

From: "McPhail, Thomas L." <stlmcp@umsl.edu>  
To: <DNSTransition@NTIA.doc.gov>  
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Pages 22-23 contain comments on ICANN. This is Chapter 12 in the book GLOBAL COMMUNICATION. It is the largest selling text book in the world dealing with international communication.

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## CHAPTER TWELVE

### THE INTERNET: THE NEW FRONTIER

#### Introduction

The Internet is to the information age what the automobile was to the industrial age. The Internet is now a mass medium that has created a new dimension for global communication. It had its origins in the 1950s as a response to a crucial military question: namely, how could the United States send strategic information across long distances electronically with a maximum guarantee of accuracy and the likelihood of reaching its ultimate destination? A team of leading scientists was assembled from leading universities across America. They set in motion research that established the foundation for the electronic transfer of information over vast distances. It was to become a marriage of computer technology and the Internet.

Before describing in detail the series of activities and decisions that collectively formed the foundation for the modern day Internet, one needs to note that only a few major innovations have affected international communications. The inventions started slowly. The printing press, the telegraph and telephone in the nineteenth century, but following World War II the infrastructure of global communications finally had been put in place.

In the nineteenth century there were newspapers, which traveled by rail or private mail, and writing, which traveled as letters via the international postal services. Electronic message systems primarily consisted of the telegraph, which tended to expand in tandem with railway systems. Following the telegraph came the telephone, which saw a rapid expansion along with a telecommunications infrastructure during the twentieth century. Wireless signals started as ship to shore devices and morphed into radio. Radio broadcasting and the creation of networks emerged in the early part of the last century. At the same time, the movie industry was taking shape in both Europe and the United States. The laying of submarine telephone cable under the Atlantic and then the Pacific Oceans further expanded international communications capacity. Shortly thereafter, satellite and cable broadcasting were introduced to further expand the telephone, radio, television, data, and other forms of telephony. Now, the introduction of digital technologies, bringing convergence, and the Internet represent the next new wave of global mass communication. The Internet relies extensively on the interconnection of widely dispersed, global, and interconnected personal computer systems.1

#### BACKGROUND

The Internet system began in the cold war era of the 1950s. With a high level of anxiety over issues such as national security, the spread of communism, the Russians' successful launch on October 4, 1957, of Sputnik,<sup>2</sup> and the potential for nuclear destruction created the public will to undertake research on a massive scale. When one combines these fears with the military background of President Eisenhower, in retrospect it is easy to understand how funding and the intellectual critical mass needed for the creation of a system that would eventually become the Internet were established during the 1950s. For example, during this era it was widely discussed that the United States was vulnerable to a potential nuclear attack and that such an attack could disrupt nationwide communication systems. Both commercial and military systems were vulnerable. The other concern was the high cost of computing, along with the physical size and awkwardness of mainframe systems, which used punch cards and bulky tapes. As a result, in 1958 the US government established the Advanced Research Projects Agency (ARPA) to promote advanced research in computing and investigate related telecommunication matters. ARPA had the task of determining how computer technology could be successfully applied to military activities. About the same time, the Rand Corporation produced a national security report that documented the extreme vulnerability of the US national communication infrastructure in the event of a catastrophic event. Basically, Rand proved that national communication systems between the East Coast and the West Coast could be interrupted or severed by a nuclear attack. This, of course, had tremendous ramifications for a coordinated military and civilian response. The collective outcome of these concerns was to build what is described as a distributed network, Internet's precursor, called ARPANET.

ARPANET was constructed in 1969 as a distributed national network basically consisting of a number of stand-alone, remote systems. Each system controlled all necessary data, like a number of backup systems. These systems collectively moved data from one system to another. This distributive network allowed for different possible routes, so if one system was down, the message or data would be relayed through an alternative telecommunication route that was part of ARPANET. For example, if the network in Chicago was down, the system would reroute the data through St. Louis or Houston until it reached its final destination, say Los Angeles. Eventually the entire message would be reconstructed as the data communication, arriving via several different networks, reached its final destination. The military thinking was that given a catastrophic nuclear attack in one part of the country, there would be enough ARPANET systems to bypass affected regions so that the Pentagon could communicate with military bases located strategically in the Midwest or on the West Coast, for example. Today the ARPANET system might appear archaic, but it did generate a large number of high-end host computers that had clear commercial applications for the technology and software being developed and supported by extensive federal research funds available through military and national security initiatives.

A second major outcome of the early computer activities that eventually led to the Internet was the extensive utilization of university talent. ARPANET was a project to interconnect the technical workings of four academic research groups based at the University of California Los Angeles, the University of California Santa Barbara, the University of Utah, and Stanford University. These groups were selected because they were working on technical design issues and signal protocols for computers in different locations in an effort to communicate with each other and share resources. These academics were the first generation of computer scientists. At the same time, the US Department of Defense was supporting networking and engineering projects at Harvard University and the Massachusetts Institute of Technology that would serve as the nucleus for East Coast high-technology research initiatives. Similarly, ARPANET provided the intellectual critical mass on the West Coast that was necessary for the

application of communication technologies to various military initiatives. Over time, universities and technical think tanks such as the Rand Corporation began to promote other nondefense uses of the networks. In the early days, newsgroups expanded based on academic disciplines. For example, physicists began to communicate with other physicists electronically, mathematicians with other mathematicians, economists with other economists, and so on. This produced an expanding universe of electronic mail users who were using personal computers or laboratory computers to communicate across a publicly switched network, which initially was under the control of the Department of Defense. ARPANET had become a packet (data) switching network that allowed researchers, via different computers in different regions, to communicate using computer machines. By 1972 the initial four sites had grown to twentythree, all networked together and pushing the frontiers of new hardware and software design. By 1987 the Department of Defense had transferred responsibility to the National Science Foundation (NSF), in part recognizing the substantial expansion of the Internet system that had replaced ARPANET by this time. The NSF was a logical choice because a large number of nonmilitary applications and protocols were being pursued, and NSF wanted to create a universitybased network for a wide variety of academics. Also, a number of commercial computer manufacturers were supporting research to create compatibility and open architectural features to assist an expanding market.

By 1990 the Internet was seeing substantial use by people who had significant computer programming experience. It was completely text based, and people had to learn computer operating systems in order to send or receive email or participate in discussion groups. During the 1990s, the creation of the World Wide Web, the mouse, icons, browsers, and search engines that were userfriendly enabled the Internet to expand globally and rapidly. During the same period, the rapid decline in the cost of personal computers also enabled widespread applications in homes, schools, and businesses, which had not been foreseen by the developers of the ARPANET system. In order to encourage the widest possible use of the Internet, in 1995 the NSF turned over control of the Internet to a number of commercial organizations and networks. Thus, today no one organization, government, or corporation owns the Internet. Rather, it is a global interconnection of telecommunications systems controlled by protocols and rule making on a voluntary basis.

Although the Internet system was initially a technical medium for scientists and engineers, it has evolved into a mass medium. It has now become a network of networks. The Internet consists of four major elements or electronic services: email, FTP (File Transfer Protocol), newsgroups, and two chat areas: IRC (Internet Relay Chat) and collaboration. Each of these elements has international communication potential.

The Department of Defense provided the initial funding, but since that time the Internet has become a global network with major commercial applications. The Internet economy now is growing faster than other sectors of the economy. For example, according to a 2000 University of Texas study, e-commerce now employs more workers than insurance, public utilities, or the airlines. The same study forecasts an additional 62 percent annual growth rate for e-commerce companies.<sup>3</sup> The Internet did not become a global network overnight, but certain events have focused its ability to bring together millions of geographically separated individuals. For example, when Princess Diana died, cyberspace became a popular meeting place for mourners. Other examples include the publication of NASA's Path Finder pictures from Mars, or the popularity of stock market information. On certain days, thousands of investors switch to Internet financial web pages provided by Internet sites, broadcasting networks, cable systems, or investment houses.

Initially, the Web was viewed as an alternative news source, but now it is a mainstream news source. The Web is a mixture of special interest information providers, ranging from governments, to commercial systems, to global broadcasters such as CNN, the BBC, or Time Warner.

#### THE WORLD WIDE WEB

The World Wide Web (WWW) is an Internet-based process that came about through the convergence of advancing technologies and increased sophistication in programming languages. The rapid development of the WWW is a result of distributed processing, which includes storing, displaying, searching, and formatting computer-based information; the global interconnection of PCs; the development of hypertext and a coding standard, HTML; and browsers. Browsers are a key component and basically represent client application software that knows how to communicate through the Internet and capture appropriate documents. Browsers also include built-in tools for searches, email, organizing information, and so on.

During the 1990s, there were two major browsers in competition with each other: Netscape Navigator, which was acquired by AOL, and Microsoft's Internet Explorer. Netscape dominated the browser market during the early years, but Microsoft overtook the browser market in the late 1990s. This domination of the browser market came to the attention of the U.S. Department of Justice. In 1999 the Department of Justice found that Microsoft engaged in monopolistic tactics through its marketing and by embedding its browser within Microsoft's operating systems, Windows, to the detriment of competition. Microsoft appealed the decision in the US successfully, but the EU continues to seek some remedies from the firm.

#### History of the WWW

As a physicist at CERN Laboratories in Geneva, Switzerland, Tim Berners-Lee wrote a seminal paper in 1980 entitled "Enquire Within Upon Everything." It contained a program that linked arbitrary computers but had the additional capacity to sort information by certain categories. The computers could be located anywhere and search for select information, perhaps on particle physics. By 1990 Berners-Lee and others had progressed to the stage of writing papers and software using hypertext for the purpose of allowing European physicists to communicate with each other by computer. Berners-Lee proposed using a single simple interface to search various information sites spread about the Internet system without regard to location. He captured the concept of using Hypertext Markup Language (HTML) to select certain words and then search a vast range of documents to discover similar words, listing them as a result of a computer search. The list also contained the remote computer's address (a URL) to obtain the referenced document. This became the basis of the modern World Wide Web. Initially the WWW was limited to professional and academic organization users, but in 1993 the National Center for Supercomputing Applications (NCSA) at the University of Illinois developed user-friendly client browsers they called Mosaic. Prior to this development there were about fifty web servers worldwide. By 1994, with the introduction of Mosaic, there were over 1,500. By 1995 the Web became the dominant mode for accessing information from remote personal computers over the Internet.

In 1994 Mosaic guru Marc Andreessen left NCSA to form the Mosaic Communication Corporation which in turn changed its name to Netscape Communications Corporation. Netscape produced the first version of Netscape Navigator, the early dominant browser for web users. In 1996 Microsoft released the Internet Explorer 3.0 version, which was to provide overwhelming browser competition for

Netscape. The Microsoft browser was able to retrieve remote documents and provide greater speed and display capacity than its competitors. Each generation of browsers added several unique features, which further expanded the utilization of the Web for home, business, school, and a plethora of other users.

With the advent of the fifth generation of browsers, the differences between Microsoft and Netscape are now so pronounced that each system interfaces with external pages that are dependent on the programming language of a specific browser. Thus, users who want the complete universe of pages or sites for any particular subject area have to load both browser programs in order to retrieve web pages that are systematically linked with one or the other of the browser architectural protocols. In part, it was this phenomenon that attracted the Department of Justice's attention, because the dominance of Microsoft's Internet Explorer browser was inclining new web site developers to develop software that could interface with Microsoft's Windows but not necessarily with the Netscape browser, or others. Because Microsoft has popular Windows products preloaded on almost every new PC, this permits Internet Explorer to be embedded within Microsoft's product lines. PCs arrive with preinstalled Explorer browsers for users who then either have little need or the sophistication to seek out the competing Netscape browser. Microsoft's browser, claiming to be faster, smaller, and offering more features, has thus become the gateway to the WWW almost to the exclusion of other competing browsers.

#### Video Games

Any history of the Internet would not be complete without acknowledging the role of video games. Whether Atari, Nintendo, Sega, or PlayStation these video games have created a generation of computer users who appreciated high speed, enhanced graphics, and interactivity. Successful video games have served as a backdrop against which computer manufacturers must judge each new generation of PC. As a result, video games continue to set new and higher standards for graphics, speed, and sophistication that each generation of PC has to at least match, if not exceed. The other related phenomenon is that video games are a global enthusiasm. Early on, much of the software originated from Japan, but North American, European, and other affluent cultures quickly became willing markets for and manufacturers of these increasingly sophisticated video games. Games became common property of teenagers in core nations.

Currently, video games are either preprogrammed within a cafeteria of software that is preloaded on PCs, or else they are available externally through the Internet to be downloaded for personal use. A major point is that video games, although a separate technology using either a modem and a standard TV monitor or a handheld device, had an impact not only on the technology of the Internet, but also on software development, particularly graphics capabilities. Games set the visual benchmark for PC graphics. It turns out that moving from a controller to a mouse is a small step for game users.

#### Internet Timeline

The following timeline represents the major historical events that cumulatively aided the global system called the Internet.

1955 US President Eisenhower approves funding for US satellite development.

1957 USSR launches first satellite program, Sputnik, which consisted of four satellites.

1958 US Department of Defense establishes the Advanced Research Projects Agency (ARPA).

1960s A series of isolated academic papers in Europe and North America appear detailing packet switching, batch processing, spooling systems, time sharing computers, and network alternatives.

1961 April\*-Soviets put first man in space.

May-\*United States puts man in space.

President Kennedy calls for massive funding for research and space exploration.

1965 Ted Nelson describes hypertext, a concept using word association to find similar words electronically

1969 ARPANET created with four university host sites.

CompuServe established for home and business customers.

United States succeeds with moon landing and walk on lunar surface.

1970s Several new ARPANET host sites established, including European sites.

1971 USSR establishes first orbital space station.

1972 First e-mail program written.

1973 United States establishes first US space station, Skylab.

1975 Microcomputers introduced.

Paul Allen and Bill Gates found Microsoft to develop programming languages.

1976 Apple Computers reach market.

1977 Owners of Apple, Radio Shack, Atari, Commodore 64, Texas Instruments, and others begin marketing personal computers designed for schools and home.

University of Wisconsin supports research to interconnect over one hundred computer scientists via e-mail

1980 Apple issues public stock to raise capital for extensive research and development infrastructure. Leads to 1984 introduction of Apple Macintosh desktop computers

Physicist Tim Berners\*Lee of CERN Laboratories (Switzerland) writes program to link colleagues' PCs.

1981 IBM enters personal computer market with two key partners, Intel and Microsoft. Because of size and market penetration, IBM sets new PC architecture standards. Smaller, lighter, and cheaper clones begin to appear as well, using Intel and Microsoft products and protocols

Bitnet for e-mail and file transfers established between Yale and City University of New York; IBM adopts Bitnet protocol to link IBM university computers.

Several Big 10 universities begin to establish protocols for networking services, e-mail, and list server activities among campuses.

1983 Desktop workstations established by scientists through grants from NSF.

1984 Newsgroups are organized by researchers at universities, re\*search institutes, and computer manufacturers

1985 America Online (AOL) founded.

1986 Microsoft issues public stock and introduces Windows. Screen icons become the industry model.

1989 Steve Jobs creates new computer company, NeXT. This system introduces many innovations for desktop systems. Berners\*Lee and others create web browser for NeXT workstations.

Commercial e\*mail offered in limited markets by MCI and CompuServe.

Berners\*Lee writes a paper detailing a system using hypertext (HTML) that would become the programming basis for the www.

1990 ARPANET is disbanded.

McGill University (Montreal) supports Archie, a primitive search protocol.

1991 University of Minnesota supports Gopher, an early search engine.

1992 University of Nevada supports Veronica, a somewhat advanced search engine.

1994 Netscape developed as Internet browser and establishes early lead.

Amazon.com launched

1995 Real Audio is developed for PCs audio use.

Netscape issues shares as public company.

Microsoft introduces browser, Internet Explorer 4.0, to challenge Netscape.

Yahoo! and eBay founded. Beginning of online auctions

1998 More PCs sold than televisions.

CompuServe and Netscape acquired by AOL.

Hacker creates viruses infecting Internet programs.

Google search engine launched

1999 Microsoft is charged by US Department of Justice with engag\*ing in antitrust activities.

AOL customer base exceeds 20 million.

Melissa virus swamps e\*mail systems.

2000 AOL and Time Warner announce merger to create the largest global communications conglomerate.

Love Letter virus originating in Philippines attaches to e\*mail addresses and infects hard drives around the globe.

Globally, old media companies begin to look for potential new media (Internet) companies for mergers, acquisitions, or partnership.

2001 Microsoft enters the video game market with Xbox.

White House web site infected with virus

2002 Verizon introduces high-speed 3G cell networks

2003 digital cameras outsell film units.

Blaster worm spread worldwide.

Lawyers for recording artists and studios go after file sharing and music downloading

2004 Google goes public with share offering.

Sasser worm and MyDoom virus create Internet difficulties.

800 million Internet users world-wide.

Online advertising exceeds \$10 billion; most coming from newspaper advertising

2005 Spyware and adware are growing problems as junk e-mail

Microsoft settles with European authorities

MPAA lawyers sue movie downloaders

Apple(s iPod sales set record

#### IMPACT OF THE INTERNET

The Internet has had a major impact on many areas of life, from e-commerce to distance education. The following paragraphs highlight a single narrow yet important area: government reports. This example illustrates some of the many unexpected influences of the Internet.

The availability of government documents on the Internet has changed not only the access issue, but also the way information is now provided in an unfiltered fashion. Political pundits no longer have free rein to put their own personal spin, whether of the Left or the Right, on issues in order to direct viewers, listeners, or readers to an "appropriate" point of view. Because of the Internet, individuals can apply their own thoughts, ideas, and background to the interpretation of new information.

The Internet phenomenon began to expand rapidly in the 1990s. The system has grown enormously, much of the fuel for growth generated by the creation of widely advertised commercial services. The original Internet system was designed as a narrow-casting system in which selected users would access select and unique data, or share specialized information. Now it has become a twenty-four-hour system, a mass medium in effect, ranging from full-service web information, to portals, to news web sites such as MSNBC or CNN, in addition to services aimed at the more limited high-tech users. Many utilize the Internet(s search engine feature.

Engines in the US about here)

One of the Internet's largest users to date was Friday, September 11, 1998. Another was 9/11. In 1998 millions around the globe flocked to the Internet when independent counsel Kenneth Starr released his report about President Clinton. It contained graphic details about the president's relationship with intern Monica Lewinsky. Many web sites, in fact, crashed or were delayed because of the record volume of web traffic. Internet tracking groups collectively reported that about six million Americans read the text of the report over a three-day period. In addition, about ten times more people downloaded the 445-page Starr report than the White House's 73-page response. The Starr report also increased the number of viewers of cable and network news on Friday, the day of the report's release. CNN reported its viewer-ship average in excess of one million households, which is three times its daily norm. MSNBC averaged about double its normal audience, and FOX News Channel also reported double the number of households for an average day. The Starr report made communication history, not just in the United States but around the world. Globally, over twenty million people accessed the report within forty-eight hours of its electronic release. Not only was the volume record setting, but also the availability to the average citizen was also astonishing. Average people around the world were reading the report at the same time as Congress, White House staff, news media executives, and reporters. For example, America Online, the world's largest web-based provider, recorded in excess of ten million hours online on the day the report was released. Other online web ramps also reported either a staggering volume or technical slow-downs due to unprecedented traffic that day. A similar phenomenon occurred with the 9/11 Commission in 2004. Televised hearings, numerous press appearances and finally a best selling government report all watched by Internet users led to significant pressure on the US Federal Government to act. Demand for copies of The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States swamped Amazon.com and other sales sites.

The important communication point to be made in all of this is that no longer were news editors, pundits, politicians, the US president, or others able to act as gatekeepers to restrict, alter, spin, or limit the information in the report. Rather, millions of average people around the world now have access to the full, unedited government reports at the same time they are presented to the national legislatures.

The Starr report and summaries of the 9/11 Report on the Internet changed in a fundamental way the potential for mass dissemination of information to a global audience. The reports represented unprecedented and unique examples of the pervasiveness of the Internet as a mass communication system. It represented the democratization of the mass media in that politicians or media elites were no longer able to control, filter, or interject their editorial viewpoints about a significant government document.<sup>5</sup> Average individuals in the United States and elsewhere with access to the Internet were able to download the entire report, consume it themselves, and draw their own conclusions. They did not have to rely on the door-to-door newspaper the next day, or condensed sound bits on national newscasts to inform them about a major government document. Even the President of the United States, along with his substantial staff of spin doctors and press spokespersons, were left to consume these and other reports from their computers at the same time that millions of people around the globe were doing exactly the same thing.

As a result of the Internet, the global public is better informed. They can act as a more informed public jury concerning major political events, such as the invasion of Iraq. But the changes are not by any means limited to politics. The Internet is changing the nature and perception of the human environment. Users

are creating a third culture, like Featherstone referred to in an earlier work on the origins and growth of a global culture.<sup>6</sup> There is a difference between users and non-users of the Internet. And this phenomenon is more pronounced among heavy users. To some extent Marshall McLuhan foresaw this as early as the 1960s when he was theorizing about the mass media being so pervasive as to totally consume all aspects of a person(s being (and leaving no aspect of one(s being untouched.<sup>7</sup> Finally, along similar lines, electronic colonialism is about the mind being shaped more and more by external media, of which the Internet is simply the latest player. The Internet does alter, affect, and influence people in psychological ways yet to be foretold or completely understood. The Internet is also primarily in English and has a US centric bias. These two realities have clear cultural consequences for Internet users around the globe. From rural villages in India with computer access to Starbuck Internet cafes in almost ever major capital of the world, electronic colonialism is on a steady march 24/7.

The Internet has an obvious downside. It is capable of relaying, inter\*nationally, sordid details about what historically tended to be personal mat\*ters. It also can spark erroneous claims that could end a politicians or CEO(s career. When an Internet site runs a story, the story goes glo\*bal. It is not restricted to a city, state, or even nation. Rather, it becomes in\*stantaneously available worldwide.

A final note is that the Internet's global and instantaneous communica\*tion ability, for good or ill, changed public life forever. In the age of the Internet there is no privacy. (Just ask the bloggers. They are covered in more detail later in this chapter.) The release of government reports have made Internet history, but they also opened the door for a two\*way information superhighway. Various constituents in record numbers e\*mailed their elected representatives with their thoughts and ideas about how to vote. Rather than sending a letter by mail, they now quickly-\*and for free-\*mail a message to even obscure members of local and national governments. Many repre\*sentatives are reporting that they have to reassign staff to deal with the flood of e\*mail as the public uses the same computers to reply to the contents of government reports as well as to influence the position of their elected representatives. The messages tend to be short and full of typos, but in the final analysis, the sheer volume of e\*mail likely has a collective impact. Politicians, or government agencies such as the FCC or the British Oftel, do not have to wait for weeks for the regular mail to arrive to de\*termine where their constituents stand on vital issues.

#### Internet and Global Television Issues

The story of video on the Internet has yet to be written. The video materials available, whether they are television programming or feature movies, have tremendous implications for current producers. With the ability of the Inter\*net to broadcast video live, along with worldwide dissemination, current copyright holders could potentially see their materials appear anywhere in the world without their authorization or compensation. The following two examples illustrate the potential problems.

In June 2000 in California, a group of movie studios filed a suit in Los Angeles to close down a web site that was allowing viewers to record televi\*sion shows online. The site was attracting a large number of users and there\*fore caught the attention of television executives. Applying traditional copyright laws, the movie studios' legal team sought to close down the site immediately for unauthorized taping and redistribution of the video con\*tent, which originated from a series of entertainment companies and was available via cable in the Los Angles area for a cable subscription fee.<sup>8</sup>

A second situation reflecting the convergence of television and the Internet is represented by a company based in Toronto, Canada, iCraveTV. Beginning in December 1999, with nearly one million customers during its first month of operation, iCraveTV offered seventeen online television stations. It provided free Internet access for its advertising-supported rebroadcast of Canadian and U.S. television channels.<sup>9</sup> The twenty-four-hour, live streaming service included NBC, CBS, ABC, FOX, and PBS. Within Canada, Internet broadcasting services are not regulated under the Canadian Broadcasting Act. What iCraveTV had done was to create ten Canadian Internet super stations for a potential global audience. Providing the integration of television with the Internet has not been without its critics. Some claim that the Internet site violated copyright laws and constituted trademark infringement. For example, the US-based National Football League was part of a group that took legal action because US Internet users are able to access NFL games through stations rebroadcast live on the iCraveTV Internet site. Other plaintiffs in the suit were ABC, CBS, FOX, Disney, and Time Warner. Using Internet video streaming or other Internet services could place firms in legal difficulties if prosecuted under US law. U.S. law is aimed at protecting the copyright provisions of not only the major broadcasting networks but also major sporting events, which are contracted on an exclusive basis with US-based networks. The Internet's role was clearly not anticipated even a few years ago in terms of providing a competing global alternative for the rights holders.

These examples will likely be replicated when some entrepreneurial web provider makes European soccer globally available on the Internet. Also, American baseball, which has a substantial following in Japan and elsewhere, may see its signals being broadcast on the Internet. The National Hockey League, which has a large following in Europe and other nations, is also likely to see its product on some Internet portal in countries where it has never been broadcast before. The International Olympic Committee is also a group that aggressively protects its trademarked products and symbols. To some, this is innovative and a new application for the Internet; for others, these users are mere content pirates and rights thieves.

#### Internet and Hollywood Films

Industries that have been surprisingly slow to change, such as Hollywood and the feature film studios, have been forced to reexamine their global distribution policies because of the Internet. Traditionally, Hollywood's major studios would release their films within North America first, and then later, sometimes many months later, would distribute them around the world, primarily to other core nations and then semiperipheral nations. In a few instances, it could take a year for a major feature film to open in theaters in smaller nations or eastern Europe. Now Hollywood is confronting the emergence of the global entertainment market. This market is increasingly sophisticated, with potential moviegoers using web sites to obtain information about newly released Hollywood films; others are purchasing films through e-commerce businesses that specialize in film distribution, primarily DVD disk technology. A new Hollywood policy of rolling out global distribution of major movies within weeks is a direct response to the changing environment created by the Internet. All the major studios are reexamining their global marketing of new films, and the major reason is that Hollywood's hype machine has finally met a force it cannot control—the Internet.

Gone are the days when Hollywood could sell its movies in domestic isolation, with little fear that the U.S. marketing message would spread quickly to countries where the films wouldn't be seen for months.<sup>10</sup> An example of this phenomenon was the co-production of Columbia and Universal Pictures, which arranged a global release for Julia Roberts's feature film *Erin Brockovich*. During the opening week, the film became the number one attraction in seven

major markets, including the United States, Canada, and five European nations. The global market for films is being approached more as a single market than as a series of isolated markets. Sony is also marketing new releases on an international rather than a national basis.

There are three other interesting facets of this new policy shift, which recognizes the globalization of the Hollywood feature film industry. The first is that the new releases come out only in English; dubbed or translated versions are not available on the initial release date. The second byproduct of the change is that the marketing strategy and advertising copy, including photos, for these releases are now all standardized. Identical promotional materials are used across the globe in other core nations. The promos seen in the United States are now the same promos being seen in Europe and other nations promoting Hollywood's latest blockbuster. Hollywood's approach to the global market had to change or face a growth in the pirating of films or alternative purchasing, which would have adversely affected the profitability of the studios' investments in what are in most cases pricey feature films. This is what has led to the third policy shift. In 2005, following the lead of the music industry going after illegal online file sharing through the courts, the Motion Picture Association of America (MPAA) began a series of law suits to stop illegal online copying of movies. MPAA is seeking to reduce file swapping or peer to peer (p2p) activities involving Hollywood productions. Although the copyright violation and movie sharing is only about 2% of online illegal activity (music represents more than 60%) the movie industry is really worried about the future. Today the enormous size of digital movie files makes downloading a long process, plus it occupies a great deal of disc space. But with each new generation of computers both speed and space will be less of a problem or deterrent. Complicating matters for MPAA is that each new version of file sharing software is becoming more user friendly and more difficult to track. Facing these technical realities Hollywood studios are seeking to make some online pirates pay and use these cases to stop others. Even if successful in US courts, the studios still have little hope of legal standing for the enormous threat to their property rights outside the US.

#### Internet Users

Yet another example of how the Internet has caused a reexamination of traditional ways of doing business concerns Internet users. According to Computer Industry Almanac Inc.'s Internet Industry Almanac, the top ten countries with the highest Internet usage in 2004 were

1. United States 202.5 million users
2. China 87.0 million users
3. Japan 66.5 million users
4. Germany 47.2 million users
5. United Kingdom 34.9 million users
6. South Korea 30.7 million users
7. Italy 28.6 million users
8. France 23.2 million users
9. Canada 20.5 million users

10. Brazil 19.3 million users

The United States alone accounts for over 50 percent of the global Internet usage.<sup>11</sup> Europe accounts for 25 percent of global usage. It is obvious that core nations were the early inventors and adopters of the Internet and now continue to expand and dominate global usage. The core nations have all three requirements for Internet access: technical expertise, the financial resources to buy the required computers and hookups, and communication infrastructures to deliver interactive Internet services. In many cases, peripheral nations lack at least one of these requirements, and in some cases they lack all three.

Not surprisingly, the US is the Internet superpower. According to SUNY-Buffalo communication professor George Barnett, (the United States is the nucleus of Internet traffic, and it is the most central nation on the international networks of both hyperlinks (bandwidth) and infrastructure. In cyberspace, peripheral and semi-peripheral nations rarely communicate directly; almost all Internet traffic flows through the US. The nature of the Internet today can be partially explained using world system theory, with language, technological, and cultural advantages that help the US remain the most powerful and influential nation. According to Barnett, the US (has the structural capacity to act as an information broker or gatekeeper for the international Internet. ([12]

Another factor that seems to encourage greater Internet use is geography. Six nations have geographically isolated populations yet have substantial per capita users. These are the Scandinavian countries of Finland, Sweden, and Norway, as well as Australia, Canada, and New Zealand.

It is projected that by 2010 over 1 billion people worldwide will have access to the Internet for their work and homes. This will allow core based broadcasters and advertisers, particularly those with a global brand or strategic plan, to market their services via the Internet on an unprecedented scale. Semiperipheral nations in central and eastern Europe will likely see the largest per capita gains in new Internet users. E-commerce on the Internet is now generating significant revenue in all core nations. This will fuel additional demand for Internet access as well as growing commercial competition as the market share for electronic purchases of goods and services around the globe expands at a rapid pace.

Finally AOL represents an interesting application of both electronic colonialism and world system theories. Currently, AOL has about 30 million subscribers around the world. It is by far the number one provider in the

United States. Internationally, primarily through a series of joint ventures, AOL is attempting to strategically focus future growth in international markets. It is the number two Internet provider in Germany, France, and Canada; in Brazil it is fourth, and in Japan it is tenth. Globally AOL and its subsidiary,

CompuServe are available in sixteen countries Offshore, however, AOL frequently does not use the name America Online for fear of anti-U.S. reaction among the computer literate. Globally, it simply goes by AOL. The expansion of AOL is targeted in the short run to semiperipheral nations, and it is anticipated that by the year 2010, a majority of AOL subscribers globally will be from outside the United States.

Computer Viruses

With the advent of the Internet came the birth of computer viruses. Some are merely nuisances, while others, such as the Melissa, Love Letter, Trojan horse, Mydoom, and Resume viruses, have affected electronic mail and other files with extremely damaging results. Major corporations have had to shut down their systems due to some of the more pernicious viruses. These have the potential to erase data, release secure data, change data, or totally freeze or take over com\*puter systems. It is estimated that there are now over 100 new viruses per week. With e\*commerce expanding on a daily basis, the impact of vi\*ruses can be catastrophic and within a matter of minutes run into the millions of dollars in lost rime and business. Although computer viruses first appeared in the early 1980s, macro viruses that spread worldwide with the extensive use of the Internet system are a more recent phenomenon. There are also many reports of hoaxes, which are more than major annoyances. Given the recent impact of viruses that embedded themselves in complex and mas\*sive ways, even hoaxes have to be taken seriously.

Cyber crime is another new by\*product, as well as a legal challenge, of the Internet. For example, the I Love You worm code that originated in the Philippines in May 2000 moved via e\*mail across Asia to Europe and from there to North and South America. Thousands of individual users were in\*fected, as well as major organizations such as the British House of Com\*mons, Yahoo!, the US Central Intelligence Agency, CNN, and the Ford Motor Company. Although the overall cost of damage from this e\*mail worm is difficult to assess, it was well into the millions of dollars.

Basically, computer viruses are uninvited guests that run on your PC. They can attach themselves to other files\*-mainly e\*mail addresses. As com\*puter-programming languages become user\*friendlier, and because they are transferable, virus programmers have realized that viruses can now switch from one platform to another without any difficulty. The virus prob\*lem is huge because viruses can be initiated by novice programmers, but the consequences can be truly catastrophic as the viruses worm their way glo\*ballly and in seconds from system to system. Malicious hackers or simply nerdy computer groupies can unleash viruses at any time. Today there is anti-virus software that has helped to reduce the problem. Yet new categories like adware, pop-ups, spyware, and malware continue to infect computers. Removal software is available from several vendors.

Finally, in 2004 in the first felony prosecution of spammers in the US, a jury convicted two spammers of sending vast bulk e-mail messages. They face up to 10 years in prison. Anti spam laws with tougher sanctions are being enacted in several jurisdictions.

## Blogging

A new Internet driven phenomena called web logs or web diaries, and popularly cited as bloggers, arrived in the mainstream media by 2004. Historically, some early bloggers, such as engineers or technicians, were adding personal or political comments to their discussion web sites as early as the mid 1990s, but a few seminal events occurred in the early 2000s, which moved blogging to a new level.

The first substantial blogger driven event was a rather focused Internet attack in 2002 on the then powerful Republican Senator Trent Lott. Lott had made some inappropriate and racist comments at a party and the mainstream media as usual covered the matter, but only for a few days. But some tenacious bloggers kept the heat on Lott for weeks and called for his resignation. This web-based chorus forced the national media to take another look at the entire episode. Lott did resign. He did so because bloggers were able to build pressure via the Internet

that put Lott back on the evening newscasts and talk shows in a negative light. A decade earlier he would have avoided such scrutiny and shame.

In 2003 other creative blog users were able to mount a substantial fund raising drive via the Internet for Howard Dean, a candidate for the Democratic presidential nomination. His star rose rapidly as the Internet favorite but he and the others lost out to Senator John Kerry. Dean also set the (gold standard) of fund raising by using the Internet in creative ways. Then in 2004 bloggers became mini celebrities by being accredited as media representatives at both the Democratic and Republican national conventions.<sup>12</sup> Blogging became a household word much as Google did in record time. Finally, in late 2004 Dan Rather and CBS carried a piece on documents alleging that President Bush was not as solid a National Guard soldier as Bush had claimed. The documents turned out to be false. Again it was the bloggers who that kept the profile and bias of the CBS network alive and forced the mainstream media to again pursue the entire issue. Eventually both Rather and CBS both issued apologies for their major ethical lapse. CBS was forced to set up an investigation and as a result other senior CBS personnel were fired. In addition, some web sites were calling for Rather to be fired as well. Rather announced his retirement.

A related newer stage of this phenomenon is video blogging. This combines the text based blog with some appropriate video. The Asian tsunami and amateur video enthusiasts on vacation in the region provided a windfall for vbloggers on several continents in 2005. There are no protocols, permissions obtained, or copyright concerns by the vbloggers. Future dramatic footage, be it a televised confrontation or a natural disaster, will find its way around the world thanks to the growing cadre of vbloggers.

So the debate about the role and eventual fate of bloggers is still to be written. Some claim that they are pretend journalists in t-shirts with a laptop, while others see the new phenomena being the next significant trend in journalism. Bloggers can be rude, crass, and seem to spent a great deal of their time discussing sex, yet they have made the political process more open and clearly have a voice and opinion on high profile issues, whether people or political parties like it or not.

#### ICANN

The Internet Corporation for Assigned Names and Numbers (ICANN) has become both powerful and controversial. It is the outcome of years of recognizing the significance of the Internet for the global economy. Domain names and various Internet protocols, which carry a unique numerical address, are at the center of the Internets( orderly expansion. All computers need an address in order to participate in the Internet(s growing role in all aspects of modern life. The global Internet community (created a need for a new kind of social contract.(<sup>13</sup> Milton Mueller refers to the various functions that ultimately provide for unique Internet names and addresses as (the root.(<sup>14</sup> It is clear that ICANN has become powerful because it controls the rights to add top-level domain names, such as .com, .edu, .net, or .org. ICANN is a private company which controls the technical standards of cyberspace. To some extent it controls global information sharing in the online environment. It raises the bar on the construct of power.

Internet names and related protocols emerged out of and along with the growth of the American Research Projects Agency (ARPANET). Since the funding for ARPANET

came from the US military at this early stage, some controversy of who was getting the preferred names was bound to emerge. ARPANET was disbanded in 1990. The US funded National Science Foundation took over part of the naming function for a period, and then in 1993 the US Federal government gave governance control to Network Solutions, Inc. A rash of (cyber squatting( took place where people would register domain names with the hope of selling them later.<sup>15</sup> By 1998 this and other problems led to the US Department of Commerce to create a private entity, ICANN, based in California. ICANN was given substantial gatekeeper control over new access to the Internet(s registries. Challenges to what appeared as a powerful monopoly role emerged.<sup>16</sup> In the US much of the challenge to the functioning ICANN came under the umbrella of antitrust laws, specifically the tough Sherman Anti-trust Act.<sup>17</sup> Even though ICANN is governed by an international Board of Directors, who attempt to insure that technical elements of the Internet(s infrastructure serve global needs, this over-sight has not kept the global community of users included or content. Currently there are calls for a shift from the US centric coordinating role of ICANN to a mutli-lateral organization and environment.<sup>18</sup> This controversial matter has unexpectedly been taken up with some peripheral nations( zeal within the World Summit of the Information Society (WSIS). It will see a politicized tone for what ICANN and others see as technical rule making in nature.<sup>19</sup> It also means that the future of Internet governance may lead to benefit the ITU or the OECD(as possible new ICANN oversight and structures(or the WSIS could end in turmoil(since Tunisia, the host country for the second phase of WSIS, has a fondnessfor arresting Internet users as well as free press advocates.

In closing, the above is not a trivial matter. The future of the Internet and how and who governs it internationally is central to the emerging electronic information environment. If fair and equitable access is not spelled out, then it is the peripheral regions that will fall further behind in the digital divide chasm. The core nations to date have controlled the (global village( with its Internet connectivity through ICANN and its predecessors. Some opening up of rule making and greater access is now being challenged in several fora.

## CONCLUSIONS

Any description of the Internet, as well as projecting the future of global communications, deals with history on the run. Given the major technologi\*cal and software advances being promoted by major corporations and re\*search institutions, there are going to be several additional generations of Internet hardware and software. Likewise, the merger phenomenon of old media stakeholders and new Internet players, such as Time Warner, is in its infancy. In the future, there are likely to be more mergers of transna\*tional corporations, whether they are based in Europe, North America, or Japan. The Internet personifies a dynamic, rather than static, state of affairs. The Internet economy is growing at a

(much faster pace than the Industrial Revolution that began in the 18th century. Perhaps more importantly, the potential scope, size and overall economic impact of this economic system is much larger than what we can comprehend today. The key characteristics that distinguish the new economy are informa\*tion, knowledge, and speed.(<sup>20</sup>

Before drawing some general conclusions, a significant point relates to indigenous Internet sites. It is true that various linguistic or ethnic groups have created sites that focus on and promote smaller cultural sectors. Many of these are aimed at keeping expatriates informed or aiding children with their ancestral roots. Yet for every page on the Internet which is non-English, there are at least 100 pages of English text. The Internet is both US centric and English dominated. That is a major reason why the Internet is a leading purveyor of electronic colonialism around the globe.

Even so, we can draw four general conclusions. First, although the origins of the Internet may be traced back to the 1950s with the strong leadership of the US Defense Department, it is still safe to say that the origin, description, and role of the Internet as it has evolved to date occurred within core nations. Innovations and expertise in North America, Europe, and to some extent Japan permitted the development and rise of the hardware technology and software necessary to establish a global Internet system. Semiperipheral nations played only a catch-up role as they attempted to mimic innovations first established and demonstrated within core nation markets. Semiperipheral nations also tend to face the dual problem of the lack of investment capital to underwrite new Internet ventures, and a lack of the high-tech entrepreneurs needed to develop and promote more indigenous Internet sites and services. For peripheral regions, the situation is exacerbated.

The Internet revolution is in progress. Some nations with progressive public policies that encourage foreign capital and reward entrepreneurs will benefit, but other nations may stall or regress over time to weakened global economic and social positions. Semiperipheral and peripheral nations are distant users of the Internet. In those regimes where the Internet exists, it is available only to elites, whether they are government officials, academics, business leaders, or religious and tribal leaders. In far too many cases, the average person in peripheral regions is waiting for a first telephone, not preoccupied with browser technologies, e-commerce, iPods, or MP3.

Second, the Internet represents change. Its impact among information gatherers and providers, whether they are in the media, business, or universities, has been profound. The situation will continue to escalate as e-commerce activities begin to displace traditional mechanisms and modes within the marketplace. Just as Amazon.com revolutionized the bookselling industry, so virtually every industry will experience similar Internet intrusiveness and some global opportunities in the near future.

Third, e-commerce and e-multimedia will take on greater global ramifications. The ability to advertise and market on the Internet is a global electronic phenomenon. It has transformed commerce beyond the traditional bounds of the nation-state. The BBC, MTV, CNN, and other media enterprises have long recognized this, but particularly with the merger of AOL and Time Warner, there is a clear demarcation between the old media firms and the new. A firm without an Internet presence is destined to a strategic reality of declining market share and influence. The Internet represents the globalization of the marketplace in a fashion unprecedented in human history. It brings with it values and economic rituals such as credit cards and advertising that reflect the electronic colonizing of both the mind and the marketplace. Internet global advertising exceeds \$10 billion and increases annually. Much of the online ad revenues appears to be coming primarily from newspapers and to a lesser extent from network television. Strategically over time, since the amount of online advertising is going to increase, some newspapers will likely close.

Fourth, capturing the consumer behavior and consumer purchasing power for products and services offered over the Internet will become a greater economic force and reality over time. The global success of the Big Four, which are Amazon.com, eBay, Google, and Yahoo! as both viable commercial and electronic leaders bodes well for not only them but many others as well.

It is not so much an issue of cultural imperialism, as some critics have maintained, as the economic common sense of following the success of various individuals, corporations, and systems that have migrated successfully and quickly to the world of the Internet. This phenomenon might more reasonably be called electronic imperialism. The Internet is to our future what automobiles

and transportation were to our past. Now we are looking at digital nations, virtual spaces, e-commerce, and global systems that link individuals and the Internet without regard for time or space. Whereas time and space were the defining characteristics of the industrial era, so now the Internet, where time and space no longer pertain, is the defining medium of the information age

Finally, Internet technologies are not neutral. They impact a broad range of behaviors from information processing, to research strategies, to e-commerce, and e-living. Just as the invention of the printing press had wide-spread consequences for the Industrial Revolution over the course of the last two centuries, so too, the Internet will impact his and future centuries in profound ways Marshall McLuhan (1911-1980) detailed the printing press's impact on society and individuals in his seminal work, *The Gutenberg Galaxy* (1962). A similar classic has yet to be written about the impact of the Internet, but there are early indications that this impact will be substantial. For example, with reference to the Internet and information technologies, Alan Hedley states "what is at stake are the very thought processes of those dominated. Only powerful nations currently have the ability to choose the type of information society most compatible with their cultural institutions.<sup>21</sup> This viewpoint is fully consistent with the theory of electronic colonialism. Basically, the Internet, whether it is in China, the United States, or some remote part of India, will have parallel consequences for social systems (e.g., education, commerce, and discussion groups) and the mind-sets of individual users. Internet users, regardless of time or space, will mentally converge over time with other widely dispersed users. They will come to have more in common with individuals scattered around the planet than with nonusers in their neighborhoods, schools, or work.

#### NOTES

1. This chapter seeks to highlight salient aspects of the history and current role of the Internet. There is a vast literature on the subject; a few sample pieces include: J Levine, C. Barondi, and M. Young, *The Internet for Dummies* (Foster City, CA: IDG Hooks Worldwide, 1999); K. Hafner and M. Lyon, *Where Wizards Stay Up Late: The Origins of the Internet* (New York: Touchstone Books, 1998); and Paul Ceruzzi, *A History of Modern Computing* (Boston: MIT Press, 1998),

2. The symbolic role of the Russian series of four Sputnik satellites cannot be underestimated. These relatively unsophisticated satellites successfully launched by the Soviet Union demonstrated to US military, political, and industrial leaders that Soviet technology was more advanced than many had believed, The same rocketry that could fire a satellite into orbit could also be easily modified to launch a nuclear payload aimed at North America. In response, in 1961 US President John Kennedy committed the nation to putting a man on the moon by the end of the decade. Thus began the space race, along with the necessary rocketry to propel not only satellites into space but also manned orbital missions. In July 1969, the Apollo 11 module landed on the moon with Neil Armstrong and Buzz Aldrin.

Although Sputnik's signal lasted only eighteen days, it was sufficient to galvanize the United States to engage in a space race with the Soviet Union. The space race would provide substantial funding for the development of satellites for broadcasting as well as military uses, and the development of manned space vehicles led to the miniaturization and increased sophistication of computer systems. Although it is highly possible that US academics and scientists would have eventually developed much of the communication technology of today even without Sputnik, Sputnik provided the impetus, focus, and substantial federal

funding required to propel the US into the global leadership role it currently holds in computers, satellites, and telecommunications.

3. USA Today, 2000 June 6, p, 1A.

4. Portals are essential navigating tools for searching the Internet. They fall into two categories. The first type of portal, available through AOL, Yahoo, MSN Worldwide, Excite, Lycos, and others, helps users search for general interest and broad categories of content. The audience for these major portals has given rise to a second category called niche portals, which specialize in more narrow areas and condensed searches. Good examples are portal sites for graphic artists, gardening, golf, sports, gambling, or health, or sites in Spanish such as quepasa.com for the global Latino market. These specialty portals have unique features that appeal to specific segments or niches of the broader Internet audience. Over time, as new niche segments are identified, these types of portals will expand significantly and ultimately draw users from the general portal sites,

5. The Internet has changed the nature and role of the mass media. Just how much is a story yet to be told. At this point, some may argue, with good reason, that the traditional media still set the agenda of public discourse and that the Internet traffic is a function of the old media, which still retain elite power. But we are rapidly reaching the point in core nations where the Internet will set the agenda and traditional media will be forced to follow.

6. Michael Featherstone, ed. Global Culture: Nationalism, Globalization and Modernity. (London: Sage, 1990).

7. Marshall McLuhan and Quentin Fiore, The Medium is the Message (New York: Bantam Books, 1967).

8. Wall Street Journal, 16 June 2000, p. B8.

9. In the early 1990s, Mark Cuban, now a Yahoo! Inc. executive, married a PC with a high-speed telephone line to get a distant college basketball game. He subsequently created an Internet site using similar connections for distant events that became so popular that he sold it to Yahoo! in 1999. Yahoo! now offers its users close to five hundred radio stations and nearly seventy television stations and cable networks. Yahoo! pays all necessary fees up front for audio and video programming that appears on the Internet by way of Yahoo!'s portal

10. Wall Street Journal, 12 June 2000, p. A1.

11. Ken Cukier of Communications Week International (France), in a 1999 paper titled "Bandwidth Colonialism? The Implications of Internet on International E\*Commerce," makes the case that the Internet is US\*centric. The global topology of the Internet is US dominated because bandwidth, cost, and technology favor the United States. Cukier cites as an example the fact that Paris\*based FranceNet's most powerful server was based in California.

12. George A. Barnett, (The Role of the Internet in Cultural Identity.( University of Buffalo (SUNY) Department of Communication, August 2004. Barnett, (The Structure of International Internet Hyperlinks and Bilateral Bandwidth.( University of Buffalo (SUNY) Department of Communication, June 2004.

13. Matthew Klam, (Fear and Laptops on the Campaign Trail(, The New York Times Magazine, September 26, 2004.

14. Milton Mueller, *Ruling the Root: Internet governance and the taming of cyberspace* (Cambridge, MA: The MIT Press, 2002).
15. Mueller *Ruling the Root* p. 6.
16. Lily Blue, (Internet and Domain Name Governance: Antitrust Litigation and ICANN,( *Berkeley Technology Law Journal*, vol. 19, 2004, pp. 387-403.
17. Susan Schiavetta and Konstantinos Komaitis, (ICANN(s Role in Controlling Information on the Internet( *International Review of Law, Computers and Technology*, vol.17, no.3, pp.267-284.
18. Blue, p. 393.
19. Wolfgang Kleinwachter, (Beyond ICANN VS ITU?( *Gazette* vol. 66, 2004, pp. 233-51.
20. Milton Mueller and Lee McKnight, (The post-.com internet: toward regular and objective procedures for internet governance(, *Telecommunications Policy*, vol. 28, 2004, pp.487-502.
21. Anitesh Barua and Andrew Whinston, *The Internet Economy Indicators* (Austin: Univer\*sity of Texas, 2000), June 8, p 2.
22. Alan Hedley "Technological diffusion or cultural imperialism? Measuring the infor\*mation revolution." *International Journal of Comparative Sociology* 39.2 (June, 1998) 210.

Figure12.1 Top 5 Search Engines in the US

1. Google
  2. Yahoo!
  3. MSN
  4. AOL
  5. Ask Jeeves
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