

## Chapter 3: $N^{n-1}$ – The law of networks and Internet publishing

*With knowledge being perishable, organisations cannot become complacent with today's knowledge . . . it is this ability to create new knowledge continuously that becomes the source of competitiveness in the knowledge society. – Ikujiro Nonaka and Hirotaka Takeuchi'*

**A**gainst the background of the Preface and the preceding chapters, it is useful to look at who uses the new medium. Individual Internet users, along with publishing companies and various other organisations, many of which do not consider themselves to be in the publishing business, are transforming information creation and dissemination. In addition, clever exploitation of Internet technology permits the redesign and reinvention of many businesses. The Internet helps invent knowledge.

The Internet follows the footsteps of the ubiquitous facsimile machine. When facsimile machines were expensive, foul smelling and rare, their value was limited. When thousands of facsimile machines flooded offices in the early 1980s, their value grew. The value of three facsimile machines is limited. When 30 million facsimile machines wait patiently in offices, they become essential.

The Law of Networks, discovered by Robert Metcalfe, the founder of 3-Corn, offers compelling evidence that when connections matter, the value of the facsimile, the telephone or the Internet is the number of machines ( $N$ ) raised to the power of  $n-1$ . The Internet, like the telephone and the facsimile, is now an essential.

The Internet provides entrepreneurs with a new business model. Traditional business economics have a role to play, but many of the truisms about driving down costs over time, valuing tangibles and work location, are given new twists. Technology plays a large part. Equally important are the new options that can be exercised by those with the flexibility to rethink the new medium.

Driving the growth is the simple fact that a global Internet presence can be established for as little as \$25 per month. No other medium in history has afforded the reach, flexibility and potential impact of Internet publishing. For \$25 per month, a person or organisation has an opportunity to tap a pool of more than seven million computers in 150 nations. In November 1995, more than 25,000 companies had a presence on the Internet. For the computer-challenged, CompuServe, Prodigy and

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[1] *The Knowledge-Creating Company: How Companies Create the Dynamics of Innovation.* New York and Oxford: Oxford University Press, 1995, p. 96.

America Online offer a Web page publishing service that an inexperienced computer user can make use of without hesitation. The number of Web pages will almost certainly flatten, but that down-turn lies months, if not years, in the future.

One key to the business opportunities is the make up of Internet users. A number of recent studies from the University of Michigan, O'Reilly & Associates and others have provided significant insight into who uses the new medium and for what purpose. These individuals are exploiting the Internet and inventing its future. Not surprisingly, the Internet market composition consists of the technologically savvy and the financially robust. As the market broadens, the Internet community resembles a select – possibly elite – global constituency.

## Internet demographics

A widely publicised study by O'Reilly & Associates posits that about 5.8 million Americans have access to the Internet. An additional four million people have access to commercial online services.' These figures provide a more conservative estimate than those of tabloid headlines. America is the country with the largest concentration of personal computers in home and business. With O'Reilly's data as a benchmark, the total world user base is certainly larger than the American user community. Other estimates of 30 million users worldwide with half in America contrast sharply with the modest thousands of users of commercial services such as Lexis-Nexis or STN.

The hyperbole surrounding the Internet has helped boost online access throughout the world. The World Wide Web and the graphical interface have added new impetus to use the Internet because images, ideograms, kanji and a host of specialised alphabets can easily be integrated into a point-and-click paradigm. The good news discovered by the O'Reilly study, funded by such paying customers as IBM, is that by 1996 an additional six million Americans will venture online. If the pattern holds, the worldwide online user community is likely to reach 18 to 20 million people. These figures are supported by the A.C Nielsen study. <sup>2</sup>

One can quibble with O'Reilly's figures, of course. Certain countries and certain socio-economic segments will not be among the online cowboys and cowgirls taming the digital frontiers. Digital range riders cannot be considered average consumers when measured against a global yardstick. The typical Internet user, according to O'Reilly's data, has these attributes:

- A 1994 median household income from \$50,000 to \$70,000.
- More than half between the ages of 18 to 34 with an additional 25% in the 35-44 age group.

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[1] The firm conducted a telephone survey in mid- 1995 of 29,000 people. The sample was selected by random dialling. The results of the study are located at <http://www.ora.com/survey>.

[2] The A.C. Nielsen data are located at <http://www.commerce.net:80/information/surveys>.

- About two-thirds male (but women are coming online in ever greater numbers).
- About 50% working for organisations with more than 1,000 employees.
- Of users not in education, 19% work in sales and 15% in engineering.

With bits and pieces from other Web surveys, the picture of the ‘average’ Internet user has more than a passing similarity to a maths scholar from Cambridge University or a bright engineering major with an entrepreneurial bent. A similar study conducted by the Online Research Group found that Internet users formed a younger group than those of other online services.’

The future users of the Internet will come from these current users. Marketers, keen to spot a trend, have begun to focus on the three million children who have access to ‘the Internet. The ‘digital kids’ form a distinct market. Jupiter Communications (New York) estimates that 12 million children will have access by 2000.<sup>2</sup>

### The common denominator

The Internet’s surging popularity is a happy occasion. The confluence of low-cost, powerful personal computers, sufficient network bandwidth and innovation such as O’Reilly’s \$495 easy-to-use web server, are rapidly creating a viable and dynamic information and communication environment. Computer literacy is spreading outside of the narrow corridors of computer science and into other areas of interest.

What Internet users share in varying degrees are habits of mind and attitude wrapped in intelligence, curiosity and sufficient financial resources to get online and stay there.

Most of the fancy multimedia Internet publishing remains accessible only to those with the more powerful computers and the proper financial backing. The mid-range activities such as listening to real-time audio programmes, engaging in toll-free international telephone conversations and browsing electronic newsstands, are available to an affluent, well-educated, computer user. Others may certainly apply for this pigeonhole, but it is reserved for a special few – less than one percent of the world population.

There are other factors that make the users of the Internet and other online systems similar.

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[1] The study’s findings were reported in the 21 November 1995 issue of *PC Magazine*, p. 30.

[2] Kathleen Murphy, ‘Web Marketers Aim Their Sites at Digital Kids’, *Web Week*, November 1995, pp.1,4.

## *Users as creators*

The person with a properly equipped PC – a graphic interface, a connection to the Internet, some word processing software and an idea – can publish electronically with a few keystrokes.

A person could have had similar tools a few years ago, but the financial cost of such access made it prohibitive for all but a few individuals. Today, a discounted personal computer and public domain software turns anyone with a telephone jack and a personal computer into Lord Thomson of Fleet.

The impact of this change is difficult to gauge. Certainly within the world of the Internet, the amount of grassroots publishing is growing at the typical network rate. The curves depicting numbers of messages and amount of data flowing to and from via the Internet make boring charts. The lines rise like F-16 or Mirage fighters scrambling for combat.

We will return to the consequences of this empowerment of what may rightly be termed a ‘new elite’ elsewhere in this Briefing. For now, the point is that the consumer of electronic information, products and services is likely to be a creator.

This is the Metcalfe Law developed on a napkin a decade ago to sell 3-Com network products. The idea is simple: one computer is useful to an individual. Link two computers together and the value grows. This is a variant on  $1 + 1 = 3$ . However, the more connections among computers, the more valuable the network. The equation is  $N^{n+1}$ . Link 10 million computers and 30,000 networks worldwide and the value of the connection becomes a very big number. The value to the user is so significant, that being connected becomes an essential part of existing.

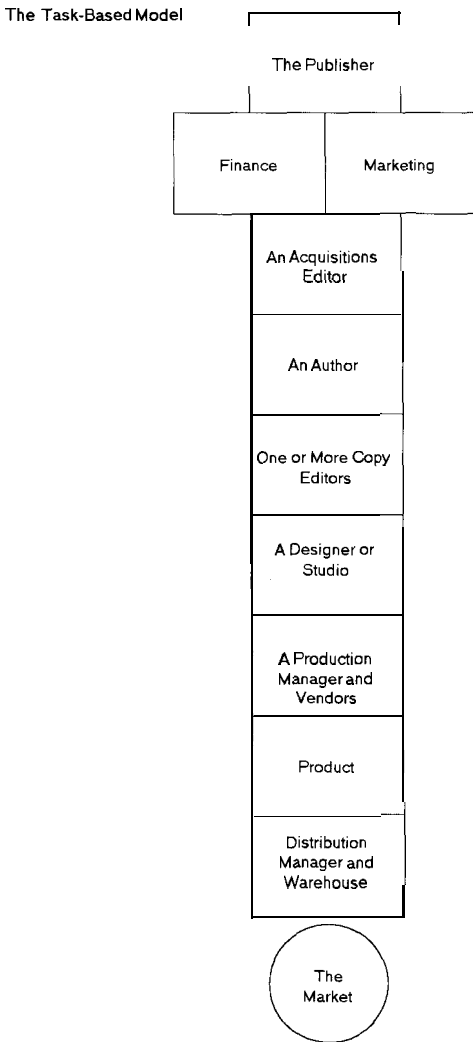
Of course, those unaware of the Metcalfe Law cannot exploit the value of the connection. From those who are immersed in the new community, the ‘outsiders’ are marginalised digitally. If one does not have an e-mail address, one does not ‘exist’.

## *New ways of working and socialising*

Within companies, electronic mail changes the mechanics of work and communication. Network romances flourish. Memos arrive with no mail room delay obviating the need to rise from one’s desk to go and speak to the recipient to see if the document appeared as requested.

Expanded globally, the work processes themselves change. The term *telecommuting* was coined to describe work from home. The dated concept of using a computer to handle the office’s daily tasks is rapidly giving way to collaborative computing. The entire work group is distributed. The work space is virtual; that is, it exists on the monitor, in the audio, within the data sets the group is manipulating.

Setting aside the frothiness of playing virtual golf, let us focus on the impact of these technologies upon the networked community or the new elite. An electronic interaction can be a satisfactory substitute for many in-person activities. The



**figure 1: the traditional model for organisational control and work flow is linear, serial and often top down.**

telephone and facsimile machine provide multimedia to the majority of the work force. To the far-sighted, the computer monitor becomes a window into a virtual environment.

Many work activities can take place in this environment. More powerful computers and faster telecommunications increase the features of the electronic workspace. The direction of the technology is clear. The networked world, for a certain segment of the world's population, will be a detail-rich, interactive applications environment. If it looks like a game, the resemblance is partly true. But it is a game played only by those who have the tools, knowledge and financial wherewithal to participate.

The community reacts spontaneously to information that ripples through the environment. As new technology becomes available, the work and social functionality increases. Shared workspaces have simply moved from tangible settings to digital ones. Both will co-exist.

Consider the impact of these technologies upon a traditional business such as book publishing. Figure 1 illustrates the top down approach to creating an information product like a book or even a CD-ROM in 1990. Contrast that with the schematic of the fast-cycle approach in Figure 2 used by many entrepreneurial publishing and database publishing companies today. The significant differences are:

- The traditional company used a serial work process. Some functions occurred in parallel, such as writing and book design, but most work followed a process essentially unchanged since the 15th century. Each function was performed by one or more people. The fast-cycle process is simultaneous or parallel.
- The roles in the structure are precisely defined. The new work environment concatenates multiple functions to one person or to a small team that performs virtually all tasks.
- The traditional structure was highly intermediated. There were bureaucratic layers between executives, staff, vendors and customers. The new structure has the customer at the heart of activities. Intermediation is sharply reduced.
- The traditional publishing process produced a product, usually a book. Re-use of the information in the book was time-consuming, costly and fraught with formatting problems. The new process recycles database information into low-cost prototypes. The products that sell are produced;

### The Fast-Cycle Process

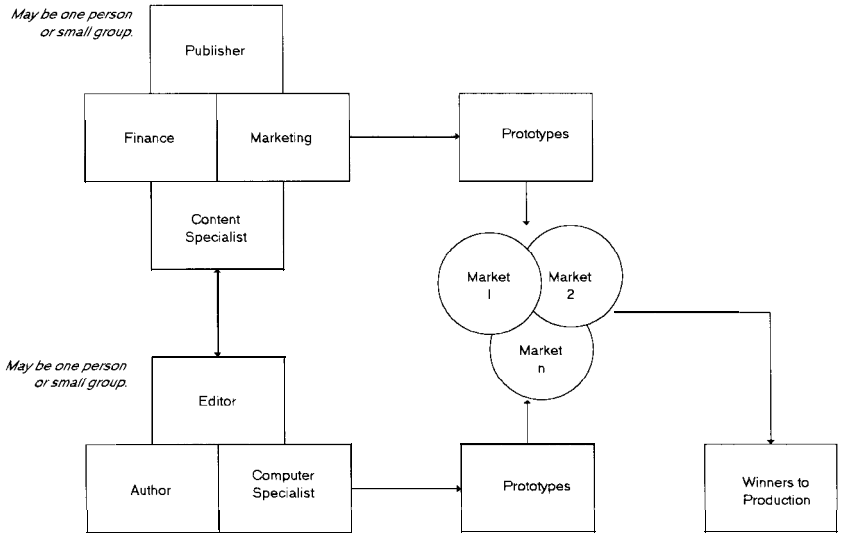


Figure 2: The model used at many Internet publishing companies is fluid, more like a spiral or a iterative loop. Staff can be located at various sites. The glue holding the entity together is the network itself. Such a structure allows multiple processes to occur at the same time. Work products flow more rapidly because the process is designed to operate at a faster cycle than the linear model.

those that do not, are killed. Microsoft is killing its line of home and some CD-ROM products because the entire range did not perform as well as the business products. Such precipitous action at a traditional publishing company would be highly unusual.

Other differences exist, but the focus of network publishing is upon the enabling technology.

### Technology as an enabler of information

Consider Figure 3. The work team, which may be a single individual in some situations, can surround itself with enabling technology and produce products. The overhead of a larger entity can be useful, particularly its marketing, sales and publicity functions. But a product or service can be created and sold with a small team of networked individuals leveraging technology.

Adobe, creator of Postscript, the standard programming language for professional publishing, invented a digital display technology marketed as Acrobat. A file processed with Adobe software into the Acrobat format can be transferred by modem and viewed with the original formatting and colour intact.

Adobe integrated the full-text searching technology from Verity into the Acrobat product. Users of an Acrobat document can search the file for any word or concept and jump via hyper-text links directly to the page with the concept, as well as to related concepts.

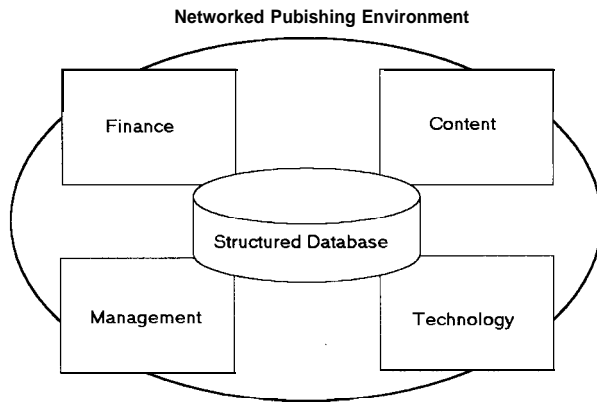


Figure 3: The traditional functional disciplines exist in an Internet publishing enterprise. However, the knowledge resource of the organisation becomes a structured set of information or data. Functional areas tap into the shared knowledge base as required.

Adobe's strategy is unfolding with a clarity of vision that is refreshing. Any user of an Adobe product can create or 'publish' documents for either print or digital media. The only effort required by the user is the ability to click a mouse and select 'File: Save As' from a menu. The software does the rest.

Universities, publishers such as Ziff-Davis and government agencies, are using the Adobe technologies to create documents that go from a single user's workstation to the Internet without any intermediary stops along the way.

Adobe Corporation purchased Frame Technology, the software company that created the cross-platform publishing tool, FrameMaker. Adobe has expanded its products by acquiring the Aldus Corporation and its flagship product, PageMaker. FrameMaker brings HTML publishing, the Adobe Portable Document Format and its read-only characteristics and complete support for SGML publishing to the desktop of any user of a Windows, UNIX, or Macintosh computer.

Quark, Corel and many other mainstream publishing software developers are either integrating or supporting Acrobat technology. Quark is carrying the Adobe model one step further. In addition to supporting Acrobat, Quark has licensed Apple's QuickTime technology. The person creating a document in Quark can embed a QuickTime movie into the document along with a traditional graphic. The Quark document, when moved to a network environment, will display the movie in real time when the user clicks on the image.

### Is there money to be earned?

The most asked question about the Internet is: "How can anyone make money with this medium?" One can pick up a magazine, newspaper or trade publication almost anywhere in the world and read about the Internet. The French publication *Univers Interactif* covers the burgeoning exploitation of the Internet by Japan's most creative CD-ROM game and comic book publishers.<sup>1</sup> Britain's *Internet Today* monitors developments in Britain, America and elsewhere. The approach is to present the content of the information in the form of brief reviews and listings reminiscent of television, film, theatre and radio listings.\*

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- [1] See the October/November 1995 number and its feature on Mr Cibaïre and the Tokyo underground express. The bimonthly is published by Courier Interactif, Montreuil, France.
- [2] *Internet and Comms Today* provides thorough coverage of content and technical issues. It is published by Paragon Publishing and is one of the outstanding Internet-centric serials.

Admittedly there is an easy answer to this question of how money can be made. Create a high traffic site, sell advertising, and then sell to a larger company willing to pay for an Internet publishing property. Point Communications sold the company 210 days after starting business, for about \$3 million. The firm had revenues of about \$500,000 and was breaking even.

There are many other ways to make money. Part of the difficulty in answering the question in a definitive way is to know the background of the person asking the question. Those without a sense of 'being digital', to borrow Nicholas Negroponte's phrase, are not likely to catch the scent of opportunity. Here are some proven winners whose success from leveraging the Internet has been widely discussed:

- For sellers of bridges, routers and various internetworking gear, the surge of interest in connectivity to and among TCP/IP networks have made Cisco Systems, Bay Networks and dozens of other companies serving this market among the hottest stocks. Cisco Systems is recording a record year with strong earnings and a per share price running more than 70% ahead of 1994.
- For resellers of Internet connectivity, revenues are coming from the sale of dial-up accounts. In Britain, Unipalm recently accepted a buy-out bid from UUNET, an Internet reseller in which Microsoft has a 20% stake. The cash price paid for Unipalm was \$150 million. Unipalm's estimated annual turnover is £50 million (about \$75 million).
- For content providers, the developers of Yahoo gleaned more than \$1 million in initial capitalisation as well as more than \$500,000 in advertising sales within the first 16 weeks of accepting advertising. A similar flow has been experienced at Architext, Point Communications and a handful of other sites on the Internet with traffic in the 300,000 users per day category. Advertising rates vary widely, but a three-month message on an opening page can cost upwards of \$12,000.
- For software developers, revenues are more difficult to estimate because hot companies are acquired before their products get to market, as in the case of Navisoft in Philadelphia, Pennsylvania. After demonstrating a prototype of NaviSoft Press, America Online acquired the company for \$150 million in cash and stock. Sales of CD-ROMs containing Internet software are available from more than a dozen vendors including Walnut Creek, SoftKey and others.

These answers beg the question, however. What managers and sceptics want to know is: "How can I make money using the Internet, protect my base business from cannibalisation and unwanted competition *and* keep my costs, including those of learning about the Internet and its technology, as close to zero as possible?"

Answering this question is more difficult because the person who asks it (and there is one at every Internet conference, seminar and planning meeting) does not believe that the new medium is viable.



### *Techniques that work*

Table 1 summarises the most common techniques for charging users of Internet services. The table is not exhaustive, but it does cover the most commonly used techniques of revenue generation. These data have been collected by Arnold Information Technology by examining more than 500 sites that offer for-fee services as part of their Internet offerings. As more uniform methods for validating credit cards become available, the use of online transactions for certain types of purchases will increase.

Entrepreneurs, unwilling to wait for a single standard to emerge, have developed a variety of techniques to generate revenue from the online usage of Internet products and services. A scan of Table 1 illustrates that revenue generation depends upon the purpose of the Web offering. In many instances, the Internet sites operate like magnets. Users are attracted to a site which provides names of potential customers or market data.

### *Four ways to generate big payoffs*

In the course of the research conducted for this Briefing, four techniques for generating large-scale financial payoffs were identified. These are:

- Develop a high-traffic Internet site. Offer advertising on the site. Advertising revenues have been estimated to be orders of magnitude more substantial than fees for the use of information. Entrepreneur Chris Kitze, one of the principals in Point Communications, said, "Fees for access to text are likely to reach \$200 million in 1996. Ad revenues are likely to approach \$2 billion". Are Mr. Kitze and the hundreds of advertising supported sites correct? The rapid proliferation of the model across more than 2,000 sites examined by the authors in the course of preparing this Briefing suggest that the trend is on target.
- Build a high-traffic site and sell the site to another organisation. Recent Internet property sales have made headlines around the world. Advertising agencies, investment firms and large publishing companies are buying or taken positions in a wide range of Internet publishing operations. Details of some of the more interesting investments appear in Chapter 7.
- Establish an Internet service bureau that provides Web page development services using advanced tools such as the Java programming language. Demand for Java, Netscape and General Magic Telescript programming skills is increasing. Java specialists such as Earth Web in New York City have expanded from a staff of three to more than 40 professionals in less than two months. According to Murray Hidner, "There is no end in sight for Java-based Web sites".
- Build a high-capacity Web server with high bandwidth connectivity. Internet start-up NTR-NET, a unit of UniDial, a telephony reseller, has projected revenues of more than \$2 million in the firm's first year of

Ways to generate revenue, 199596				
Technique	Example site	Company	Fee	Comment
Monthly fee plus variable charge	<a href="http://www.infoseek.com">http://www.infoseek.com</a> <a href="http://www/cognito.com">http://www/cognito.com</a>	InfoSeek Information Access	\$10 per month plus surcharge based on database and number of types online. Buy 'tokens'	Lure is free access to an index of the World Wide Web; free trial to for-fee services for 30 days
Download trial version free. then buy real product	<a href="http://www.navisoft.com">http://www.navisoft.com</a> <a href="http://www.adobe.com">http://www.adobe.com</a>	America Online's Navisoft unit Adobe	No charge for shareware: upgrade is \$500	Full-featured programs that have a built-in expiration date are preferable to disabled software
Advertiser supported	<a href="http://www.pointcom.com">http://www.pointcom.com</a> <a href="http://www.atext.com">http://www.atext.com</a> <a href="http://www.yahoo.com">http://www.yahoo.com</a>	College Marketing Group (Lycos) Architext Yahoo	Ad rates range from \$50 to \$20,000 depending upon the site and its traffic and the 'page' on which the message appears	Architext charges \$2,500 for a banner, but the advertiser does not pay unless that page receives more than 2,500 users per month
Use Internet as a brochure	<a href="http://www.rmii.com/~ccs/main.html">http://www.rmii.com/~ccs/main.html</a>	Eppie's Weaving Gallery	Each woven rug priced separately	Eppie Archuleta. 72-year old, weaver in Colorado markets via the Web
Register for trial use; fee assessed later	<a href="http://www.infomkt.ibm.com">http://www.infomkt.ibm.com</a> <a href="http://www.gnn.com">http://www.gnn.com</a>	IBM America Online's Internet unit	IBM fees vary; America Online's GNN service is \$ 15 per month	Free trials yield a 50% turnover or 'churn' rate
Buy an application and get Internet access free	<a href="http://www.intuit.com">http://www.intuit.com</a>	Intuit	Internet access is free; certain services are sponsored by Intuit's partners	Revenue flows from commissions or fees paid by Intuit's partners; for example, Wells Fargo Bank

Table 1

operations. According to company officers, "We are likely to beat our revenue forecast by a factor of two". Similar fast-growth successes are causing Internet providers to expand their computing infrastructure. Architext, a software tool developer, has moved to a Sparc 1000 with eight processors. The NTR-NET site uses a Silicon Graphics Challenger, one T-3 and two T-1 lines.

## Business-centric medium

According to estimates prepared by *PC Week*, the American computer newspaper, about \$20 million traded hands on the Internet in 1994. The most recent reports from Simba, Jupiter and DataQuest – all American information research bureaux – suggest the figures for 1995 will increase significantly. By 2000, the Internet as a collective enterprise will generate an estimated \$13 billion worldwide, according to high-technology specialists at Hambrecht & Quist in San Francisco. In addition, consumers and businesses will buy and sell products and services worth an additional \$15 billion. Billions in revenue almost certainly lie in the future.’

The future revenue opportunities are numerous. Those that appear to have the most important role to play for those who have access to network services are:

- *Banking and financial services.* Reasons: Cost reduction from re-engineering existing business practices, and transaction-based pricing for user-triggered services. Lines develop between traditional financial institutions and new competitors such as companies (eg, Ford Motor) and software companies (eg, Microsoft).
- *Shopping in virtual stores.* Reasons: Global reach for consumer, industrial and services companies and significant payoff from bundling factoring, letters of credit and other facilitating services into one integrated system. A consumer success is the Virtual Vineyards’ site which averages 1,500 shoppers per day and has enjoyed 20% growth per month. In mid-1995, there were more than 350 shopping malls with variations on the theme emerging with increasing frequency.
- *Software distribution* (music, video and programs). Reasons: Instant collection of funds and delivery of product. Online software eliminates or sharply reduces the need for distribution, packaging and tangibles associated with the software sale. MusicNet (San Francisco) and Geffen Records (Los Angeles) have established strong presences on the Internet that will offer alternatives to CD-ROM delivery of music. Video will not be far behind with 15 frame per second display now possible using software-only technology from Xing, VDO Live, Apple and other companies.
- *Communications.* Reasons: Hardware, software, network services and ancillary services are needed to respond to the demand triggered by Internet-based business. Some of the the most highly-prized companies are found in this opportunity area. AT&T’s strong moves promise to change the the face of Internet access by delivering an ‘Internet dialtone’.

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[1] Anne Knowles, ‘Electronic Commerce’, *PC Week*, 30 October 1995, pp. 102, 108.

- *Collaborative communications, team computing and groupware.* Reasons: Speed, cost savings and flexibility drive this business segment. Setting aside the \$3.5 billion paid by IBM for Lotus Notes, the hardware, software and services supporting Internet-facilitated team computing is one of the next major financial bonanzas in the new medium.
- *Entertainment.* Reasons: The users control 'programming', and interactive, real-time, high-resolution, high fidelity audio entertainments are wanted by the Internet constituencies. Traditional giants in this \$6 billion segment are scrambling to respond while entrepreneurs and start-ups are moving to meet demand. Gambling is an interactive entertainment which is a business segment with a significant value.

## The downside

The Internet has a less sanguine aspect as well. Despite the promise of riches the Internet offers, it is clear that it serves a specialised constituency. The constituency will grow but will not reach the number of people using television, videotapes and recorded music. The Internet demands resources – intellectual, technical and financial. CompuServe Information Services outbid America Online for the electronic version of *Time Magazine*. The Internet is raising the stakes in all segments of the business. The winners over the long term are likely to have access to financial, technical and intellectual resources that distance them from less well-equipped organisations.

As a result, the pace of growth will slow and the penetration will reach a saturation point. We estimate that 25% to 30% of a developed nation's households will make use of Internet publishing in the next five years. In America, an estimated 68% are now connected. By 2000, penetration will approach 25%.

The consequences of the Internet environment are significant. In social terms, the Internet is exclusionary. Nations and people without the necessary resources to connect are not part of the networked environment.

The thousands of people and companies rushing to establish Internet businesses are likely to face intense competition and suffer a high mortality rate. For those who survive, consolidation will take place as users coalesce around certain products and services. When played upon a regional, national or international scale, only the largest organisations have the funds and technical resources to sustain a business.

Because the Internet represents a radical way to reinvent certain business processes, restructuring or re-engineering will take place in many enterprises. The impact on workers and consumers will be considerable. If these individuals do not have the tools that work in the networked world, it is likely that they will have significant difficulty obtaining a comparable job. In sum, social, business and technical change will accelerate.

Finally, outside America, penetration of Internet services will increase but at rates significantly below those in America. The reasons include government control of network infrastructures, cultural issues and resource shortages. Nations, like indi-

viduals, will be split along lines defined by their Internet capability. Poor nations will face even more difficult challenges to close the gap between lower quartile nations and the more advanced nations such as France, Germany, Japan, Scandinavia and Britain. <sup>1</sup>

## Outlook

The market exists, although it is not likely to be a mass market of couch potatoes. A better characterisation will be upscale 'mouse potatoes'. The products and services delivered will have their analogues in the traditional business world. The Internet-published products and services will define new product categories, services and environments. There are significant revenues to be generated from Internet publishing wherever the infrastructure exists. The markets will be, by definition, global. Profits may be made at local, regional and national levels. The difference is that the incremental cost of moving beyond one's geographic boundaries is zero.

As the Internet becomes ubiquitous, increased emphasis will be placed upon using the infrastructure and technology for organisational purposes; that is, *Intranets*. As rapidly as the public networks will grow, private Intranets will explode. The impact of the Internet technology for organisational processes will account for much of the growth in networking in the next two to four years.

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[1] Internet penetration in Europe is three years behind America