Competitive Strategy

The Future of Commerce

by Adrian Slywotzky, Clayton M. Christensen, Richard S. Tedlow, and Nicholas G. Carr

As we enter the twenty-first century, the business world is consumed by questions about e-commerce. While the electronic sale of goods still represents only a small fraction of economic activity, the Internet seems at this moment in history to present almost unlimited possibilities—as both a conduit and a disrupter of business. To shed light on the changes we may see as the early years of our new century unfold, we asked some close observers of electronic commerce to share their thoughts and speculations about the future.

Adrian J. Slywotzky, a management consultant and author, has written extensively on the evolution of business models. He believes that electronic commerce will accelerate the shift of power toward the consumer, which will lead to fundamental changes in the way companies relate to their customers and compete with one another. Harvard Business School professors Clayton M. Christensen and Richard S. Tedlow view the Internet as a classic example of a disruptive technology, one that will alter the basis of competition in retailing. They examine past retailing disruptions, and they find patterns that appear to be recurring, at least in part, today. Finally, HBR senior editor Nicholas G. Carr,

who has edited a number of the articles on electronic commerce that we've published over the last two years, examines the fragmentation of economic activity taking place on the Web. He foresees a future of "hypermediation," in which profits derive more from clicks than from sales.

It should be no surprise that our authors offer very different visions of what's to come. Out of such intellectual friction comes insight.

The Editors

The Age of the Choiceboard

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As customers gain control over the design of products, competition within and among industries will take on a whole new shape.

The last time I bought a car, I looked at a number of different models on dealers' lots. Not one of them precisely met my needs. Even the car I ultimately purchased represented a compromise, providing some features that I wanted (antilock brakes and a spacious trunk, for instance), some that I was neutral about (a sunroof and power mirrors), and a lot of others that I had no need for whatsoever (from cruise control to fog lamps to heated seats). I bought it, even with all the unwanted features, because I liked the way the car looked and handled, and because it was available at that moment. I didn't want to wait a month to get a car with a marginally better mix of features.

What I went through is what all customers go through. Indeed, customer frustration is designed into our business system. Companies create fixed product lines that represent their best guesses about what buyers will want, and buyers make do with what they're offered. There may be some minor tailoring at the point of purchase—a few optional features or add-ons—but by and large the set of choices is fixed long before customers even begin to shop. Whether they're purchasing cars or clothes or computers, people always get too little of what they want and too much of what they don't.

Of course, the fixed product-line system is no joy for suppliers, either. Predictions of future demand, no matter how well grounded, are inevitably inaccurate. That's why the pages of newspapers and catalogs teem with announcements of sales, factory rebates, and dealer incentives, and why off-price stores are always plentifully stocked. Frustrated retailers and manufacturers spend tens of billions of dollars in discounts every year to help dispose of merchandise that isn't moving the way they thought it would.

So why does a system that's bad for both customers and companies hold sway? Historically, there hasn't been an alternative. The slow, imprecise movement of information up the supply pipeline and of goods down it has meant that the manufacturing process must begin long before accurate information about demand exists. Our entire industrial sector operates on guesswork.

From Product Taker to Product Maker

Now for the good news. Thanks to the Internet, an alternative to the traditional unhappy model of supplier-customer interaction is finally becoming possible. In all sorts of markets, customers will soon be able to describe exactly what they want, and suppliers will be able to deliver the desired product or service without compromise or delay. The innovation that will catalyze this shift

is what I call the *choiceboard*. Choiceboards are interactive, on-line systems that allow individual customers to design their own products by choosing from a menu of attributes, components, prices, and delivery options. The customers' selections send signals to the supplier's manufacturing system that set in motion the wheels of procurement, assembly, and delivery.

The role of the customer in this system shifts from passive recipient to active designer. That shift is just the most recent stage in the long-term evolution of the customer's role in the economy. For most of the twentieth century, customers were "product takers" and "price takers," accepting suppliers' goods at suppliers' prices. Over the past two decades, as customers became more sophisticated and gained greater power over the buying process, they stopped being price takers. Armed with more options and more information, they looked further, bargained harder, and eventually found lower prices. But customers are still product takers. Even though suppliers have tailored their offerings to finer and finer slices of the customer base, buyers are ultimately forced to settle for the best approximation of what they want. With the choiceboard system, however, customers are product takers no longer. They're product makers.

The Coming Dominance of Choiceboards

Choiceboards are already in use in many industries. Customers today can design their own computers with Dell's on-line configurator, create their own dolls with Mattel's My Design Barbie, assemble their own investment portfolios with Schwab's mutual-fund evaluator, and even design their own golf clubs with Chipshot.com's PerfectFit system. But the choiceboard model is still in its infancy. Despite its enormous benefits, it's involved in less than 1% of the $30 trillion world economy. Even where it's well established, such as in the PC business, it accounts for only a small fraction of overall industry sales.

Three things are holding choiceboards back. The first is simply their newness: many manufacturers can't even imagine doing business through a choiceboard model. It would mean restructuring their entire manufacturing and sales systems. The second is the lack of highly responsive supply networks that can deliver components and services as needed. The third, and most important, is the lack of a critical mass of customers able to use choiceboards. Digital readiness, which I define as the number of PCs times the degree of PC literacy times the breadth of broadband access, remains low. Some industrial markets have an abundance of digital-ready customers, but in most markets, especially consumer sectors, the digital-ready segment is still a tiny sliver of the customer base.

But that last roadblock will be dismantled quickly. PC sales are strong; digital literacy is spreading rapidly, particularly among the young; and the expansion of broadband access is inevitable. And as soon as the customers are there, you can bet that choiceboards and the supporting infrastructure will be in place. By the end of this decade, I anticipate that choiceboards will be involved in 30% or more of total U.S. commercial activity, as our economy moves from a supply-driven to a demand-driven system. The big question isn't, Will choiceboards dominate commerce? It is, Who will control the choiceboards?

Changing the Terms of Competition

Because choiceboards collect precise information about the preferences and behavior of individual buyers, they enable companies to secure customer loyalty as never before. With each transaction, a company becomes more knowledgeable about the customer and hence better able to anticipate and fulfill that customer's needs. That knowledge can be used to tailor, in real time, the design of the choiceboard itself, customizing the options presented to the buyer and promoting up-selling and cross-selling. Once aggregated, moreover, the customer information can be used to guide the evolution of entire product lines and to spot

new growth opportunities at their earliest stages. In such an environment, it becomes very difficult for a competitor, lacking the in-depth customer information, to displace the existing provider.

As we are only in the early stages of the choiceboard revolution, first movers stand to gain enormous advantages. As Dell's experience has shown, successful choiceboards act as magnets. They not only exert a strong pull over existing customers but also draw in each new wave of digital-ready buyers. And with each new customer, the company's market knowledge grows stronger, propelling it ever further ahead of the pack. Equally important, choice-boards attract key suppliers, which are also hungry for accurate and timely information about demand. Dell's far-reaching supply contracts with IBM, for example, will help it endure periods of restricted component supplies far better than many of its competitors.

For all those reasons, the rise of choiceboards promises to redistribute power within industries. I foresee three types of competitors vying for early choiceboard control. First is the individual manufacturer or assembler, such as a Dell or a Schwab. Second is a consortium of existing manufacturers; an example is the MetalSite choiceboard launched by a group of leading metals producers. Third, and most threatening to existing players, is the new intermediary. Because choiceboards are essentially design tools and conduits of information, they needn't be controlled by the companies that produce the products. Point.com, for instance, uses a choiceboard to help customers research and buy wireless phones, service plans, and accessories. As it amasses more and more customer information and refines its choiceboard, it will pose an ever greater threat to entrenched telecommunication companies, particularly those that are slow to launch their own choiceboards.

What's abundant in most industries today is production capacity. What's scarce is the ownership of customer relationships. Because the companies that control choiceboards will also control customer relationships, they will be the ones that hold the power in an industry and reap the lion's share of the profits.

The War of the Choiceboards

Once a company controls a choice-board in an industry, it can use its store of customer information to expand into new industries. This pattern is already playing out with Dell. It first used its choiceboard simply to sell computers. It subsequently expanded into selling computer peripherals and related services such as Internet access. And Michael Dell's investment in CarsDirect.com last year suggests an intent to extend beyond computing. Information-rich customer relationships need not—and will not—end at the traditional boundaries between industries.

In the not-too-distant future, therefore, I expect to see a war of the choiceboards. It's impossible to predict exactly how this war will play out, but it seems clear that the victors will be those with the best-designed choiceboards, the most responsive supplier networks, and the closest customer relationships. Today, choiceboards are essentially transaction devices; information is a by-product. Tomorrow, choiceboards will be primarily information-collection devices and customer relationship-builders. Companies will use their choiceboards to actively solicit from customers information about their satisfaction levels, their buying intentions, and their requirements and preferences. And, by means of sophisticated analytical techniques like collaborative filtering, they will use the information to predict customers' needs and behavior across virtually all product and service categories. One-stop shopping will take on a whole new meaning, and commerce will take on a whole new look.

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The past may not tell us everything about the future of electronic commerce, but it reveals more than we might expect.

The entire retailing industry is in an acute state of uncertainty. Within every company, at every trade association meeting, in every product category, electronic commerce and its implications dominate the conversation. Fearful of missing an epochal opportunity, investors and executives are rushing to place huge bets on Internet retailing, at what appear to be very high odds. But despite all the talk and frenzied activity, the future of retailing remains decidedly cloudy.

It would be foolish to try to predict which companies' Internet strategies will prove profitable in the end. Yet it seems clear that electronic commerce will, on a broad level, change the basis of competitive advantage in retailing. The industry has, of course, undergone transformations in the past. By examining those transformations and identifying patterns in the way they unfolded, we can discover clues about how retailing is likely to evolve in the Internet era.

The essential mission of retailing has always had four elements: getting the right product in the right place at the right price at the right time. The way retailers fulfill that mission has changed as a result of a series of what we call *disruptive technologies*.[1] A disruptive technology enables innovative companies to create

new business models that alter the economics of their industry. In retailing, the first disruption arrived in the form of department stores. The second was the mail order catalog. The third was the rise of discount department stores. Internet retailing marks the fourth disruption. A diverse group of Internet companies—retailers such as Amazon.com and Autobytel.com, distributors such as Chemdex, travel agencies such as Travelocity.com, and auction sites such as eBay—are poised to change the way things are bought and sold in their markets. These newcomers pose powerful threats to competitors with more conventional business models.

While disruptions change the economics of an industry, they don't necessarily change companies' profitability. In retailing, profitability is largely determined by two factors: the margins stores can earn and the frequency with which they can turn their inventory over. The average successful department store, for example, earned gross margins of approximately 40% and turned its inventory over about three times per year. In other words, it made 40% three times, for a 120% annual return on the capital invested in inventory. Compare that with the business model of the average successful discount department store, which earned 23% gross margins and turned its inventory over five times annually. It achieved a similar return on inventory investment by changing the balance between margins and turnover rates. Internet retailers' profit margins haven't yet converged into a standard range. But if businesses such as Amazon.com continue to turn inventory at present rates of 25 times annually, they could achieve traditional returns with margins of 5%.

Department Stores as Disruptive Innovators

Retailing was originally dominated by local merchants who provided value to their customers by keeping large inventories, extending credit, and offering personalized advice. The merchants' high-inventory, service-intensive business model resulted in slow turnover—evidence suggests that many of these

retailers struggled to turn their inventories over twice a year—and involved high costs. As a consequence, these retailers were forced to charge high prices to earn the margins necessary to stay in business.

The industry changed dramatically in the late nineteenth and early twentieth centuries as a result of the first retailing disruption: the launch of department stores by men like Marshall Field and R.H. Macy. These stores tended to underperform the existing retailers in many aspects of customer service—a classic characteristic of an industry disruption—but their other qualities gave them advantages. In particular, they did a superior job of getting the right products into the right place. They brought together an enormous number of different goods in one location, making it much easier for shoppers to find what they needed. In effect, the department stores served as the portals of their day: you knew that if you walked into a good department store, you were likely to find what you wanted. The aggregation of customers and products enabled department stores to outperform local stores in pricing. By accelerating inventory turnover rates, they could earn the same returns on much lower gross margins.

Marshall Field's, Sears, and other big department stores served as the portals of their day.

The department stores also found a way to mitigate their disadvantage in customer service. Because their clerks could not be as knowledgeable about individual customers' needs and preferences as local specialty shop owners, department stores initially tended to focus their merchandise mix on simple, familiar products. Then, as customers grew accustomed to the

new format, the department stores introduced more complex products at higher price points. The brand of the retailer became a surrogate for product reliability.

The reason that department stores blossomed when they did can be traced to a new technology—the railroad. With an infrastructure of rails in place, department stores could aggregate goods from all over the country, and rail trolleys could transport customers from their homes at the fringes of town to the department stores at the center. Site location became a source of competitive advantage and was managed scientifically. Chains hired squads of "traffic counters" to tabulate the number of potential customers walking past busy street corners. (The busiest corner in America in 1914 was State and Madison in Chicago, which 142,000 people passed between 7:00 am and midnight.)

At the same time that department stores were springing up in cities throughout the country, another very different disruption was also taking place—catalog retailing. Originally targeted at rural customers who could not easily visit department stores, mail-order catalogs were made possible by the introduction of rural free mail delivery. Sears touted its catalog as "the cheapest supply house on earth," and it compensated for the lack of personal service with money-back guarantees.

Catalogs were, in essence, an early equivalent of today's virtual department stores. And just as we are now beginning to see virtual retailers branch out into real stores—the so-called clicks-and-mortar strategy—so Sears expanded beyond its catalog to create a chain of physical outlets.

Trumped by Malls and Discounters

Another technological advance—the automobile—set in motion the next retailing revolution. First, the automobile made shopping malls possible. Although malls proved a real threat to department stores, they didn't alter the fundamental business

model. They were a *sustaining* innovation, not a disruptive one. Malls did the same thing that department stores did, only better. They attracted enough customers to enable a collection of focused retailers such as the Gap, Abercrombie & Fitch, and Williams-Sonoma to achieve similar margins and inventory turns as department stores, but with deeper product lines within each category. For the first three decades after shopping malls appeared, department stores continued to play crucial roles as anchors, using their strong brands to draw shoppers. But by making shoppers comfortable with malls, the department stores sowed the seeds of their own obsolescence. Today, many strip and outlet malls are simply aggregations of category-focused retailers, which thrive in the absence of department stores.

A similar transformation took place in catalog retailing. As customers became accustomed to making purchases through the mail, hundreds of specialty catalogs appeared. They chipped away at the sales of the generalist catalogs, like those of Sears' and Ward's. In 1985, Ward closed down its catalog operations. Eight years later, Sears followed suit.

The automobile also made a second wave of innovation possible: the establishment of the discount department stores in the early 1960s. The increased mobility of shoppers enabled discounters like Kmart to set up shop in less expensive real estate at the edge of town, effectively voiding department stores' competitive advantage of prime locations in city centers. Unlike malls, discount stores were a disruptive innovation. They made money through a completely different business model—a low-cost, high-turnover model that enabled successful discounters to achieve five inventory turns a year with gross margins of between 20% and 25%.

Repeating department stores' early strategy, the discounters seized their beachhead by initially concentrating on simple products that could sell themselves. About 80% of the floor area

of the leading discount stores during the 1960s and 1970s was devoted to branded hard goods such as hardware, kitchen utensils, books, luggage, and packaged personal care products. Because the key attributes of such merchandise could be communicated easily—by pictures on the package, the brand of the manufacturer, and a few numbers—the discounters were able to spend even less on customer service than the department stores did.

As the discounters invaded the low ground, the department stores systematically closed down their hard-goods departments and moved upmarket. They became retailers of soft goods such as clothing, home furnishings, and cosmetics—products whose key attributes are more complex and harder to communicate. Because soft goods were more difficult to sell in the low-service, discount format, department stores were able to maintain the higher margins required to sustain their business model.

Upending the Discounters

During their early years, the discounters were quite successful. As long as they priced their goods 20% below the prices of their common enemy, the department stores, they could make money. But when the discounters had driven the department stores from the lower tiers of the market, they were competing only against equally low-cost discounters. That competition drove pricing and profits in the branded hard-goods tiers of the market to subsistence levels.

And, in a continuation of the earlier pattern, another new set of highly focused retailers attacked the discounters. Specialty discounters such as Circuit City, Staples, Home Depot, Toys R Us, Barnes & Noble, CVS, and Tower Records carved up the hard-goods market. Like the malls, these category killers represent a sustaining innovation rather than a disruptive one. They offer

broader, deeper selections of products within their narrower categories, but they still have the volume to achieve the inventory turns required in the discounters' 23% × 5 profit model.

Faced with ever fiercer competition, many of the weaker discount department stores such as Korvettes, Venture, Woolco, Zayre, Grand Central, and Caldor have bowed out of the business. A few discounters, WalMart, most notably, have been able to use their purchasing clout and logistics-management capabilities to continue to compete in hard goods. But most of the surviving discount department stores have followed the earlier path of the department stores: they've fled the hard-goods competition by migrating upmarket. Indeed, discounters such as Bradlees and Target have flipped their original merchandise mix: 60% to 80% of their floor space is now devoted to soft goods. Competing against full-price department stores is much easier than competing against the cutthroat category specialists.

Repeating Patterns?

A fourth retailing disruption, instigated by the Internet, is now under way, and it promises to alter the retailing landscape as fundamentally as the three earlier disruptions.

Of the four dimensions of the retailer's mission—product, place, price, and time—Internet retailers can deliver on the first three remarkably well. The right products? In categories ranging from books to chemicals, Web stores can offer a selection that no bricks-and-mortar outlet can match. The right price? Internet retailers enjoy unparalleled margin flexibility. To earn a 125% return on inventory investment, an Internet retailer such as Amazon.com, which can turn its inventory 25 times each year, needs to earn only 5% gross margins.

And the right place? It is here—location—that the Internet is most revolutionary. The Internet negates the importance of location. Anyone, at any time, can become a global retailer by setting up a

Web page.

With such advantages, it's no wonder electronic commerce is attracting so much attention. But how should we expect this revolution to evolve?

As we've seen, there are two clear patterns in the way the earlier retailing disruptions unfolded. First, generalist stores and catalogs dominated retailing at the outset of the disruptions, but they were eventually supplanted by specialized retailers. The specialists emerged once the market for the new form of retailing had grown large enough to generate enough sales volume for a narrower but deeper product mix. Second, the disruptive retailers weighted their initial merchandise mix toward products that could sell themselves—simple, branded products whose key attributes could be comprehended visually and numerically. They then shifted their merchandise mix toward higher-margin, more complex products to maintain their profits in the face of intense competition at the low end of their businesses.

We appear now to be seeing a repeat of the early stages of both those patterns in Internet retailing. Let's look at each one.

Generalist to Specialist

Leading Internet retailers like Amazon.com have rapidly migrated toward the department store strategy. The logic is clear. The Web is a vast and confusing place, and it is currently very difficult to know who is selling what. Anybody with a few thousand dollars can set up a Web-based business, just as almost anybody with a little money in the 1850s could set up a small shop. The best Internet search engines today can locate only a fraction of the Web sites that exist in a category, and they are frustratingly inaccurate. And with such intense advertising noise about us, it is next to impossible to remember which dot-com name is associated with which product or service. Hence, Amazon seems to sense the same opportunity that Richard Sears and Marshall

Field saw. If you need to find a product, you don't need to search in the thicket of the Internet. You only need to remember how to type "Amazon.com"—or better yet, click on its bookmark—and you'll be guided to whatever you need.

It's less clear, though, whether this pattern will unfold as it did in the past. Even the largest bricks-and-mortar department stores could stock only the items with the highest turnover rates within each product category. That limitation opened the door for the specialists. Internet department stores face no such physical limits. They can, in theory, offer the depth of the specialist with the breadth of the generalist.

It is possible, therefore, that the Internet department stores will not yield market share to specialized retailers as the volume of purchases in individual categories grows. But there is a counterforce. The inevitable emergence of better search engines, together with the availability of greater bandwidth into homes, will make it increasingly easy for consumers to find specialized e-tailers. We would like to be able to predict the future of Internet department stores and category-focused retailers based on the patterns of the past, but the future simply cannot be known at this point. The technological and economic factors that drove the historical patterns are different in this wave. Our bet, however, is that the pattern will play out: the managerial benefits of focus and the ultimate ease of travel across Web sites will give a slight edge, eventually, to focused players. The odds will tilt toward specialists even more if cybermalls emerge that rent space to a collection of specialist retailers whose category brands are strong—akin to the way today's physical shopping malls have evolved.

Upmarket Momentum

As with the earlier disruptions, Internet retailing has initially focused on the simple end of the merchandise spectrum—books, CDs, publicly traded stocks, personal care products, commodity

chemicals, and so on. The question is, How fast will the disruptors move upmarket into more complex products and value-added services?

As with earlier disruptions, Internet retailing has initially focused on simple merchandise. The question is, How fast will e-tailers move upmarket?

Already we see signs of upmarket migration. The transformation of some Internet-based retailers into "clicks and mortar" retailers —establishing warehouses and physical stores to give customers faster access to inventory and to handle returns and service issues conveniently and personally—is not an admission that the Internet-retailing model doesn't work. Rather, just as we saw with Sears years ago, it is a perfectly predictable step. As competition in the simplest tiers heats up, good managers migrate toward higher price points and value-added services to keep their profit margins attractive.

The upmarket migration is likely to happen much more rapidly today than it did in the earlier disruptive waves. Traditional retailers have always had to make a trade-off between the richness of information they could exchange with customers and the number of customers they could reach. Although local merchants could exchange rich information about products, the economics of providing such expertise meant that they could cater to only a narrow set of customers. To reach a mass market, department stores could not afford to employ expert staff to sell a broad range of complex products. They were forced to provide less rich information. The Internet seems capable of breaking this trade-off. It can enable retailers to communicate rich information about

a broad set of complex products to a very large set of customers.[2] That capability should help e-tailers move upmarket more quickly than their predecessors did.

Of course, some products are less suited to electronic sale than others. While Internet retailers excel at getting the right product in the right place at the right price, they're at a disadvantage when it comes to delivering physical products at the right time. When shoppers need products immediately, they'll head for their cars, not their computers. There are also certain experiences that the Internet cannot deliver. Even with a lot of bandwidth, communicating the feel of clothing and home furnishings will be difficult. And in those customer segments where the social experience of shopping is an important element of value, the homebound nature of on-line commerce offers little appeal.

Although such constraints appear daunting, they are unlikely to slow the momentum of Internet retailing. Historically, experts have underestimated the ultimate reach of disruptive technologies. Blinded by their perception of the initial limitations of the new technology, they failed to appreciate the strength of the innovators' motivation to move from the fringes of commerce to its mainstream.

1. The concepts of disruptive technologies *and* ustaining technologies *were first introduced in Joseph L. Bower and Clayton M. Christensen's "Disruptive Technologies: Catching the Wave" (HBR January–February 1995) and explored more deeply in Christensen's* The Innovator's Dilemma *(Harvard Business School Press, 1997).*

2. This theme is developed in an article by Philip Evans and Thomas S. Wurster, "Getting Real About Virtual Commerce" (HBR November–December 1999), and in their book Blown to Bits *(Harvard Business School Press, 1999).*

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On the Web, profits will be made a penny at a time.

When the notion that you could sell things over the Internet first arose, there was a widespread belief that it would mean the death of the middleman: Producers of goods and services would use their Web sites to connect directly with consumers, bypassing wholesalers and retailers altogether. We'd enter a great era of "disintermediation," which would drain profits from distributors and redirect them back to manufacturers.

Like many of the early assumptions about electronic commerce, this one has proved laughably wrong. With few exceptions, manufacturers have not been able to do much direct selling over the Web. In the virtual world as in the physical world, people want a broad selection of goods when they go shopping; they don't want to be limited to a single product line. Even Levi Strauss, whose launch of a sophisticated e-commerce site back in 1994 made it a poster child for disintermediation, has thrown in the towel. It recently announced that it will stop selling jeans through its site.

It is now becoming clear that, far from experiencing disintermediation, business is undergoing precisely the opposite phenomenon—what I'll call *hypermediation*. Transactions over the Web, even very small ones, routinely involve all sorts of intermediaries, not just the familiar wholesalers and retailers, but content providers, affiliate sites, search engines, portals, Internet service providers, software makers, and many other entities that haven't even been named yet. And it's these middlemen that are positioned to capture most of the profits.

Clicks as Transactions

A simple, everyday example of Internet shopping will show how hypermediation works. Let's say that an occasional Web user—I'll call him Bob—becomes interested in the ubiquitous *Harry Potter* books. He thinks that he'd like to read them, but he wants to learn a little more about them. So he goes onto the Web and, since he's never bothered to change his browser's default home page, he ends up at the Netscape portal. In the search box he types the phrase "Harry Potter," and from a list of available search services he chooses, on a whim, GoTo.com. He's transported to the GoTo site, where his search results are posted. He chooses a promising-sounding site near the top called "Nancy's Magical Harry Potter Page."

Nancy's site, a personal home page with an unsophisticated but friendly design, is full of information that Bob finds useful. There are glowing reviews of the books by Nancy and a few of her friends, detailed plot summaries and character descriptions, and a discussion board where readers share their comments. There's also a link to a special Harry Potter page at eToys. Bob clicks on the link, and he finds that eToys is selling the first book in the series for 50% off its list price—just $8.97. He can't resist that kind of a bargain, so he takes out his Visa card and places an order. Three days later, the book is in his mailbox.

A fairly routine buying expedition on the Web, right? But consider the complex array of intermediaries that made money off Bob's modest purchase. There are the usual suspects, of course—the retailer eToys, the book distributor that eToys buys from, the bank that issued Bob's Visa card, the U.S. Postal Service. But there are less obvious players as well. First is Netscape. Netscape puts various search services on its home page and, in return, the services pay Netscape a penny or two every time a visitor clicks through to their sites. So when Bob was transferred to GoTo.com, Netscape received a little money. GoTo, for its part, auctions off its top search results to the highest bidders. Nancy, for instance, agreed to pay GoTo one cent for every searcher who clicks on her

link. So when Bob chose Nancy's site, GoTo made a penny. GoTo didn't get to keep all of it, though. Because GoTo contracts with an outside provider, Inktomi, to conduct its searches, it had to pay Inktomi a fraction of that penny for processing Bob's search.

Then there's Nancy herself. Like thousands of other individuals who have personal Web pages, Nancy has signed up to be an affiliate of eToys. When she sends someone to eToys through a link on her page, the e-tailer pays her 7.5% of any resulting purchases. So Nancy made a cool 67 cents when Bob bought the book. What's more, eToys doesn't run its own affiliate program. It outsources the job to a company named Be Free. Be Free, in turn, takes a small cut on the purchases it administers. So it, too, got a little of Bob's money.

Add them up, and you'll find that no fewer than nine intermediaries had their fingers in Bob's $8.97 purchase. (And that doesn't even include the people who posted reviews on Nancy's site—they just haven't realized that they could be charging for their words.) In fact, every single time Bob clicked his mouse, a transaction took place: a little bit of value was created, and a little bit of money changed hands. Yes, the money usually amounted to only a penny or two, but it seems a safe bet that far more profit was made by the intermediaries that took those pennies than by eToys when it sold the book for half-price. Bob's transaction is a microcosm of the emerging economic structure of e-commerce: the profits lie in intermediate transactions, not in the final sale of a good.

Volume and Efficiency

Two characteristics of electronic commerce make hypermediation possible and even inevitable. First is the sheer volume of activity. People make billions of clicks on the Web every day, and because each click represents a personal choice,

each also entails the delivery of value and thus an opportunity to make money. A penny isn't a lot of money in itself, but when you start gathering millions or billions of them, you've got a business.

The second characteristic is efficiency. Most physical businesses wouldn't be able to make money on penny transactions; it would cost them more than a penny to collect a penny. But the incremental cost of an on-line transaction is basically zero. It doesn't cost anything to execute a line or two of code once the code's been written. The pennies taken in by many intermediaries are almost pure profit.

If volume and efficiency make microtransactions attractive, they make microbusinesses attractive, too. Take Nancy's Magical Harry Potter Page. (I made up that site, but there are millions just like it all over the Web.) It doesn't cost Nancy much to maintain her site. She spends an hour or two on it a week, adding text and images using a site-design program that came bundled with her home PC. Her ISP hosts the site for free on its servers. And she didn't have to pay eToys anything to become an affiliate. The commission checks she receives from eToys are small—80 bucks a month, say—but they're all profit for Nancy. She brags about the income to her acquaintances, and now they're all launching small sites focused on everything from gardening to sports to education to doll collecting. Through affiliations with various e-tailers, they're pulling in a few extra dollars a month, too. Some are earning hundreds or even thousands.

Just as microtransactions don't look like much individually, so microbusinesses seem insignificant at first glance. But, again, volume changes everything. One microbusiness is no big deal. Millions of them, sucking billions of dollars of profit out of the e-commerce system, is a very big deal. After all, there's not a whole lot of profit in selling stuff on the Web to begin with.

Geeks Rule

So what does hypermediation mean for the future of on-line business? I would argue that the lion's share of the profits in e-commerce will likely flow to two very different types of intermediaries. One type is represented by Nancy—the owners of specialized content sites. These content sites will draw people interested in the particular subjects they cover, often using discussion boards or other interactive features to encourage return visits. As affiliates of big e-tailers, they will also serve as gateways to purchases, gaining a share of all sales. Some of these content sites will be large—America Online has long pursued such a business model—but most will be small and intimate. When people first venture onto the Internet, they tend to head for the big-name sites—Amazon, Yahoo, and the like—because those are the easiest to find. But as they become used to the Web and more familiar with searches and other navigation aids, they start to seek out sites tailored to their particular interests—sites that might get only a few dozen visitors a day. For content sites, specialization is more important than scale.

The second type of intermediary is the infrastructure company—the search engines like Inktomi and Google, the advertising networks like DoubleClick and Engage, the affiliate networks like Be Free and LinkShare, the backbone providers like Akamai and Exodus. Here, scale will often be important. In some cases, the network effect will lock out small new competitors—at least for a time. But even more important than scale will be technical prowess. The technologies underpinning the Web are still in their infancy. Every day we see the arrival of some new company with a neat piece of code that changes something about the way the Web works. Those companies are well aware that every click is a potential source of profit. They are focusing their energy and creativity, not to mention millions of dollars of venture capital, on figuring out new ways to turn clicks into transfers of cash.

Just as it was once assumed that disintermediation was an inevitable result of e-commerce, so it has been assumed that the power over e-commerce will inevitably shift from the geeks to the suits: good, well-disciplined business sense will supplant enthusiasm and technical knowhow as the key determinant of success. I don't see it that way. In a world of hypermediation, the enthusiasm that gives rise to specialized content sites and the engineering skill that underpins technological advances will continue to trump B-school smarts. While many big, highly visible Web retailers will vainly struggle to sell products above cost, a whole slew of anonymous businesses will be quietly collecting pennies behind the scenes.

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