Scale

by Costas Markides and Paul Geroski

from **strategy+business** issue 35, Summer 2004

reprint number 04206

booz&co.

Reprint

The Art of Scale

How to turn someone else's idea into a big business.

by Costas Markides and Paul Geroski

In October 2003, in a statement issued after the company's annual meeting, Procter & Gamble Chairman and Chief Executive Alan G. Lafley said, "Our vision is that 50 percent of all P&G discovery and invention could come from outside the company." The target was ambitious: In 2002, only one-fifth of new ideas put into development by P&G came from the outside. But the company hoped that if it worked with public companies, startups, and universities, outside innovation would ultimately comprise half its portfolio.

Procter & Gamble's goal is part of the newest wave in management thinking. Thought leaders from academia and inside companies have argued repeatedly in recent years that opening the firm to outside innovation is an important path to sustained growth. Berkeley's Henry Chesbrough calls this model "open innovation." C.K. Prahalad and Venkatram Ramaswamy of the University of Michigan argue that companies and their customers should innovate together, to "co-create value."

This advice differs markedly from conventional thinking about innovation. There has long been a cultural and management bias in favor of discovery, especially discovery that takes place inside the corporate walls. Many of us aspire to become a modern-day Thomas Edison — the pioneer, the inventor, and the founder of a firm that launches the industries of the future. A natural by-product of this bias is that most of the academic research on and guidance given to companies to make them more "innovative" is primarily guidance on how they can become better at "creation" — discovering something new, testing it in the market, and, if successful, creating a new market.

Costas Markides
(cmarkides@london.edu) is a professor of strategic and international management and holds the Robert P. Bauman Chair in Strategic Leadership at the London Business School. His newest book, with Paul Geroski, provisionally titled *Racing to Be Second: How to Conquer the Industries of the Future,* will be published in November 2004 by Jossey-Bass.

Paul Geroski
(pgeroski@london.edu) is deputy chairman of the Competition Commission and a professor of economics at the London Business School. His most recent book is *The Early Evolution of New Markets* (Oxford University Press, 2003). Professor Geroski sits on the editorial boards of several journals and on the council of the Royal Economic Society.

However, successful innovation requires much more than discovering something new. As we all know, the majority of new ideas fail or never grow beyond small and insignificant market niches. To be truly successful, a new idea must ultimately grow and capture a mass market. Our aim is to describe the strategies that a company can use to turn someone else's big idea into a big business.

We begin with a radical recommendation: To succeed at scaling up new radical markets, don't even try to create them.

Consolidation Is King

In our last article for *strategy+business,* we argued that discovery and scaling up are essentially different activities that do not necessarily have to be performed by the same firm. (See "Colonizers and Consolidators: The Two Cultures of Corporate Strategy," Fall 2003.) In fact, in the majority of cases, the companies that pioneer — or, in our terminology, colonize — new *radical* markets are *not* the ones that ultimately consolidate and take ownership of those markets.

Radical (or disruptive) innovations are those that, like the PDA in the 1990s, the PC in the late 1970s, and the television in the 1950s, introduce major new value propositions that upset existing customer habits and behaviors. Moreover, the markets they create undermine the competencies and complementary assets on which existing competitors have built their success.

We believe that big established firms do not have to be actively involved in both the colonization and the consolidation of new radical markets. Given their skills and attitudes, incumbents will be better off if they stick to consolidation, positioning themselves to exploit the pioneering efforts of others. One primary way established firms can accomplish this is by developing a network of feeder firms and serving as a venture capitalist to them. When a feeder firm has successfully demonstrated the existence of a market for a new product or service, the established firm can use its skills and competencies — in manufacturing, marketing, sales, and management of the extended enterprise — to scale up that market.

Unfortunately, few companies have the courage to do what Procter & Gamble is attempting to do. They fear that by separating discovery from consolidation, they might not be able to take advantage of the market when it grows. They are mistaken. We have recently researched a number of industries to understand how new radical markets are created and how they evolve. The evidence shows that the firms that discover the new market are not the ones that consolidate and conquer it. The evidence also shows that discovery and consolidation are essentially different activities undertaken by different firms.

In industry after industry, we see the same phenomenon: As soon as a new radical market emerges, hundreds of new entrants rush to colonize it. Before long, consolidation takes place and most of the early entrants disappear. A few survive. But even these early survivors usually are not the ones that end up conquering the new market. The true winners are those firms that undertake a series of actions that scales up the new market. How do they do that? We have identified five distinct strategies.

Focus on the Price/Performance Trade-off

The first move for consolidators is to draw the market's attention away from the wonders of technical superiority, to attributes they can exploit, especially the best functionality at the most attractive price.

The early colonizers of new markets tend to stress the *technical* attributes of their product or service. This happens because the entrepreneurs who created the company often are engineers whose technical and engineering skills allowed them to translate a certain technology into a new product. It is the functionality of the product that attracts the first customers.

You see this emphasis on the technical attributes of the product in the early days of most young radical markets. Xerox sold its copiers on the basis of their functionality and the speed at which they made copies; Ampex sold its VCRs on the quality of their recording; Leica sold its cameras on the quality of their lenses; and Apple sold its handheld computers on their breakthrough handwriting-recognition software.

Putting the spotlight on a product's technical aspects and functionality at this stage is understandable. To begin with, although the product represents the passion of its inventor, it gains the necessary support to enter the development phase only because corporate or private financiers believe it satisfies a certain customer need. Unless it has the necessary technical features to meet this need, early financiers won't back it. Second, the natural inclination of inventor–engineers is to call attention to the things they know and those they believe make their product superior. Third, at the birth of any new market, the performance of early products is still below what the customers ultimately will want. For all these reasons, pioneers battle each other by adding functionality to their products, and competition in the early stages of the market is based on product features and performance.

The efforts of these pioneers create the initial market niche. The customers who rush to purchase the new product tend to be technology enthusiasts or early adopters. They don't particularly mind that the product is flawed or expensive — they just want to get their hands on the new "toy." Of course, early adopters represent only a small fraction of the population; by definition, pioneers are targeting a niche market.

It is at this stage that forward-thinking consolidators can move in and "steal" the market away, by shifting the basis of competition from technical performance to such attributes as quality and price. This makes the product attractive to the mass market and facilitates rapid growth. (See Exhibit 1.)

The evolution of the disposable diaper market in the U.S. illustrates well how price and functionality can drive market consolidation. Chicopee Mills, a unit of Johnson & Johnson, introduced the first disposable diaper, Chux, in 1932. Two other providers, Sears and Montgomery Ward, launched disposable diapers after World War II.

By 1956, disposable diapers accounted for only 1 percent of diaper changes in the U.S. The main reason was their high cost, about 9 cents per unit, which was more than double what laundry service cost (and much more costly than home washing). Another reason was the product's performance: The early diapers' absorbent core was made of several layers of tissue paper, which led to excessive leakage. As a result, consumers treated disposable diapers as a luxury item to be used only on special occasions (such as traveling with babies).

That same year, Procter & Gamble acquired a paper-pulp plant. The company put Victor Mills, a chemical engineer, and his team of engineers, in charge of figuring out what to do with it. A grandfather, Mr. Mills thought about how much he hated to change diapers; it occurred to him that using cellulose fibers instead of paper would vastly improve the performance of the disposable diaper. That involved design and production challenges. The diaper had to be soft enough to be comfortable, yet strong enough not to disintegrate when wet; and the company needed to devise a manufacturing process that would allow it to produce the diaper cheaply enough to attract the average consumer.

After five years of research, Procter & Gamble introduced Pampers in 1961. The initial test was not successful. Although consumers said they liked the product, it was still too expensive for most. Drawing upon its experience in grocery marketing, P&G calculated that a retail price of 6.2 cents per diaper would stimulate mass demand. This meant reducing manufacturing costs to around 3 cents, a figure that entailed significant reductions in raw material costs and a more efficient manufacturing process.

Five years later, P&G finally succeeded in producing the disposable diapers at 3.5 cents a unit. Pampers was rolled out nationally at a retail price of 5.5 cents, and became an instant success. The U.S. disposable diaper market grew from $10 million in 1966 to $370 million by 1973. Pampers' triumph was so overwhelming that the market pioneer, Johnson & Johnson, withdrew Chux and focused on private label production.

Although Procter & Gamble captured the diaper market by improving quality and reducing prices, there

Exhibit 1: **Scaling Up a Market by Emphasizing Different Product Attributes**

Industry	Pioneers	Product Attributes Emphasized by Pioneers	Firms Scaling Up the Market	Product Attributes Emphasized by the Scaling-up Firms
Photocopying	(Haloid) Xerox and 3M	Speed and quality of copying	Canon	Price, size, and quality
Handheld computers	Apple and Casio	Writing recognition software and functionality	Palm (3Com)	Price, size, and PC synchronization
Online brokerage	K. Aufhauser, Security APL, and Howe Barnes	Convenience	Charles Schwab	Price, convenience, and speed of execution
Portable computers	Osborne and Kaypro	Technology and functionality	IBM	Price and size
Video recorders	Ampex	High-quality recording	JVC and Sony	Price, size, and weight
Online bookselling	Books.com and clbooks.com	Convenience	Amazon.com	Availability, convenience, and price
Motorcycles	Triumph and Harley-Davidson	Speed and power	Honda	Size and price
35mm cameras	Leica	Quality (of lenses and pictures) and engineering	Canon and Nikon	Price and ease of use
Microwave ovens	Tappan Stove Co., Raytheon Co., and Litton	Speed and quality	Panasonic, Sharp, and Samsung	Price
Internet service	CompuServe	Technology, info content, speed, and functionality	America Online	Ease of use and price
Food processors	Cuisinart	Speed, technical features, and quality	Black & Decker	Price
Shaving razors	Cutthroat razors and Autostrop Safety Razor Co.	High-grade steel for lifetime of sharpening	Gillette	Disposable blade, price, and ease of use
Pocket calculators	Bowmar	Speed, technical features, and ease of use	Texas Instruments	Price
Disposable diapers	Chicopee Mills (J&J)	Ease of use and quality	Procter & Gamble	Price and ease of use
Fax machines	Xerox	Quality and speed	Sharp	Price and ease of use

Source: Costas Markides and Paul Geroski

are many cases when a late entrant has captured the market even with a product that is inferior to that of pioneers. This is because colonizers, passionate about functionality, often overengineer a product or service, adding features that customers do not need, sinking costs into unnecessary research and development, and missing mass-market price targets. Consolidators can steal the market away by creating a product that might not be as good as the pioneers', but is "good enough." When this is combined with a much lower price, the mass market will switch to the consolidator's "inferior" product.

The story of how Palm conquered the handheld computer market illustrates this point. Apple Computer Inc. created the market by introducing the Newton in August 1993. Palm Inc. followed three months later with the Zoomer. Both products flopped; they had poor handwriting-recognition software, and were expensive, heavy, and overburdened with PC functions (such as spreadsheets) that slowed their performance.

In 1995, Palm was acquired by U.S. Robotics, a larger firm with financial and marketing clout. The following year, the company introduced the Palm Pilot. By just about any technical performance measure, the Palm Pilot was far less sophisticated than Apple's Newton. But that proved to be the foundation of its success; whereas the Newton was a sort of junior PC, the Pilot was conceived as an *accessory to* the PC — an organizer with connectivity. It was also simple and fast and, more important, cheap — $299, compared with $700 for the Zoomer and almost $1,000 for the Newton.

Henry Heinz confronted the challenge of risk insurance with an unlikely weapon: horseradish.

By 2000, Palm controlled more than 70 percent of the market for what became known as personal digital assistants, which had subsumed the existing market for portable organizers that had been dominated by Philips, Casio, and others. In the years that followed the Palm Pilot's introduction, Microsoft developed its own operating system for handheld computers, Windows CE. Yet Microsoft's attempts to make inroads in this market by adding more features and more memory have failed thus far. Microsoft's motto of "more is better" has come up against Palm's "smaller, faster, cheaper." So far, Palm is winning.

Get a Bandwagon Rolling

Achieving a price that makes the product attractive to the mass market is only part of the challenge. A second priority for consolidators looking to succeed at scaling a market is to create a consumer bandwagon effect that will establish their design as dominant. There are at least three complementary strategies that history shows are used to bring this about.

Alliance strategies can help a design become dominant. Co-opting rivals or potential entrants by licensing them to manufacture according to your specifications might limit short-term profits, but can accelerate the adoption of a common standard or design. This "open innovation" strategy is the one JVC used to establish its VHS format as the industry standard in the videocassette recorder market, defeating Sony's technically superior Betamax standard. JVC was quick to form alliances and agree to deals with original equipment manufacturers (OEMs). As part of this process, JVC kept the product design fluid and provided extensive manufacturing and marketing support to its allies. By 1984, JVC had more than 40 partners, and its VHS format had conquered the market.

The importance of an alliance strategy in creating bandwagons is best seen in cases where competitors haven't adopted such a strategy. Consider the brutish six-year life of quadraphonic sound — the four-channel experience — which was designed to liberate long-suffering music lovers from the confines of stereo. By all accounts, it was clearly superior to stereo sound. Yet it failed to get established. Why?

It all started in 1971 when Columbia Records (CBS) introduced its SQ (or "matrix") system. Its first rival was the confusingly labeled QS system championed by Sansui. But its major competitor turned out to be the CD-4 "discrete" system that JVC introduced and RCA records supported. Both systems were superior to stereo, a fact that led Chase Econometrics to predict in 1974: "Quadraphonic sound will eventually replace stereo … by the end of the 1980s."

However, the two systems were incompatible. Instead of cooperating to establish quad as the dominant design over stereo, the two main competitors began pointing out weaknesses and problems in each other's systems. Forced to make a choice, consumers wisely decided to play it safe and stay with stereo; audio dealers refrained from promoting uncertain systems; and artists refused to record using the new technology. By 1976, quad was dead, although multichannel surround sound is today becoming dominant thanks to a new product, the DVD.

A second way to speed up a consumer bandwagon is simply to engineer a merger with a major rival, and retire a competing design. Caught in an expensive battle with the British Satellite Broadcasting consortium,

Focus: How eBay Created a Trust Bandwagon

The online auction site eBay.com has succeeded in persuading millions of rational human beings to send money to total strangers, for goods, sometimes quite expensive goods, they have never seen. The strategy, premised on eBay's ability to use technology to build a trust-based brand, originated with company founder Pierre Omidyar. Believing that democracy should be the core principle of the company, Mr. Omidyar came up with the idea for a "feedback forum" through which individuals (suppliers or purchasers) would earn a reputation based on their trading habits. The concept is simple: If we do business together on eBay and if I am happy with the merchandise that you sold me and you are happy with how rapidly I paid you and how I treated you in the e-mail discussion that we had, then we give good feedback on each other for everyone else to see. This serves to enhance our reputations as users. Too many negative comments and you are banned as an eBay seller forever. The feedback forum is particularly critical for sellers, the vast majority of whom are small retailers or individuals who rely on eBay exclusively.

To ensure even higher professional standards by its sellers, eBay recently announced that it will offer low-cost premium health insurance to "Power Sellers," those who sell at least $2,000 a month via eBay and achieve 98 percent positive feedback ratings. Not every seller on eBay reaches that level; in fact, established companies appear to have the most difficulty meeting the feedback criterion. As of 2003, both IBM and Ritz Camera had positive feedback levels of only 93 percent; Disney's feedback was labeled "private," indicating that bidders could not view comments left by previous buyers. This seems to show that the huge shipping and handling fees and slow turnaround times that go along with many large companies' direct marketing efforts do not work on eBay.

Although eBay relies mainly on buyers and sellers to police themselves, it does investigate fraud claims when required to ensure that confidence and trust in its service is maintained at all times. The company is aware that even a handful of unhappy users could damage its reputation. Although its technology and tactics are specific to its industry, the principle is universal — to scale up a market, consolidators must invest in reducing the customer's perceived or real risk of adopting a new product or service.

—C.M. and P.G.

Rupert Murdoch's U.K. satellite television service, Sky TV, acquired it in 1990. Today, Sky's dishes are the ones seen all over Britain.

A third way to generate a consumer bandwagon is to use marketing to create the illusion that a design has already become dominant. Hollywood studios do this all the time when they limit the number of screens on which a new release shows, generating crowds at a few theaters. Palm similarly limited the distribution of the original Pilots. Stores began to sell out, creating a reinforcing buzz in the business press about the new product.

Reduce Consumer Risk

The third major strategy that consolidators exploit to scale up new radical markets is to reduce the customers' risk in adopting the new product.

The story of how Henry Heinz built consumer confidence in canned foods and scaled up this market more than 100 years ago provides a fine illustration of the importance of risk insurance to market consolidation. To appreciate the challenge he faced, imagine life back in the middle of the 19th century. Most people lived on or near farms and consumed a steady diet of fresh food. Even urban dwellers were used to purchasing food in an unprocessed form in open markets. Under these circumstances, it's hard to understand why anyone would contemplate consuming food from a can or a box that could not be seen, felt, smelled, tasted, or tested before opening the package.

Henry Heinz confronted this challenge with unlikely ammunition: horseradish. In the 1870s, most bottled horseradish was sold in green or brown bottles to disguise its generally low quality. Heinz started out by selling his horseradish in clear bottles, to signal his confidence in it. He also cultivated local grocers and hoteliers and used them to help certify the quality of his product. Soon, the public began to associate high quality with his name, creating a brand that was effectively an insurance policy for consumers. The brand helped facilitate Heinz's geographic expansion and extension into other products, such as pickles, celery sauce, and other condiments. His deepest geographic penetration was in cities, where resistance to nonfresh food was already low and where housewives often had so many demands on their time that economizing food preparation time was a priority. Moreover, the early products made by Heinz did not compete directly with fresh food but were complements to it.

The Heinz saga highlights the importance of developing customer trust in a new product or service, and thus in the entire market segment itself. A brand is the result of this process, which can include broadcast communication, direct communication with the end consumer, and use of credible experts or allies to spread the word. Indeed, the list of tactics in building customer trust is always evolving. (See “Focus: How eBay Created a Trust Bandwagon,” page 7.)

A fourth tactic by which consolidators scale up a market is to build the distribution that can reach the masses. This might require setting up a new distribution channel from scratch (as the auto companies did in the early 20th century). But most of the time it requires persuading existing channels to accept the new product.

Achieving acceptance by distributors can be extremely difficult. It usually means the would-be consolidator has to use market power or develop an innovative strategy. Golden Wonder, a Scotland-based division of Imperial Tobacco, used both methods to grow the potato chip market in the U.K. sixfold in the 1960s. In the process, it increased its market share from near zero to 40 percent in only 10 years.

Until 1960, potato chips were sold overwhelmingly to men in pubs; the “crisps” complemented beer, and (as publicans and brewers both knew) salt increased drinkers’ thirst. Since more than 75 percent of total sales were made through pubs, all main competitors had set up their distribution systems to supply pubs around the country.

Golden Wonder launched its assault on the market in 1961 by changing its target consumer, and promoting the potato chip as a nourishing snack for women and children. Heavy investments in advertising were made to transform the image of the product and position it for domestic consumption. The company developed competencies for the distribution channel most appropriate for its targeted customers — supermarkets and other retail outlets. It trained a sales force to pursue grocers, gave incentives to independent “merchandising sales cadets” to sell the product to retailers, arranged for shop displays, and provided point-of-sale promotional material. The company also invested heavily in a new production technology to improve the quality of the product, drive down costs, and reduce prices. In the period 1958 to 1969, sales of potato chips in pubs went from 75 percent of the total to 25 percent; sales in supermarkets and other retail stores grew from 25 percent to 65 percent. (Other channels accounted for the remainder.)

Building up distribution to the mass market is not cheap and becomes even more costly when a market is scaling up. During that period, a market figuratively explodes in size, as buying becomes frenzied and sales skyrocket. Companies aspiring to scale a market must be willing to invest financial and managerial resources in setting up the necessary distribution quickly, for a sale lost at this stage will go to a competitor, and a customer may be lost for life. Alliance strategies may be particularly effective for this task.

Support Complementary Products

A fifth strategy a firm can use to scale up markets for new products and services is to support the growth of complementary goods.

Many goods and services are consumed with other goods and services. Indeed, some products have no value in the absence of such complements. Having a car won’t get you far if there are no gas stations; CDs do not sound sweet without a CD player and a set of speakers; a DVD player will be an expensive toy without Hollywood movies and video rental shops.

Certainly, the development of an open platform encourages complementary products and services to enter the market. For example, by keeping its design open and encouraging other OEMs to produce that design, JVC quickly established a large customer base for its VCRs, reducing the risk Hollywood studios might have faced in adopting the VHS format for their tapes. When the studios accepted the format, it prompted the emergence of video rental shops.

Trying to keep a proprietary hold on a design is almost certainly more profitable if that design emerges as the dominant design — something that shareholders in Microsoft know — but it lowers the probability that that design will win. By contrast, letting the design become open makes it more likely that it will become dominant, but lowers the profits that the company might accrue from such a strategy.

Other complementarity strategies a company might employ are to provide financial support to makers of corresponding products; develop the complementary goods on its own; sponsor industrywide standards; and use alliances with providers of complementary goods to control choke points on the emerging industry's value chain. It is the responsibility of consolidators to promote the growth of complementary goods. Without them, a market cannot be scaled up.

Research Methodology

We examined the historical evolution of 20 newly created markets from the moment they were created until they grew to mass market. The 20 markets were television, personal computers, scientific instruments, the Internet, supercomputers, online groceries, cars, beer, Internet service provision, tires, semiconductors, baked beans, genetically modified foods, mobile phones, video recorders, satellite TV, stereo sound, typewriters, computer operating systems, and medical diagnostic imaging.

This helped us understand the difference between creating and consolidating a new market and appreciate that the companies that created new markets were not the ones that scaled them up. We then developed a list of 25 companies that were successful in scaling up new markets and wrote a historical account of how they did it. The insights presented in this paper derive from these 25 cases. Further details of the first part of this research can be found in *The Early Evolution of New Markets* (Oxford University Press, 2003), by Paul Geroski. Our full research findings will be published in November 2004 by Jossey-Bass in *Racing to Be Second: How to Conquer the Industries of the Future,* by Paul Geroski and Costas Markides.

New Music

We started this article by proposing that consolidators should let others create a radical new market and then move in to "steal" the market and scale it up, using the competencies that they already have. As a test case of our consolidation-versus-colonization hypothesis, we suggest you keep your eyes trained on the evolution of the digital music industry. In particular, notice how relative latecomers such as Apple and Dell are now taking the market away from the pioneers.

The $35 billion recorded music industry is still in the early stages of a transition away from CDs to digital downloads, a transformation now widely accepted as inevitable inside and outside the entertainment field. The market for portable MP3 players — a consumer appliance category that didn't exist until the late 1990s — is growing exponentially, and is expected to reach $2.6 billion by 2005, up from $1 billion in 2003.

The current category leader, in terms of both sales and imagination, is Apple Computer. Having introduced the stylish iPod portable player in 2001 and propelled it to an 18 percent market share in the U.S., Apple furthered its leadership claim in April 2003 by unveiling new ultrathin iPods with mass storage capacity, and an Internet-based music store, iTunes. The new Internet store opened after Apple had reached an unprecedented agreement with all the major record labels to allow legal downloading of their music for 99 cents a song. More than 10 million songs were sold in the first four months following the launch of iTunes, while the new and slimmer iPod looked set to completely dominate the portable MP3 players market.

So far, Apple has played the consolidation game brilliantly. The colonizers of the digital music industry included research institutions, such as Germany's Fraunhofer Institute, the inventor of the MP3 format, and startup companies, notably Napster, whose peer-to-peer file-sharing service popularized the format. With that open format already established, Apple followed several of the principles described above, using its talent for design, its entertainment industry networks, its trusted brand, and attractive pricing to dominate the digital download marketplace. But that doesn't mean that Apple will remain a winner forever. A host of new rivals have entered the market, none more formidable than the Dell Computer Corporation.

On October 28, 2003, Dell unveiled its Dell DJ MP3 player. The DJ had three advantages over the iPods then on the market:

1. It was much cheaper. The 15-gigabyte DJ sold for only $249, 38 percent less than the 15-gigabyte iPod. It also offered all the key features of its more expensive and glamorous rival.

2. Dell teamed with music software firm Musicmatch Inc. to create the Dell Music Store, which matches iTunes in price but offers a greater choice of songs. This is because Musicmatch has licensing deals with 30 independent music companies, in addition to the five major record labels, enabling it to offer a larger music library — currently more than 250,000 tracks, with plans to increase its library to more than 500,000 by the end of 2004. As of late 2003, Apple's iTunes had 200,000 tracks.

3. Dell's DJ was easily linkable to PCs. Although Apple introduced a Windows version of iTunes (by bundling Musicmatch's Jukebox software with Apple's iPod), it is still unclear whether the company will be able to win over Windows users in the long term, a task made more difficult by the fact that Microsoft insists that Apple has not licensed its Windows Media technology or its copyright protection software (both of which are used by many of the new iTunes-like services). This means that people who want to access the likes of Musicmatch, Napster 2.0 (Napster's successor), or BuyMusic.com (which offers 79-cent downloads) will not be able to use iPods.

Although it's certainly too soon to tell which company, if any, will dominate the market for MP3 players and services, both Dell and Apple have been enormously innovative in scaling up a market pioneered by others.

And that is exactly the point we want to make to senior executives of modern, major corporations: Most strategists will try to persuade you that discovery is the essence of innovation, the most creative part of business. But don't you believe it. Scaling up a market is not only as innovative — it also creates tremendous value. And it's clearly the area where established firms have an advantage over pioneers because they possess the requisite skills and competencies to convert niche markets into mass markets. Scaling up is the area in which big established firms could make a big difference. This should therefore be the focus of their attention. ✚

Reprint No. 04206

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is published by Booz & Company Inc.
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