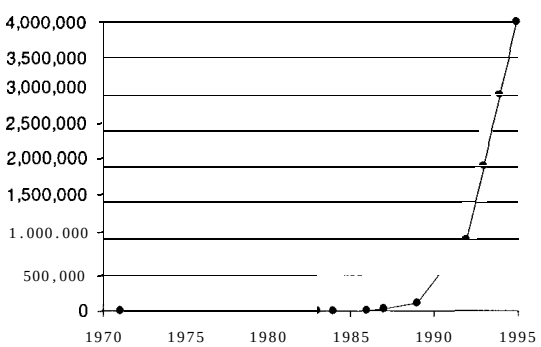
Chapter 1: The new medium: the Internet

'Tis true; there's magic in the web of it;
A sibyl, that had number'd in the world
The sun to course two hundred compasses,
In her prophetic fury sew'd the work.
-William Shakespeare, *Othello,* (Act III, Scene iv)

Something has happened. Arguments no longer centre on the number of people making use of the Internet. There are millions, with thousands more plugging in each week. As the graph below shows, the number of hosts – that is, the number of network servers connected to the Internet – spikes in the period from 1990 to 1995. The present infrastructure supports as many as 30 million users. More sobering is the estimate of the Internet Society that says that by 1999, 120 million machines will be connected to the Internet. No one knows for certain, but few can ignore the sea change that has taken place.'



Consider these bellwether figures:[2]

- About 36% of American households had personal computers in 1994, up from 30% in 1993. In 1995, more than half of the households will have personal computers.

[I] Figures come from the Internet Society, Network Information Centre and *Byte* Magazine, July 1995, pp. 69 and following.

[2] Data derived from the 1995 *SIMBA Online Services Report* and from the 1995 *Jupiter Commercial Online Services Report.*

- In 1994, an estimated 17% of American households with computers had modems. In 1995, modem penetration will be about 34% and rising.

- Worldwide commercial online services attracted about seven million people worldwide. Internet served an estimated 20 million. Bulletin board services and local online systems reached another three million. Growth in usage for the commercial services is estimated to be about 40% through 1997. Internet growth is estimated at being roughly twice the rate of the commercial online services.

Similar growth is expected in Western Europe, Japan and other highly industrialised areas. Will the penetration of personal computers and modems in these countries match American levels? No; many educational, social, political, cultural, financial and infrastructure issues must first be resolved. It is evident from Network Information Centre data that the pace of Internet growth will remain rapid among educated and affluent sectors of the global economy for several years.

The question should not be *whether* to exploit the electronic information superhighway, but *how*.

A definition of network publishing

Network publishing is the creation of information for distribution via an online network. Publishing has been a natural by-product of networking. Users move data from point to point because the network exists to link computers and users via electronic arteries.

Since the beginning of networking more than 40 years ago, users have had to cope with various constraints when creating and distributing information on internal (intranet) or external (internet) networks. They include:'

- Lack of easy-to-use tools to combine text and graphics.
- Lack of standards for the transmission of text and other digital objects: for example, sound and executable files.
- Comparatively small communities of users who could access information on the particular network.
- High costs for hardware, software, telecommunications and network connectivity.
- Systems requiring the user to have particular knowledge of system procedures and commands.

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[1] The University of Michigan information is posted on a number of servers. *Netsurfer Digest* sponsored a study in late 1994 and reported in the February and March 1995 newsletters. The sample included more than 15,000 people in America For Internet demographic data query *infoseek.com*.

Despite these limitations, private proprietary networks gained a strong presence among business and scientific users. The Internet evolved to meet the particular non-proprietary requirements of the academic, research and government community.

A grassroots online presence emerged in 1982 in the form of local or regional 'bulletin board systems' exploiting the personal computer technology entering the market. Despite significant growth in the number of computers, and their strides in computing power coupled with lower prices, by 1991 online information retrieval seemed to have lost its momentum in the area of text services.

The CD-ROM emerged as a significant marketplace factor in 1992 as an electronic publishing medium that provided low-cost access to large quantities of data. CD-ROMs provided individuals and organisations with a means of combining text, sound and graphics ('multimedia') with an interface that was easier to use than those available from the online services.

In 1993, a new software front-end to the Internet was written by a student at the University of Illinois. Marc Andreesen's buggy and unstable program became a global sensation in a matter weeks. The Mosaic browser, which had been built upon the seminal work in 1990 by British scientist Tim Berners-Lee, was placed in the public domain. For the first time, a user without a knowledge of UNIX commands could navigate among servers containing information coded with a primitive set of structural tags.

In 1993, there was just a handful of servers that made use of Dr. Bemers-Lee's hypertext conventions. These 'links' allowed a person scanning a tagged document to click on a link and jump instantly to another chunk of information and then return to the original starting point – or follow another link to another chunk of information.

It is perhaps unfair to characterise Messrs. Andreesen and Bemers-Lee as the pivotal figures in this remarkable chain of events. Their work would not have been possible without the significant work done by various committees and individuals on SGML(Standard Generalised Markup Language) from which the HTML coding scheme – the codes that make Mosaic 'work' – was derived. The idea of hypertext and the ability to move from point to point in a domain of information has been the focus of serious study for more than 2.5 years and owes its origin to Theodore Nelson's Xanadu project. The infrastructure, funded principally by the American government, was in place and advancing rapidly to a universal, high-speed distributed network. In short, many developments made the 'invention' of Mosaic almost inevitable.

Within a matter of months, the number of World Wide Web sites ('Web sites') jumped from fewer than 20 to more than 600. The number of Web sites has passed 60,000 as of this writing in late-1995 and is growing at double-digit rates each month. The Yahoo Internet indexing service catalogues more than 200,000 Web sites and receives about two million 'touches' or 'hits' per day.

Network publishing has moved from electronic mail to robust, graphically enabled, for-fee applications on the Internet and the closed communities of the intranet.

The Medium's the Magic

For millions, there is real magic in the Internet. The benefits are easy to see: global electronic mail, access to vast libraries of text and software, the promise of electronic friendships, graphics -even 'live' videos, and special interest groups for a seemingly infinite variety of interests.

More startling is the speed with which the Internet has moved from co-operative obscurity to a must-have service. Not surprisingly, commercial online services have been revitalised by the Internet revolution. The number of users is up sharply at America Online, CIX in the United Kingdom, and Nifty-Serve in Japan. France Télécom's Minitel has been revitalised and is moving toward TVR (Télétel Vitesse Rapide). Only the costly, niche, professional online services have been so far unable to exploit this renaissance of online. Knight-Ridder Information Services (formerly Dialog Information Services) and the Reed-Elsevier Lexis-Nexis services have tried to climb on the Internet bandwagon, but they seem to be unable to match the prescience and dynamism of their upstart competitors.

What is the magic? First, the Internet is an example of an information environment built by its users without the control of a central authority. Despite its inherent apparent disorganisation, the Internet – a loose confederation of diverse networks and computing platforms – provides a global electronic information environment, what may be called a *datasphere*. Developments are non-linear and subject to Darwinian forces: they work and are accepted, or they die.

In the spring of 1995, American government direct support of the Internet stopped. In America the Internet infrastructure is operated by commercial entities, including MCI Communications, ANS (now a unit of America Online), and Sprint. Elsewhere, governments play a major role in the Internet infrastructure. Nevertheless, the infrastructure is in place, and although sorely taxed in places and at certain peak times, the torrential demand continues. It is likely that the marketplace forces will be considerably more brutal in the months and years ahead. But for the foreseeable future, the global datasphere is growing, maturing and changing at an incredible velocity. No environment can support continuous growth for indefinite periods. Limits will be reached, and they are likely to occur when about 40% of a given population has become connected. This group represents the most affluent, expert and highly motivated users. Although connectivity may become ubiquitous in America and in certain other countries or metropolitan areas, the Internet will be of significance to a highly desirable and sharply defined slice of many people and their organisations.

Second, the catch phrase *The network is the computer* is a reality. A single computer, like a solitary facsimile machine, is almost valueless. When everyone has a facsimile machine, life without the device becomes almost impossible. The same was true of the telephone, and now of an Internet connection. The value of a

connection, and the imperative for a connection, increases as more people get on the 'Net'.

Third, the Internet generates change. The clearest indication is the vector of change traversed by the Mosaic browser. At the start of 1995, Mosaic had morphed – that is, changed itself – into a software industry. The Internet is no longer a passive means of moving information from point to point. It has become an applications environment that has forced Microsoft to alter its Windows strategy. The excitement generated by new Internet applications has been witnessed a handful of times before in the computer age. The World Wide Web and the Internet are comparable to the IBM-compatible personal computer and the software applications developed for that machine.

Network publishing is simply a suite of applications that exploit a growing, global application environment that moves from the bottom up; that is, from the users. It is, therefore, a new, exciting and powerful new medium.

Benefits of the Internet: the foundation for network publishing

There are real benefits to people and organisations of all types. Communication among people seems instantaneous. In some ways, posting an electronic mail message or participating in an electronic forum is more satisfying and seems more immediate than leaving a voice mail message. Electronic interaction and the human ability to visualise, spawn the construction of virtual communities. The anomie and ennui of modern life become digitally energised. There are indications of a financial payoff for a person or company with a better mousetrap. In short, the Internet is an example of a medium created by individuals using commonplace tools to meet a wide range of human needs.

The term *Internet* has been stripped of its meaning. The word now is used as a synonym for any type of online interaction. Misuse and over-use pay a dividend, however, since millions of people now know what it means to go online and to be connected to the Internet. The idea of an interactive, electronic communications environment – a datasphere – has moved into the mainstream.

It is a certainty that within the next two to three years, the online user community will embrace more women and millions of users outside the affluent North American market. In short, a highly desirable new market is in the process of forming. Where there are customers, there will be a steady flow of new products and services. In short, the Internet has provided important fuel for software and information services innovation at a time when Microsoft Corporation had all but snuffed out software innovation for the desktop computer.

It is the arrival of this new market that has been making headlines. Most major business publications carry Internet-related stories in each issue. Trade publications such as *ComputerWorld* and *Network World* have featured such stories for many years. Internet now captures the attention of local newspapers and mainstream business magazines throughout the world. Much of the enthusiasm is well-intentioned, but somewhat misleading.

For the *newbies*, as beginners are called by Internet veterans, a certain naivete is understandable. The Internet is cheaper electronic mail and thrills such as digital pornography and electronic thievery – if one believes the popular press, the hundreds of Internet books. and the dozens of seminars.

The term *network publishing* is appearing in articles about software tools and is used as a generic term for getting information on the Internet in World Wide Web formats. Even to many professional information creators, the Internet looks like traditional online if one wishes to view the Internet as a global library, which it surely is. It is also a global electronic mail system. Pragmatists will point to text dressed up with fonts, colour and graphics and say, "We've been doing this for centuries with ink. Now it's bits, as that chap Negroponte says."'

But the Internet world has an essential character that is new, remarkable and not well understood. Most notably, it permits a dramatically fresh type of publishing. Individuals – as well as organisations and corporations – can create information and disseminate it to a global audience in a matter of hours. No costly printing bills, no expensive postage fees, no or few constraints on content, presentation or approach. No export or import regulations, no taxes. And no long waits for reactions and signs of interaction.

Signposts of a new medium

The Internet is more than 25 years old. If one were to examine the pre- 1993 Internet, it would little resemble the razzle-dazzle that is now everywhere in evidence.

The original Internet changed relatively little in form or substance for its first two decades. It was primarily a communications and remote-terminal service for scientists, researchers, academics and a cadre of UNIX aficionados.

With the suddenness of a phase transition in quantum physics, the Internet has become a marketplace, a research library, a video-conferencing facility, a replacement for party-line telephone conversations and a playground for people armed with graphics programs and powerful computers and workstations. The Internet is what might be termed a 'socialising environment'. People connect to the Internet and derive intense personal satisfaction from the interactivity possible within the datasphere or cyberspace, the imaginary 'place' where electronic interaction takes place. The principal differences between the new medium and more traditional media such as books and newspapers appear in the table below.

An innovation engine

The Internet, and now commercial online services and bulletin board systems – even networks operated by organisations of all types for their employees' use – ripple with innovation. The importance of the Internet's technology is most easily

[1] See Nicholas Negroponte, *Being Digital* (New York: Alfred A. Knopf, 1995) for the discussion of atoms and bits. Atoms, of course, are tangible like books, magazines and journals.

The established media are. . .	The new medium of the Internet/network is. . .
One-way. When interactivity is provided, special devices are added on to the medium; for example, direct mail with a toll free telephone number for orders	Inherently interactive. The medium is the means of interaction. Interaction defines the medium.
Accepted as a natural means of communication. Information presented in a video, a book or magazine has a quality of realism even if the subject is fantasy.	Capable of creating alternate realities. A single computer user is a part of a virtual community. The scene on the monitor may appear real, but it is a digital construct.
Of varying temperatures. Some are hot; others are cool.	Driven by intense involvement at all levels. The most intense experiences are ones that blur the lines between the reality and the virtual reality of the digital environment.
Tangible. Even a motion picture has a physical form of mylar and a reel.	Intangible. Digital constructs are 1s and 0s and difficult to visualise in their native form.
Static. Most of the old media are difficult to change. Updating a book or motion picture requires significant resources.	Dynamic. The new medium is easily changed and in constant change. After an hourly update, the database is refreshed.
Dependent upon a value chain of authors, editors, manufacturers and distributors.	Accommodating. The individual can play all roles and assume responsibility for the information construct.
Not easily scaled up. A book can become a television programme with significant rewriting and a complex production process.	Easily altered, changed, scaled upwards or downwards, and re-purposed.
Usually limited to one or two objects; for example, a musical score and an audio CD.	Able to assemble information from many different objects. The re-use or format of the information is highly fluid.
Codified with formal syntax, well understood rules, and a considerable body of legal and social codes that control the contents, formats and outputs.	In the process of defining itself. Traditional syntax, rhetoric and legal and social codes are being shaped as necessary to match the specific requirements of the Internet/network.

seen in the proliferation of browsers that provide users with additional functionality. Perhaps the most important development is the creation of the Java programming language by Sun Microsystems. Java permits a programmer to create Web-compatible applications. Using this C-like language, a Web site can offer users live software applications such as spreadsheets and database queries. In addition, the Java language has been designed to permit clever programmers to enrich sites with animation and other digital objects. Java is essentially platform-independent. Executables are compiled at run time for the user's particular computing platform. Hot Java is able to examine the user's machine and the digital objects offered at a Java Web site; if the user's machine lacks code to display a particular object, the browser automatically downloads the necessary code for the user.

Other examples of innovation include intelligent routers to give users and network managers an easy way to connect to a communications channel appropriate to the data being transferred. [1] Commercial online services are integrating Internet Web-

[1] These 'virtual networks' pose a significant threat to the providers of high-cost, proprietary value-added networks.

compatible browsers into their proprietary software and developing Web authoring tools for users. Prodigy, after years of lacklustre performance, has created user-friendly Web authoring tools for its users. No slowdown in innovation and software development is likely for the next 18 to 36 months. In November 1995, Compu-Serve launched its Home Page Wizard, a dowloadable software program that allows users to create their own Home Pages for the Web, hot-link the Home Pages to further pages, and then to test the 'Web site' out on their local machine using their local browser, before putting the pages up on the Web. The program operates via drag-and-drop, and no knowledge of programming or HTML are required.

Culture clash

The hitherto unregulated world of the Internet is meeting the commercialising forces of big business. There will be considerable friction as the wide open Internet world interacts more and more with for-fee services and with governments that want to dictate behaviour.

In addition, there will be conflict between the users of for-fee online services such as America Online and CIX (Britain). The sudden arrival of hundreds of thousands of online users evoked strong reactions from long-time users of the Internet. Newbies do not understand netiquette; that is, how one participates in an electronic discussion group, the accepted way of calling attention to one's needs, or appropriate marketing.

Perhaps the most severe battles will be concentrated in two areas: copyright and censorship. The culture of the Internet has been based upon individuals co-operating to provide information and software to others without charging a fee. The notion of ownership runs counter to the belief of some Internet users that "information wants to be free." The existing copyright laws reflect a heritage of print and a pre-digital age when unlimited, instantaneous, perfect copies did not exist. We return to this issue in the context of security later. Copyright promises to be a thorny issue to resolve in the digital clarity of cyberspace.

An even more explosive issue is censorship. The uproar over the flawed 'Rimm Study' illustrates the power of the Internet over popular and American Congressional imagination. Without hard facts, a new industry has sprouted to filter objectionable material. An industry coalition has been formed in America to 'self-regulate' a new medium that is amorphous, without frontiers or boundaries, and global.

At risk is the freedom that has spawned much of the innovation associated with the Internet. Censorship treads dangerously close to thorny issues of security, copyright and privacy. In different countries, definitions as to what constitutes objectionable material may be political, cultural or social in nature. Freedom of speech and freedom to access are two sharp horns of an unpleasant dilemma that the Internet, users and content providers must blunt or cut off in some satisfactory way.

The potential for difficulty within and between cultures is high. Resolution will be time-consuming and unpleasant – and the difficulties associated with them may bring the new medium to its knees.

Government information

Governments must deal with several mandates. Obviously they must disseminate information. The Internet provides an ideal way to provide appropriate parties with access to the information they need. For example, using Adobe's Acrobat technology, tax forms can be printed on demand where they are needed.

The cost of paper is rising rapidly. For some grades, the costs are moving upwards in increments of several percent each month. Although prices may moderate as recycling gains momentum, the concept of cheap paper is likely to go the way of the concept of cheap fuel.

The Internet provides a ready-made solution. Distribution on the Internet eliminates some, if not eventually all, of the cost of printing certain documents. The shaping and mailing costs become a part of the telecommunication costs. But more importantly, the Internet gives the government a way to create information that can be sold in value-added forms. The publisher who wants to re-use government information can pay to obtain access or a data tape structured to meet the publisher's requirements. The government can charge differential rates for access. For example, a citizen pays nothing, while a non-citizen pays a fee.

Many professional publishing companies have built their businesses upon reformatting and republishing government-generated information. With this raw information flowing on to Internet servers and becoming available to users worldwide for low or no cost, professional publishers have cause for concern. Entrepreneurs who can move more rapidly or who have technological skills the large publishing companies lack, can move into added value services pertinent to government information and have an immediate and direct impact on the revenues of the established publishing companies serving law, tax and service professionals.

New paradigm for innovators

The most important signpost of a new medium is the rapid emergence of a new paradigm for authors, artists, scholars, researchers and other knowledge workers.

As recently as 1990, it was difficult, if not impossible, for a serious scholar to establish a reputation without publishing articles in a printed, peer-reviewed journal. Today in disciplines as diverse as biochemistry, fractal mathematics, software design and development, and desktop publishing, active participation in Internet fora can yield substantially the same benefits as the more traditional publish-or-perish route.

More importantly, individuals are now empowered to create, design, distribute and support a wide range of knowledge-value products and services using the Internet as a medium. Artist collectives, newsletter writers and college students have found ways to bring specific bodies of information or information services to bear on a market need. Within six months of going live, the Internet Underground Music Association found itself the doyen of major music companies. The sound bites, band profiles and music information about recording groups without major recording studio contracts provided access to information that simply was not available

in such publications as publishing giant Reed-Elsevier's *Billboard* or Jann Wenner's *Rolling Stone.*

It is unlikely that avid users of the Internet will forget their perception of the benefits of Internet use and go back to their pre-Internet life-styles.

Differences between paper publishing and network publishing

At first glance, the Internet is pretty tame stuff. After all, computers have been part of the landscape since the early 1960s. Most people under the age of 30 take computers and other electronic devices for granted. Those fortunate to have a suite of computer skills grasp tools to use, not technical devices to fear. One can see that a gulf must exist between people who can use computer and information technology as tools to achieve ends, and people who simply punch buttons on automatic teller machines. Mastery of information technology creates an ever wider gap between the information elite and the rest of a society. This simple fact has enormous implications for virtually every country in the world. The computer does not narrow economic and educational gaps; it widens them. Those who are linked to the global network will enjoy advantages that are denied to those without that access. A new elite is emerging, comfortable with information in all its forms.

The differences between paper and electronic information stand out sharply against this societal background. The differences between network published 'new media' and more traditional forms such as books and even broadcast television, gain impact in the context of the cultural sea change that the Internet phenomenon has signalled. Several of the more important differences warrant comment.

Global, not local

The original penny press served an elite community in a limited area. True, sailing vessels carried London's broadsheets to other countries, but the number of copies and the timeliness of the printed information was constrained by the distribution system.

National magazines, regardless of countries, and most television broadcasts have a local flavour. Today's local magazine may appeal to people living in a single country, or its television shows appeal to a specific segment of the viewing audience. The Internet fosters a type of electronic publishing that is simultaneously global and personal. The market for a particular bit of software or a comment in an online forum may be extremely small, so small that it is not commercially feasible to create a printed publication or a tv programme for such an audience. For one thing, the cost of marketing to a handful of people scattered throughout a large country such as America would be high. For another, there is no guarantee that the interest of the small market has persistence. The market is here today and gone tomorrow.

In general, the Internet makes it possible for people, businesses and organisations to create and participate in one or more virtual communities without regard for time and distance. Many social changes are flowing from this environment. Telecommuting becomes more practical. The serial, time-dependent processes associated

with hundreds if not thousands of activities are likely to be transformed. Peer review of technical material will shift to the Internet as will real-time collaborative communications for personal and professional activities. As bandwidth increases, the lure of digital video will be irresistible. The personal computer and the network promise to replace television for certain segments of the global community.

Knowledge-enabled users

One often overlooks a simple truth: accessing the Internet requires some type of privilege. The 'privilege' may be as simple as intelligence and desire, or as distinct as a quest for money or power. What Internet users share, regardless of individual differences, is an ability to make use of the Internet as a knowledge-enabling tool.

Just as literacy was confined to the clergy and the upper classes in 15th century Europe, Internet expertise is equally limited. If we accept the perhaps over-inflated figure of 35 million Internet users worldwide, that represents less than one percent of the population of North America and Western Europe.

The profile of an Internet user is based on a blend of computer expertise, literacy and curiosity. Users of traditional print products may share or exceed in the literacy category, but the Internet user has other attributes.

Contrast the Internet user with a person who consumes electronic information in the form of commercial television or with a person who does not have the reading skills required to make use of an interactive computing environment. The Internet market is one with characteristics that distinguish it from those individuals who choose not to use it or who simply lack the knowledge, ability or financial support required to participate in the Internet.

One of the more regrettable aspects of the Internet is that it is a divisive force. The users are segregated to some degree from non-Internet users. The impact of this type of global separation of people into those connected and those who are not, is difficult to predict and mostly ignored.

Fast-cycle time

There are still innovations in printing technology as attested by the rapid development of direct-to-press, on-demand printing and single user, low-cost, four-colour lasers. Powerful alliances among Xerox, Sun Microsystems and other companies pave the way for a new paradigm in traditional book, journal and magazine publishing. The path is blazed not by the printing industry, but by the businesses firmly anchored in the new medium of network publishing.

The Internet operates in fast-cycle time; everything accelerates. Portions of the Internet work in real-time all of the time. Comments are added to discussion groups around the clock. Users with access to high-bandwidth workstations can participate in video conferences. Those with more mundane SLIP/PPP connections must content themselves with Internet Relay Chat, a character-based party line which lets people add comments to a computer discussion group and conduct real-time voice conversations.

Unlike print, fast-cycle time information objects can be stored for later retrieval. Thus, the Internet works like a giant information video cassette recorder. One can enter the network, retrieve information that may have been archived minutes or years ago, and examine it when it is convenient or needed. Information can be located using software tools and agents. Print can be archived, but it becomes difficult to locate and manipulate large amounts of historical information.

The Internet poses its own set of challenges, but its very nature is tied to the world of digital communications and personal computers. Information can enter the Internet, move through a complete life cycle, and disappear in a matter of minutes. A traditional print publication does not come into being, and move through its life cycle rapidly. Even a daily newsletter distributed via a facsimile machine is a process built in a dramatically different way to a time scale dramatically slower than the Internet. The velocity and volatility of the Internet set it apart from print. What creates the multi-dimensionality of the Internet as a publishing medium is that the medium itself undergoes changes in capability and functionality as well. Innovation is an imperative for the network and those who use it.

Self-organking versus organised

Many people after their first encounter with the Internet or similarly user-centric online services remark, “It’s so confusing. It takes too long to find what I need. Whom do I call for help? Who is in charge?”

The Internet is organised differently from print or any other medium. The typical commercial electronic information product has its roots in print. A publisher selects a staff which works with one or more authors to create information. The information is organised and packaged by the publisher who produces, distributes and collects the money generated by the product. At their core, traditional media are top-down and rooted firmly in specific serial processes.

The Internet has been self-organising. The millions of users coalesce into clusters, some as small as two or three individuals, continents apart. The individuals make decisions to organise information for a particular need. When viewed from afar, the Internet appears to be chaotic, disorganised and the antithesis of ‘organised’ activity. Closer inspection reveals precise organisational structures designed for specific user communities. Thus, despite differences, archives of software have a similar structure. The content of LISTSERVs share a number of distinct features that allow a user to participate in several different discussion groups without difficulty. World Wide Web pages behave according to precisely defined rules that behave predictably regardless of the content or location of the page of information.

How such spontaneous structures emerge is not known. Kevin Kelly, author of *Out of Control,*[1] speculates that a hive mind emerges from the individual efforts of

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[1] The full title is *Out of Control: The Rise of Nen-Biological Civilisation* (Addison-Wesley Publishing, 1994). See Chapter 2, ‘Hive Mind’.

people connected to the Internet. What is clear is that top-down permission is not needed for any information to become available to the system. A single person can create information and release it on the Internet. At this time, no watchdog guards the digital press and mailbox. Unlike print, the Internet facilitates grassroots publishing and a global audience without the processes and costs of print communication. The Internet, in effect, cuts out or dis-intermediates gatekeepers or certain manual enabling processes.

Outlook for the new medium

Most people will see the Internet as an extension of an existing technology. It is the familiar made new with fresh paint. Others will recognise that the Internet is something more. It looks familiar but has remarkable new characteristics and capabilities. Its rhetoric and syntax are its own.

Change – extremely rapid change – will continue to take place. The Internet after the midpoint of this decade will evolve rapidly. It promises to transform computer use. Publishing will be recast into a new industry. Whether the Internet persists in its present form is largely irrelevant. What is certain is that the wired world will not wither and die.