

# **E-Business: Revolution, Evolution or Hype?**

by

Tim Coltman<sup>1</sup>

Timothy M. Devinney<sup>1</sup>

‘Alopi Latukefu<sup>1</sup>

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David F. Midgley<sup>2</sup>

2 February 2000

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1. Respectively Ph.D. candidate, Director and Researcher, Center for Corporate Change, Australian Graduate School of Management, Sydney, Australia 2052.
  2. Professor of Marketing, INSEAD, Boulevard de Constance, 77305 Fontainebleau Cedex, France.

The authors would like to thank Patrice Auger, Paddy Barwise, Robert Blanning, Markus Christen and Prashant Malaviya for their helpful comments on earlier drafts and the Australian Research Council for funding this research.

## **Abstract**

### **E-Business: Revolution, Evolution or Hype?**

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In this paper we seek to move beyond the hyperbole in the popular press by questioning whether “e-business” truly represents a revolution in the way firms operate or whether it is a more normal evolution in the operations of certain firms. It is important to answer this question because if the change is revolutionary then many managers will be required to rethink their firm strategies and managerial responses in a profound way. On the other hand, if the change is simply evolutionary it will apply more to some firms than to others and pre-Internet strategies and managerial responses will still be appropriate in many circumstances.

In order to answer this question we examine where this revolution (or evolution) is concentrated, and why this revolution (evolution) is occurring as it is. In contrast to views in the popular press, we find that e-business is growing most rapidly in business-to-business markets and for the purchasing of routine items. Moreover, in these markets it is occurring as an evolutionary development of previous technologies (telex, fax, EDI, etc.) in established relationships between purchasers and suppliers. We then examine the claims that “e-business” is different to previous forms of business. For each of these claims we find that there are countervailing arguments and, despite the claims of technological “visionaries,” E-business has not suspended the laws of economics. Finally, we evaluate whether e-business meets the criteria of pervasiveness and process orientation that have characterized previous industrial revolutions. We conclude that it is premature to categorize e-business as revolutionary.

Overall, we argue that e-business is no silver bullet, rather it will be a useful tool for some firms and some tasks. Rather than listen to the popular press or consultants, managers should put in place sense-making approaches that question its appropriateness to their firm and its circumstances.

## Introduction

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It is almost universally accepted that we are in the grips of an e-business revolution (see, e.g., Aldrich 1999; Evans and Wurster 1999; Hagel and Armstrong 1997; Schwartz 1999). According to many, we are set to move into e-business driven 'hyper growth', with trade over the Internet reaching trillions of dollars. Growth that is fuelled by established firms conducting more of their business through the digital infrastructure and by the creation of new firms seeking to exploit the potential of the 'Net'. Electronic business is the subject of increasing popular attention, as is evidenced by its play in the popular media and the fascination of Wall Street investors. Both large investment houses and individual day traders are almost fanatical in their conviction that an economic miracle is underway—having driven the valuation of 'virtual' (in more ways than one) firms to the level of an Internet Bubble (Perkins and Perkins, 1999).

A survey by Booz-Allen & Hamilton (1999) finds that more than 90 per cent of top managers believe the Internet will have major impact on the global marketplace by 2001. Given this response, one could assume that most managers no longer need convincing that they are in the throws of fundamental change and are busy implementing electronic business plans. This could not be further from the truth. The reality is that many firms are confused about the direction the future will take and are either taking a wait-and-see attitude or placing a series of bets in the hope that one or more will prove successful.

There are a number of possible reasons for these reactions.

- Experienced managers are inherently conservative about large IT investments. Having already been through process re-engineering and enterprise resource planning with disappointing results, managers are reacting carefully to suggestions that IT be elevated to core business strategy levels.
- The pragmatic difficulty of implementing complex IT based strategies is another, altogether more difficult, task. Despite the money invested in consulting advice over the past decade, managers have struggled with the same set of implementation problems (Bensaou and Earl 1998).

- The competitive necessity for electronic business varies considerably from industry to industry. Firms are exposed to wide ranging levels of competition, from slow to fast-moving traditional rivals and Internet-based newcomers. In some industries e-business is a threat, in many it is not.
- Although this may be considered heresy, the promises of Internet driven growth may actually be more hyperbole than substance. There are serious questions regarding the pace at which the ‘networked’ economy may emerge and, indeed, the ultimate suitability of electronically based business for many firms. To successfully compete in the networked economy requires a more systematic understanding of the forces at play, as well as the fundamental characteristics of inter-networked organizations, than is evident in much of the writing on this topic.

Our paper focuses on the last of these reasons—we seek to outline the forces at play in determining the appropriateness of e-business to the firm and to sketch out the characteristics of those inter-networked organizations that are likely to be more enduring. We do this by asking three related questions.

1. Where is this revolution (or evolution) concentrated?
2. Why is this revolution (evolution) occurring as it is?
3. Are we in the throes of a revolution or are we experiencing a natural evolution?

With most revolutions, participants may not know that they witnessed history until historians have told them that something truly spectacular had occurred. Nor do those participating in the events fully understand the ramifications of what the change means to them and future generations. Also, it is a natural human tendency to feel that we are witnessing a great event when reality is more mundane. Hence, the term ‘revolution’ may be bandied about in inappropriate ways under circumstances where constructive cynicism would lead to a clearer understanding of the phenomenon being experienced.

As we will note later, a revolution can be defined around the breadth and depth of the changes it makes in the everyday lives of individuals. In this sense, what we have and are witnessing in terms of the changes wrought by transistors can be justifiably thought of as being revolutionary. However, e-business cannot claim, at this time, to have radically changed the way the majority of people shop or the way most

business is conducted on a day-to-day basis (although, again, transistors can). To cover this topic in more depth, we first address the current trends and extant models of e-business. Here we identify that the potential for real transforming change lies more in upstream business-to-business activities and less in the higher profile but less pervasive downstream business-to-consumer activities. Next we undertake a basic analysis of the business rules driving the electronic economy. Here we argue that much of the conjecture surrounding this current period of technological change is speculative and that in many cases, century old economic theory is still as relevant as it ever was. As Shapiro and Varian (1998) rightly point out: “Technology changes. Economic laws do not.”

This conclusion is followed by a discussion of whether what we are witnessing is evolutionary or revolutionary, an important distinction affecting firm strategy and decision making. If we are witnessing “natural” competition (Henderson 1989)—an evolutionary process of trial and error within existing structures—this is familiar territory for most managers. If we are witnessing “strategic” competition—revolutionizing value chains—this is uncharted territory where irreversible commitments are needed and many firms will fail. We end with speculation—since little hard information is available—on how firms might prepare themselves for the changes ahead, be they radical or incremental.

## **Where is e-business concentrated?**

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One of the valuable lessons from prior encounters with revolutionary technological change is that there is often a difference between what Chris Argyris and Donald Schon (1978) have referred to as *espoused theories* (what we say about the technology) and *theories-in-use* (how we actually use the technology). Nowhere is this difference more evident than in the current discourse surrounding e-business.<sup>1</sup> As we hope to show, the actual impact e-business is having on the way people shop and the way business is conducted is quite different from the way it is talked about by technologists and journalists.

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<sup>1</sup> We define e-business as any business that is conducted, in whole or in part, through a digital infrastructure. We do not distinguish between Intranet, Extranet or Internet applications as these boundaries are no longer clear, and we have chosen to encapsulate both business-to-business and business-to-consumer applications within this definition.

### **Technology-in-theory**

With predictions indicating that electronic business will reach trillions of dollars it is not surprising that many feel we are in the midst of an inevitable transformation. In some cases investor excitement regarding the *espoused use* of electronic business technology has manifested itself as an overwhelming belief that you must act quickly, or else be left behind. Normal metrics that governed investment for decades, such as business models and price-to-earnings ratios are ignored in the mad rush to get 'online'. Instead, a new market logic—based more on faith than logical inference—has emerged to the effect that as long as a company is on the Internet, and attracting traffic to its site, it will ultimately, somehow, turn into a real business (Schwartz 1999).

Consider the logic behind these recent market valuations:

- Having failed to return a profit since its inception in 1995, Amazon.com commands a value more than five times greater than that of Barnes & Noble and Borders combined;
- Before their merger, the value of America Online exceeded that of Time Warner; and
- Yahoo.com's value is bigger than the four largest American airlines (e.g. American, United, etc.).

However, to dismiss current stock market activity as mere gambling is unjust. Electronic business represents much more than a roll of the dice—provided investors turn their attention from espoused theories and towards reality; i.e., the actual use of technology. This will require a better understanding of the changing ways in which the technology is being used—usage that will have a big impact on eventual market size (Kardes 1999). Recent activity by venture capitalists, investment bankers and high tech investors provide us with some tangible pointers as to where the real e-revolution may be concentrated.

### **Technology-in-use**

At present the PC is the dominant platform for network connectivity and according to the usual statistical sources most people still lack or choose not to have Internet access (Exhibit 1). Even in the United States, one of the most networked countries in the world, 60 per cent of the population still do not have Internet access. For those who have access, either at home or in the office, the Internet has proven to be more of

an addition to their lives—sometimes helpful, at times entertaining, often slow and frustrating—than a critical and indispensable part of their lives (Symonds 1999). For the average household e-mail provides a useful capability to communicate asynchronously—cheaper than the telephone and faster than the postal service. Although at times difficult to navigate, the ability to retrieve information has been a beneficial innovation. Yet even when you consider the convenience and economic value of purchasing items over the Internet, we are still dealing with a relatively small segment of the population.

### Exhibit 1 about here

The impact Internet access numbers have on the potential market for Internet based goods and services is worth considering. Overall, the long-run likelihood that a random customer will purchase an item over the Internet, in any given product category, can be expressed as a simple equation comprising the product of individual choice strategies and technological access factors.

$$P_e = \text{e-Business purchase likelihood in the product category } i = h_i * n_i * a_i * t_i \quad (1)$$

Where:

$h_i$  = percentage of those people purchasing in the category who have *access to a computer*;

$n_i$  = percentage of people with access to a computer who have *Internet access* on this computer;

$a_i$  = percentage of people who are *aware that the good can be purchased over the Internet*; and

$t_i$  = percentage of aware people who are willing to *make a trial purchase on the Internet*.

The term  $h_i * n_i$  is a measure of access to the electronic distribution channel and one based purely on having the necessary technology. The term  $a_i * t_i$  represents the likelihood of a trial purchase based on the willingness to purchase the product from the Internet once. We can refine this formula to get the market share of the e-business component of a product category's sales:

$$MS_e = \text{e-Business Market Share} = h_i * n_i * a_i * t_i * r_i = P_e * r_i \quad (2)$$

Where:

$r_i$  = percentage of people who try the product through the Internet and *repeat* using that medium.

Even when very generous awareness ( $a_i$ ) and trial ( $t_i$ ) levels—i.e., 90 per cent and 70 per cent, respectively—are applied to equation (1), it is clear that the overall probability is far from compelling for

e-business entrepreneurs. Using the 1998 US based Internet access levels of 40 per cent, the likelihood of a random customer in the category trying a purchase through the Internet is only moderate.

$$P_e = \text{e-Business Purchase Likelihood} = (h_i * n_i = 0.4) * 0.9 * 0.7 = 0.25 \text{ or } 25\%$$

If we assume that these customers have a 65 per cent chance of coming back to make further purchases, this would decrease the long-run likelihood of purchasing from the Internet, and hence market share, to around 16 per cent ( $=0.65 * 0.25$ ). Finally, if we make the heroic assumption that these levels apply to all product categories we might infer that some 16% of purchases would move to the Internet.<sup>2</sup>

Whilst 16 per cent of the US market represents immense buying power, to date, the beneficiaries have primarily been niche players selling books, toys, CD's and computer equipment or technology-based companies (e.g., Cisco) that generate purchases from their narrower and technically-literate customer bases. Few of these have Internet sales that approach 16 per cent of their respective markets. As yet little evidence has emerged regarding the widespread transferability of profitable electronic business models to other industries and customers. For example, companies such as Peapod Inc., Netgrocer Inc., and Streamline have invested millions of dollars into solving a nagging problem most people face every week, shopping for groceries. Yet despite the best efforts of these companies, less than 1 per cent of U.S. households order groceries online (Schwartz 1999; pg. 30). The empirical evidence suggests that, in reality, this often-mundane task is seen by many as one of life's small social pleasures and that people have no intention of giving up the physical shopping experience. Additionally, many of the products and services we purchase have to be seen, felt or touched before they can be appreciated. The bottom line is that despite the media attention, there are many business barriers to be overcome before we can even begin to speak of consumer electronic business as revolutionary—i.e., changing the outlook and behavior of consumers in a fundamental way.

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<sup>2</sup> In all likelihood many product categories will have lower levels whilst a few may have higher levels.



The fact is that most businesses are less interested in selling online to consumers than in using the Internet to interact with suppliers and large buyers. There are several reasons why businesses are more willing than consumers to communicate, negotiate, buy and sell online.

- Companies, and in particular larger companies, are generally better equipped to communicate electronically. They already have a high proportion of available computers, networks and bandwidth capacity thus making Internet use faster and more convenient. The early popularity of corporate Intranets largely arose from a realization that the critical mass of users lay not in the general community but in the large numbers of internal staff with desktop PCs;
- Companies are more cost-conscious, since every dollar saved in procurement is equal to a dollar of new profit (Dobler, Lee et al. 1984);
- Network externalities (Katz and Shapiro 1985) will have a particularly strong impact, as corporations develop online strategies aimed at reducing costs and increasing efficiency. Having invested substantial amounts of money into developing their IT supply chain infrastructure, the natural reaction for these companies will be to encourage others to do the same and generate further efficiency gains. In the case of Air Products (compressed air products), there has been a strong commitment to an Internet-based strategy, integrating the company's suppliers, customers and other stakeholders into their informational framework;
- The diffusion of innovation literature has shown that products consumed in the workplace diffuse more rapidly than products consumed privately in one's own home (Rogers 1983; Kardes 1999). Browser technology provides an example, as the front-end to accessing Intranet and Extranet systems as well as a 'portal' to legacy systems. Such functionality has seen the web browser become a default application for many companies;
- Many business transactions are already conducted at a distance, by facsimile, mail, or electronic data interchange. These are easily translated to the Internet as Dell Computers was able to do; and

- Opportunities to create close alliances with business partners can offer innovative opportunities to form strategic relationships or address customer problems in new ways. In many cases, these relationships may involve customers, suppliers, distribution channel members, firms having complementary skills and resources, and even competitors. For Chemdex e-business goes much deeper than ordering books from Amazon or PCs from Dell. Corporate customers require relationships and Chemdex consultants provide on-site assistance to assist firms map their existing systems into Chemdex software—seeing the company grow from 3 suppliers in January 1998 to 335 suppliers and more than a million products (*Economist* 1999).

These arguments are supported by the Aberdeen Group who “pegs business-to-business at 10 to 20 times the business-to-consumer market” (Tedeschi 1999). For many companies like Ford, General Electric, Dell and Cisco, the movement of products from detailed designs to basic commodities through a supply chain is where the real value in e-business will be found. Aberdeen’s David Alschuler states:

“...the fact is, business on the Internet is cutting significant cost out of the supply chain, with better procurement and resource planning. That stuff shows up as line items on balance sheets of companies like Intel, but in the long run, that will have a far bigger impact than what you buy from Amazon.” (Tedeschi 1999)

In similar vein, the Boston Consulting Group has recently predicted that one-fourth of all business-to-business purchasing will be conducted online by 2003—some \$2 trillion over the Internet and \$0.8 trillion over private networks using EDI (BCG 1999).

As we enter a new phase in e-business development, established firms—particularly branded goods suppliers and physical retailers—are slowly beginning to get involved. This will shift attention from growth strategies adopted by start-ups (i.e., Amazon and E\*Trade), towards strategies that deliver sustainable competitive advantage for more traditional firms. In the next section, we investigate the viability of many commonly espoused predictions for e-business and their likely impact on firm success.

## Why is e-business occurring as it is?

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Five years since the first release of the browser in 1995 the fear of electronic transactions by the general public has begun to dissipate. The original novelty of Internet shopping and e-business is also wearing off. Aimless surfing has decreased and people have become more selective in how they spend their time on the Internet. For the first time we see signs of a general maturing of the community of users and the impact the Internet will have on the lives of ordinary people is becoming clearer. For business, however, the answer to that all-important question of how to make money is much less clear. Despite billions of dollars in investment, firms are still struggling to find the best way to complement traditional activities or develop new electronic lines of business. For example, Timmers (1998) has identified no less than eleven distinct e-business models that have been tested in the marketplace. Shapiro and Varian (1998) suggest that many managers are so focused on the trees of technological change that they fail to see the forest of underlying principles that determine success and failure.

Although the end game is still distant, e-business has so far failed to transform business processes in a significant way. Certainly we have seen significant savings in the time and cost of routine tasks (i.e., buying and selling shares, tracking inventory and delivery schedules) but in the large; few of the visionary predictions concerning the e-business revolution have materialized. The most salient insight emerging is that the principles that have governed business success for centuries remain largely the same. Despite the hyperbole and speculation, the ability to predict the future is still in many cases, firmly grounded in the past. Exhibit 2 summarizes the visionary predictions made about e-business and our assessment of the current reality. We will now examine each of these predictions in greater depth.

### Exhibit 2 about here

**Importance of brand strength.** A common belief was that e-business technology would enable a one-person business to make its virtual storefront available to as many consumers as reached by bigger firms. Intelligent software agents and search technologies would reduce search costs and enable consumers to compare products and prices anywhere in the world easily. Low setup and distribution costs associated

with this new electronic capability would represent a major potential threat to brands and make brand strength weaker than ever before (Kalakota and Whinston 1996).

Recent evidence indicates that these predictions have yet to approximate reality. Ernst and Young reported recently that 69 per cent of respondents to a survey on e-commerce stated that brand names play a significant role in their online buying decisions. Despite increased information availability, the Internet is no guarantee of lower search costs or customer attention. As Barwise (1997) argues, in a busy, “over communicated and untrustworthy world,” consumers continue to gravitate towards brands as a way to simplify choices. He suggests two reasons for this: (1) brand names can act as substitutes for information gathering, helping online buyers locate specific products, reducing search costs, and (2) brands build trust, security and an expectation regarding product quality.

The key issue for firms is to determine where the brand strength—as determined by its distinctiveness and relevance—lies. Is the branding used to convey beliefs or facts regarding product or channel attributes (e.g., UPS same day parcel delivery), or is it based more on emotional feelings or associations (e.g., attitude that young girls might have towards Mattel’s Barbie brand)? As the e-business medium evolves and the technology becomes more pervasive and interactive three possible scenarios emerge: (1) the brand can be reinforced, (2) the brand can be diluted, or (3) a new ‘cyberbrand’ can be created (Exhibit 3).

### **Exhibit 3 about here**

**Brand reinforcement.** Most buyers require assurances that goods are unused, properly identified, and legitimately obtained before they will source from an unknown supplier. This tends to favor larger, incumbent brands, like Levi Straus and Schwab.com in the consumer marketplace, or independent distributors like NECX and Aliso Viejo in the business marketplace. This is especially so for consumers who feel more secure dealing with a known brand. Even though many incumbents are just starting to move their businesses online, the strength of their brand may continue to provide distinct advantage, particularly in situations requiring high emotional involvement (Barwise 1997).

**Cyberbrand creation.** Companies like Yahoo.com, Amazon.com and Brandwise.com (see below) are all examples of a growing segment of cyberbrand companies, aimed at providing total customer centric solutions. These cyberbrands are all encompassing and link promotional strategies with web site design and payment with distribution to provide a fully integrated solution package. As a new comparison-shopping venture, Brandwise.com has the potential to become a major force in the retail industry—challenging the strength of brands such as General Electric, that base their strength on a belief that they produce superior products. Since beliefs are based on facts, Brandwise.com can repeatedly demonstrate that specific products are not as technologically superior as claimed. Indeed if consumers base purchasing decisions on an endorsement by Brandwise.com, then the original brand would become redundant. Thus, cyberbrands have opportunities to play a powerful role and compete directly against many traditional brand-as-belief products (Evans and Wurster 1999).

**Brand dilution.** The hypermedia characteristics of the Internet do, however, make this new medium unforgiving if the company doesn't get it right. General consumer inertia and an unwillingness to try something new are weakened when your competitor is only the click of a button away. The reality for some brands will be the continual dilution of their position as they fail to deliver or meet changing consumer preferences. For example, traditional banks are seeing their brand strength threatened by a wave of new entrants in the financial services industry (e.g., Intuit Financial Software, Wingspan, etc.).

Despite these concerns incumbent brands are still in a strong position; a fact recognized by those new start-ups that are making considerable investments in marketing to build brand awareness. In 1998, E\*Trade spent \$150 million on mass-media advertising, more than 3 times the amount spent by

#### **BRANDWISE.COM**

Brandwise.com is a comparison-shopping Web site designed to assist consumers in narrowing down their selections from the milieu of products currently available in the marketplace. As a joint venture between Whirlpool, publishing firm Hearst and The Boston Consulting Group, the new venture claims to provide totally independent customer advice.

A consumer laboratory examines all washing machines, dryers, refrigerators, microwaves, dishwashers, and cooking units available in the marketplace and reports their advantages and shortcomings. Brandwise.com also hosts chat rooms where customers can ask for the advice of other customers who bought the same machines.

The site will soon be adding other product categories including home electronics, lawn and garden, small appliances, baby products and many others.

Providing customers with independent advice is not the only objective. Brandwise.com also collects customer information on the importance of different product attributes, which can then be sold back to manufacturers.

traditional brands such as Schwab or Merrill Lynch (Schwartz 1999). At one time Amazon.com was spending \$36 in marketing for every \$100 in sales (*Washington Post* 1998).

Equally important is the need to create a relationship of trust with consumers as evident by the recent acquisition of traditional companies by Internet start-ups. The acquisition of Butterfield and Butterfield, a highly respected traditional firm of auctioneers, by the online auction house eBay represented a deliberate attempt to improve the cognitive association between the eBay brand and its product. Amazon.com's link-up with Sotheby's represents another effort to portray an image of quality and trust (*Economist* 1999). This view is reinforced in a Boston Consulting Group (1999) study titled "The State of Online Shopping", where the authors conclude:

"The brand is everything and everything is the brand."

**Disintermediation to intermediation.** The late 1990s was to be the age of disintermediation. In his 1994 book, futurist George Gilder wrote, "[I]n every industry—from retailing to insurance—the key impact of the computer-network revolution is to remove the middleman." Through the combination of telephone, fax and Internet technology, every manufacturer would be able to sell direct to the public. The traditional sales force would be eliminated and we would witness the demise of the middleman. But the computer vendor Compaq provides an example of the risks associated with such simplistic strategies (see right). The Compaq story is one that other firms are loath to repeat. The combination of intermediary power and their proximity to the customer are the main reasons why we have seen few successful examples of disintermediation. This has nothing to do with whether or not profits are possible from disintermediation. Rather it has everything to do with deciding how to move into a new distribution channel without jeopardizing existing channel relationships. As noted by Carson et al. (1999), just because something is feasible and preferable is only a necessary, and not sufficient, condition for its adoption. Institutional structures, such as intermediaries, satisfy the complex requirements of customers and suppliers that can not be unraveled overnight.

#### COMPAQ AUSTRALIA

Compaq's logic was straightforward enough, eliminate reseller margins and utilize the savings to go direct to customers with a customizable, price-competitive product. Unfortunately the reality was not quite that simple. In Compaq's case, its success has been determined largely by its long-standing, close channel relationship with resellers. Not surprisingly when these resellers learned of Compaq's decision to sell direct to the customer, they let their displeasure be known. Compaq Australia has been on the receiving end of this displeasure, when all Compaq products were tossed out of the country's leading retail outlets. The cost to Compaq Australia of the debacle is estimated at A\$100 million in lost revenue.

*(The Australian 24 August, 1999)*

Value as well as price characterizes purchase decisions and adept intermediaries can exploit new business models to provide customer value. As shown in Exhibit 4, there are still a number of opportunities for intermediaries to implement electronic versions of traditional business models or to create new value added business models based on high levels of IT functionality.

#### **Exhibit 4 about here**

Whilst it is inevitable that competition will eliminate intermediaries who fail to add value, low barriers to entry and information asymmetries (i.e., poor transparency, privacy and security flaws, etc.) will continue to provide a lucrative environment for intermediaries. In the networked economy, intermediaries with a sound understanding of the hypermedia environment will be able to capture customer and product information in ways to ensure they have an important role to play. An increase in the number of e-business “infomediaries” (Hagel and Armstrong 1997) is just as plausible as any predicted demise.

**Economies of scale and scope.** Esther Dyson, chair of the Electronic Frontier Foundation, has suggested that the Internet will change economies of scale in favor of the little guy, creating a flatter competitive landscape. As a result, online firms will face less pressure to grow and benefit from economies of scale (Dyson 1997). This is inconsistent with the lessons of history, which have shown that the size of the firm or the network tend to produce a simple logic. In the case of the network, the larger the network the more attractive it is to users. This phenomenon, referred to as *network externalities and positive feedback*, is illustrated in railway, trucking, telecommunications and banking networks (i.e., ATM machines). Markets for portal companies (e.g., Yahoo.com), hardware (e.g., Intel) and software (e.g., Microsoft) provide more recent examples of companies deriving increased value from wider network reach.

For example, the benefit derived from using Microsoft’s Office Suite is not just that it permits word processing and spreadsheet analysis. More importantly, it also facilitates interaction, providing users with the flexibility to work from different locations, share files and collaborate with others. The greater the numbers of people using the product, the greater the size of the benefit to users and Microsoft. Similarly, utilizing the network to distribute free software to build a customer base quickly became the basis of Netscape’s strategy. The more consumers using the Netscape browser, the more opportunities this

created to extend Netscape's product range and sell complementary products (i.e., servers) and services (i.e., a one-stop portal). Economies of scope have been so powerful that Netscape no longer considers itself a browser company. According to its mission statement, it is a leading provider of everything from client, server, development and commercial applications to a platform for next-generation requirements.

Whether real or virtual, the amount of strategic, physical and monetary resources a firm can bring to the competitive arena will continue to play a critical role in the networked economy. Inter-organizational systems require standardization over a wide range of rules governing the size of data fields, format type, and various operating characteristics. Large firms usually have greater bargaining power and are often able to encourage co-operation among channel members—thereby establishing de facto standards. Such co-operation is often in the best interests of the large firm. Large firms also have greater resources for developing and protecting their brands and are able to absorb short-term losses in order to mitigate the challenges posed by their smaller competitors.

Amazon.com provides an example of the importance of scale and resources. Having invested considerably in building its brand strength, the company is leveraging its network to provide a value-added service that goes beyond lower prices. By storing information from various sources—authors, magazine reviews and reader comments—the company has developed a powerful information service for its customers. Also the more books you buy, the more proficient the company's software becomes at identifying your preferences and finding a book that you might like—differentiating the company from smaller competitors, creating powerful lock-in and barriers to entry. Amazon is also increasing physical warehouse space, preparing the company to compete effectively on cost and speed.

**First mover advantages.** Silicon Valley worships trail blazers and speed to market. To gain an edge in the new economy there is no time to analyze and plan, being first is enough to create an advantage (Kardes and Gurusurthy 1992; Downes and Mui 1999). *Playboy* magazine was able to extract first mover advantages when it decided to distribute the magazine electronically in 1995. As the first commercial Web site, the venture was novel, attracting the attention of large numbers of Web surfers and a healthy fee-paying subscriber base.



Whether the success of Playboy.com was a result of pioneering advantages, or whether it was due to its size, brand name, resource and management capabilities is an important research question. The existence of first mover advantages has been a widely espoused business principle as entrepreneurs and established corporations compete in a race to be first to market. Unfortunately, the empirical literature on first mover advantages is still undecided and no clear position has emerged that supports the existence of enduring advantages to market pioneers. Recent research (Tellis and Golder 1996; Lieberman and Montgomery 1998) suggests that being first to market can be beneficial, but, by itself, is neither necessary nor sufficient to maintain a company's position as the market evolves. These authors suggest that pioneers often miss the best opportunities by failing to: (1) develop the right strategic resources, (2) leverage the mass market opportunities that are presented to them, (3) commit the necessary financial resources as the market evolves, and (4) dominate in distribution, R&D, production or brand awareness.

In new markets like e-business, the magnitude of any first mover advantage is proportional to the size of the market. Although the time to a critical mass of consumer demand in these markets is getting shorter, in most cases, it still takes years to develop. In an industry dominated by rapid technological innovations, high-risk investments and market uncertainties, the chances of developing the wrong strategic resources is a very real concern for managers. It is common knowledge that information technologies, by themselves, will not provide sustainable advantage and pioneering efforts may ultimately prove to be of limited value in markets where barriers to entry are low and "rules" are still evolving.

Provided high customer switching costs do not exist, the savvy early follower is often well positioned to exploit their existing strategic resource base and core competencies. Leveraging a nine million strong client base—which is larger than all the online brokers combined—Merrill Lynch is well positioned to challenge online incumbents such as E\*Trade and eSchwab seriously. Having sat back and watched the pioneers test the market, Merrill Lynch is now ready to implement its own unique business model, providing investors with a valuable mix of human advice and online access. The same logic applies to BarnesandNoble.com (see below).

The choice of being a first mover is a critical one for managers, yet the evidence provides little guidance. It is not clear which e-markets are amenable or antithetical to first movers, hence there is no guarantee that first to market firms like Amazon.com will maintain their leadership as the market matures.

**Lower prices.** Conventional wisdom suggests that a combination of increased competition and improved price discovery technologies will create more efficient markets and reduce the price for goods and services traded online. Although the networked economy can provide potential opportunities for lower prices, the same infrastructure can also be used by sellers to collect and process customer information in ways that maintain an incumbent's oligopoly power. Alternatively, a more positive outcome would be for firms to use this same information to deliver products in a more value

#### **BARNES AND NOBLE**

Amazon.com was established in July 1995 with "a mission to use the Internet to transform book buying into the fastest, easiest, and most enjoyable shopping experience possible" (Amazon.com 1999). It took Barnes and Noble some time to realize the emerging threat of Amazon and develop a strategy to combat the strengths of its new competitor.

BN.com, while slow to emerge, has leveraged its existing competencies—brand, logistics and warehousing capacity, retail store integration and existing links to media outlets (i.e., the Oprah book club) and other chains (i.e., Starbucks), as well as the trust and recognition that they have with existing 'real world' customers—to compete with Amazon. BN.com is now counted as one of the top ten most visited sites in the US in 1999 (*Economist* 1999). The emergence of BN.com, and the pressure they exerted both exogenously (as a competitor) and endogenously (through their influence on book suppliers), has seen Amazon (while still the leading online retailer) rethink parts of its own strategy—particularly with regard to holding of physical inventory and fulfillment requirements.

effective way, leading to a higher final price but with a greater overall value proposition to customers.

The one thing we can be sure about is that the prices for goods and services will continue to vary as sellers utilize individual strategies to avoid commoditization. The real question is whether or not this increases or decreases consumer surplus. On the downside we can think of firms using a number of techniques to extract more rents from consumers, including:

- price discrimination and various versioning strategies (Shapiro and Varian 1998);
- market segmentation strategies that make comparative shopping difficult; and
- the creation of networks that lock in customers.

Consider the case of a supplier who collects customer information over the Internet using an online registration form. The customer is willing to divulge personal information in return for a customized service. The supplier, in turn, uses this information to make inferences regarding the customer's beliefs,

attitudes and buying behavior. Based on this improved customer information the supplier is then able to differentiate the service in ways that target the customer's price limits, extracting maximum rents.

On the positive side we can see a situation where the value proposition to consumers is enhanced by integrating the value chain. For example, Shopfast.com, an Australian Internet grocery shopping service, envisions a world where consumers will look to its company to maintain their household inventory in the same way that point of sales terminals do for stores. When a person takes a can of soup from their pantry, they can scan the barcode using a scanner; this tells Shopfast that the consumer wants this item restocked. Then according to their prearranged delivery schedule, the soup, and whatever else was requested, would be delivered to the customer. Although Shopfast.com will not charge you less for the can of soup, they will charge you less for the whole proposition of getting the can of soup into your pantry.

The main impact of e-business is the ability to reduce the cost of exchanging and processing information, thereby reducing the overall costs of customization—either between a producer and a supplier or customer and a product or service provider. The potential is not that the bottle of Coke or metallic widget will get any cheaper (although this might occur in some circumstances), but the cost of getting the right item to the right customer has got cheaper. Value system change has occurred where particular upstream and downstream activities have been opened up or better tailored to customer needs. Therefore, what we are seeing is a new transactional medium being formed that is designed to reduce deadweight losses. For example, the growing importance of auctions is not because we know more about auctions but that the medium allows us to use them in a greater variety of circumstances. Technology is allowing us to capture a larger part of the whole customer proposition. As such, speculation about whether prices will rise or fall is something of a red herring. They could go up or down.

**Summary: conflicting worldviews.** There is little doubt that the result of the e-business experiments occurring today will have a significant impact on the way technology is used in the social and business environment. Whilst these developments in interconnectivity represent a major technological innovation, the question we need to ask is whether or not the evidence we are seeing implies a fundamental paradigm shift in the way business is conducted. One side of the argument is that the fundamental rules that have

governed businesses for centuries—supply versus demand, market competition, segmentation pricing, contracting and the nature of governance in the firm—will remain as relevant today as they were when Adam Smith described the workings of a pin factory. According to this stance, although e-business will have a dramatic impact on many businesses and demand new requirements from many managers, the basic rules will not be altered. This is the position put forth by authors such as Shapiro and Varian (1999). We can sum this up as saying that “there is no such thing as e-business, there is just business and some of it is electronic.” The counter stance is that the old rules of business will not apply and a sea change is underway in the way we approach the operation of firms. Booz-Allen Hamilton (1999) best represents this position:

“[t]he internet is not just about e-commerce, however. The real story is the profound impact this medium will have on corporate strategy, organization and business models. Our research reveals that the Internet is driving a global market-place transformation and paradigm shift in how companies get things done, how they compete and how they serve their customers.”

We can summarize this view by saying, “there is no business, bar e-business.” The remainder of our paper concentrates on determining whether the change we are witnessing can be classified as revolutionary or evolutionary. For if we classify it as evolutionary, then pre-Internet firm strategies and managerial responses are largely appropriate. On the other hand, if we classify it as revolutionary, then new strategies and responses will be needed.

## **Is this a revolution or is it evolution?**

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### **Déjà vu all over again?**

“The great industrial revolution that transformed America after the Civil War .... set the pattern for the rest of the nineteenth century, which experienced huge economic advances, punctuated by treacherous slumps. Lured by easy profits, legions of investors rushed into a promising new field and when big gluts developed from overproduction they found it impossible to recoup their investment. This was especially true in new industries where people lacked the caution bred by

experience and thus expanded with reckless abandon. As a result, many businessmen began to distrust unfettered competition and flirted with newfangled notions of co-operation—pools, monopolies, and other marketing arrangements that might curb production and artificially buoy prices.” *Titan: The Life of John D. Rockefeller, Sr.* (Chernow 1998; pg. 129)

The similarities between the changes wrought by the American industrial revolution and the rise of the steel (Carnegie), railroad (Stanford & Vanderbilt), automobile (Ford), oil (Rockefeller) and utilities industries (Edison) and the current convolutions occurring today are not lost on the student of history. The inter-relationship between the major industries at the turn of the last century, their tendency to compete and cooperate with abandon and the acquisition of fortunes out of nothing by social outsiders, makes the parallels eerie. The steel industry was at one and the same time dependent on the railroads, which bought track and stock, but so too were the railroads dependent on the steel industry, which needed to transport coal and iron ore. The oil industry also needed railroads to transport oil while the railroads needed the volume of transport guaranteed by the oil companies. The automobile industry competed directly with railroads but was the savior of the oil giants, which were dependent on kerosene as their main product. Once electric lights began displacing kerosene lamps, the oil industry found that the by-product of their refining process—i.e., gasoline—was valuable in internal combustion engines. The boom in automobiles further increased the demand for steel and on the cycle went, making millionaires of the men who would not be given the time of day by society’s elite before they became rich.

Today’s Silicon Valley whiz kids fall into much the same category as their industrial predecessors. Riding a wave of technological innovation in inter-related industries such as microprocessors (Andy Grove), operating systems (Bill Gates), relational databases (Larry Ellison) and network computing (Scott McNealy, Jim Clark & Marc Andreessen), these men have emerged from humble backgrounds to become billionaires and leading figures in the new economy. Intel chairman Andy Grove’s vision, to build chips, was simple but its success was dependent upon the development of the software industry. Similarly, the development of the software industry required a microprocessor platform. Leveraging the power of the

Intel microprocessor, Bill Gates foresaw a world where Microsoft software could run on computers in every home and office. Like Rockefeller and Ford before them, both men's companies moved from the periphery to the center of the new economy. Network evangelists like Scott McNeally and Marc Andreessen have built on Microsoft's foundation while at the same time are working hard to erode Microsoft's dominance through their vision of seamless connectivity. They believe that the Internet will change people's work and social interactions with the world at large in fundamental ways. As was true for the railroads and related industries at the turn of the last century, these newly emerged sectors of business have evolved into a complex network system with notable players dominating critical nodes.

In many ways, the same dynamics that were at play in industrial infrastructure and transport systems at the end of the nineteenth century are being repeated with modern analogues that are not lost on current writers like Westland and Clark (1999):

“The economic impact of the knowledge-ward paradigm shift is not unlike that of the paradigm shift in the agricultural economy at the end of the 19<sup>th</sup> century. The relevant ‘network’ technology in those days was offered by the railroads. Railroads accounted for almost 15 per cent of US GDP at the end of the 19<sup>th</sup> century—similar to the share of IT at the end of this century... We face many of the same issues and challenges today. New information technology remaps the ‘distances’ between people and places...”

In considering the parallels described above, it is important to ask the question “are we really undergoing a revolution?” If we look on the industrial revolution as triggered by the development of engines, we would be rightly justified as saying that James Watt's steam engine was the trigger of the revolution to follow. If, however, we consider the industrial revolution as a triumph of man in the use of power—with a wide variety of consequences—then the industrial revolution is just one more evolutionary event in a long sequence, namely the replacement of human and animal energy with chemical energy.

In applying this logic to the changes occurring in e-business, we need a basis on which to build our understanding of when events are more or less ‘revolutionary/evolutionary’. Manuel Castells' view of the information revolution is representative of much thinking in the field and provides a good starting point.

“The historical record of technological revolutions... shows that they are all characterized by their *pervasiveness*, that is by their penetration of all domains of human activity, not an exogenous source of impact, but as the fabric in which such activity is woven. In other words, they are *process oriented*, besides inducing new products.” (Castells 1996; pp. 30–31)

Applying Castells’ logic, a revolution is a historic transformation in the doing and thinking about things through the diffusion of transformative catalysts, be they ideas, technologies or primary inputs. Underlying this is the idea that the ways in which humans manipulate their environment is the central foundation from which all facets of the economy and society are built. With this basis we can say that the two main elements underpinning any revolution are (1) its *pervasiveness* or *ubiquity* and (2) its impact on *process* or the ways of doing things (i.e., it is not just a bunch of new things). Clearly, many people feel that the development of IT satisfies these criteria:

“[U]nlike any other revolution, *the core* of the transformation we are experiencing in the current revolution refers to *technologies of information processing and communication*. Information technology is to this revolution what new sources of energy were to the successive industrial revolutions, from the steam engine to electricity, to fossil fuels, and even to nuclear power, since the generation and distribution of energy was the key element underlying the industrial revolution.” (Castells 1996: p. 31)

However, what we need to understand is whether what is occurring now is being driven by the characteristics of e-business itself or whether changes in the nature of firm management are affecting e-business. As noted above, the discovery of different sorts of power was not in itself revolutionary. What made it revolutionary was the complementary development of an ability to distribute it to customers.

**The pervasiveness of e-business.** As we examine the historic record, major technological developments have had relatively long periods over which they have diffused through the economic and social milieu. One of the hallmarks of the development of computers and the internet that is generally argued as being reflective of its ‘revolutionary’ mantle is the speed with which it has flowed through the economic

system. Exhibit 5 presents this information as well as the diffusion paths of other technologies over the past century. What is curious about this graph is that there has been a general increase in the speed with which all new inventions have diffused through the society over time. Hence, we are left with the currently unanswerable question, to what extent is the speed with which the IT related inventions have diffused across the economy a cause or a consequence? For example, the phenomenon of beanie babies was far more rapid than the uptake of any IT related technology. Its pervasiveness was due to the ability of the manufacturer to market the product in a way that reached the potential market quickly. Within one year of their introduction, almost everyone who was a potential beanie baby purchaser had one of the beasts. However, we would not look on the phenomenon of beanie babies as in any way revolutionary.

#### **Exhibit 5 about here**

If we examine the up-take of computer technology and e-business it is only with the maturation of IT industries in the 1990's that any claim to pervasiveness could be justified, and then only in certain sectors of advanced industrial economies (Castells 1996). If we look at the most recent figures on IT from OECD countries, while not ubiquitous in each sector of the economy, there are some clear trends emerging in the uptake and use of information technology. An important determining factor has been cost and its decline has been a signal of the maturing of information technologies. According to the Secretariat on Electronic Commerce (Margherio, Henry et al. 1998), the diffusion of Internet usage in the United States can be traced most notably to breakthroughs in the quality and performance of IT that have been matched by equally dramatic falls in the costs of acquiring IT infrastructure.

This discussion indicates that, for many businesses, the advent of IT is not a pervasive phenomenon but that measures of diffusion may not be the most appropriate measure of pervasiveness. At best, diffusion must be thought as a necessary but not sufficient condition for pervasiveness to exist.

Our discussion of the industrial revolution highlights a remarkable degree of complementary development. Hence another perspective on pervasiveness is it is embodied in the degree to which one phenomenon leads to change or development of complementary phenomenon. For example, the industrial revolution was the confluence of three complementary events, a revolution in agriculture, a



revolution in manufacture of textiles and a revolution in power. From this perspective, the Internet and, by association, Internet based e-business are not stand-alone phenomenon. Rather the Internet represents an endogenous development linked, perhaps randomly, with the progression of related technology and a larger and more historically pervasive movement. To the extent that we take this one step further and talk about e-business, our ability to discuss this as a ubiquitous phenomenon loses some strength. It may be the result of a ubiquitous phenomenon but fails to be justified as such in its own right unless it can be shown to be the impetus for its own predecessor's formation.

A consequent issue is that the Internet and e-business could be pervasive not because they have affected a large proportion of business but that where they have had an effect, the effect has been dramatic. Hence, the key to claiming pervasiveness could lie in the productivity dividends that accrue through use of the technology. However, the evidence is not supportive of a radical change in productivity derived from the use of information technology. Jorgenson and Smith (1999) argue that, in fact, IT is:

“...not ushering in a period of faster growth of output and total factor productivity. Rather returns to investment in IT equipment have been successfully internalized by computer producers and computer users... The rewards are large because of the swift pace of technical change in the production of computers and the rapid deployment of IT equipment through substitution, not because of spillovers to third parties standing on the sidelines of the computer revolution.”

Hence, reading all of this together we are left with the conclusion that e-business cannot pass a test based on the pervasiveness of the phenomenon at this time. Similarly, although basic IT infrastructure is pervasive from the standpoint of diffusion, much of this is substitution from one factor input to another. IT architecture can improve the efficiency and effectiveness of organizations and at the same time provides a medium for maintaining the information base of those organizations. However, this is as much a shift along an existing production function as it is an expansion of the production possibilities frontier.

**Process orientation.** Process orientation is the key benchmark of any successful technology. In each of the industrial revolutions the inputs that have brought about change have been linked to the successful

orientation of process to technology. In the case of e-business, process orientation is linked to the informational characteristics of the businesses and, as a derivative of that linkage, their ability to network internally and eventually network externally (Tapscott, Lowy et al. 1998) with other organizations. In many ways productivity improvements are only possible once the technology has had an impact on process. J. Bruce Harreld (Tapscott, Lowy et al. 1998) states:

“...Simply providing a powerful new desktop tool won't transform the way people work together. .... Creating change throughout an enterprise requires a comprehensive solution that addresses the full fabric of organizational culture.”

This suggests that process orientation is more about the changes that can be brought about within an organization's culture than it is about the diffusion of technology. Indeed, the Alliance for Converging Technologies describes the history of the inter-networked enterprise as an evolution of organizational processes rather than technological changes (Exhibit 6).

#### **Exhibit 6 about here**

Given the convergence of information technology and work practices, any claims to a revolutionary impact go against the grain of existing evidence. While the technology may be revolutionary, the process orientation itself is not. Process orientation is driven by factors of efficiency, economy and effectiveness. These three factors will rarely, if ever, occur together as a direct result of revolutionary technological change. Because of the way people learn it is impossible to match revolutionary technology with the evolution of work practice. People learn to adapt technology into their work process, while the technology feeds off this implementation. When presented with such a framework, one can argue, as does Castells (1996), that what has occurred has been a result of an evolutionary process of IT integration into work practices and not as a result of a revolutionary vision for where IT would lead work practices.

**Summary: evolutionary versus revolutionary—should we worry?** In challenging the popular myth that e-business is revolutionary, we hope to provide managers with a clearer understanding of the strategic options available. Like all myths, they capture elements of the truth only—as was clearly the case with

the computer revolution. The popular claim that the development of the transistor explains sufficiently the progress of computing, ignores the significant influence supporting technologies (e.g., disk storage, etc.) had on the development of the working computer. In a similar vein, claims that e-business is driving revolutionary business change are misleading and as we have shown only partly correct. Social requirements govern technology (not the other way around) and current efforts to ‘virtualize’ business have not been pervasive or process oriented enough to warrant the term revolution.

From an historical point of view, our discourse hopefully provides an appreciation of the likely ramifications e-business will have on future generations. For managers however, the real value in our conclusion relates more to market entry and the likely rate of imitation. Sensible strategies that effectively integrate brick and mortar facilities with an Internet presence take time to materialize. During an evolutionary period, timing of entry can be delayed until strategies are fully developed, the technical architecture is robust and mechanisms to monitor e-business are understood. Providing classic customer service is the key and repeat purchasing will be based on service capabilities across all levels, from product selection, to customer responsiveness, order fulfillment and on-time delivery. Taking the time to get this right will provide the barriers to entry and customer loyalty required for slowing the rate at which imitation erodes competitive advantage.

## **Issues and questions for future consideration**

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Truly revolutionary changes often presents challenges in direct proportion to the benefits they offer. So it must have been in the rise of the factory and the subsequent atomization of the artisan’s workshop. So it surely was with the development of the railroad and the impact increased mobility had on economic, societal and political dimensions. Yet similar claims of an e-business revolution that will fundamentally change the way business is conducted are still largely premature.

Predictions regarding the demise of brands, economies of scale, middlemen and imperfect markets have failed to materialize. Advances in information technologies have yet to change in any significant

manner the way major decisions are made in business. Instead those principles that have served us well for a century—identify customer value propositions and put together the right people, processes and technical resources in an effectively managed manner—are still as relevant today as ever. This view affirms Keen's (1993) 'fusion' perspective as well as the premises underlying the socio-technical systems literature (Miller and Rice 1967).

Just because it is possible to purchase parts online doesn't mean electronic buyers will flock to the new channel. To date, few buyers have shown a willingness to entrust such a crucial part of their business to unproven electronic supply sources. If the e-business revolution is to occur, then answers to new challenges will be required to ensure the costly nature of e-business development is wisely managed. What is best practice in an e-business environment, and how do firms decide whether the complex chain of upstream and downstream virtual relationships is over or under designed? How many specialized investments have to be made and which governance structures will work best in a virtual alliance?

Establishing trust may be the easy part; but it is the ongoing management of the relationship that is likely to be the hardest part. As Aldrich (1999) points out, building relationships will be even more important in an e-business world, where multiple channels and interaction points create a level of complexity not experienced previously. Like its predecessors (e.g., EDI and Strategic Information Systems) e-business is likely to play an important role in certain markets and for certain population groups. However e-business is no 'silver bullet' and will not meet all trading requirements or provide a competitive edge for all firms. Now is not the time to panic, now is the time to plan and put in place sense-making approaches that look beyond the rant played out in the popular media.

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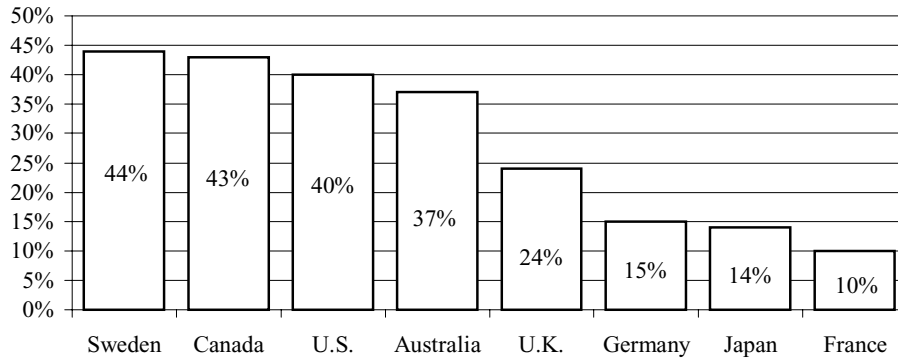
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**Exhibit 1:** Per cent of the Population with Internet Access at Home or at Work



Source: Computer Industry Almanac, November 1999.



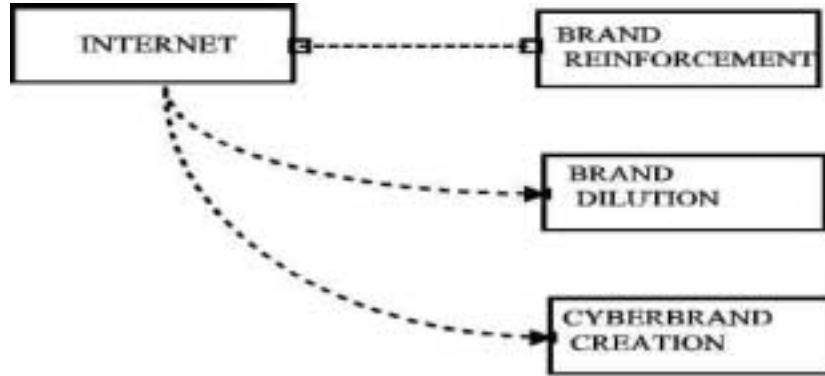
## Exhibit 2: e-Predictions and e-Reality

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Prediction	State of Current Reality
<b>Brands will die!</b> The Internet represents a major threat to brands, making brand strength weaker than ever before (Kalakota and Whinston 1996).	In an over communicated environment, the Internet provides no guarantee of customer attention or lower search cost. It is likely, therefore, that users will continue to gravitate towards brands as a way to simplify choices, reduce search costs and build trust (Barwise 1997).
<b>Middlemen will die!</b> “In every industry—from retailing to insurance—the key impact of the computer-network revolution is to remove the middleman” (Gilder 1994)	We have still seen few examples of successful disintermediation resulting from e-business investment. This has nothing to do with whether profits are possible. Rather, it has everything to do with the difficulty of working out how to move into a new distribution channel without jeopardizing existing channel relationships.
<b>Scale is irrelevant!</b> Esther Dyson, has suggested that size will be less important for online firms (Dyson, 1997; pg. 64)	Networks, be they real or virtual, work to a relatively simple logic. The larger the network, the more attractive it is to users. Markets for portal companies (e.g., Yahoo.com), hardware (e.g., Intel) and software (e.g., Microsoft) all provide recent examples of companies deriving increased value from wider reach. Equally standardization of inter-organizational systems will require governance mechanisms and large firms will leverage their bargaining power to encourage co-operation among channel members. Such co-operation is often in the best interests of the large firm.
<b>Being first is the key!</b> In the networked economy, speed is God and first movers will reap the rewards (Downes and Mui 1999).	There is no guarantee that pioneering firms like Amazon or eBay will be able to maintain their position as the market evolves. Information technologies, by themselves, will not produce sustainable competitive advantage and pioneers must be careful not to develop the ‘wrong’ resources. Provided high switching costs do not exist, the early follower is often well positioned to exploit their existing resources and core competencies. In many cases, the early follower has complementary assets (e.g., brands) that will be their basis of competition.
<b>Lower prices!</b> E-business will lead to more efficient markets and lower prices	Reduced information exchange and coordination costs have enabled firms to capture a larger part of the customer value proposition. Whilst the cost of getting the right item to the right customer has got cheaper, there is not guarantee that this will result in lower prices. Speculation about whether prices will go up or fall is something of a red herring.

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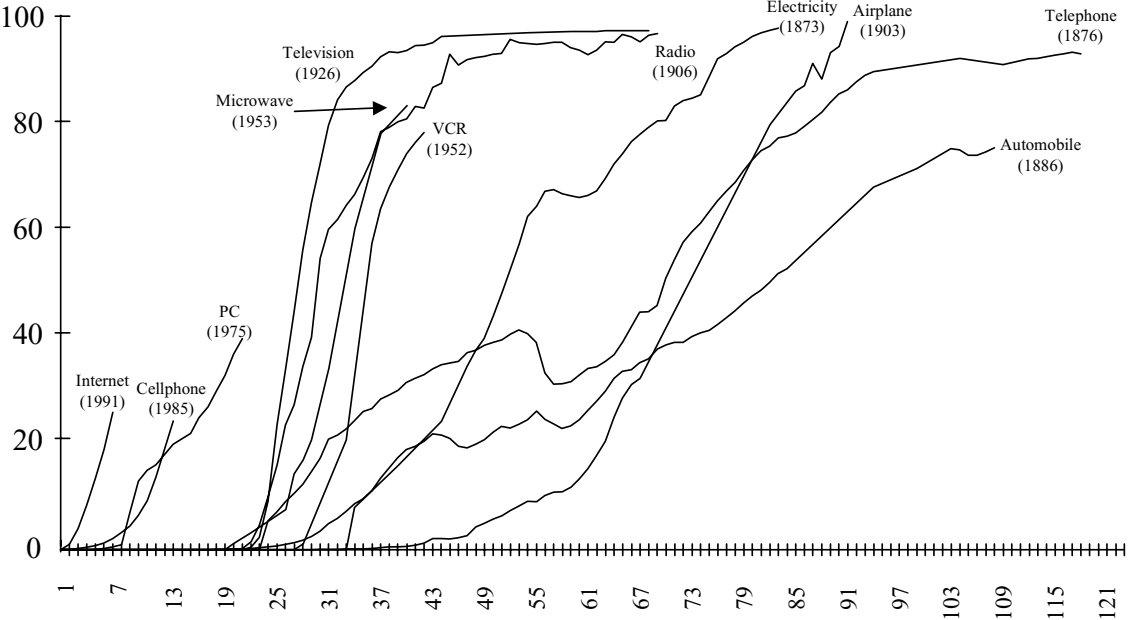
**Exhibit 3:** Three effects on Brands in an Online Environment



**Exhibit 4: Examples of Value Adding Intermediaries**

<b>Business Model</b>	<b>Value-adding capabilities</b>	<b>Internet example</b>
E-auction	Price discovery and demand collection systems where customers state product/price preferences which are forwarded onto suppliers for consideration	Priceline (www.priceline.com) and online auction sites—eBay (www.ebay.com) or QXL (www.qxl.com)
Value chain integrator	Offering complementary goods, services which aggregate information rich products into a more complete package for customers	Car dealership, insurance and automotive accessory aggregator—AutoByTel & Carpoint (www.carpoint.com)
Value chain service provider	Specialize on particular value chain function such as electronic payment or logistics	Package and shipping —FedEx (www.fedex.com), UPS (www.ec.ups.com) or European bank transaction settler—SWIFT
Information brokers	Privacy and trust providers, business information and consultancy advice	Public key & certification authorities—Verisign (www.verisign.com), seller rating service provider—Bizrate (www.bizrate.com) & search engines—Yahoo.com (www.yahoo.com)

**Exhibit 5: The Spread of Technology (Penetration Rates Years after Introduction, Year 1 = Year Invented)**



Note: The vertical axis is either the per cent of households with the product; air miles as per cent of 1996 level; motor vehicles relative to population over 16 in age. The horizontal axis is the years since invention of the product

Source: Dallas Federal Reserve Bank, in *Forbes*, 7/7/97

**Exhibit 6:** The Alliance for Converging Technologies Framework (Tapscott 1996)

Process orientation (the promise)	Technology	Transformative quality (productivity dividends)
The effective individual	Personal multimedia	Task and learning efficiency
The high performance team	Workgroup computing	Business process and job redesign
The integrated enterprise	Enterprise infostructure (intranets)	Organizational transformation
The extended enterprise	Interenterprise computing (extranets)	Recasting external relationships
The internetworked business	The net	Wealth creation and social development