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OUTLOOK 2000: TECHNOLOGY & MEDIA: The Economy Transformed, Bit by Bit

Business/Financial Desk; Section C

Businesses and Society Confront the Inescapable Challenges of High **Technology** and the Internet

By STEVE LOHR

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In 1995, Bill Gates of Microsoft wrote an impassioned memo to his lieutenants stirring them to confront the challenge of "The Internet Tidal Wave." That wave hit corporate America as a whole in 1999, when companies large and small recognized that **the impact of the Internet** would not be confined merely to Silicon Valley or to the proliferating dot-com start-ups.

"Every **business** now knows that it faces the opportunity and threat of being transformed by the Internet, and this was the year that happened," said Daniel Yergin, a **business** consultant and author.

The Internet has also become a powerful symbol of **society's** expectations about the future -- a future of fast-moving, disruptive **technology** that is shifting the terrain not only in **business**, but also in politics and culture.

The truth, of course, is that it is probably too early to judge whether an **Internet revolution** is truly under way. Historians say the Internet should be viewed mainly as the latest advance in communications, a successor to the telegraph and the telephone, more a technological step than a leap forward.

Still, whether labeled a revolution or an evolution, the Internet's impact on the economy seems destined to become greater and greater. When people speak of the "Internet economy," they do not really mean that Internet businesses themselves suddenly loom so large in the nation's \$9 trillion economy. They are talking of a **technology** and a pattern of **business** behavior that feels like the future.

The Internet is seen as a **technology** of borderless free markets. It is a global network with open **technology** standards, not owned or controlled by a single company or nation. And it is magic on Wall Street these days, driving the shares of many Internet companies to astronomical heights.

Because it is such a low-cost communications **technology**, the Internet holds the promise of drastically reducing transactions costs. This opens the door to what Michael Porter of Harvard's **business** school has called "atomistic competition," as market forces and entrepreneurial ways are driven further down toward the individual level. Organizational bureaucracies of every kind -- corporate, government and union -- suddenly look vulnerable to the Internet's decentralizing powers.

Even the power of nation states, already eroding, seems at risk. Mr. Yergin, the co-author with Joseph Stanislaw of "The Commanding Heights," a history of the rise of the global marketplace, observed: "Nothing so symbolizes globalization as the Internet, a **technology** with the power to leap across the geographic borders of nation-states and across time zones."

Prediction tends to be a humbling, hit-or-miss endeavor even for the gifted or lucky. In the late 1960's, for example, Sir Arthur C. Clarke, the science fiction writer, predicted that by 2000 a vast electronic "global library" would be developed -- and the Internet and the World Wide Web could arguably qualify as one. Then again, Sir Arthur also predicted that the planets would be colonized by next year.

But technologists, economists and futurists say that some questions are worth asking when thinking about how the Internet economy might evolve over the next few years. What was the mixture of **technology** and policy decisions that created today's Internet? What key **technology** and policy issues are likely to affect the Internet over the next few years? And, finally, since the future is usually the past with a twist, what can be learned from earlier **technology**-driven transitions?

The Internet has been embraced by libertarian free-marketers as the embodiment of their values, but, to be sure, it began with government financing. Yet liberals who point to the Internet to support a pro-government stance -- at least in any conventional sense -- are ignoring certain facts. The early money for the Internet -- as well as for pioneering research in computer graphics and speech recognition software -- came from an elite, the Pentagon's Advanced Research Projects Agency. Its money came from the military's largess, and ARPA's leaders spent it pretty much as they pleased with little accountability. From the mid-1960's to the mid-1970's, the agency's leaders displayed an uncanny knack for backing long-term winners in **technology**.

For two decades, the Internet was developed gradually in the distinctive milieu of the nation's research centers by scientists who believed in the free sharing of information and in open **technology** standards. The next major policy pronouncement about the Internet did not come until 1997, when the Clinton administration released its "Framework for Global Electronic Commerce." Written by Ira C. Magaziner, a senior White House adviser, the report called for a market-driven Internet. "**Business** models must evolve rapidly to keep pace with the breakneck speed of change in the **technology**," the report said. "Government attempts to regulate are likely to be outmoded by the time they are finally enacted."

So the pattern of policy to date: shrewd government seeding of research followed by benign neglect. But as the Internet increasingly becomes a main thoroughfare of commerce, a host of new policy issues loom -- how to deal with taxation, **privacy**, security and international trade in a global networked economy.

"The Internet has given us the greatest rate of return on a public infrastructure investment ever," said Robert Litan, director of economic studies at the Brookings Institution. "And it has flourished because we have not yet taxed or regulated it to death -- though those are live issues."

Technologically, the Internet is almost an economy unto itself -- a network, yes, but also a complex and interacting set of technologies. Today's Internet is a result of a torrid pace of improvement in recent years in computer networks, processing power, data storage, software, display **technology** and user interfaces like the Web browser.

The sheer firepower of computers, experts say, is certain to race ahead to startling effect over the next few years. Data storage **technology**, for example, is advancing at a particularly rapid rate. By 2003, personal computers may well come with terabyte hard drives, which are roughly 100 times the capacity on new PC's today, featuring about 10 gigabytes on average. A terabyte drive would be able to hold every conversation that even the chattiest person has had in a lifetime. Think of a supercomputer on every desktop, in terms of giving individuals the ability to mine personal or **business** information.

In every field of academic and scientific research, computing will increasingly be used for simulation and analysis. The real payoff from the Human Genome Project, for example, will come not from identifying the complete DNA sequence, but from understanding how these complex proteins work. Such knowledge, medical experts say, will be the basis for everything from developing personally tailored drugs to discovering new ways to treat disease. The main tool for stalking that breakthrough knowledge is computational biology -- microbiological simulations run on powerful computers.

The real technical challenge to the Internet economy will not come from any shortcoming in raw computing power, but from the difficulty of building up the global network to meet demand. The next-generation vision of the Internet is of a high-speed global network to which billions of devices are connected, from TV set-top boxes and hand-held computers to refrigerators and washing machines that would be able to do everything from optimizing fuel use to requesting a repair call automatically online.

But that kind of global nervous system of commerce and **communication** will require far more than adding computers and laying more wire. The Internet, after all, was originally designed as a computerized "party line" for a small community of researchers -- who knew and trusted each other -- to send e-mail. And network complexity can increase exponentially -- that is, a network with 200 million users is far more than twice as complex as one with 100 million because each user, each computer and each line of code can interact with others in the network in unpredictable ways, just as in a biological organism.

A presidential advisory group of leading computer scientists concluded earlier this year that new research, fresh approaches and more government money were needed to cope with the problem. "Scaling the Internet to handle the expected growth over time is a major challenge," said Irving Wladawsky-Berger, general manager of the Internet division at I.B.M. and a member of the group. "And the current infrastructure can't scale up."

The group's report to the White House warned that there would be "catastrophic failures" in the computer networks that increasingly support the nation's defense and economy, unless those networks were retooled.

Still, Mr. Wladawsky-Berger predicts that the technical challenge can be overcome, provided the government and industry make the needed research investments. "It should not be a showstopper," he said.

Indeed, given the track record of success in computing, the visceral optimism of the technologists seems justified. "Sure there are some tough problems, but it'll work," said Rick Rashid, head of research at Microsoft. "We can do it. We always have. In information **technology**, that is the way it's always worked."

That information **technology** is delivering a problem-solving payoff has been an article of faith in the corporate world for years, far more so than among economists. **Business** investment in computer hardware and software is running at \$380 billion a year, up steadily from the annual rate of \$110 billion five years ago. And corporate America is expected to keep increasing such spending. By the end of 2001, Macroeconomic Advisers, a research firm in St. Louis, projects that **business** investment in computer hardware and software will be running at a yearly rate of \$513 billion.

Economists expect the nation's extraordinary growth to continue next year, though at a somewhat slower pace. The consensus among the 50 forecasters in the Blue Chip Economic Indicators survey is that the economy will expand 3.9 percent this year, with inflation at 1.4 percent. For 2000, the consensus is growth of 3.2 percent and inflation of 1.7 percent. In February, the economy should set the record for the longest expansion, surpassing the 106-month record set in the 1960's.

Just what impact information **technology** has had on the economy's uncommon run of growth, productivity gains and low inflation is a subject of heated debate within the economics profession. It is probably too early to tell, but Mr. Litan of Brookings, who is leading a yearlong study on the issue, sponsored by the Internet Policy Institute, said, "My instinct is whatever we find the economic impact to be, it will be a lot greater five years from now."

The sense of being at the start of a **business** and economic transformation, of course, has fueled the Internet start-up fever. It seems a speculative bubble, but such periods of investment mania foster a rapid pace of **business** experimentation. Thomas Eisenmann, an assistant professor at the Harvard **Business** School, notes that from 1900 to 1925 there were more than 3,300 automobile start-ups in America turning out cars of many types -- some sporting three wheels, some six; one model featuring a shiplike tiller for steering; others trying electricity or steam as power sources.

"We'll see the same kind of winnowing in e-commerce," Mr. Eisenmann said. "Some will succeed, but most will fail. We'll repeat the past again, only faster."

For established companies, the Internet challenge is to adapt to an accelerated technological shift. That was precisely the quandary Mr. Gates was sketching out in his 1995 memo: Microsoft was threatened by the rise of Internet software; yet if it scrambled, he wrote, the company could benefit from the Internet. The speed of Microsoft's response is regarded as an exceptional case of a big company's moving nimbly to change course, but the tactics it used became the subject of the government's sweeping antitrust suit against Microsoft.

The Internet's openness, low-cost use and speed are its distinctive features. The telegraph, historians note, had many of the same qualities -- it was an electronic network that transformed many **business** practices and was a new medium of informal **communication** for many. Yet the telegraph was expensive in contrast to the Internet. Sending a message was a household budgeting decision; firing off an e-mail message today is not. "The Internet is the telegraph for the rest of us," noted Paul Saffo, a director of the Institute for the Future.

The speed at which the Internet is spreading across the globe, pushing both the tools and values of high **technology** onto people, could prompt a backlash. Peter Schwartz, a leading futurist and **business** consultant, is a **technology** optimist. Along with Peter Leyden and Joel Hyatt, he wrote, "The Long Boom: A Vision for the Coming Age of Prosperity."

Yet Mr. Schwartz, while predicting that the pace of technological change will not slow, adds that the willingness of people to accept new **technology** could reverse sharply if companies and governments do not make the right policy choices.

The Internet economy carries the potential for creating "a deep divide between those who have the skills to prosper and those who don't," he said.

"That's why education policy is so important," he added.

The social tolerance for **technology**, Mr. Schwartz added, could also cool. The advance of nuclear power in the United States, he said, came to a standstill because the public fears after the Three Mile Island accident were not allayed. The recent resistance to genetically altered foods and the protests in Seattle over the World Trade Organization's global influence on environmental and labor protections, he said, are warning signs.

"An inadequate appreciation of either the losers in this new economy or of the people with legitimate concerns could be real problems," Mr. Schwartz said. "If you don't address those groups early on, it will come back to bite you."

Drawings (John Hovell)(pg. C1); (John Hovell)(pg. C38) Chart: "The Information Boom" investment in computer hardware and software is running at a \$380 billion yearly rate, up steadily from the annual rate of \$110 billion five years ago. The corporate world is expected to continue investing in information as spending passes a projected \$500 billion by the end of the year 2001. Chart shows investment in computers, peripherals and software, quarterly, in 1996 dollars from 1965 through projections for 2001. (Source: Commerce Department; Macroeconomic Advisers (projections))(pg. C38)

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DIGITAL ENGINE ROOMS: A special report.

Business/Financial Desk; Section A

Computing Centers Become The Keeper of Web's Future

By STEVE LOHR with JOHN MARKOFF

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English

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SCHAUMBURG, Ill. -- As Walt Grom tours his domain row upon row of hulking black computers -- he speaks of the importance of "fundamental engineering disciplines" and "brute force experience." The vast room is spotless, brightly lit and chilled by air-conditioning, an austere interior designed for the care and feeding of big computers.

The huge data center, run by I.B.M., is one of the engine rooms of the Internet, powering the World Wide Web sites and electronic commerce operations of some 400 companies and organizations including Bank of America, Macy's, Goodyear and the National Hockey League.

Such computer centers, known as server farms, are the unglamorous side of the **Internet revolution** -- a world apart from the young, urban culture of Web design artists with their tattoos and earrings. Here, a no-nonsense style prevails, and the hallways tend to be populated by big, beefy men with beepers.

"We're happy to do the plumbing," said Mr. Grom, who runs the International **Business** Machines Corporation's server farm in Schaumburg. Big data centers are sprouting up across the country, offering expertise and economies of scale to corporate customers and housing the proliferating Internet-based services that cater to consumers. It has become a billion-dollar **business**, doubling annually, and represents a sure sign of the trend toward once again housing information and computer power centrally -- a reversal of the last two decades of computing.

The personal computer has defined the industry's recent history and how computers were used. As personal computers spread rapidly in the early 1980's, they were seen as engines of individual empowerment and decentralization of information. Millions of islands of information were suddenly stored on desktop machines -- knowledge residing in the spreadsheet, word processing and data base programs of individuals. It was a technical and social repudiation of the previous three decades, dominated by mainframes and minicomputers, a computing formula based on "big iron" machines that held all the information.

But in an odd alliance, the Internet -- hailed as the **technology** behind a new economics, tearing down old hierarchies and flattening corporate organizations -- is fueling a recentralization of information and a revival of big iron computing.

The Internet holds the promise of anytime, anywhere access to information and entertainment delivered over powerful networks to an array of information appliances like handheld devices, cell phones with screens and television set-top boxes. They will join personal computers more than replace them anytime soon.

That makes the present round of information centralization very different from the old days. The data centers of the 1960's, housed in glass, were controlling gatekeepers with information rationed from the center. Today's modern server farms, by contrast, are powerful nodes on the Internet, making information more readily available to individuals.

Large computer centers, to be sure, could be vulnerable to breakdowns, though they typically have their own backup power supplies and data recovery systems. And there are clearly **privacy** concerns raised by the prospect of creating increasingly larger digital storehouses of personal information. Those concerns, **technology** experts say, require clear-cut corporate and public policies to protect **privacy**.

"In a **society** where knowledge is power, centralized knowledge is centralized power," said Richard Sobel, a fellow at the Berkman Center for Internet and **Society** at the Harvard Law School.

Still, even personal computer pioneers generally regard the shift to Internet-based computing as an irreversible step toward efficiency rather than a retreat from the information democracy they sought to foster.

"People want to own their own information, but they don't want to maintain it, and that is driving the shift toward centralization," said Adele Goldberg, a member of the team at the Xerox Palo Alto Research Center in the early 1970's that created the founding concepts of personal computing.

A Basic Shift

Back to the Future In a Post-PC World

Because of the Internet, companies are starting to embrace centralized computing again for the first time in decades. "A real mind shift is under way in corporate America," Scott Winkler, an analyst at the Gartner Group, a research firm, said.

In some ways, corporate America is following the Internet leaders. For behind an America Online or an Amazon.com is a huge arsenal of computing power. America Online Inc. supports its service to more than 16 million subscribers -- with a million people using the system simultaneously on many evenings -- with two vast server farms in Virginia and a third one planned, a \$520 million project announced in March. (Such data centers are known as server farms because they are veritable crop rows of big computers that send, or serve, data out to users.)

"The good old economics of scale really do apply when it comes to server farms," Marc Andreessen, the chief **technology** officer of America Online, said.

The new model of computing -- a proliferation of information appliances linked by the Internet to server farms -- has been called the "post-PC era." For the post-PC vision to be fully realized will take years and billions of dollars of investment to build ultrafast digital networks, wireless **technology** and new kinds of hand-held and other devices.

And to say that computing appears to be heading toward a post-PC era is not to say the PC will become obsolete. Indeed, the PC industry has benefited from **the rise of the Internet** because the PC today is the principal way to get on the Net. Desktop alternatives to the PC like the "network computer," or NC, running only a Web browser -- first proposed in 1996 by Lawrence J. Ellison, chairman of the Oracle Corporation -- have not yet slowed PC sales.

But the evolution toward the Internet model, most analysts agree, represents the most significant change in the industry since the PC replaced the mainframe as the center of gravity in computing two decades ago. The shift represents a daunting challenge to the big winners of the PC industry, the Microsoft Corporation and the Intel Corporation, whose software and microchips are the essential **technology** in most PC's. Their high profit margins could erode as consumers increasingly use simpler, lower-cost devices to tap into the Internet.

Both companies recognize the challenge and are responding. As one step, Intel announced in April that it was planning a big move into Internet services by building and running server farms. The move seems a big departure for Intel, whose microprocessors serve as the electronic brains of most PC's. But Intel sees the server farms as part of its future of moving beyond the personal computer to become a "building-block supplier" to the Internet economy.

"The PC industry is changing drastically," Andrew S. Grove, the chairman of Intel, said, "and when it's over it probably won't even be called the PC industry. It will become the Web infrastructure industry."

Waking Giant

Microsoft Is Moving Beyond Software

Microsoft is preparing for the day when people may keep much of their personal and professional information on large servers with an initiative called Megaserver. Using such a service, a person would be able tap into a large central data base via the Web to get E-mail, personal schedules, news, weather updates and other information anywhere, anytime.

Even Microsoft concedes the access device will not always be a PC. "While the PC will stay central, we realize there is demand for computing on non-PC devices," Steven A. Ballmer, the Microsoft president, said.

An early model for the Megaserver concept is Hotmail, a Web-based E-mail system, which Microsoft bought for an estimated \$300 million in January 1998. Since then, the number of users of the free E-mail service has jumped from less than 10 million to 40 million. With Hotmail, a person can retrieve E-mail from anywhere with any PC or other device equipped with a Web browser instead of being required to use a particular machine loaded with one's own E-mail software.

"Hotmail has served as a big wake-up call for us, and we're delighted that we bought it," John Ludwig, a vice president of Microsoft, said.

Hotmail is supported by four large data centers, and Microsoft is using them as incubators for developing the heavy-duty software needed to run server farms, thus improving the capabilities of Windows NT, the company's most powerful operating system. But Microsoft, Mr. Ludwig notes, is also working to improve the software the user sees, making it easier to use.

"There's more software to write than ever before -- that's the good news for us," he observed.

Microsoft added another centralized information service in April when it acquired Jump Networks Inc., a Web-based calendar and datebook system.

Microsoft's move came a few weeks after America Online purchased an Internet calendar service, When Inc., for an estimated \$150 million. The start-up, which stores personal scheduling information on a Web site, started its fast-growing service just four months earlier.

Both companies are headed in the same direction, though from different starting points, one a software giant, the other an online service. Clearly, the line between software and services will blur as the shift to Internet-based computing proceeds.

In an internal memo last fall titled "The Era Ahead," William H. Gates, the Microsoft chairman, pointed to the opportunity as software becomes more a services **business**. "We get a closer relationship with customers and a predictable revenue model because they pay us a regular fee for the service," he wrote.

But Mr. Gates also warned of the threat to some Microsoft products likely to come from on-line services. "A company such as America Online is in competition for all our information-management software, because they can do it through their servers," he observed.

The Playing Field

Building the Engines To Run the Servers

In Silicon Valley, dozens of start-ups have been created to provide centralized Internet services for personal information. The new companies mostly focus on E-mail, calendars and backup file storage to insure information is not lost when an individual's PC crashes.

"Many of these applications should be moved onto the Internet because it is more reliable, available everywhere and cheaper," said Eric Brewer, a computer scientist at the University of California at Berkeley who is a co-founder of the Inktomi Corporation, a Web software company.

Building and running the computing engine rooms behind these Internet services promises to be good **business** for years to come. Yet this behind-the-scenes **technology business** -- like the market for Internet appliances -- will most likely be more diverse and competitive than the bygone mainframe era, whose dominant supplier was I.B.M., or the current PC era, ruled by Microsoft and Intel.

The start of the trend back to central computing has already been rewarding for the established producers of "big iron" machines like Sun Microsystems Inc., a leader in computers running the powerful Unix operating system, and I.B.M., whose mainframes have been retooled as Internet servers. The big Unix and mainframe server computers range in price from \$100,000 to millions of dollars.

"The big growth for us has been in everything dot com -- the revolution in Internet commerce in all its forms," said Edward J. Zander, the president of Sun.

Indeed, as more and more companies begin to view the Internet not as an experiment but as a **technology** on which they run their businesses, they need Web sites, E-mail networks and Internet order-processing systems to be up and running around the clock, seven days a week. That kind of reliable, industrial-strength computing is the traditional bailiwick of mainframes and Unix systems.

Still, PC **technology** is improving steadily and PC servers -- typically using Intel microprocessors and Microsoft's Windows NT software -- are increasingly tackling heavy-duty computing chores. Some heavily trafficked Web sites, handling huge amounts of **business**, are backed up by server farms using mostly PC **technology**.

The Dell Computer Corporation, a direct marketer of PC's, says that sales from its Web site are now running at a pace of \$5 billion a year. "Look at our Web site," Michael Dell, the company chairman, said. "It's Dell servers running Windows NT. Yes, we have a way to go at the high-end of computing, but don't bet against the PC industry."

The Next Utility

Basic **Business** Tasks Move to the Web

Gary Hargreaves does not much care about who supplies the **technology**. He just wants it to work.

Mr. Hargreaves manages an electronic commerce project at the Goodyear Tire and Rubber Company -- a company Web site set up to more efficiently distribute and share information with its tire dealers.

The current system, which is gradually being phased out, is costly by any measure -- time, paper or aggravation. Three thick packets of documents are mailed out each week to Goodyear's 2,400 dealers in the United States and Canada. The company's call center in Akron, Ohio, receives 2,500 inquiries a day from the dealers, many of which are merely to obtain routine information on prices and the availability of tires.

That kind of information -- along with sales reporting -- is being transferred to the Web site. A third of Goodyear's North American dealers are on line and using the Web site, and Mr. Hargreaves is already impressed by the results. The call center is reporting fewer routine calls, he says, and dealers say they are getting more timely information, which helps them sell more tires and improve customer service. The weekly mailings will end at the start of next year.

For all the attention understandably focused on the meteoric rise of on-line retailers and auctioneers, like Amazon and Ebay, the biggest economic impact of the Internet in the next few years is expected to be inside old-line companies like Goodyear -- raising productivity by electronically automating back-office transactions.

Though Goodyear has an in-house data center, it chose to let outside experts provide the computing power for its Web site -- a role known as hosting -- and run its electronic commerce network. Many companies are making the same choice. That is why the Web services **business** of both established companies like I.B.M. and AT&T, and newcomers like Exodus Communications Inc. and Verio Inc., is projected to grow from \$696 million last year to \$10.7 billion in 2002, according to the International Data Corporation, a research firm.

Internet companies like America Online will have their own server farms. But others increasingly view computing as a utility, a service to be purchased like electricity. **Technology** historians note that when factories began using electricity in the late 19th century, each had its own power plant. Later, regional utilities were created and sold electric service to the factories.

At Goodyear, Mr. Hargreaves seemed to apply the same logic to his company's decision to have its Web site for dealers managed by I.B.M. at its server farm in Schaumburg. "We're in the tire **business**," he said. "Why run the digital power plant ourselves?"

Photo: America Online's two huge computer server farms in Virginia can supply information to as many as one million home users simultaneously. A third center, a \$520 million project, was announced in March. (Carol Powers for The New York Times) Graph: "Serving Up the Web" Revenues for managing corporate Web sites, handling Internet commerce and storing Internet-related data are expected to climb sharply. Graph tracks total revenue, from 1997 through a projected 2002. (Source: International Data Corporation)(pg. C4)

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Novell to Offer Data-Privacy Technology For Internet

By JOHN MARKOFF

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Seeking new markets beyond its mainstay corporate data network software, the Novell Corporation plans today to announce an **Internet technology** intended to give Web surfers greater control over their identities as they travel through cyberspace.

Novell hopes the **technology**, called Digital Me, will gain acceptance as a standard means of controlling identity on the World Wide Web, permitting network users to reveal or retain as much personal information as they wish.

At Novell's annual users group meeting today in Provo, Utah, the company plans to demonstrate a simple personal computer version of the Digital Me software, which acts as a digital safe-deposit box for personal information -- not only name, address, credit card numbers and such, but also possibly the telltale electronic codes that can identify a person's PC and be used to trace his or her Web travels.

When an individual visits a Web site, the Digital Me software would enable the user to control how much personal information the Web site collects from this digital deposit box.

Besides protecting **privacy**, such an approach might also make it possible for users to sell or barter their personal data for rebates, discounts or other special considerations from on-line merchants. Digital Me also permits computer users to store and exchange lists of information like Web site bookmarks or song lists, work groups or groups of friends.

As part of the announcement, Novell plans to say that the financial services company Citigroup and the credit card provider First USA will test new services based on the Digital Me software. Those companies also intend to support Novell's effort to turn the **technology** into an industry standard for on-line companies hoping to reassure customers that personal digital information will not be used in unauthorized ways.

In tackling electronic **privacy**, Novell, which is still the market leader in corporate network software but is feeling increasing pressure from the Microsoft Corporation, has embraced one of the Internet's lightning-rod issues.

As the Internet has become increasingly commercialized, companies have employed various electronic means to identify computer users, track their movements over the Web and employ so-called data mining techniques to create digital dossiers on individual consumers. In response, **privacy**-rights and consumer advocates have demanded that users be given more control over their on-line identities and personal data.

"This is a promising arena," said Marc Singer, co-author of "Net Worth: Shaping Markets When Customers Make the Rules" (Harvard **Business** School Press, 1999). "The challenge for Novell is finding the right **business** model. But the reason this can work is there is value for both the consumer and the merchant."

Digital Me is the first significant new **technology** from the company under Eric E. Schmidt, a former Sun Microsystems Inc. executive who became Novell's chief executive in March 1997 and was given the mandate of helping the office network software company remain relevant in the Internet age.

The **technology** itself is the brainchild of Michael Sheridan, a longtime software designer who was one of the three creators of Sun's Java programming language. Last May, Mr. Sheridan left Sun to join Mr. Schmidt at Novell as vice president involved in new technologies.

"Increasingly, corporate Web sites are Hoovering virtually everything you do on the Internet," Mr. Sheridan said, using industry slang for the Hoover vacuum-cleaner approach that data miners often take in gathering up all loose user information. "They are talking about 'sticky' Web sites and 'capturing eyeballs,' and I'm not sure I like this language."

Although Internet commerce companies are increasingly reliant on their ability to aim advertising at individual consumers, many Web surfers are not aware of the extent to which computerized matching **technology** is being used to keep tabs on them.

Novell plans initially to release the Digital Me **technology** in this year's third quarter in a form that would permit users to establish multiple on-line identities -- perhaps one for work, another for use with friends and a third for anonymous Web surfing.

Identity, according to Mr. Schmidt, is the Internet's next frontier. He cited an axiom set forth some years ago by the network innovator and entrepreneur Robert Metcalfe, positing that the value of a computer network can be expressed as the square of the number of devices connected to it. "Now we're in a new phase," Mr. Schmidt said. "Today, the value of the network is the square of the number of human relationships on the networks."

While Novell plans to sell and license Digital Me products and **technology**, the company has also decided to make the end-user, or client, portion of the software freely available under so-called open source terms, in the hope that other software developers will expand the market for Digital Me by building compatibility into software for E-mail, personal information management and Web navigation.

The industry's receptivity to Digital Me will be a crucial test of Mr. Schmidt's ability to expand Novell's **business** beyond its corporate networking niche, where its Netware flagship is under fire from Microsoft's Windows NT and the coming Windows 2000.

In the fiscal year before Mr. Schmidt arrived, Novell was profitable, earning \$126 million on sales of \$1.3 billion. But even then, sales of Netware were stagnant, and the company was widely perceived as a once-innovative player that had failed to adapt to **the rise of the Internet**.

After Mr. Schmidt oversaw several money-losing quarters of painful revamping, Novell returned to profitability in 1998. And last month, the company reported a fiscal first-quarter profit of \$29 million, or 8 cents a diluted share, which was more than double its earnings in the quarter a year earlier.

There is a distinct sense of optimism at Novell's Provo campus these days, where word of delays in Microsoft's Windows 2000 networking software has given the embattled company a sense of reprieve. Certainly, Novell's share price has reflected Wall Street's renewed optimism in the company. The stock, which closed at \$26.1875 last Friday, is up 44.5 percent this year. And the company's overall market value now stands at \$8.8 billion, compared with barely \$2 billion before Mr. Schmidt took over.

Digital Me's 47-year-old godfather, Mr. Sheridan, holds only a vice president's title. But as a member of Novell's eight-person executive committee, he is clearly a part of Mr. Schmidt's brain trust.

A 1974 graduate of Claremont College, where he studied economics and Russian history, Mr. Sheridan was initially drawn to the world of small publishing and became a protege of Grant Dahlstrom, whose Castle Press was an exemplar of the small publisher devoted to high-quality book printing.

Mr. Sheridan's work led to an interest in computerized typography. And after growing close to two well-known Stanford University computer scientists who specialized in the field, Chuck Bigelow and Donald Knuth, Mr. Sheridan was accepted for graduate studies at Stanford. Before he took his first course, though, he got sidetracked by his first start-up company, Imagen, one of the world's first laser printer companies, which was eventually sold. Later, his second Silicon Valley start-up, a typography software company, was bought by Sun Microsystems in 1988 and he went to work there.

After a number of development projects at Sun, where the main product line is high-powered computer work stations, Mr. Sheridan branched off with a development project for hand-held computers that eventually led to the Sun Java programming language.

But in 1993, long before Java reached the market, Mr. Sheridan had tired of what he perceived as political infighting over the project. He moved east to attend film school at American University in Washington, and later made a PBS documentary, "The Image of the Spirit," about a group of Russian religious iconographers.

By 1996, though, Mr. Schmidt persuaded him to return to Sun, which is based in Mountain View, Calif. Two years later, he followed Mr. Schmidt to Provo.

Mr. Sheridan continues to make his home in Oak Hill, Va., but spends most of his time in Provo supervising the small "skunk works" development laboratory that he has filled with people he has selected from throughout the company.

Until recently, the group's warren of offices was identified only by a sign that read "Documentation Center."

The sign now reads "NPI: New Product Initiatives," as the company has become more open about the Digital Me project and another half-dozen projects in the pipeline -- or, to use Mr. Schmidt's term, the Pipe. Most of those projects involve refinements to network directories, the computer-system equivalent of telephone books, which are a strength of Novell's Netware.

More than a label, the Pipe is an incentive program for soliciting innovative ideas from throughout the company and fostering an entrepreneurial, risk-taking corporate culture.

"Our problem," Mr. Sheridan said in a recent interview, "was, how do you use Novell's collective brain?" The answer: pay employees \$2,000 for any idea for a new Novell project that a small review committee accepts.

Moreover, the employee, who can come from anywhere in the company, gets the opportunity to assemble a small team of people to begin the process of transforming the idea into a product.

"One of Eric's mantras is that 'It's O.K. to fail,' " Mr. Sheridan said of the Pipe, which was set up five months ago.

Photo: Michael Sheridan, a vice president of Novell, helped develop the Digital Me , which is intended to help Net users control personal data. Mr. Sheridan is pictured near company headquarters in Provo, Utah. (Tim Kelly for The New York Times)(pg. C10) Graph: "On the Rebound" After languishing for years, Novell's stock has picked up. Graph tracks the company's daily closing stock price, since the beginning of the year. (Source: Bloomberg Financial Services)(pg. C10)

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The New York Times

E-Commerce; Section G

Big Blue Casts Itself as Big Brother to Business on the Web

By STEVE LOHR

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An article on Sept. 22 in the special E-Commerce section, about business services provided by I.B.M., included a company erroneously among the 20 suppliers that sell their wares through an I.B.M. client, the E-Chemicals Web site. Dow Chemical is not among them.

CORRECTED BY THE NEW YORK TIMES THURSDAY SEPTEMBER 30, 1999

AFTER years of working as a marketing executive for champagne houses like Taittinger and Veuve Clicquot, Rosemary Zraly decided it was time to branch out on her own. Like so many entrepreneurs in the 1990's, Ms. Zraly -- a consultant, lecturer and author -- headed for the World Wide Web.

Her Web site, Champagnelady.com, is a decidedly modest foray into Internet commerce. It amounts to an advertisement for herself and an on-line shop for merchandise, including a book she has written and all manner of champagne paraphernalia, glasses, ice buckets, even earrings. No corporate powerhouses quake at the mention of her Web site. No Wall Street bankers are wooing Champagnelady.com, eager to sell its shares in a public stock offering.

Yet Ms. Zraly's venture shows one side of the new economics of the Internet. "Anybody can afford to get into business this way," she said. "It's cheaper than my cable TV bill."

Behind Ms. Zraly, pocketing a \$60 monthly fee for running her Web site, is an unlikely partner -- the International Business Machines Corporation, the world's largest computer company. Its customers have long been its corporate peers on the Fortune 500, not tiny upstarts. Until a few years ago, that is, when the Internet took off and I.B.M. went with it in new and innovative directions.

I.B.M. itself shows another side of the new economics of the Internet -- how a big, old-line company can turn the challenge of technological upheaval into a rejuvenating opportunity. I.B.M. has embraced the Internet in its products, practices and marketing -- from overhauling its mainframes into Internet computers to refashioning itself as an Internet leader with its giant "e-business" advertising campaign.

The result has been a startling revival in I.B.M.'s prospects and image. A few years ago, I.B.M. was stumbling as the mantle of leadership in computing seemed to have passed to the Microsoft Corporation and the Intel Corporation, the **technology** standard-setters of the personal computer era. But the Internet changed the landscape again.

The rise of the Internet -- a vast global network -- played to I.B.M.'s traditional strengths. It required powerful centralized computers to serve up data to millions of viewers. And I.B.M. adapted its big-iron computers to Internet protocols, recasting them as giant Web servers and the transaction-processing workhorses of electronic commerce.

As the Internet moves beyond the experimental stage, as more and more companies actually run their businesses on the Internet, those systems must be robust, secure and up and running 24 hours a day, seven days a week. That level of reliability is second nature to I.B.M., and it is why airline reservations systems, national defense systems and the like depend on I.B.M.

"We were moving in the right direction and, frankly, we were lucky as well," said Nicholas Donofrio, the senior vice president for **technology** at I.B.M. "The industry moved our way."

Today, I.B.M. is a leading supplier of **technology** and know-how in the Internet era. The well-known names of this new world may be America Online, Amazon.com and Yahoo, but I.B.M. has emerged as the quiet giant of the Internet by serving as a kind of arms supplier for this new economy to companies of all sizes. In that role, it has plenty of competition from a wide range of companies, including Sun Microsystems, Hewlett-Packard, Microsoft and others. But none has risen as fast from what seemed to be so far behind not long ago.

"I.B.M. is getting a real bounce from the Internet," said Stan Dolberg, a senior analyst at Forrester Research, a consulting firm in Cambridge, Mass. "It seemed a moribund company three or four years ago. But I.B.M. jumped on the Internet instantly, and it's been an innovator. It has surprised a lot of people."

THE company estimates that roughly one-quarter of its revenue -- or \$20 billion -- is driven all or in part by E-business demand. It defines E-business as companies grappling with Internet-related projects, from setting up a Web site to reach customers to handling most of its procurement over the Internet.

I.B.M. has helped thousands of small companies get on the Web, and it runs their sites for fees that range up to \$200 a month. By 2001, it hopes to have two million small-business customers.

Yet it is the larger companies that remain I.B.M.'s bread-and-butter business. They often hire I.B.M. to help them use the power of **Internet technology** to revamp the way they deal with suppliers, customers and employees in an effort to lower their costs, focus their marketing and eliminate mountains of paperwork. These can be multimillion-dollar projects.

Most of this work involves the economic infrastructure of companies dealing with one another -- known as business-to-business commerce. It is the business-to-consumer commerce of Amazon.com, Ebay and others that understandably gets the most attention. But streamlining business-to-business transactions will ultimately have the greatest effect on consumers in terms of prices and quality of service.

Business-to-business dealings, analysts say, represent the biggest opportunity for Internet commerce over the next several years. Forrester Research estimates that consumer sales over the Internet will jump to \$108 billion by 2003 from \$3.9 billion last year. But that impressive increase is dwarfed by Forrester's projection for business-to-business commerce on the Internet, rising to \$1.3 trillion by 2003 from \$45 billion last year.

And it is industry's "back office" -- procurement, accounting, order-processing and the like -- that economists are watching most closely for evidence that the spread of the Internet is leading a **technology**-based productivity payoff in the nation's economy. The evidence on that front is still inconclusive, but that could be because the use of powerful computing and **Internet technology** has not gone very far yet.

Louis V. Gerstner Jr., the chairman of I.B.M., made that very point in a speech before industry analysts and professional investors in May. He bemusedly observed all the attention lavished on "these new dot-com Internet companies" by the **media** and Wall Street, before proceeding to his theme.

"But I think of them as fireflies before the storm: all stirred up, throwing off sparks," Mr. Gerstner said. "But the storm that's arriving -- the real disturbance in the Force -- is when the thousands of institutions that exist today seize the power of this global computing and communications infrastructure and use it to transform themselves. That's the real revolution."

Under Mr. Gerstner, I.B.M. has undergone its own internal transformation. Much of its sales, service, procurement and training are now handled on the Web.

I.B.M. estimates that \$3.3 billion of its sales last year were over the Web, or roughly five times those of Amazon.com. This year, I.B.M. plans to have Web sales -- mainly to corporate customers -- of \$10 billion to \$15 billion. The company figures it will save \$600 million this year by letting customers find answers to straightforward service and technical support questions on specialized I.B.M. Web pages, thus freeing the time of its human support staff for more complex problems. By handling a portion of its internal training over the Internet instead of in classrooms, I.B.M. estimates it will save \$100 million. And by procuring \$12 billion worth of goods over the Web this year, I.B.M. says it will do away with about 5 million pages of paper forms.

TO position itself as a company on the cutting edge of electronic commerce, I.B.M. began a major advertising campaign in the fall of 1997, promoting the notion of "e-business." The term was new then but has since become routinely used in newspaper and magazine stories and in the marketing campaigns of other companies. The I.B.M. ad campaign -- budgeted at \$550 million worldwide this year -- has featured customers of all kinds, from body-pierced Web designers to Ms. Zrally to corporate titans. Its implicit message is that the Internet is not about

just putting up a Web site, it is the technological starting point for a complex rethinking of how business is done. Trust us, we're I.B.M., we know more about business and complex **technology** than anyone else.

Big companies like Ford, United Parcel Service, Charles Schwab and Bank One have chosen I.B.M. as their **technology** partner as they try to exploit the Internet to transform their businesses. Yet so have ambitious start-ups that are trying to change the economics of an industry, like E-Chemicals Inc.

E-Chemicals, based in Ann Arbor, Mich., is an on-line marketplace for chemicals, founded by a group of former Dow Chemical employees and distribution experts. Its chairman is Yossi Sheffi, the director of the Center for Transportation Studies at the Massachusetts Institute of **Technology**, and its president and chief executive is Jim Alampi, the former head of one of the nation's largest chemical distributors.

The chemical business is a \$250-billion-a-year industry in the United States. E-Chemicals is betting it can make its fortune by streamlining the industry's fragmented distribution system, a jury-built setup based on industry directories, phone calls, faxes and relationships with distributors.

Its on-line chemical marketplace lists 20 suppliers, including Dow Chemical and DuPont, more than 1,000 products and 600 registered customers. For suppliers, E-Chemicals offers a low-cost way to sell to small customers, right down to sales of a couple of 55-gallon drums. For smaller buyers, E-Chemicals promises to substantially level the playing field by offering the kind of lower prices usually available only to distributors' big customers.

E-Chemicals can do that because of its lower expenses, operating as a kind of "virtual corporation" that uses subcontractors for much of its basic work. It has just 20 employees. Sun Trust Banks acts as its credit and collections department, and Yellow Freight serves as its logistics department. I.B.M. helped build its large Web site at www.e-chemicals.com and supplies much of its critical software. The site is hosted at a huge I.B.M. data center in Schaumburg, Ill.

E-Chemicals says it chose I.B.M. because of its history of serving chemical-industry customers and its tradition of building and running computing systems that handle thousands upon thousands of complex industrial transactions.

"For what we are doing, we're not talking about some on-line billboard where how it looks and the user interface are all that matter," Mr. Alampi said.

"We're doing real commerce on this Web site," he said. "It has to be secure, and it has to be able to quickly increase the volume of transactions it can handle. I.B.M. can do that. And we don't want to have to buy computer hardware ourselves, so we let them handle all that by hosting the site. At E-Chemicals, our expertise is in the chemical business and distribution, and we want to stay focused on that."

Saab Cars U.S.A., the American distribution arm of the Swedish auto maker, is putting in place a Web-based system that is a typical example of how existing companies are trying to use **Internet technology** to improve customer service. Most of its 210 dealers now have a new system, using mostly I.B.M. computers and software, for ordering parts and providing customer service and training. The dealers tap in from personal computers to Saab's database, and the early goal is to make dealer service more timely and efficient.

YET the company is also working on creating more detailed, car-by-car data profiles that customers can use. With help from I.B.M., the company is building a vast "customer vehicle database" that will, for example, allow the owner of a used Saab to look up the repair history of that car. A person interested in buying a new Saab will be able to go to the company's Web site, look at the available models and arrange on line for the local dealer to deliver one for a test drive.

"The goal is to serve customers better and ultimately sell more cars," explained Jerry Rode, the director of information **technology** for Saab.

The Bank One Corporation, the nation's fifth-largest banking company, faces the classic Internet challenge of an enterprise with a vast brick-and-mortar network. It has more than 1,900 offices nationwide, serving more than 9 million retail customers.

Bank One is making a big Internet push, both with its own Web site and by opening a virtual bank last June, Wingspan.com. John B. McCoy, the president of Bank One, succinctly summed up the thinking behind these moves: "I am not about to sit here and let someone take my business."

I.B.M. is helping Bank One with its Internet strategy for gathering more customers. Wingspan.com is run from I.B.M.'s Schaumburg data center, selected for its reliability and knowledge of networks.

But Bill Wallace, the top **technology** executive for Wingspan.com, also mentions one attribute that is surprising for a company once viewed as a dinosaur.

"The Web is about speed," he explained, "and I.B.M. can move very quickly these days."

She Knows Her Bubbly, But Nothing About Bytes

ROSEMARY ZRALY has a recommendation for personal computer makers. "They should give out Valium with the PC when you buy one," she said. "It's painful learning how to really use one."

Ms. Zraly wanted to avoid having to master Web **technology** to get her on-line business, Champagnelady.com, up and running. That was why I.B.M.'s Home Page Creator service for small businesses appealed to her: it seemed to be a practically pain free way to start an Internet venture.

I.B.M. helped her set up a Web site, which is run at I.B.M.'s data center in Schaumburg, Ill., outside Chicago. Ms. Zraly does not baby-sit for computer hardware or fret about software bugs or crashes. I.B.M. also handles most of the back-office plumbing of Internet business, processing the on-line transactions and credit-card verification.

"All I have to do is ship the goods when I receive an order," Ms. Zraly said.

The monthly fees for the I.B.M. small-business service range from \$30 to \$200, depending on the Web site's size. Ms. Zraly pays I.B.M. \$60 a month.

She can check the traffic on her site, update it or edit it from her home office in New York. And Ms. Zraly has adapted to the Web's always-on pace.

"My Web site is the first thing I check every morning and the last thing I see at night," she said. "It's like living with another person, totally part of my life." STEVE LOHR

Photos: Jim Alampi, the chief executive of E-Chemicals. I.B.M. helped build the company's Web site, which is run from an I.B.M. center. (Jim West/Impact Visuals for The New York Times); "Anybody can afford to get into business this way," Rosemary Zraly says. (Ruby Washington/The New York Times)

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The New York Times

Business/Financial Desk; Section C

A Coming-Together of Foes To Assess Internet's Impact

By STEVE LOHR

667 words

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Over the weekend, Robert J. Herbold, the chief operating officer of Microsoft, and James L. Barksdale, the former president of Netscape Communications, appeared on television, radio and in newspapers, commenting from opposite sides of the Microsoft antitrust case.

But today, they are putting those differences aside to focus on a shared interest in high **technology** as board members of a new research organization, the Internet Policy Institute. The founders -- a diverse collection of corporate sponsors, Internet pioneers and political figures -- say their Washington-based nonprofit institute is intended to be a source of influential and independent research for policy makers.

"The Internet is surrounded by noise, hype and marketing, but there is little hard data on which policy makers can base critical decisions that will determine the future of the new medium and how it affects **society**," said Mr. Barksdale, co-chairman of the institute's board and now an independent investor.

The institute, its founders say, has ambitions to become a major research center -- a kind of "Brookings Institution for the Internet," according to Kimberly Jenkins, who functions as its president.

The research group is looking for offices in Washington and plans to grow quickly over the next couple of years to support 30 or so resident scholars and outside research projects, with an annual operating budget of \$10 million. "We want to move fast because the next three to five years is the formative stage when so many of the key policy decisions will be made about the Internet," Ms. Jenkins said.

The institute plans to focus its research on assessing the Internet's impact in areas including the economy, **privacy**, security, government, **society** and innovation. Along with publishing its research and sponsoring conferences, it plans to hold briefings for the presidential candidates on Internet issues starting next March. It will also support international research projects.

The 19-member board is expected to make sure that the institute's work is noticed in both government and industry circles. Mr. Barksdale is an adviser to the Republican front-runner for president, Gov. George W. Bush of Texas. Other board members well connected politically include Ira Magaziner, a former senior policy adviser to the Clinton administration; the former House Speaker, Newt Gingrich, and Adam Clayton Powell III, vice president for **technology** programs of Freedom Forum.

Internet pioneers on the institute's board include Vinton G. Cerf, a senior vice president of MCI Worldcom, and Robert E. Kahn, who is president of the Corporation for National Research Initiatives. Its corporate representatives, besides Mr. Herbold of Microsoft, include George Vradenburg III, senior vice president for policy at America Online.

The board's diversity, the founders say, represents an effort to make sure that its work will not carry an ideological or political slant. "Unlike other organizations focused on the Net, this is not going to be an advocacy group or a trade association," said Esther Dyson, a board member and currently interim chairwoman of an Internet governing body for assigning online names and addresses. "The objective here is to do research without an agenda."

The first project the institute is sponsoring is a study of **the impact of the Internet** on the economy -- headed by Robert Litan, director of economic studies at the Brookings Institution, and Alice M. Rivlin, an economist and former Federal Reserve vice chairwoman, who is also at Brookings.

The yearlong project will try to assess the likely impact of **Internet technology** on productivity, prices and costs. The research, according to Mr. Litan, will look forward, trying to assess the Internet's effects as they are diffused across the economy.

"It won't be traditional economics and it won't be easy," Mr. Litan said. "But the potential policy implications would be to help assess the appropriate speed limits on monetary policy in the future and to assess just how new the so-called new economy really is."

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The New York Times

Seizing the Initiative on Privacy
Business/Financial Desk; Section C
On-Line Industry Presses Its Case for Self-Regulation

By STEVE LOHR
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English
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By the stilted linguistic standards of government reports, the Federal Trade Commission gave the on-line industry a pistol whipping in June 1998. After reviewing the **privacy** practices of World Wide Web sites, the commission told Congress that the industry had "fallen far short of what is needed to protect consumers."

Only a tiny fraction of Web sites, the F.T.C. noted, told people what the sites did with the personal information they collected -- names, E-mail addresses, credit card numbers. Even fewer sites offered consumers any choice about how their personal data were used, allowed them to access the data or gave assurances of its security.

Industry self-**regulation**, the F.T.C. concluded, was not working.

Its scathing report increased the chances that Congress would enact sweeping Internet **privacy** legislation. And the findings hardened resolve in Europe to reject the American self-regulatory approach to **privacy** on line, a dispute that threatened to escalate into the first Internet trade war.

Christine Varney, the commission's Internet expert until she left in August 1997, had long warned the industry that if it did not move to shoulder responsibility on **privacy**, the Government would surely step in. Suddenly, that threat seemed imminent.

Yet, two months before the F.T.C. report was released, a group of companies had already taken a collective first step toward trying to shore up the Internet industry's credibility on **privacy**, fend off **regulation** and deflect a trade war with Europe.

On April 17, 1998, some 60 lawyers, lobbyists and executives gathered in an 11th floor conference room at I.B.M.'s Washington office, representing several companies that included America Online, I.B.M., Hewlett-Packard and Microsoft, plus a few trade groups like the Direct Marketing Association.

There was a sense of urgency at that afternoon meeting. "We realized we had to make a lot of progress in a short time on the **privacy** issue," recalled Marc Berejka, Microsoft's manager of government affairs.

The group formed that day, the Online **Privacy** Alliance, now has nearly 100 corporations and associations as members, and it has done a remarkable job in turning the public debate over Internet **privacy** in the industry's direction.

And in a switch of roles of the kind so unremarkable in Washington, the person heading the industry alliance, as its legal counsel and spokeswoman, is Ms. Varney, the same F.T.C. commissioner who led the Government's efforts to safeguard **privacy** on the Internet.

Her success, **privacy** advocates say, has been as a Washington insider guiding a shrewd campaign of persuasion and not, as the industry alliance asserts, in prodding on-line companies to adopt meaningful **privacy** policies.

But even her critics admire her work. "Christine Varney has been enormously effective in her role -- she's a cheerleader for an industry self-regulatory approach that she believes in," said Marc Rotenberg, executive director of the Electronic **Privacy** Information Center, a civil liberties advocacy group. "The problem is that you now have the Government taking its lead from industry on the **privacy** issue."

Judgments about the Online **Privacy** Alliance vary. But there is no disputing that the group has strengthened the standing of those who believe that a hands-off approach is the wisest Internet policy. The group has blunted the drive for broad Internet **privacy** legislation or strict Government **regulation**. Its efforts have won praise from the F.T.C. And the group has even made headway on impressing Europe's trade negotiators.

"The jury is still out as to whether self-**regulation** will work, but there is no doubt that the industry has made a lot of progress on the Internet **privacy** issue in the last year or so," said Robert Pitofsky, chairman of the F.T.C. "And if the industry keeps making as much progress as it has recently, I don't see how you can really argue that we need legislation."

The 43-year-old Ms. Varney, who served as secretary to the Cabinet in the Clinton White House before joining the F.T.C. in October 1994, is a lawyer at Hogan & Hartson, a Washington law firm, where she is building an Internet-law practice. Her pedigree made Ms. Varney very attractive to the companies assembling the industry **privacy** group.

"She was perfect," said Jill Lesser, vice president for domestic public policy for America Online Inc. "She had really pushed this issue at the F.T.C., so she had credibility with Government and with consumer groups."

Ms. Varney has no qualms about her labors on the industry's behalf. She sees her role as a continuation of her work as a **privacy** advocate and not as a compromise of the principles she espoused during her Government service.

She is not opposed to **regulation** per se, Ms. Varney says, and she urged the industry alliance to get ahead of its critics by pushing for a **privacy** law tailored for children. The industry group did encourage Congress to enact the Children's On-Line **Privacy** Protection Act of 1998, passed last October, which requires Web sites to obtain parental permission before collecting any personal information from children under 13.

In most cases, however, Ms. Varney believes **regulation** should be a last resort, filling the breach if the private sector fails, especially in Internet markets, which change so quickly, undermining the effectiveness of traditional **regulation**. "I think we can have a market-driven approach to **privacy** on the Internet," she said. "And, at least, this experiment with self-**regulation** is worth doing. Let's see if the marketplace can do it."

There are encouraging signs of progress. In early 1998, when the F.T.C. surveyed 1,400 commercial Web sites, only 14 percent gave users any notice of how they handled personal information. In early 1999, a Georgetown University survey of some 360 heavily trafficked Web sites -- a study requested by the F.T.C. and paid for by the industry -- found that 66 percent gave users some notice of how they handled personal data.

"That 66 percent is pretty astonishing from where we were a year ago," Ms. Varney observed. "From my perspective, that means that self-**regulation** is working."

But **privacy** advocates point to other numbers as evidence that self-**regulation** is failing. They note, for example, that the 1999 Georgetown survey also found that only 10 percent of Web sites included the four touchstones of what the F.T.C. calls "fair information practices": notifying users of the sites' data collection practices; giving users a choice of opting out; giving them access to personal data, and assuring them that their personal data were secure.

The same four principles also serve as the basis for the Online **Privacy** Alliance's voluntary guidelines, but critics say the principles are too vaguely worded, giving companies too much leeway, to protect consumers. "And those policies are just window-dressing unless they are backed up by a credible system of enforcement," said Deborah Hurley, director of Harvard University's Information Infrastructure Project.

The industry has financed independent **privacy** monitoring organizations, like eTrust and BBB Online. Even so, enforcement remains an issue for **privacy** groups and in negotiations between the United States and Europe.

To date, much of the development of **privacy** practices on line has been by the marketplace, responding to complaints, often by the thousands. In 1997, for example, when word spread that America Online planned to pass along customers' telephone numbers to telemarketers and other direct-sales merchants, the big Internet service provider heard a consumer outcry -- and quickly dropped the plan.

Likewise Amazon.com, the big on-line bookstore, ran into a backlash last month when it posted "purchase circles," which showed the book buying habits of users from selected companies and universities. Some users found this a breach of **privacy** without consent and asked to be removed. After asking employees for their reaction, Louis V. Gerstner Jr., chairman of the International Business Machines Corporation, received 5,000

E-mail responses within hours. More than 90 percent objected to having their book-buying habits as a group disclosed on line.

I.B.M. was removed from the book-purchase circles. Later, Mr. Gerstner wrote to Jeff Bezos, chief executive of Amazon.com, saying, "I'm certainly not going to tell you how to run your business, but I do urge you to view this as an enormously important issue."

Some on-line **privacy** issues have surfaced case by case. Last year, for example, a customer service representative at America Online told a Navy investigator the real name of a naval officer who had identified himself by the screen name "Tim" and listed his marital status as "gay." Later, America Online reached an out-of-court settlement with the officer and adopted new policies to protect the **privacy** of its customers. America Online's thousands of customer service representatives are now given special "scenario training" to insure that they do not give out private information about users without those users' consent or a court order.

This trial-and-error, market-driven approach to **privacy**, Internet executives note, has often resulted in stricter practices than those, for example, of the credit card and catalog industries. Besides, they add, a rapid response system for customers is built into the Internet, where E-mail complaining and chat room organizing can punish companies more quickly and more severely than Government regulations can.

"At the end of the day, good **privacy** policy is good business for us," said Robert Pittman, president of America Online. "It's very important to our members. We've learned that anything you do, you have to think through the prism of **privacy**."

"We're not always perfect," Mr. Pittman added. "But if we miss something, our members tell us in one big hurry."

Most on-line consumers, apparently, are willing to fend for themselves on the increasingly commercial Internet. A survey by **Privacy** and American Business, a research firm, found that 86 percent of 460 adult Internet users questioned earlier this year said they wanted to be able to essentially "trade" their own personal information with Web sites -- as long as they were properly informed about how their data were used and were offered benefits for doing so.

Mr. Pitofsky, the F.T.C. chairman, points to those survey results as the reason he is "willing to be patient to see if self-**regulation** works."

Yet many people argue that some basic legislation to protect individual **privacy** on the Internet is inevitable -- and that it could both benefit consumers and stimulate the growth of E-commerce by fostering greater public trust in doing business on line. Such sentiments extend well beyond the traditional champions of Government intervention like **privacy** advocates and consumer groups.

Tim Berners-Lee, the British physicist who created the basic software for the Web, is the director of the World Wide Web Consortium at the Massachusetts Institute of **Technology**. His consortium is working on **privacy**-enhancing **technology**, software that holds a person's **privacy** preferences and can communicate and bargain on an individual's behalf over the Internet.

Still, Mr. Berners-Lee said: "On **privacy**, I don't think that self-**regulation** is enough. In America, I believe that the lack of **regulation** means that the corporate marketers have too much power."

That power seems certain to increase in the near future. The spread of **Internet technology** will result in a data collection network of previously unimagined reach as telephones, televisions, cars and appliances -- not just personal computers -- are connected to the global digital network before long. And the rapidly developing fields of data-mining and profiling software will enable corporations to increasingly slice and search through this ocean of data to identify personal patterns of buying and behavior -- and make inferences, accurate or not, about a person's likely behavior.

The unnerving prospect, according to Paul Saffo, a director for the Institute for the Future, is that "we will all be players in what could be a fairly inaccurate virtual Truman Show."

At stake, technologists say, is far more than who gets which Internet marketing pitches. Profiling, they say, could be employed to determine who gets -- and who is excluded from -- all kinds of opportunities like jobs, housing and education.

The F.T.C. is also studying the use and potential abuse of increasingly powerful Internet software. The commission has scheduled a public workshop on "on-line profiling" in November.

Digital red-lining, Ms. Varney says, is an evocative term and a troubling concept.

"There's no question that this **technology** could be hugely invasive," she said. "But it could also be enormously empowering by allowing individuals to make their own choices and by saving us all time and money. Particularly in the future, we will face more difficult decisions and trade-offs. But I think that argues for leaving those decisions to the marketplace for **privacy** as much as we can."

Photo: Christine Varney was the Federal Trade Commission's Internet expert until she left to join an alliance dedicated to staving off Government rules. (Shana Raab for The New York Times)(pg. C1) Chart: "Guidelines vs. Requirements" Industry groups contend that self-enforced guidelines are sufficient for protecting on the World Wide Web. But -rights groups want legal requirements -- not industry self-policing. Here is a comparison of some ways the two groups would protect the of personal data collected on the Web. ACCESS The Industry Suggests -- Companies should take "reasonable steps" to insure that personal data are "accurate, complete and timely." Groups Demand -- Individuals should have "the right to see personal information" that a company has collected on them -- and to correct inaccuracies. CONSENT The Industry Suggests -- Users must be given the "opportunity to exercise choice" over how their personal information may be used when such use is "unrelated to the purpose for which the information was collected." Groups Demand -- Individuals should have "the right to control the use" of their personal information. Such information should not be "used or disclosed for other purposes without the consent of the individual or other legal authority." DATA SECURITY The Industry Suggests -- Companies should take "appropriate measures" to insure the reliability of personal information and take "reasonable precautions" to protect from its loss or misuse. Groups Demand -- Companies "must institute reasonable security safegaurds" against risks including "loss, unauthorized access, destruction, use, modification and disclosure." (Sources: Online Alliance; Center for Democracy and)(pg. C8)

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The New York Times

Ideas & Trends

Week in Review Desk; Section 4

In E-Commerce Frenzy, Brave New World Meets Old

By STEVE LOHR

1,121 words

10 October 1999

The New York Times

NYTF

Page 5, Column 1

English

(c) 1999 New York Times Company

WHEN Amazon.com declared two weeks ago that it was beginning a bold campaign to become an Internet shopping bazaar, Wall Street applauded. And why not? Amazon, a corporate poster child of the New Economy and pioneer of on-line retailing, would be collecting money from any **business**, large or small, that wanted to set up shop under its cyber-tent.

Besides, Amazon really needs the cash. Its losses are mounting, as they are for most Internet merchants. But, Amazon explains, the red ink merely underlines the scale of its ambitious investment for future growth.

And what is Amazon spending so lavishly on these days? Building a high-tech bunker of supercomputers or hiring battalions of software wizards? No, Amazon is spending much of its money on a half-dozen huge warehouses across the country.

The New Economy is increasingly coming face-to-face with the old: Net code hackers and money hustlers meet the members of Bricklayers Local 247. The hot, new fields of the Internet economy suddenly include distribution and logistics, the humdrum backstage of **business**. Indeed, as electronic commerce moves into the mainstream -- an estimated 17 million American households will purchase on line this year -- it has prompted a new appreciation for the **business** skills of the old bricks-and-mortar world.

Customers, it seems, still have decidedly off-line standards of service. They demand timely delivery of goods and the ability to easily return merchandise that proves disappointing, for example.

The on-line retailers who come up short on those fronts, industry analysts predict, will be casualties in the coming consolidation among on-line retailers -- a Darwinian winnowing expected to begin during this year's Christmas shopping season as winners are sorted from losers.

"A lot of the dot-com retailers are going to fold after their venture capital money runs out," observed David Pecaut, a senior vice president of the Boston Consulting Group.

Curiously, the biggest winners in on-line retailing could well be today's department stores, discount chains and specialty stores. In fact, 62 percent of E-commerce sales are accounted for by bricks-and-mortar and catalog companies that also have begun on-line ventures. Within five years, Mr. Pecaut expects that share to rise to 85 percent as companies like Wal-Mart, Nordstrom and Sears improve their performance on the World Wide Web.

THE reason, he says, is that their assets from the "legacy world" -- well-known brands, distribution networks, stores and purchasing power -- will prove to be advantages, and increasingly so in electronic commerce. The leading on-line brands like Amazon and Ebay, for example, came onto the marketplace a few years ago as innovative newcomers, when cyberspace was far less crowded and Internet brand-building was far less costly. The chance of an Internet start-up gaining that kind of brand recognition today, Mr. Pecaut says, is slim.

"For marketers, the superior economics in the future are going to come from the old standards of **business** -- and not just being on line," he said.

The new catch phrases of modern retailing have embraced that notion: multi-channel retailers, integrated shopping and 360-degree marketing. All are meant to convey the concept of servicing -- or assaulting -- the consumer on many fronts, on line and off.

Some Internet companies are even using their high-priced shares as currency to buy bricks-and-mortar counterparts. For example, the on-line auctioneer Ebay purchased Butterfield & Butterfield, a San Francisco-based auction house founded in 1865, for \$260 million in stock earlier this year.

The statistics for on-line retail sales, and projections of future revenue, show meteoric growth. Yet a closer look at the numbers suggests how much traditional retailing retains its hold, despite the rapid, up-from-zero growth of E-commerce. On-line sales in the United States will rise sharply this year to \$20 billion and jump to \$185 billion by 2004, according to Forrester Research Inc., a **technology** research firm in Cambridge, Mass. Still, the \$185 billion figure, even if it proves accurate, would represent only 7 percent of the nation's retail sales in 2004, the firm maintains.

The rise of the Internet has clearly created not only new wealth but a new sense of economic opportunity.

"The essence of the new Internet economy is its ferocious speed, the faith that this is a big deal and the uncertainty that it will pay off," said Thomas Eisenmann, an E-commerce expert at the Harvard **Business** School.

The economic payoff from **Internet technology** will almost surely come first in an area that gets the least attention: its use as a low-cost communications **technology** to automate all kinds of **business** transactions. "The Amazons of the world get all the press, but the real growth in electronic commerce in the next five years is going to be in the **business-to-business** market," said Peter Schwartz, chairman of the Global **Business** Network, a consulting firm.

FUELING that growth will be companies using the Web instead of faxes, telephones and face-to-face meetings to handle the "back office" tasks involved in trading with their corporate customers and suppliers. Forrester Research projects that the **business-to-business** market could reach \$1.5 trillion by 2003.

But even the Internet-assisted overhaul of dealings among businesses in the next few years represents an evolutionary instead of a revolutionary step. Much of the anticipated transformation amounts to doing the same chores more efficiently because of new **technology** -- as was true with the telephone and, before that, the telegraph, which has been called "The Victorian Internet," in a book published last year (Walker & Company) by Tom Standage.

And if the past is any guide, the surest corporate winners in the E-commerce **business** may be the suppliers of basic tools and services for the Internet: computers, software and technical know-how. That, at least, seemed to be the lesson of the last great gold rush in California. It was the general stores and saloons, not the miners, that pocketed the steady money.

Photo: Working the old-fashioned way at Amazon.com's distribution center in Seattle. (Dan Lamont for The New York Times) Graph: "WindowShopping.com" On-line shopping is expected to grow dramatically, yet it will remain a small portion of total retail spending, and growth should level off. Graph tracks total U.S. online retail revenues, online shopping as a percentage of total retail, and new online shopping households added each year for 1999 through 2004. Data is tracked from 1999 through 2004. All figures are projection. (Source: Forrester Research)

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The New York Times

Business/Financial Desk; Section C

Senior Microsoft Executive To Leave Management Job

By STEVE LOHR

496 words

29 July 1999

The New York Times

NYTF

Page 2, Column 5

English

(c) 1999 New York Times Company

Paul Maritz, a senior executive at the Microsoft Corporation, is returning to his roots as a programmer as part of the company's campaign to persuade software developers to continue to rely on its **technology** despite **the rise of the Internet**.

In an internal E-mail to colleagues on Tuesday, Mr. Maritz, a group vice president, said he was handing off most of his day-to-day management duties to work more closely with William H. Gates, the chairman, to help "set technical direction in the company" and "to educate myself on the details of technologies that I have not had the chance to be as 'hands on' as I would have liked over the last several years."

Mr. Maritz said he intended to begin his technical-immersion project by "writing some" code using various Microsoft software tool kits including Visual Basic, Visual C++ and Visual J++, and move on to Microsoft's new programming projects.

"So be warned," Mr. Maritz wrote to the other members of Microsoft's developers group.

In the E-mail, Mr. Maritz said he also planned to focus on promoting Microsoft's development tools within the software community.

Mr. Maritz's hands-on push into the **technology** of development tools, colleagues say, comes as Microsoft is engaged in an effort to both simplify the process of software development and marry its Windows **technology** with the **technology** of the Internet.

The rise of Internet-based computing poses a continuing challenge, which has been called the post PC era, to Microsoft. The challenge is not that personal computers might go away, or even decline in number, but that computing may no longer revolve so much around PC **technology** -- which Microsoft dominates with its industry-standard Windows operating system.

Accordingly, Microsoft is trying to persuade outside developers to use its software tools instead of the tools of rivals like Sun Microsystems Inc. The goal is to position Microsoft's tools as the glue between PC and **Internet technology**.

"Paul has the experience and respect, both inside and outside Microsoft, to push that initiative hard," one Microsoft engineer said.

The Wall Street Journal reported yesterday that Mr. Maritz was passing off most of his daily management duties to David Vaskevitch, a vice president in the developers group.

Like many senior Microsoft executives, Mr. Maritz, 44, who joined the company in 1986 from the Intel Corporation, is immensely wealthy from his Microsoft shares. In recent months, a number of other top company executives have taken leaves of absence or left the company.

Mr. Maritz's move to relinquish most daily management duties raised the question of whether he, too, was about to step out. But in his E-mail, he suggested that was not the case. His shift of assignments, he wrote, did not portend "some major change, or that I am about to leave the company."

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The New York Times

Business/Financial Desk; Section 1

Microsoft Will Alter Its Software In Response to Privacy Concerns

By JOHN MARKOFF

1,300 words

7 March 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

SAN FRANCISCO, March 6 -- The Microsoft Corporation moved to defuse a potentially explosive privacy issue today, saying it would modify a feature of its Windows 98 operating system that has been quietly used to create a vast data base of personal information about computer users.

Microsoft in effect conceded that the feature, a unique identifying number used by Windows and other Microsoft products, had the potential to be more invasive than a traceable serial number in the Intel Corporation's new Pentium III computer chip that has privacy advocates up in arms. The difference is that the Windows number is tied to an individual's name, to identifying numbers on the hardware in his computer and even to documents that he creates.

The combination of the Windows number with all these data, the privacy advocates said, could result in the ability to track a single user and the documents he created across vast computer networks. Hackers could compromise the resulting data base, or subpoenas might allow authorities to gain access to information that would otherwise remain private and unavailable. Privacy advocates fear that availability will lead to abuses.

"We're definitely sensitive to any privacy concerns," Robert Bennett, Microsoft's group product manager for Windows, said. "The software was not supposed to send this information unless the computer user checked a specific option."

Mr. Bennett said the option to collect the information had been added to the software so that Microsoft support employees would be able to help users diagnose problems with their computers more accurately. He said the Redmond, Wash., software giant had never intended to use the data for marketing purposes.

Microsoft said it would take the steps after a computer programmer in Massachusetts discovered the numbers attached to documents that he had created. The programmer, Robert M. Smith, told Microsoft he believed the practice created a potential threat to privacy.

Mr. Bennett said Microsoft would alter the way the registration program works in the next maintenance release of Windows 98. He said the company's technicians would look through its data bases and expunge information that had been improperly collected as a result of earlier versions.

The company is also exploring the possibility of creating a free utility program that would make it possible for Windows users to delete the serial number information from a small data base in the part of Windows known as the registry, where it is now collected.

Mr. Smith, who is the president of Phar Lap Software Inc., a software tools development company, contacted Microsoft earlier this week after discovering that the Microsoft Office business software was creating unique numbers identifying his personal computer and embedding them in spreadsheet and word processing documents.

Mr. Smith discovered that the hardware identifier was sent to Microsoft even when he instructed the registration program not to send it. The discovery brought to light what Mr. Bennett contended was a programming error.

Microsoft officials said earlier this week that the numbers generated by the company's software were part of an effort to keep different components from interfering with each other in an increasingly complex world of networked computers.

However, Mr. Smith said that the number created a "digital fingerprint" that could be used to match a document created by a word processing or spreadsheet program with a particular computer.

On Thursday, after further studying the "registration wizard" -- the software module that enables customers to register their copies of the Windows 98 operating system for support and updates -- Mr. Smith discovered that the number, known as a Globally Unique Identifier, was being transmitted to Microsoft as part of a list of registration information that generally includes the owner's name, address, phone number and other demographic information as well as details about the hardware and software on or attached to the user's computer.

"Microsoft never asked me if it was O.K. to send in this number, and they never said it was being sent," Mr. Smith said. "They are apparently building a data base that relates Ethernet adapter addresses to personal information."

Ethernet adapters are cards inserted in a personal computer that enable it to connect to high-speed networks within organizations and through them to the Internet.

The controversy erupted just weeks after Intel, maker of the most widely used processors for machines that use the Windows operating system, agreed to change a small software utility that came with the new Pentium III chip so that a serial number on the chip would be inactive unless the computer user switched it on.

Privacy activists have been attacking both companies, arguing that identification numbers can be easily misused to create electronic monitoring systems. Such systems could track a computer user's behavior in cyberspace or create dossiers of personal information about individuals.

The issue has sparked a heated debate over the fundamental **technology** of modern computer networks and software systems, which routinely employ serial numbers to identify individual computers and software modules, known as "objects," that can be shared by a number of programs.

But the Intel number only identified a computer. The Windows number identifies a person. And because the Windows number created a potential linkage between individuals and confidential documents they created, **privacy** advocates said they were outraged.

"I think this is horrendous," said Jason Catlett, president of Junkbusters, a consumer **privacy** organization based in Greenbrook, N.J. "They're tattooing a number into each file. Think of the implications. If some whistle blower sends a file, it can be traced back to the person himself. It's an extremely dangerous feature. Why did they do it?"

Privacy groups have long warned about the dangers of centralized information and electronic monitoring. The groups have been discussing the implications of the serial number on the Pentium III with Intel, and while some **privacy** advocates acknowledge that the number can play an important role in protecting both **privacy** and security, others have called for a boycott of Intel, arguing that the likelihood of misuse of the number outweighs its benefits.

Beyond the fear of a centralized Big Brother, they add that **the rise of the Internet** has made it possible for individual companies to freely use detailed personal information for commercial ends.

"The problem is the absence of legal rules that limit the collection and use of personal information," said Marc Rotenberg, director of the Electronic **Privacy** Information Center in Washington. "It's clear to me that large Internet companies such as Microsoft, AOL and Netscape will try to squeeze out **privacy**."

Microsoft executives said on Friday evening that they had developed the feature for technical reasons related to the need to distinguish between millions of different hardware and software objects on the Internet. They said they had never considered the **privacy** implications.

Microsoft software engineers say the roots of the company's numbering system go back to a system developed by computer researchers at the Open Software Foundation in Cambridge in the early 1990's.

In an effort to develop **technology** that would enable computers to communicate across networks, a numbering system called a Universally Unique Identifier, or UUID, was established as part of a software standard known as the Distributed Computing Environment, or DCE. Microsoft relied on this standard when it developed a remote computing capability for Windows known as Object Linking and Embedding, or OLE.

The company's designers changed UUID to GUID, for Globally Unique Identifier, and that term is now widely used by software applications. For example, the GUID is used for "cookies" -- files that World Wide Web sites send to a visitor's hard drive to identify the user later and to track his or her travels through the Web.

The New York Times

Business/Financial Desk; Section C

Internet Companies Set Policies to Help Protect Consumer Privacy

By STEVE LOHR

935 words

5 November 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

To address online **privacy** concerns, a group of leading Internet advertising and data-profiling companies have agreed to adopt policies that allow consumers to find out what information is collected by the marketers and to turn off the data-gathering **technology**.

The industry initiative is set to be announced on Monday at a public workshop about online profiling in Washington, which is being held by the Federal Trade Commission and the Department of Commerce.

The spread of **Internet technology** and its use by companies to identify personal patterns of online buying and behavior is a subject of increasing concern to **privacy** groups and the government. Profiling software can monitor every World Wide Web site that a computer user visits, every online advertisement she views, every mouse movement she makes.

"This **technology** is something we haven't examined closely, yet it allows companies to collect great amounts of information without the slightest knowledge by consumers that it is being collected," said Robert Pitofsky, the F.T.C. chairman. "It certainly strikes me as a troubling notion. And this surreptitious nature of the data collection makes this different from other **privacy** issues we've dealt with."

The 10 companies involved in the self-regulatory effort are Internet "middlemen" businesses that place ads on Web sites and assemble demographic profiles for marketers and Web sites. Until now, most pressure for online **privacy** policies had been applied to the brand-name sites of the Internet like America Online, Microsoft's MSN, Yahoo and Amazon.com.

"We are by and large invisible to consumers, so we do need to make an extra effort," said David Zinman, vice president of marketing for Adknowledge, a company controlled by CMGI that is in the group, which has been tentatively named the Network Advertising Initiative.

Kevin Ryan, president of Doubleclick Inc., another member of the group, said, "We're doing this as one step toward the broader goal of making consumers feel comfortable on the Internet."

The companies started working together on voluntary **privacy**-protection guidelines earlier this year after prodding from the F.T.C. and the Department of Commerce. The Clinton administration has generally adopted a self-regulatory approach to Internet **privacy**, though it did endorse online **privacy** legislation for children, which was passed last fall.

The United States policy of self-**regulation** has been a sticking point in long-running trade negotiations with Europe, which has adopted a data protection law. To try to settle the dispute, David L. Aaron, the undersecretary of commerce for international trade, and the European Union's top negotiator, John Mogg, met in Washington yesterday. Their discussions will continue today.

The companies in the initiative plan to announce that they have agreed to clearly notify consumers of their data collection practices and allow them to "opt out" of the profiling **technology**.

The companies are also working with Web sites and advertisers so that their **privacy** policies clearly state that they are using these Internet middleman services, known as infomediaries. In addition, the host sites and advertisers should have links to the profiling companies, making it easier for users to opt out.

The companies in the initiative have pledged to have their **privacy** practices checked by independent Internet monitors including Trustee, BBB Online and Webtrust. The group is also setting up its own Web site, www.networkadvertising.org, where consumers can read about the practices of Internet advertising and profiling companies, and opt out if they choose.

Besides Doubleclick and Adknowledge, the companies initially in the group are Netgravity, a unit of Doubleclick; Adsmart and Engage Technologies, which are also controlled by CMGI; Matchlogic, a unit of Excite@home; Flycast Communications; 24-7 **Media**; AdForce; and Real **Media**.

At the profiling workshop, Doubleclick says it will clarify its position on how it plans to work with Abacus Direct, an information company whose database contains the catalog-buying habits of 88 million households.

In June, when Doubleclick said it would buy Abacus for \$1 billion in stock, **privacy** groups were very worried about how Doubleclick might merge the Abacus buying data with its online profiles. Mr. Ryan said that the Abacus catalog-buying data will not be linked to Doubleclick's online profiles without clearly notifying consumers and letting them opt out.

Doubleclick has met with the F.T.C., Mr. Ryan said, to discuss how that notification and choice could be clearly presented to users so they do not have to be technically sophisticated to opt out. But no final arrangements, he added, can be made until the merger closes later this month.

Many key issues about online profiling **technology**, **privacy** experts say, lie in the future as the software becomes increasingly powerful. The profiling companies note that their **technology** identifies a user's machine through an identifying software tag on its browser. But, they add, the profiling software does not track individual users by name.

Privacy advocates say that the distinction between a person's machine and the person can be a fine line at best -- and a line quickly crossed if a person buys an item online with a credit card or registers by name at a Web site.

"There are a lot of serious challenges to **privacy** raised by the activities of these companies, which people don't have knowledge or control of," said Deirdre Mulligan, staff counsel for the Center for Democracy and **Technology**.

Evan Hendricks, editor of **Privacy** Times, said, "Putting up some principles does not represent a serious effort to protect Internet **privacy**."

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The New York Times

HELP WANTED

Business/Financial Desk; Section C

Newspapers Seek Cyberpartners To Fight On-Line Ads

By FELICITY BARRINGER

2,058 words

30 August 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

Mitchell Bernstein did his bit to chip away at the profits of the newspaper industry this year. Not that he meant to. The 26-year-old advertising copywriter was simply looking for a job with an Internet company in the most logical way -- on the Internet. He posted resumes on Monster.com and Hotjobs.com and scoured the job boards of the New York New **Media** Association, which eventually matched him with Organic, an Internet services firm in Manhattan.

"I looked in newspapers," Mr. Bernstein said last week, "but there are no jobs that I'm looking for in newspapers."

Those are chilling words for newspaper publishers, whose most lucrative revenue source is usually those pages of agate type, pages that generations of job seekers, home buyers and car buyers have torn out and punctuated with penciled circles. On-line journalism has caused concern about the industry's standards, but on-line classified advertising threatens newspapers' profits and dominance in an \$18 billion market.

That revenue currently represents an average of 43 percent of the advertising revenue of the largest-circulation newspapers -- and more than a third of their total revenues -- according to the figures of the Inland Press Association, a trade association.

The Internet is challenging a franchise that flourished with the post-World War II buying boom, when newspapers' role as a local marketplace fattened their daily editions. It has continued despite cyclical advertising recessions and intermittent shocks, like Wal-Mart's suffocation of small businesses, whose advertising died with them.

Classifieds, in particular, brought in a higher and higher percentage of newspaper advertising dollars. The figures of the Newspaper Association of America show classifieds represented 18 percent of advertisers' newspaper spending in 1950; 26 percent in 1975; and 41.5 percent last year.

Now, the question is how much revenue newspapers are going to lose to the hundreds of Internet competitors, and how quickly. While the weighty pile of printed classifieds is not fading away any time soon, Michael J. Beebe, a **media** analyst for Goldman, Sachs, said flatly, "There is going to be an erosion in revenue and profitability" in the old-fashioned newspaper classifieds.

"That's not to say that some company might not discover the right model and build an economically viable and perhaps value-added **business**, using the Internet to its advantage," Mr. Beebe added. "They're all searching for it."

For the past four years, through investments in on-line ventures like AdOne L.L.C., Careerpath.com, Classified Ventures and Careers.wsj.com, newspaper companies have scrambled to compete in the fast-growing world of on-line classifieds.

Their competitors come from all over -- an employment-advertising agency like Omnicom's Bernard Hodes Agency, which also happened to be the single largest purchaser of newspaper advertising (\$572 million in 1997, according to Editor & Publisher) and operates CareerMosaic.com. There is also TMP Worldwide. This marketing services and executive search firm is a major yellow pages advertiser whose Monster.com Web site is the most-visited in the on-line help-wanted world.

There are also **technology** giants like the Microsoft Corporation, which runs Carpoint.com; the National Association of Realtors, which runs Realtor.com, and portals like Yahoo Inc. and America Online, which offer free

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classifieds. The list gets longer daily. Less than two weeks ago, the CBS Corporation took a 38 percent share of Jobs.com, a Texas company, in return for a pledge of \$62 million in promotion and other considerations.

The geometric expansion of on-line competitors coincided with a disturbing dip in newspapers' help-wanted advertising during portions of the past 18 months in at least five markets -- San Jose, Dallas, Boston, New York and Los Angeles.

Newspaper executives and industry analysts are cautious about attributing all the drop to the on-line predators. A full-employment economy, like the United States has enjoyed for more than two years, reduces the need for employers to place ads.

All that said, it is clear that the ads for job-seekers like Mr. Bernstein -- not to mention **technology** managers, Web designers, software developers and computer engineers -- are disappearing from print newspapers. While paper is portable, it cannot match the Internet for fine-grained search capabilities.

Robert W. Decherd, the chairman and chief executive of the Belo Corporation, is hardly panicking. At Belo's flagship, The Dallas Morning News, he said, "It's not as if classifieds have fallen off a cliff."

But, he added, "There is one major category that is temporarily disabled" -- employment ads.

And the drop in help-wanted ads, in some markets, more than offset gains in auto and real-estate ads. After two years of robust growth, The Dallas Morning News's help-wanted declines pulled its overall classified advertising lineage down 3.1 percent in 1998. It is down another 3.6 percent through the first half of 1999.

Last year, The San Jose Mercury News, owned by Knight Ridder, became a poster child for the trend. Classified advertising revenue at Silicon Valley's hometown newspaper dropped 9.2 percent in 1998, compared to the previous year. A turnaround in help-wanted advertising starting this spring reduced that decline to 2.4 percent through July.

At The Boston Globe, which is owned by The New York Times Company, overall classified ad lineage inched up 0.5 percent in the last quarter, compared to the second quarter of 1998. But volume dipped in each of the three previous quarters.

Overall classified lineage at The New York Times was up 2.7 percent in 1998 and is down 1.4 percent through July, according to Janet L. Robinson, the newspaper's president. The Times, however, drew 25 percent of its total advertising revenue from classifieds in 1998, a proportion well below the industry average.

At The Los Angeles Times, the flagship newspaper of the Times Mirror Company, help-wanted advertising volume declined in 1998, but it was offset by real estate and auto gains in every period except the first quarter. Overall, classifieds were up 7.1 percent through the first half of 1999.

All these markets have a high concentration of high-**technology** employers, who are spending less and less on newspapers. Companies like the Intel Corporation are now on many on-line jobs boards, often limiting themselves to a few print ads directing readers to their own Web site listings.

Jeffrey C. Taylor, the founder of The Monster Board and currently an executive vice president at TMP, is more than happy to take some of the blame. "A whole industry developed under the umbrella they were standing under and they didn't see it," Mr. Taylor said of newspapers. The people abandoning newspapers are "your information-age workers."

"They have a computer on the desk," he said. "They look for a job at work."

Few analysts will put a hard figure on what Monster, Hotjobs.com and other sites will cost newspapers. One that does, Forrester Research, predicts a rough future for newspapers. Competitive pressures to lower rates, the loss of existing revenues and the failure to capture new **business** will cost newspapers \$4.7 billion by 2003, Forrester estimates. This estimate is widely disputed. "It's nowhere near as severe as they make it out to be," said P. Anthony Ridder, the chairman and chief executive of Knight Ridder. "The big strength that newspapers have is the relationship with advertisers in the places where they do **business**."

But Mr. Taylor of Monster.com scoffs at this, saying that most newspaper classifieds come through advertising agencies, not local employers.

While it is clear that on-line sites -- including newspapers' own -- can cost newspapers money, it is unclear how to make money on line. Monster.com is one of the rare Web sites to turn a profit. Analysts expect it to generate about \$120 million in 1999 revenues.

Peter M. Zollman, the principal of Advanced Interactive **Media** Group L.L.C. of Altamont Springs, Fla., said: "There will be significant growth in on-line classified advertising. Newspapers have a superb opportunity to capture a tremendous amount of that -- or to throw it all away -- depending on how they respond."

To date, two major competing models have emerged. Both involve pooling help-wanted, real-estate and automobile advertising, but the structures are distinct. One establishes territories and allows newspapers to protect most revenues from their local markets; the other treats the whole country as a single market.

The territorial model was adopted by the New York Times Company, the Times Mirror Company, the Tribune Company and the Washington Post Company, which jointly founded Careerpath.com. They also are backers of Classified Ventures, a similar company whose newspaper participants also include the Gannett Company and Central Newspapers Inc. The idea is to sell advertisers -- car dealers, real estate agents, employers, agencies -- a package, offering on-line classifieds for free or a nominal fee to those buying print ads. Some analysts question the wisdom of a cooperative model they believe is built on defensive fiefs, questioning how quickly it can respond to the marketplace.

Mr. Decherd of Belo backs the approach of AdOne, which was acquired in January by a consortium of **media** companies. The initial investors include Advance Publications Inc. and the Hearst Corporation. In July, more **media** companies, including Belo and Pulitzer Inc., joined AdOne and its Classifiedwarehouse.com site.

Asked why he preferred AdOne, Mr. Decherd said: "Essentially, because it's boundaryless. There is no trying to carve up territories. We're trying to create a national platform that will compete head-to-head" with the new on-line firms.

In addition, analysts and newspaper executives are keenly aware that making money on the Internet may require not just advertising jobs or purchases but making them happen and taking a share of these on-line transactions.

Whichever model survives, the current newspaper-backed sites, like their competitors', will offer more than listings. David Israel, the president of Classified Ventures, said, "We're in the **business** of trying to create really big, attractive marketplaces." For instance, "for a car -- people want to know all about pricing, reviews, financing rates, about decisions about leasing versus buying."

The value-added concept has been embraced by many on-line sites. Homestore.com Inc., the parent of Realtor.com, has signed a multiyear marketing deal with Norwest Mortgage Inc., which is owned by Wells Fargo & Company. The realtors' site has its own newspaper ally; on Thursday it announced it would provide on-line listings to Homes.wsj.com, a new site on The Wall Street Journal Interactive Edition, which is owned by Dow Jones & Company.

Most newspaper executives tend to bank on their local roots. John W. Sweeney, associate publisher and president of Hearst's Houston Chronicle, said the essence of classifieds is "local companies offering local people jobs, local dealers offering them cars."

"Ultimately," he said, "newspapers should be able to win."

Still, Mr. Beebe, the Goldman, Sachs analyst, thinks Monster is formidable. "The more employers have jobs there, the more consumers are going to trust the brand." Most analysts believe newspapers have to be willing to sell or give away on-line classifieds that might leach revenue from the printed newspapers.

Ms. Robinson of The New York Times said, "If portions of our **business** wane, we will see other portions of our **business** grow dramatically." She added: "The model is changing constantly. The idea is for the newspaper companies to remain as nimble as possible."

Photo (pg. C1) Graph: "Why the Fine Print Matters" Classified advertising revenue for newspapers has grown substantially over the last two decades and now represents about 40 percent of their overall revenues. But is expected to cut into future revenues as classified advertisers increasingly place ads on the Web. Graph tracks the following: four-quarter moving average of classified advertising spending in newspapers, in 1999 dollars (since 1980); four-quarter moving average of classified advertising spending in newspapers as a share of their total revenues (since 1980); and classified advertising revenue both if there were no Internet and assuming the

Internet (1994 through a projected 2003). (Sources: Newspaper Association of America; Forrester Research)(pg. C8)

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The New York Times

OUTLOOK 2000: TECHNOLOGY & MEDIA

Business/Financial Desk; Section C

The PC Is Dead! The PC Lives! Can 2 Extremes Both Be Right?

By JOHN MARKOFF

1,137 words

20 December 1999

The New York Times

NYTF

Page 37, Column 3

English

(c) 1999 New York Times Company

In 1999 it became fashionable to predict the end of the PC era.

At the vast Comdex personal computer trade show in Las Vegas in November, the buzz seemed to be about everything but the personal computer.

There was hype about Web pads -- handy, wireless slates for surfing the Web, in effect portable computers with screen but without keyboard. And there was more hype about Internet appliances, which are devices other than computers that provide Web access.

Even William H. Gates, the Microsoft chairman who is high priest of the PC, took time out from his presentation to showcase what he called a Web companion, a computer that eschews the Windows operating system in gaining access to the Web. It looks much like the "network appliance" that Mr. Gates once reviled when it was first proposed by his company's rivals, Sun Microsystems and the Oracle Corporation.

The most hoopla of all surrounded a coming generation of cellular phones that are part phone and part computer and will allow mobile users to surf the Web and do everything from shopping to making restaurant reservations from wherever they are.

By comparison, the PC's on display, whose makers seemed focused on repackaging their machines in different-colored boxes, appeared drab and uninspired.

It has begun to seem that, like the mainframe computer, the venerable PC may be on the verge of being supplanted -- by more powerful technologies promising quick and easy access to the Internet through devices that are highly portable, less costly and readily adopted by non-PC users.

Indeed, hot Silicon Valley companies like Phone.com, the telephone Web browser company based in Redwood City, Calif., are reporting gleefully that beginning next year, almost half the cellular phones sold will come equipped with the ability to surf the Web. Moreover, they predict that at the current growth rate, the number of Web browsers in phones will exceed the number in PC's in 2001.

"There's no doubt that personal mobile **communication** is going to happen," said Greg Galanos, a software strategist at Motorola. "The fact that you're chained to the desk to do electronic mail makes no sense at all today."

If using the Internet rather than spreadsheets and word processors is driving the growth of the personal computer industry, then mobile access to the Internet is likely to dominate in short order. Who could possibly argue that surfing the Web while trapped sitting in a chair at a desk is natural or inevitable?

The one flaw in this argument is that PC sales are not shrinking. PC industry growth has been in double-digit figures for six years, and it is expected to strengthen this year to 20.6 percent, near the 21.3 percent increase posted for 1994-95, according to Dataquest, the market research firm based in San Jose, Calif.

In his keynote address this year at Comdex, Mr. Gates boasted that industry analysts have underestimated industry growth for decades. "Year after year, people look at the personal computer and think: 'Wow! It must have reached its peak,'" he said. "There hasn't been a year that analysts haven't said: 'Well, this is really it. Boy, the growth has been so fantastic over the last year; this has got to be where it cuts off.'"

Mr. Gates's view is shared by Steven P. Jobs, a rival who became a nominal ally after Microsoft invested in Apple Computer in 1997. Mr. Jobs has argued forcefully in the last two years that there is no reason to assume that innovation -- and thus growth -- is dead in the PC world.

To underscore his point, Apple's new iBook portable personal computer became the top-selling portable in November. The machine has a built-in antenna and permits a user to easily insert a card, costing about \$100, to provide high-speed wireless connections.

Continued growth is a strong argument in favor of the PC, but the same argument was made by defenders of the mainframe computer in the late 1980's, shortly before that industry began its collapse.

The problem with defending the PC in this debate is that **the rise of the Internet** has changed the role of the PC. Rather than an end in itself, the PC is now merely one of a variety of Internet entry points.

"The advent of the Internet has shifted the focus of the industry from 'personal computing' to the Internet and e-**business**," said Irving Wladawsky-Berger, general manager of International **Business** Machines Corporation's Internet division. "The glamour is all in the Internet and e-**business**."

Moreover, the attack on the PC industry may soon be joined on the video game front. In an editorial last month titled "A Billion Connected PC's? Guess Again," the editors of Microprocessor Report, an influential semiconductor industry newsletter, took issue with the Intel Corporation's view that PC's will continue to dominate "personal computing" in the future.

They pointed out that two big Japanese consumer electronics companies, Sony and Nintendo, have both placed billion-dollar-plus bets on semiconductor factories to build a new generation of chips that may be more powerful than the fastest Intel microprocessors.

Sony is readying its PlayStation 2, while Nintendo is developing a new system, code-named Dolphin. Using the new chips, both of these machines will probably be part video-game player, part Internet appliance.

"Which would you rather have in your living room: a Windows 98 PC or a Sony PlayStation 2?" the Microprocessor Report editorial asks. "For most people, the Play Station 2 is a better choice."

As a result, computers are almost certain to become like electric motors. Once upon a time, it was envisioned that one electric motor, equipped with pulleys and cables, would run appliances all through the house. Instead, there are now electric motors in every appliance.

With computing, "I think it's more of a morphing," Mr. Galanos of Motorola said. "The fine line between the PC industry and the consumer electronics industry will increasingly vanish."

If it is ending, the PC era has been a remarkable two decades. From its roots in a hobbyist subculture populated by a handful of long-haired engineers who hungered for their own machines, the personal computer exploded to create powerful industrial monopolies. But Moore's Law --that the number of transistors on a microchip will double every year and a half -- ensures that no computing era will last forever, not even that of the PC.

Photo: Noncomputer devices that provide access to the Web were the hot topic at the Comdex personal computer trade show in Las Vegas. (Reuters)

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The New York Times

Foreign Affairs
Editorial Desk; Section A
What's Your IQ?

By THOMAS L. FRIEDMAN

786 words

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The New York Times

NYTF

Page 33, Column 5

English

(c) 1999 New York Times Company

My favorite Internet commercial these days shows this man checking into a cheap motel. The desk clerk is a bored young woman. As the man is checking in, he asks the clerk whether he can get movies on his room TV. And the clerk answers matter-of-factly: "All rooms have every movie ever made in every language, any time, day or night."

It's hard to predict exactly when desk clerks at Motel 6 will be telling you that, but thanks to the Internet it will be a lot sooner than you think. It took America Online nine years to sign up its first million members; AOL just added its latest million members in 42 days. Two years ago, the average AOL member was on line for 14 minutes a day; now it's 55. The U.S.-based Internet economy has gone from \$0 to roughly \$300 billion in revenues in five years.

Things are changing so quickly that Cisco Systems, which makes the black boxes that connect the Internet, has just come up with a model through which companies can measure themselves for how close they are to what Cisco believes is the ideal business model needed for success in the Internet economy. It's called the Internet Quotient, or IQ. It's not a perfect yardstick, and Cisco has an obvious self-interest in promoting it. But there's something to it.

A company's Internet IQ, argues Don Listwin, Cisco's executive V.P., is the product of two measures: the degree to which its own internal operations -- and how it delivers products and services -- are now built around using the Internet, and the degree to which its external behavior exploits the global spread of the Internet.

To find your company's IQ, start by assigning one point for each of the following internal criteria it meets: (1) Does your management understand the opportunities, and destructive potential, of the Internet for its business? (2) Is your business strategy fully aligned with what the Internet now makes possible, or do you deal with the Internet as just another piece of **technology** to add on to your computers? (3) Do you use the Internet to anticipate customer behaviors and recognize market changes? (4) Does your company cultivate Internet skills for its workers and managers?

(5) Can your company's technological infrastructure accommodate rapid change and customization without sacrificing scale and security? (6) Are Internet sales an important component of your overall revenues? (7) Can your company handle an Internet ecosystem in which you are intimately tied together over the Internet with multiple suppliers and multiple customers? (8) Is each one of your employees empowered to use **Internet technology** to build employee ecosystems within the company? (9) Can you operate in warp-speed Internet time to get to market faster and establish first-mover positions? (10) Do you have systems for measuring **the impact of the Internet** on your business and cost-cutting?

Next, go through the external checklist and assign two points for each of the 10 external criteria you meet. I don't have space for all 10 (you can get them off Cisco's Web site), but here are the key ones: Is your company sought out as an Internet partner by other companies? Does your company have a vision for tapping the Internet market in ways that will enable other companies to also profit from its success? Is your company actively engaged in developing Internet standards? Is your company investing in its future by financing other companies that are pursuing complementary Internet technologies? Are venture capitalists financing Internet start-ups that could feed off your business?

You calculate your Internet Quotient by multiplying the total points you get on the internal scorecard (ideally 10) by the number you get on the external one (ideally 20). The ideal IQ would be 200. Does it matter? Well, Cisco

contends that there will increasingly be a correlation between a company's Internet IQ and its return on invested capital. The higher the IQ, the higher the return. According to Cisco, Dell, which pioneered computer sales over the Web, has an IQ of 140 and a return on capital of 51 percent; Compaq has an IQ of only 40 and a return of 9 percent; Sotheby's auction house has an IQ of 8 and a return of 13 percent.

Yeah, it's probably just a gimmick, you say. Nothing to worry about. Right. The next thing you know someone will tell you that Motel 6 is offering every movie ever made in any language on its room TV's.

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The New York Times

Business/Financial Desk; Section C
A New War Drew New Methods for Covering It

By FELICITY BARRINGER

1,906 words

21 June 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

As 16,100 NATO troops rolled into Kosovo last week, 2,700 journalists signed up to follow them. Most of those journalists had been forced to watch the 78 days of bombing through the lenses of official video cameras and wanted to see things for themselves.

"Almost anywhere you point the camera you find a story," said Bill Wheatley, NBC's vice president for news.

The wave of images of Serbian tanks departing and ethnic Albanians returning is only the latest to show the paroxysm of Kosovo. From the terror of airborne high- **technology** bombing to the terror of the Serb military campaign, the conflict has produced war coverage that, according to editors, correspondents and **media** critics, was in some basic ways different from any battlefield coverage that had come before. There was both more censorship -- and more information. Military censors ratcheted up controls during the bombing but satellite communications allowed reporters from Brussels to Kukes, Albania, to triangulate information more easily than in earlier conflicts.

There were more journalists covering all sides of the conflict. Yugoslav authorities repeatedly expelled Western journalists, but enough Western reporters returned and were tolerated to provide on-the-scene coverage of the bomb damage and the ethnic strife -- though these journalists were often operating under tight Serb restrictions.

With **the rise of the Internet** and cable television news, there were more outlets for instantaneous reporting and analysis. Cable news channels offered high-decibel debate, though some people contend that the formats permitted little nuance or textured argument. On the Internet, a profusion of Web sites provided perspectives on the conflict from any angle one could want: Serb, Albanian, Republican, Democratic, from the depth of the BBC to the passionate nationalism of the Belgrade-based newspaper Politika.

For David Halberstam, the author and former Vietnam correspondent for The New York Times, the sum total of all these trends amounted to sharper, speedier, coverage. "Despite all the restrictions, and just God-awful limitations and dangers, there were enough different people in enough different places to give you the dimensions you needed," he said.

"If the spin doctors working in Washington were saying how well it was going, there were enough people in the NATO command who would talk quietly" about the reasons for pessimism, Mr. Halberstam added.

The multinational cast of the war also helped. Squabbles among the 19 member nations of NATO produced self-serving leaks, as did differences in Washington about the need for ground troops or the bombing's effect.

Coverage strategies evolved in the early days after NATO began bombing March 24, largely shaped by the Pentagon decisions to stringently limit information.

Kenneth Bacon, the Assistant Secretary of Defense for public affairs, said that "because the Serbs had a significant air defense, we were going to give as little information as possible" about what planes were flying, the frequency and location of bombings, even what ordnance they were using.

"So much has been public about this, there is so much on TV, that it was like an extension of his own intelligence services," Mr. Bacon added, referring to the Yugoslav leader Slobodan Milosevic.

Even to disclose the number of bombing sorties or their targets after the fact -- when the Serbs already knew what had been done -- would provide the enemy with too much information, he contended: "You could extrapolate from what we were doing one night what we would do the next."

Blinders were also imposed by the Serbs, who swept journalists from their territory in the first days of the war -- but did not throw out a German reporter and a Canadian-born correspondent for The Los Angeles Times when they made their way back into Kosovo shortly after their expulsion.

Journalists coping with the restrictions imposed by the combatants used other sources more fully, editors, correspondents and **media** critics said. As ethnic Albanian Kosovars poured across the border into refugee camps, they were not only the subjects of one story -- the mass exodus -- but also sources for what was happening inside Kosovo.

And the new technologies kept the information moving at what Mr. Wheatley of NBC called "an unheard-of speed among the interested parties, the groups, the combatants."

"It doesn't mean we were always able to authenticate something that NATO was saying or Serbia was saying," he said, "but it made it somewhat easier."

The key catalyst for putting together information, according to editors and **media** critics, was the satellite phone and, more broadly, satellite communications -- which first came into their own during the three-year siege of Sarajevo in the Bosnian war, which ended in 1995.

Broadcast radio was the device that broke new communications ground in World War II; the evening television news show was the medium that most directly brought home the violence of the Vietnam War, and CNN's 24-hour cable TV news coverage first caught hold with the Gulf War. This time around, the satellite uplink was the information medium of the moment.

"Instantaneous **communication** has changed things," said Andrew Rosenthal, the foreign editor of The New York Times. "The ability of a reporter on the Macedonian border to call a reporter on the Albanian border or to call a reporter in Brussels or Washington instantly made a huge difference. Newspapers were able to put together groups of reporters to do joint efforts in a way that was previously impossible."

The same satellite **technology**, said Ted Koppel, host of ABC's "Nightline," can cut two ways when it comes to television. The **technology**, he noted, allows a profusion of images to be transmitted at great speed. When those images reflect something like the fate of Kosovar refugees, or the Serb troop pullout from Kosovo, the medium's emotional power is at its peak -- for better and for worse, in Mr. Koppel's view.

"Television in particular is a medium that allows people at home to become violence voyeurs," he said, speaking from Pristina by, yes, satellite telephone. "The more they see, the more it takes to gain their interest the next day. And it's all happening so fast and such an enormous volume is being churned out, that people become very jaded by what they see very quickly."

"The great danger is that there will be a reaction from American television viewers that 'we've seen it all, and last week it looked better.' "

S. Robert Lichter, president of the Center for **Media** and Public Affairs in Washington, said that television coverage -- by doing what it does best -- buttressed the humanitarian justification for the hostilities.

"Early on, the human suffering of the refugees provided a natural story line that fit very well with NATO's rationale for the war," Mr. Lichter said. "To sell a war in a democracy when you're not attacked, you have to demonize the leader or show that there are humanitarian reasons for going in. George Bush demonized Saddam Hussein. We did something of the same with Milosevic."

When the refugee crisis came, he said, "the need of TV to have human beings and an ongoing story and the need of the Administration to have a rationale for the bombing melded very well."

His words have an echo in those of Mr. Bacon at the Pentagon, who said that "the refugee crisis, along with the atrocity stories, was an indication of why we were fighting."

But, Mr. Lichter said, he and his staff noticed in the conflict's first few weeks that electronic news organizations and print journalists weighted their coverage very differently, with much more critical coverage found in print. The initial television news coverage "was so highly positive," he said.

Not all TV coverage was. Many cable and some broadcast shows -- particularly the weekend wrap-up and analysis programs from Washington -- are driven by debate, and they amplified the criticisms of President Clinton's decision to rule out ground troops. Then, when Mr. Milosevic did not quickly accede to NATO demands, criticism also grew that NATO had badly miscalculated.

Night after night, strategy and tactics were debated by journalists, Congressmen and former generals in a forum whose lifeblood is "the journalism of assertion" -- a term coined by the **media** critics Bill Kovach and Tom Rosenstiel in "Warp Speed" (Century Foundation, 1999), their book on the pitfalls of instantaneous journalism and the argument culture of cable television.

Some **media** coverage found this coverage tendentious -- journalists reflecting unrealistic expectations about an early end to the war and reinforcing dubious assumptions about the limitations of bombing.

"One fundamental issue arose early in the coverage and was never challenged to the end of the war," said Marvin Kalb, the director of the Shorenstein Center at the Kennedy School of Government of Harvard University, "and that was that this war could not end through the application only of air power, that somehow or another you're going to have to send troops in."

In addition, Mr. Kalb said, there was an early expectation that if the bombing did not quickly sap Mr. Milosevic's resolve, then it had failed.

"This is a conviction perhaps sired by the quick end of the gulf war and perhaps by the American psyche that can't hold its attention on anything for more than a week," he said.

But Mr. Rosenthal, The Times's foreign editor, said that "the fact remains that the analysis of the war's having gotten off to a slow and clumsy start was accurate."

He added: "The press reflects what is going on. If the Administration is sitting on its hands and not explaining itself, we have to go to other analysts. And dissenters are always more willing to talk."

Some reporters, however, were able to see things first-hand. Some did it with the Pentagon's sufferance, like Steve Komarow of USA Today, who flew with a B-52 crew in the first days of the war, but was not allowed to use the names and hometowns of the pilots in his dispatches.

Others, like Steven Erlanger of The New York Times, worked from Belgrade, reporting on bomb damage and Serbian morale while working in and around a web of Serb censorship. Still others, like Paul Watson of The Los Angeles Times, got inside Kosovo and covered bombing damage and ethnic violence close up. And Jack Kelly of USA Today reported from a dangerous vantage point alongside a Kosovo Liberation Army unit.

Some critics, however, see serious remaining flaws in war coverage, even in the age of a thousand sources and a thousand outlets. "All wars are imperfectly covered," said John R. MacArthur Jr., the publisher of Harper's Magazine, who wrote "Second Front: Censorship and Propaganda in the Gulf War" (Hill & Wang, 1992) about the Persian Gulf War. "All wars are a mess. You can only hope to get shards of information."

And while he said that the reporting of the Kosovo conflict had been "vastly better than the Gulf War," he said that reporters still take too much official information and pass it on as fact. "I didn't see the word claim or claimed used nearly enough," he said. "It's a useful discipline not to let the Pentagon or NATO get away with loose talk."

Photo: The refugee exodus from Kosovo was one lasting image of the war. (Agence France-Presse)

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The New York Times

Market Place

Business/Financial Desk; Section C

Technology Bankers Work To Give Merrill A Silicon Shine

By LAURA M. HOLSON

1,562 words

27 December 1999

The New York Times

NYTF

Page 1, Column 6

English

(c) 1999 New York Times Company

WHEN the Goldman Sachs Group and Morgan Stanley Dean Witter announced upbeat earnings news last week, a cheer could be heard in Silicon Valley. There, both Wall Street investment banks have flourished, riding the wave of dot-com companies that have enriched themselves by offering shares to a rapacious public or selling out to each other.

But in recent years, another big Wall Street name has been conspicuously scarce in the Silicon Valley gold rush: Merrill Lynch. The firm's sideline status has been puzzling, given that as much as one-quarter of the revenue generated by investment banking departments these days comes from advising **technology** companies on mergers and public stock offerings.

So why has Merrill largely missed out on **technology** bankers' big bull market?

To hear Merrill Lynch explain it, the firm has not missed out at all; it simply got a late start. Tom Davis, executive vice president of Merrill's corporate and institutional client group, said the company was only three years into a multiyear effort to expand its **technology** presence worldwide.

"We are at the beginning of what is a long secular shift in the economy," Mr. Davis said. Of Merrill's strategy, in particular, he said, "I think we are at the early stage of this game."

Of course, **technology** executives have heard that before. When Merrill set up an office in Palo Alto, Calif., in 1996, it was the third attempt to crack Silicon Valley's clubby community, after abortive efforts in the 1980's and early 1990's. Mr. Davis said the company had been too busy expanding other departments to focus much on **technology** in those days.

Given its relatively late start, Merrill has made a respectable showing this year. According to Thomson Financial/Securities Data, Merrill ranked fourth in taking new **technology** companies public in 1999, as measured by the amount of money raised. That is a far cry from 1997, when it did not even rank among the top 20.

Merrill's total of \$2.2 billion in **technology** underwriting this year, as calculated by Thomson, gave the firm a market share of 7.8 percent through Dec. 22. Those numbers do not tell the full story, though. That is still only about half the market share of more influential rivals like Morgan Stanley, Credit Suisse First Boston and Goldman Sachs -- which rank first, second and third, respectively, in Thomson's lineup.

And with the exception of the Internet Capital Group, a Merrill loyalist that invests in Internet concerns and which Merrill took public in August, Merrill has yet to attract the roster of superstar companies that their larger competitors have.

Investors in Goldman and Morgan have been handsomely rewarded this year, in part, because of their prowess in the **technology** sector. Goldman's share price is up 53 percent since the firm went public in May; Morgan's is up 85 percent for the year. Merrill's share price, though, is up only 17 percent.

"It is not clear to me that they are going to make strides quickly enough," Steven Galbraith, an analyst at Sanford C. Bernstein & Company, said of Merrill. The concern, Mr. Galbraith said, is that by the time Merrill might catch up in **technology**, the market will have moved on to the next hot sector.

Some analysts have said that when merger talks between Merrill and the **technology** investment boutique Hambrecht & Quist broke down two years ago, Merrill missed a ripe opportunity to increase its presence in **technology** underwriting.

Merrill suffered blows, too, with the loss of high-profile executives like its president, Herbert M. Allison Jr., a favorite in Silicon Valley who left the firm earlier this year and joined the ranks of political fundraisers, and, more recently, Scott Ryles, head of **technology** investment banking, who had helped build that practice. Mr. Ryles left last month to become chief executive of a new online investment bank backed by Charles Schwab.

What is more, Merrill has not been a believer in the "star system," Mr. Galbraith said. Having a name-brand stock picker, like Mary Meeker, the celebrated Morgan Stanley analyst who helped put that Internet practice on the map, is essential, he argues.

On that count, though, Merrill may now be trying to cultivate a rising star. In February, it hired a 33-year-old CIBC Oppenheimer analyst, Henry Blodget, who went way out on a limb last year by predicting that Amazon.com would hit \$400 a share -- a target the stock not only reached but surpassed. Hiring Mr. Blodget, who has quickly gained a Silicon Valley following, is simply one indication of the way Merrill Lynch has expanded its **technology** research effort, said Steve Milunovich, the firm's global team coordinator for **technology** research.

"I'm a big believer that changing perception is hard," Mr. Milunovich said. "Our perception is probably better outside the valley than in the valley."

Certainly, Merrill's perception problem was not helped by comments one of its top executives made about the Internet last year. A Merrill vice chairman, John Steffens, was criticized after newspapers quoted him as saying that online trading was akin to gambling and a "serious threat to Americans' financial lives." Some in Silicon Valley took umbrage, suggesting that if Merrill did not understand **the impact of the Internet** on its own **business**, how could it understand theirs?

When Mr. Steffens, who is known as Launny, subsequently began extolling the Internet, the perception that he was scrambling to recover from a faux pas only seemed to make matters worse.

Mr. Davis said that Merrill had not lost a piece of **business** because of Mr. Steffens's comments. But others at the firm wonder how much potential **business** landed elsewhere. "We got tarred for that," Mr. Milunovich said. "There's no question that Launny's comments hurt."

One of Merrill's best **technology** credentials has been serving as a mergers-and-acquisitions banker to the networking giant Cisco Systems. Merrill got the job because it is one of Cisco's largest equipment customers. Cisco has an in-house team that does most of the heavy lifting on its transactions, but Merrill has retained the client on merit.

"They do a nice job and we've been pleased with the level of service," said Mike Volpi, Cisco's senior vice president for **business** development.

Still, Merrill's career as a merger adviser has hit some snags. Merrill had a very close relationship with the At Home Corporation, a provider of high-speed Internet service for cable television subscribers. Merrill had helped take At Home public and arranged for subsequent financings. So it was not surprising the firm was tapped to advise At Home on its \$6.7 billion stock-swap merger in January with Excite Inc.

But the night before the Excite@Home merger was to be announced, executives at Excite noticed a problem: the total that At Home would pay in stock was lower than the agreed-to price. In effect, a miscalculation had been made in the documents, and At Home's board of directors had to be reconvened to vote again on the correct amount, according to George Bell, president of Excite@Home and the former chief executive of Excite. "We were up until 4:30 a.m., they fixed it, and we announced that morning," Mr. Bell said. "Because it wasn't our company, I can't say it was the bankers' fault."

Whoever was to blame, industry executives say such last-minute mishaps are rare.

Thomas Jermoluk, who had been At Home's chief executive, could not be reached for comment. But people involved in those talks say he and executives from the AT&T Corporation, which owned a large stake of At Home, were enraged at the time. And when the merged Excite@Home, led by Mr. Jermoluk, announced its acquisition of BlueMountain.com recently, it was not Merrill that was hired to advise on the deal.

Mark Shafir, who is in charge of Merrill's **technology** merger department in San Francisco, was hard pressed to comment on the mixup with Excite and At Home except to say the terms were "discussed and vetted" with executives and their lawyers. "Unfortunately, there must have been some misunderstanding," he said.

If the **technology** boom continues, as many analysts expect, Merrill may now bear watching. Executives there say that the firm's **technology** effort for the first time has the full backing of Merrill's management. And if the company can transform indeed itself into the stock-offering powerhouse that it is in other industries, the next few years could improve Merrill's standing in Silicon Valley.

"Perception," Mr. Davis said, "lags reality."

Chart: "One Bull That Is Not Stampeding" Morgan Stanley Dean Witter's stock has soared this year, as has Goldman Sachs since going public in May. But in a great year for the markets, Merrill Lynch's performance has been rather ordinary. Graph shows daily closing stock prices from Jan.-Dec. for Morgan Stanley Dean Witter (Year to date: +85.2%); Merrill Lynch (Year to date: +17.2%); and Goldman Sachs (Year to date: +52.8%)(Source: Bloomberg Financial Markets)(pg. C4)

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The New York Times

MUSIC

Arts and Leisure Desk; Section 2

A Chance to Break the Pop Stranglehold

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An article last Sunday about the growing dissatisfaction of pop artists with major record labels omitted the given name of a musician who has established her own label. She is Jonatha Brooke.

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THERE are two great pop music dreams. And they usually follow each other, like marriage and divorce. The first great dream is to get together with friends in a basement or garage, write songs, make music, feel the magic and perform at local clubs until a big record label rushes in waving a contract. And then the label takes care of the rest: hit singles, arena shows, limos, parties, a new house for mom. But the dream, even for those few who actually get to live it, has usually been a nightmare.

That's when the next great dream kicks in. This is the dream of independence, of breaking away from the record label and going it alone. It's about rethinking the first dream, remembering that the most exciting part of being in a band was when you did it yourself. There was the joy of selling the first three copies of a CD or cassette you made on your own. Back then, you actually made a few bucks off those sales. Now, under a record label, promotional costs are so high that you may see no actual money, even if you're lucky enough to sell a million albums. And then there are the long tours spanning four continents, the executives that keep sending you back into the studio asking for hits despite the fact that you considered your album finished months ago, and the three-year gap between the release of each record. Signing to a big label suddenly doesn't seem like a step up anymore; it seems like a sacrifice.

"There's no contract you can sign in modern life that resembles a recording contract; they're absolutely unconscionable," said Bart Bull, the manager and husband of Michelle Shocked, the singer-songwriter who spent four years extricating herself from her contract with Mercury Records after the label rejected her new songs for being inconsistent with her style. "You take those 48 pages of a typical contract and hold it in front of anyone familiar with other types of business contracts, and they think it's insane."

A slew of recent events -- from the panic at major labels over the distribution of music on the Internet to the bloodletting following large music company mergers -- has made it clear to musicians that the structure of major record companies is not conducive to either their financial or, more important, their artistic goals. Talking to everyone from up-and-coming bands to those who have been signed for more than a decade, from artists with low sales to superstars, from lawyers to former executives, there is a growing dissatisfaction with a system that has been building its fortress for more than 100 years -- since a company called Columbia sprung up to challenge Thomas Edison's exclusive distribution of prerecorded cylinders to be played on the phonograph he invented.

This dissatisfaction stems less from the fact that the companies are owned by multinational conglomerates than from the belief that the labels are simply too big, numbers-driven and inefficient. Artists who could be much farther along in their creative work get bogged down in the bureaucracy. Waiting for the new record from Perry Farrell of Jane's Addiction? Keep waiting. It's already been rejected by his record label, Warner Brothers, several times. And what ever happened to Joan Osborne? Her label hasn't liked her new material either. The Verve Pipe? The label made the band write dozens of additional songs for its next album in search of a new hit. And Beck? He has just been sued by his record label over a contract dispute. And this is how the labels treat their favored artists.

Today, we are at an important moment in music history. Thanks in part to **the rise of the Internet** and music-business consolidation, a window has opened, one in which making this sacrifice of artistic freedom for

commercial success may no longer be necessary. In the next few years, either a lot of best-selling musicians are going to climb through that window or the window is going to slam shut, tighter than it ever was before.

Take a look at the music industry today. Manufactured teeny-bopper bands are dominating the pop world, corporate mergers are squeezing hundreds of musicians out of the business without even giving them the rights to their recordings, and executives of major record labels are meeting behind closed doors to develop a way to police and control the distribution of music on the Internet.

These events are pointing the way to an exit from the status quo by fostering dissent and inadvertently giving musicians the freedom to act on it. In recent years, several people have stepped up to try to make the business work better for musicians and their fans, among them the musician, computer whiz and virtual-reality pioneer Jaron Lanier and the progressive rock guitarist Robert Fripp of King Crimson. They are developing new companies in hopes of chipping away at a business that loses money on far more records than it profits from.

Despite the rhetoric on the Internet about an on-line music revolution bringing down the record establishment, it is not the Internet per se that is going to grant musicians their freedom. It's the idea of the Internet -- in other words, the knowledge that there is an alternative to the system.

The golden age of the Internet -- as a freewheeling, chaotic world where all information is available free of charge and everybody is equal -- is fast coming to an end. There's too much money at stake for it not to be transformed into a new revenue stream for corporations. Look at the record labels. It may seem as if they are running scared because recent technological advances have made it very easy for Internet users to copy and distribute their favorite CD's on line without authorization, but the truth is that the labels have already found a way to turn this new **technology** to their financial advantage.

Most major labels have added what's called a new **technology** deduction clause to the contracts they offer bands. What it does is subtract 15 to 25 percent of the royalty rate of 12 to 13 percent that a new band receives for each record sold. The labels maintain that the clause is necessary because of the costs of Internet-related **technology**. This rationale seems strange because the distribution of music on the Internet is supposed to save record labels money in CD manufacturing, packaging and shipping costs.

"Even the lawyers with the most power can't get rid of those clauses," said Ken Freundlich, a top music-industry lawyer. "It's the same mind-set the labels have had since the CD: bring on the new **technology**, cut the royalty rate."

The head of a record company, speaking on the condition of anonymity, said he wasn't worried about artists releasing their CD's independently on the Internet. "How are they going to compete with someone putting \$10 million into another Web site?" he asked. "Do you know how big the Internet's going to be? You're going to need infrastructure."

Putting control of the Internet in the hands of the corporations means that a utopian musical vision may be dying. The vision is of a level playing field where all bands regardless of their record label or financing have equal access to the ears of the consumer. Instead, the chances of a dystopian world are increasing, one in which record companies have even greater control over music distribution, and new bands are signed not because of how they sound but because of how many visitors come to their Internet site each month.

At present, record companies have a great deal of control. A record deal is basically a service contract that puts the musician in the employ of the record company. In all but the rarest cases, by signing a deal musicians forfeit their ownership of any music they make under that contract. And, from the outset, the musician is put in a position of accepting debt. That tantalizing million dollar advance, for example, must be paid back to the record label at an interest rate far higher than that of a bank loan. Because the debt is paid out of the small royalty that musicians make, most acts never see a penny from their record sales. The record company executive said: "A lot of lawyers and artists don't understand how the record business works. Artists don't have \$50 million in overhead. We don't make money on their T-shirts and concerts that we market and promote."

For the music fan, far more disturbing than the financial toll record labels exact from artists is the creative one. Except in the case of an extremely slow, laborious songwriter like Leonard Cohen, artistic creativity moves at a much faster rate than the current system allows. Even in hip-hop, in which musicians tend to turn around albums quickly to take advantage of shortterm trends, there is frustration over inertia on the part of the record labels.

"Years ago, there was a 9- or 10-day turnaround after an artist turned in a record; now it takes 9 to 10 months because the record labels can't handle the traffic and need a year to set up their marketing and promotion systems," said Chuck D of Public Enemy, a pioneering rap group that left a major label in January and will release

its next record through an Internet company called Atomic Pop. "If the majors cannot adapt to change, they become solely banking systems. If they could sell Brillo pads with a slice of cheese on them, they'd do that, because the music is irrelevant to them."

There are many musicians who probably belong in the major label system, particularly those using music as a route to money and fame or those who see their calling not in artistic achievement but in mass entertainment. Then there are songwriters like Aimee Mann, the former singer in 'Til Tuesday, who has a strong fan base and is an accomplished songwriter. But her experiences trying to release records have been soul-crushing, and as a result she has only put out two albums in eight years.

Her first label, Giant, got cold feet and canceled her contract before releasing her first album. Her second label, Imago, folded before her second record came out, and, just after Ms. Mann completed her third album for her third label, Geffen, the company was consolidated into Interscope as a result of the merger of both labels' parent company, Universal Music, with Polygram. Ms. Mann thought she had finally caught a lucky break when she became one of the few artists whose contracts were not dropped in the merger. But soon after, she was told that Interscope -- her fourth label -- wanted her to continue working on an album.

"I'm officially at the end of my major label rope," she said.

Labels have built their business on hits. If they had developed a model that could profit from a record that sold 200,000 copies, the way many independent labels do, they could have made money by putting out the five or so records that Ms. Mann -- or the scores of other performers in similar situations -- might have released.

This mishandling doesn't just happen with serious artists. Another merger casualty was the English teeny-bopper band Boyzone, which suffered a setback in its chance for success in America when, to meet a quarterly quota, its label, Mercury, quietly released 30,000 copies of its album before the merger instead of waiting to set up the record properly. A spokeswoman for Mercury said that the record had been released to get "a running start" for the band's promotional campaign this summer.

Another problem is that labels judge with weekly sales reports and not their ears, giving up on a band that doesn't do well in the short term but may generate future catalogue sales. History has proved over and over that one decade's failures (whether it's the Velvet Underground's proto-punk or Joni Mitchell's redirection into jazz) can become the next decade's classics. But the history of the music business is one of inefficiencies, dating back to the late 19th century, when less than half the sheet music released paid back the high cost of marketing the music, despite the tactic of paying well-known performers to include the song in their repertoires.

"For an artist like me, who is somewhere in the middle saleswise, I've maybe had a couple of records that once made the record company money," said David Lowery, formerly of Camper Van Beethoven and now in Cracker on Virgin Records. "But now, I doubt a gold record could make them money anymore. They need a platinum."

Here is one more story, a common tale with a new twist: Josh Clayton-Felt, formerly of the rock group School of Fish, spent three years working on his second solo album for A&M Records. Every time he thought he was finished, label executives sent him back into the studio with the four words that have become anathema to working musicians, "It needs a hit." Mr. Clayton-Felt turned in a total of 22 songs, then waited for executives to set a release date for the record. But after eight months, A&M was taken over by Interscope. Mr. Clayton-Felt was one of some 250 artists dropped after the Universal merger.

A free agent, Mr. Clayton-Felt asked if he could release the music he had recorded during that time elsewhere: the label said no. He asked if he could buy it back and release it himself, and again the answer was no. Label executives said they would negotiate only with a major label. So he decided he would rent a studio and record new versions of the songs. But Universal still said no: a clause in his contract prevented his rerecording the songs for five years.

BOB BERNSTEIN, a spokesman for Universal, said that Mr. Clayton-Felt had been told that his album could either be released independently for a limited term or shopped to a major label. "If he garnered interest from a major, Universal would be willing to negotiate a sale of that record," he said.

For four months, Mr. Clayton-Felt wrestled with the label and with himself. "I started to look at why it has gotten to this point, that record labels have so much power," he said. "And the reason is because artists have given them far too much control. We need to start looking out for each other. But we so badly want a piece of the pie that we've knocked each other down in the process of pursuing it."

Mr. Clayton-Felt considered changing his name to record the songs or performing them in a concert that his audience was encouraged to bootleg. Finally, he realized that there could be as many as 100 artists in similar situations because of the merger. And, legally, he could bring together a dozen or so of them and record an album on which musicians take their best songs stuck in the Universal machine and give them to another performer to record. Currently, Mr. Clayton-Felt is working on the compilation and hoping to use the proceeds to start an artist-run cooperative label.

"God, I never thought I'd say these things," he said after explaining his plan. But Mr. Clayton-Felt is only echoing sentiments held by Chuck D, Ms. Mann, Ms. Brooke, Mr. Lanier, Mr. Fripp and Mr. Lowery. What is more surprising is that a large number of popular musicians -- even lawyers and label executives -- are agreeing with them. No one wants to give the system another chance. The idea of the Internet, the alternative, is much more tempting.

There are three things musicians want from a major label: money for recording and touring, national marketing muscle and wide distribution. If another system could be developed that offered musicians this trinity, then perhaps when their contracts expired they would think twice about remaining with major labels. Especially considering that when asked, many artists said they would rather sell 200,000 copies of 10 records each than 7 million of 2.

"If we didn't have a record deal, I would explore manufacturing the records ourselves," Mr. Lowery said. "I'd make an arrangement with an independent distributor, maybe hire some Internet marketing firms, make deals with MP3 sites and run the business more like a software company. I would like to see if doing it that way is going to afford us more creative control and make us more money and get our music to the people we think would like us." (By MP3, Mr. Lowery is referring to a popular **technology** that enables music to be converted into relatively small, high-quality computer files that can be easily distributed on line.)

As for alternatives, there are a few different possibilities. The first is simply doing the work yourself. Lately, being on their own label has paid off for musicians like Ms. Brooke, Kristin Hersh, Jane Siberry, Ani DiFranco and, most popular and dramatically of all, the artist formerly known as Prince. Not only did he sport the word slave on his cheek while under contract to Warner Brothers, but he also announced that he would be rerecording all 17 of his records for the label to spite it for not giving back his master tapes when he was released from his contract in 1995.

But there is a downside to independence. Just as it is unfortunate for artists to waste away creatively while waiting for a record label to put out their music out, it's also a shame when they spend more time doing business than making music. "I'm swamped with the business side of things," said Ms. Brooke, whose independent record has sold more copies than her major-label ones did. "So it's very hard to put on the other hat, close the door and start banging on my piano again when I feel like I should be calling up the indie promoters and publicists working the record."

ANOTHER alternative is a holdover from the 70's: setting up a label based on a set of artist-friendly principles and trying to get other musicians to join the collective struggle. In 1991, Mr. Fripp, the British guitarist, formed a company called Discipline Global Music. There is little chance that it will even cause a blip on the radar of the current music business, but its ideas could inspire a related movement that will.

"Any culture whose artists are directed or controlled by commercial interests is in mortal danger," Mr. Fripp begins one section of his company's manifesto, going on to declare: "Any record company who asks an artist, 'You want to sell records, don't you?' should be avoided. Any A&R man who tells the artist to record a single because their album can't be promoted without one has just told the artist to change labels."

Then there's a third, more ambitious alternative: to devise an entirely new way of doing business. That is exactly what Mr. Lanier is doing. Recently, he drew up a five-point strategy, formed a musicians' collective called Musicisum with Kristen Stavola and signed up more than 45 artists to begin a noble experiment that involves the Internet, subscription fees and music filling stations.

The plan provides that giving artists equity in the companies that market their work would motivate them. They would receive dividends, a much larger share of royalties, the rights to their master recordings and short, standardized contracts so that everyone would be aware of the risks and rewards in the deal. On a more radical note, the proposal suggests that successful musicians be asked to take a stake in new acts to help them get started. In turn, so-called music pirates would be encouraged to become mini-retailers instead and sell CD's and concert tickets on their own Web sites for a small profit. "The hacker kids are the indie retailers of the future," said Ms. Stavola.

Mr. Lanier, cautiously optimistic, predicted: "If we do it and get crushed like bugs, we'll still have shifted what the business does so it will be better for fans and artists. At least they will be educated. But I don't think we will get squashed. There will just be a variety of different businesses in place -- the supertankers and ours, which will have the best music."

There are several other schemes similar to Mr. Lanier's that have been suggested. What they all involve is finding a way for musicians to finance the release and marketing of their albums that does not involve their signing away their rights. In such proposals, it is the artists who hire the companies that promote, publicize and distribute their music. This way if any company isn't doing its job, it can be dismissed without serious consequences. And it is the Internet that serves to market -- and help distribute -- an artist's music by building up a network of dedicated fans not unlike the way the Grateful Dead did in the real world. Of course, the best of the plans don't rely entirely on the Internet, since its capabilities to distribute music lie in the future and a large portion of music sales will take place outside the home for years to come.

The main problem with most such approaches is capital: where does the start-up money for groups to record and promote their music come from? The solution requires building better banks: Mr. Lanier suggests having "musician-friendly entities" or more successful artists serving as guarantors on a loan for start-up bands. Others suggest having financiers invest in a band in exchange for a percentage of the royalties but no other involvement, though this could create a new set of business problems.

As anyone who's studied European revolutions knows, the revolution often becomes as tyrannical as the establishment it overthrows. Or, as the Who once sang, "Meet the new boss, same as the old boss." Public Enemy's Internet deal with Atomic Pop may be revolutionary because it will result in the first new album by a major artist available for direct download on the Internet before it is in stores. But look who is running Atomic Pop: Al Teller, the former head of two major labels, MCA and Columbia, for which Public Enemy recorded its first albums. Of course, the problem in the business is not necessarily the people in charge; it's the system they're entrenched in.

The anti-major-label sentiment expressed by Mr. Lanier, Mr. Fripp and others is nothing new in pop music. It is actually what drives the business. Periodically, popular music veers into a period of stagnation and major labels shut their doors to new talent and innovation. Those shut out develop their own voice, usually through independent labels. This happened in the mid-50's with rock-and-roll, what's now called classic rock in the late 60's, punk rock in the late 70's, alternative rock in the late 80's and gangsta rap in the mid-90's. And maybe it is happening again.

Of course, the next step is that once the major labels see the success of outsiders, they embrace them and bring them into the system. The result is that the alternative becomes the mainstream, demoted from rebellion to trend. It is then diluted with successively cheaper imitations until the myopic gatekeepers slam the doors shut again, allowing the next band of renegades to gather their forces as the labels once more focus their resources on the superstars. This means that today we stand at the threshold of a revolution or a repetition.

Making and Ally of Piracy

Since January, major labels have been meeting to develop a system of distributing music on the Internet to combat what they see as piracy.

Jaron Lanier, a virtual-reality pioneer and a musician, sees things differently. He is developing what he considers to be a more sensible plan for the emerging **digital economy**, and here is an excerpt from his manifesto, "Piracy Is Your Friend."

Piracy is a phony issue that record labels are hyping to rip off artists. Piracy has always existed. That's why there's a mountain of blank cassettes in any big electronic store.

When someone decides to buy your music instead of copying it, they're doing it for a lot of reasons. Maybe they're ethical. Maybe they like the convenience of not having to hassle with the uncertainty of copying something -- Will it come out right? Is it done yet? Maybe it's their way of expressing good will to you.

But face it, if your music wasn't available for free in some form, no one would have a chance to hear it to decide to buy it in the first place. The old form of "free" music was radio (which is often taped by pirates) and MTV, but eventually the Internet is going to take over everything. There will still be TV and radio, but they'll be implemented digitally. Give it 10 years. When that happens, the idea of not giving away music for free will be exactly the same thing as never promoting music at all.

The real question should not be, "How can I keep my fans from hearing my music for free?" It should be, "How can I best make money from my fans?" Those are two different questions. Sure, you "lose" money to pirates. But you also lose money to a label that isn't doing anything for you.

It used to be that a label was needed to finance, manufacture, store, ship and market your music. That's how they earned their cut. The arrangement made sense. If the music business wasn't shrinking before our eyes, it would still make sense.

But in the digital era, it costs nothing to ship your music over the Internet to a fan. So the biggest reason for labels just went away.

As for financing, well, if advances were stacked up against finance deals in other industries, they'd look a lot like usury -- except that they aren't even loans: once they're paid back, the label still owns the master. There is simply no worse conceivable form of financing. We can do better if we take charge of our own careers.

But what about marketing? Can labels still do that? Of course they can, for a few big acts. But once you are established, your own Web site connects with your fan base better than the label can.

Even if you are a huge artist, think whether in the course of your whole career, not just the next couple of years, you lose more money to pirates or to labels who will be taking most of your money for no reason at all?

When somebody in a dorm room buys thousands of dollars' worth of gear and stays up all night hacking MP3's just to get "free" music, that's what you call an opportunity, not a problem. You have found yourself a new generation of fanatics. The only problem is that computer companies are making the money right now instead of musicians.

Labels can't prevent piracy. No one can. I know computers as well as anyone on the planet, and I promise you, kids will break whatever copy protection scheme the labels come up with. And the industry knows it.

In fact, the easier it is to copy music, the less of a threat piracy will become. When piracy gets easier, professional pirates have less to offer. The only pirates left will be fans. And there are lots of ways to make money from fans.

The reason the Recording Industry Association of America and the labels are pushing anti-piracy laws and technologies has nothing to do with preventing piracy. They're doing it so that they can control the new digital music channels. To keep anyone else, like you, from sharing the power. They're doing it to rip you off. Period.

You can make more money in the new era of "free" digital music. But only if you break free of label mind control.

Photos: SIGN OF DEFIANCE -- The artist formerly known as Prince wore the word slave on his cheek while under contract to Warner Brothers. He also announced that he would rerecord all 17 of his albums for the label when he was released from his contract in 1995. (Stills/Retna)(pg. 1); Chuck D of the rap group Public Enemy, above, and Kristin Hersh were dissatisfied with the restrictions of their major-label contracts. (Ebet Roberts)(pg. 51)

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Business/Financial Desk; Section C
Bertelsmann Chief Pushes Public Growth

By DOREEN CARVAJAL

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English

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An article in **Business** Day yesterday about efforts by Bertelsmann, the **media** company, to increase its public recognition misstated the name of a women's human rights group for which the company held a fund-raiser last week. It was Equality Now, not Quality Now.

CORRECTED BY THE NEW YORK TIMES TUESDAY MAY 25, 1999

In a drive to become a dominant force in the digital world and take advantage of investor enthusiasm for Internet stocks, the sprawling **media** conglomerate Bertelsmann A.G. is laying plans to take more of its on-line operations public.

Bertelsmann is already expected to offer stock later this week in its on-line bookselling joint venture with Barnes & Noble Inc., Barnesandnoble.com. And it has announced plans to issue shares in its Berlin-based Web site and software design concern, Pixelpark. But those only presage other Bertelsmann stock offerings in coming months, according to Thomas Middelhoff, the company's chief executive and chairman.

Among the candidates, Mr. Middelhoff would specifically cite only Springer-Verlag, a professional book publisher that offers more than 400 technical and medical journals through an information service called Link. The company's Internet operations also include the music site Getmusic.com and an expanding group of on-line bookstores in Europe called BOL.com, for Bertelsmann Online.

As part of its Web push, Bertelsmann, which is based in Guetersloh, Germany, also hopes to make Internet access more affordable in Europe, where users complain bitterly about having to pay not only for connection time but also a separate rate for use of the underlying telephone line. Within the next few months, Mr. Middelhoff said last week, the company plans to switch to a package of fixed monthly rates for subscribers of America Online Inc.'s Europe operation, in which Bertelsmann owns a 50 percent stake.

Mr. Middelhoff also said that Bertelsmann and the Microsoft Corporation were considering joining in a bid for Deutsche Telekom A.G.'s cable television operations, so that Bertelsmann ultimately could sell music titles over the Internet through those high-capacity cable lines. "We are having preliminary discussions," he said, "very preliminary."

With projected revenue of \$18.5 billion next year, Bertelsmann is the world's third-largest **media** company, behind Time Warner Inc. and the Walt Disney Company. But it is a private company, and so Bertelsmann has not had publicly traded stock to use as a currency for making deals in this age of stock deals. Nor has Bertelsmann had the kind of high profile and brand recognition that lend instant cachet to a public stock offering.

"In this Internet world, we compete with companies that are public," said Mr. Middelhoff, who is intent on competing with nimble rivals like Amazon.com. "How do we compete with such cash-rich, aggressive Internet companies? We decided that the only way to handle that competition is we have to bring our Internet companies public."

Mr. Middelhoff discussed the plans in an interview in his 44th-floor office above Times Square, in the headquarters of Bertelsmann's United States operation, where he typically works at least one week a month.

Since becoming chief executive last year, he has been intent on raising the profile of Bertelsmann, which spans more than 50 countries with almost 60,000 employees in 300 subsidiaries -- including the top trade book publisher in the United States, Random House Inc.

Bertelsmann's plan to take more companies public in the coming months is part of a broader corporate trend, according to David R. Brodwin, an associate partner at Andersen Consulting, a management and **technology** consulting firm.

"They're in the first wave, one of the pioneers," Mr. Brodwin said. "All the major **media** companies are wrestling with how to compete with the Internet and how to compete with start-ups. Most of these companies are public and they simply can't afford to spend the kind of money that the competition is able to spend based on their initial public offerings. They can't afford to do the kinds of deals that they can for stock."

Such "spin-outs," as Mr. Brodwin called them, can present potential problems in large companies. One is that managers in the parent corporation's core companies may resent the stock options that managers in newly public companies receive. Another is that it could heighten tensions and divisions between rival divisions of a far-flung organization.

But Mr. Middelhoff seems ready to take that risk with companies like Springer-Verlag, in which Bertelsmann acquired a majority stake last year for \$597 million. Springer, which has offices in the Flatiron Building in Manhattan, is seen as having particular appeal for investors because of its Link advanced electronic network.

Mr. Middelhoff was reluctant to identify other companies that could be offered to the public, other than indicating they would probably be Internet plays. He took pains, though, to say the list would not include Random House, which Bertelsmann acquired last year.

"Random House? Never, never, never will this jewel ever be brought public," he said. "Unthinkable."

As he spoke, Mr. Middelhoff's comments were interrupted occasionally by the throbbing vibrations of a band performing in a nearby room for executives from Bertelsmann's music **business**, whose labels include Arista, RCA and Windham Hill. But he pressed on, repeatedly stressing that the company must move rapidly. "We have to become No. 1 in all our content businesses and we have to be No. 1 as far as the **media** and E-commerce **business** is concerned," he said. "Worldwide."

This week's offering of Barnesandnoble.com, he said, is an example of that new aggressiveness. The two partners are planning to sell 25 million shares, or about 18 percent of the company. Each will retain about a 41 percent interest in the new company. (Barnes & Noble has a **business** tie to The New York Times, selling books through links from the newspaper's Web site.)

Mr. Middelhoff is also tending to the political aspects that will come with owning a publicly traded company.

He is considering offering some sort of stock options to all Bertelsmann managers to avoid creating two classes of executives within the corporation. He is also expanding the seminars offered through "Bertelsmann University," a **business** training program done in conjunction with Harvard University that seeks to increase cooperation among the company's managers.

"The only way to achieve the changes we want is through the brains of our executives," Mr. Middelhoff said. "And they really have to understand that they're going to have to change their minds. If you have a corporate culture, which believes that they don't have to change, then with such a culture we will not survive."

But perhaps his most difficult problem is promoting the image of Bertelsmann, which will be an important part of attracting investors for the various spin-outs. Bertelsmann may be the third-ranked **media** company in the world, but its brand name does not have the widespread recognition of a Disney or Time Warner.

"I think they're very concerned about their image as Germans," Albert N. Greco, an associate professor of **business** at Fordham University who studies **media** management. "There's no brand recognition. They did that on purpose for a long time and now when they're thinking of branding the company they have to have a different strategy."

And yet, even as Mr. Middelhoff discussed the company's plans for aggressive expansion, he described what sounded like a political-style campaign to explain the company's motives so that its activities were not perceived as threatening.

Bertelsmann has commissioned surveys in Spain, France, Germany and the United States, for example, to gauge how the company is viewed. And Mr. Middelhoff has been making speeches about **the impact of the Internet** and has been scheduling visits with the editorial boards of major newspapers.

He has also started to dabble with charities. Last week, the actress Meryl Streep was one of several guests at a fund-raising reception held in his Manhattan office for Quality Now, a women's human rights organization. Mr. Middelhoff was supposed to be the host, but had to return to Germany for **business** and could not participate. Still, he managed to call Ms. Streep from Germany to thank her for her participation.

Graph: "German Roots, Global Reach" Bertelsmann has become one of the world's biggest and entertainment companies by pursuing a variety of businesses in many markets. Graph tracks company revenue, net income, and revenue breakdown figures, since 1993. All figures are for fiscal years ended June 30. 1998 FISCAL YEAR
BMG Entertainment -- 33.0% Music recording, CD-ROM's and video tapes Books-- 30.2% Includes Random House and Bantam Books Gruner & Jahr -- 21.4% Magazines, like McCall's and YM, and newspapers Printing and services -- 14.1% Multimedia, film and TV -- 1.3% (Source: Bertelsmann)(pg. C13)

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The New York Times

TECHNOLOGY

Business/Financial Desk; Section C

Privacy on Internet Poses Legal Puzzle

By STEVE LOHR

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Page 4, Column 1

English

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Each time a revolutionary new **technology** has arrived, the governments of the day have been leery of its capacity for mischief and criminality. Centuries ago, there were calls for giving the authorities the power of prior restraint lest the printing press become an instrument of sedition and slander. Later, there were qualms about selling automobiles to the public because crooks could use them to escape the police.

As the designated representative of this rich and checkered tradition, Philip Reiting, a prosecutor for the Justice Department, knew he faced a tough crowd last Tuesday in Cambridge, Mass.

He was speaking at a conference to mark the 35th anniversary of the founding of the Laboratory for Computer Science at the Massachusetts Institute of **Technology**, a gathering of **technology**'s true believers.

Mr. Reiting, square-jawed and pin-striped, opened with a bit of dry humor, laced with sarcasm. "It may come as a shock to many of you, but people commit crimes on the Internet," he said.

So began a spirited discussion and debate on a seemingly narrow subject, "Should the Laboratory for Computer Science Anonymous Remailer Be Shut Down?" But the discussion focused on some of the broadest social and legal issues involving the Internet: identity, **privacy**, anonymity and free speech.

Mr. Reiting's opposite number on the panel was Nadine Strossen, a professor at the New York Law School and president of the American Civil Liberties Union. They were joined by Frans Kaashoek, an associate professor at M.I.T., who has been in charge of the anonymous remailer since it began operating in 1996.

An anonymous remailer, a type of data-network relay, is essentially a technological buffer, offering confidentiality to its users.

It can be used to mask the origin of a piece of E-mail or the computer from which a person is browsing the World Wide Web. It does this by stripping off the identifying information on an E-mail, for example, and substituting an anonymous code number or term.

Sophisticated remailers, like the one at M.I.T., also route messages through many different relay computers around the world, leaving no record of the path an anonymous message traveled after leaving the remailer.

But computer experts have occasionally tracked messages from remailers, either because a person used an anonymity service incorrectly or because of security flaws in a remailer.

There are about 40 anonymous remail services worldwide. They are used by, among others, dissidents and human rights representatives in nations with repressive governments, whistle-blowers in companies or government agencies, minority groups fearing discrimination and people simply wishing to avoid the bulk E-mail advertising that marketers increasingly send over the Net.

In Kosovo, some people with on-line connections have started using anonymous remail services to try to maintain confidential communications and avoid detection by the Serbian military.

But anonymous remail services, Federal prosecutors say, are also used by child pornographers, extortionists, software pirates and drug dealers.

Though not illegal, remailers are often viewed with suspicion by law enforcement agencies. They occupy a gray area in cyberspace, and Mr. Kaashoek good-naturedly underscored that fact by wearing a black ski mask for much of the panel discussion. After his opening, Mr. Reitinger turned to his theme.

"Anonymity has a down side to it," he said. "It's hard to put a pseudonym in jail. There are not a lot of indictments that say, United States of America versus John Doe. If people are truly anonymous, there can be no law enforcement."

Mr. Reitinger and Ms. Strossen have debated these issues in the past, so their early exchanges had the practiced rhythms of old sparring partners.

Her opening salvo: "We've got to make sure that freedom of speech, freedom of the press and **privacy** are as protected in cyberspace as they are in the rest of life. Certain individual rights cannot be sacrificed because of the panic and fears of abuse of a new **technology**, or because it creates problems for law enforcement."

Mr. Reitinger, a senior counsel in the Justice Department's computer crime and intellectual property division, agreed that the Internet had made his life more difficult. Trying to trace a path of criminal communications often involves working with authorities in 8 to 20 nations, he observed.

Anonymous remailers can make that tracing far more difficult, if not impossible. Mr. Kaashoek said M.I.T. had received several subpoenas from state and Federal authorities since the university's remailer was set up in 1996. M.I.T., he said, has answered the subpoenas but he noted that typically the tracking information it can offer involves only one leg of a many-legged path of **communication**. "If a person is using our system correctly," Mr. Kaashoek said, "law enforcement isn't going to find that information very useful."

As a medium, the Internet does seem unique in the way that it magnifies the issues of **privacy** and anonymity. "The problem is that this **technology** is just so darned powerful," said Paul Saffo, a director of the Institute for the Future. "It makes it easy to be anonymous, but it can also make it far easier to track people down and invade their **privacy**."

Mr. Saffo did not attend the debate, but both Ms. Strossen and Mr. Reitinger addressed the point that **Internet technology** has raised the stakes on matters of **privacy**. Both agreed that the **technology** poses difficult challenges, though they approached the subject from understandably different vantage points.

Ms. Strossen said she was "very concerned" that new software **technology** allows corporations or governments to track a person's every mouse click and to assemble vast digital dossiers on individuals. "It can include all your personal financial transactions and your medical records," she observed. "I don't think our laws adequately protect individual **privacy** anymore. The technologies of anonymity and cryptography may be the only way to protect **privacy**."

To which Mr. Reitinger replied: "I think we are perilously close to a lose-lose situation in which citizens have lost their **privacy** to commercial interests and criminals have easy access to absolute anonymity. That's not a world we want."

There was scattered clapping for various remarks made during the debate, but that comment from Mr. Reitinger was greeted with sustained applause. Sophisticated criminals, of course, will always have access to the latest **technology**, whether cars or software. Nodding to that reality, Mr. Reitinger told the audience of computer scientists, "I'm just asking that you help law enforcement to capture the stupid criminals."

Photo: Prof. Frans Kaashoek of M.I.T., wearing a mask to underscore concerns about anonymous remailers, joined Philip Reitinger and Nadine Strossen. (Ed Quinn for The New York Times) Chart: "Internet Stealth" People use anonymous remailers to send E-mail messages, trying to mask the identity of the original sender. There are about 40 remailers around the world. 1. Messages can be sent to the anonymous remailer by anyone, from anywhere. Some remailers assign I.D. number to users, a list of which is kept by the remailer administrator. 2. A remailer receives an incoming message, automatically strips off all traces of the sender's identity and then forwards the message -- to a single electronic mail box, or to thousands of addresses or to other remailers. 3. Because the messages are remailed in a random sequence different from the order in which they arrive, people who may be monitoring the remailers cannot match the outgoing messages with the incoming messages to identify who sent which message. (Source: William Stallings, author of "Protect Your : A Guide for PGP Users")

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Business/Financial Desk; Section A

LOW-COST TRADING ON LINE IS PLANNED BY MERRILL LYNCH

By SAUL HANSELL

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English

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Merrill Lynch, which grew to be the nation's biggest retail brokerage house through an army of 14,000 stockbrokers who mixed advice with salesmanship, bent to the pressures of the Internet era yesterday, announcing that it would add a low-cost service for people who want to trade on line.

Like leading firms in many industries, Merrill has been struggling to find a way to compete with cheaper on-line upstarts. From bookstores to travel agencies, companies must decide how much to risk their existing large and profitable businesses in order to do battle with small, unprofitable but rapidly growing Internet competitors.

Merrill, which has more brokers and assets than any other such firm, has for years held the line, arguing that customers would be willing to pay its higher fees for superior service and in-depth analysis. But ultimately it decided that Internet trading was neither a fad nor a small segment of the market. Indeed, 6.3 million households trade stocks over the Internet, and they account for one in every seven stock trades in the country.

Beginning in December, Merrill, which now charges \$80 to \$100 for an average trade, will let customers trade on line for \$29.95, matching Charles Schwab & Company, the largest brokerage firm on the Internet. But those customers will not get access to research or guidance from a broker.

Alternately, customers can pay an annual fee of at least \$1,500 for unlimited trading and advice, either on line or through a broker.

"We could see just by observing the growth of Schwab's asset base that there was a segment of the market that wants to use **technology** and only **technology**," said David H. Komansky, Merrill's chairman.

While a few of the other traditional full-service brokerage firms have introduced on-line trading in one or another form, analysts say that most of them will have to go much further to match Merrill, along with Schwab and the on-line brokers. "This puts a lot of pressure on other full-service firms to respond in kind," said Bill Burnham, an electronic commerce analyst at Credit Suisse.

The full-service brokers have mainly tried to offer trading on line while forcing customers to use and pay for a broker. Prudential Securities, for example, introduced an account similar to Merrill's new flat-fee program that combines on-line trading with advice.

Mr. Burnham said that the full-service brokers would also have to compete head to head with a low-cost Internet offering, as Merrill has done. "Merrill is two years late to the game, but you have to hand it to them; they didn't get half pregnant," he said. "They looked at Schwab and said if you can't beat them join them."

Two other full-service firms have low-cost Internet units -- Donaldson, Lufkin & Jenrette and Morgan Stanley Dean Witter -- but they have segregated them from their full-service operations. Merrill's approach, by contrast, invites clients to have both traditional accounts and discount Internet trading accounts at the same time, with trades from either reported on one statement.

Merrill considered a separate Internet unit as well but decided it needed to reach out to its existing customers because an increasing number had already opened an account with an on-line competitor to try Internet trading on their own.

"I think that it will be the rule that people use multiple forms of accounts with us," Mr. Komansky said. He also said he believed most Merrill clients would stick with the current broker-client account at least for the near future, with both the Internet and flat-fee accounts attracting new customers.

The biggest losers from all of this may not be the brokerage firms but the brokers themselves.

"This isn't about E*Trade saying, 'Boot your broker,' " said Christos Cotsakos, the chairman of E*Trade group, a big on-line broker. "This is Merrill booting their own brokers."

Merrill argues that while some brokers may lose **business** in the short run, the move is necessary to attract a new generation of clients for the firm.

Since much of the trading at on-line brokerage firms represents an increase in activity, traditional firms are not seeing declines in their **business**. But their growth is far slower than that of firms like Schwab and E*Trade.

Joan S. Solotar, a brokerage stock analyst at Donaldson, Lufkin & Jenrette, said, "On-line trading raises a new threat, but the retail brokerage **business** is still extraordinarily profitable." Even so, she said Merrill was risking some medium-term profits to increase its growth rate. As customers move from full commission to the discount program, she predicted that Merrill's profits could be cut by as much as 10 percent in two years. And she expressed skepticism that people would choose Merrill simply as a discount broker.

"Most likely, the Merrill Lynch client will continue to use the services of a financial consultant, but they may also decide to do some trading on line," she said

Beyond **the impact of the Internet** on trading, Merrill's announcement yesterday tries to answer a longstanding criticism of the traditional broker-client relationship -- namely, that the broker's fees for each transaction mean that his or her advice is often inspired as much by salesmanship as by objective analysis. This issue will be addressed with the new Internet service and with a new pricing plan for traditional brokerage services.

Many full-service brokers, including Merrill, are hoping Internet trading will shift clients from per-trade commissions to flat annual fees. They have been offering these so-called wrap accounts for more than a decade, using brokers for trading, but the appeal has been limited. For example, only 2 percent of Merrill's customers use its current flat-fee account, which had higher annual fees. It now hopes that the new, less expensive wrap account, with access to on-line trading, will become much more popular.

"I'm very happy to see this as the beginning of the death knell of transaction pricing," Mr. Komansky said. "It will eliminate the last vestiges of the perception that there exists a conflict between the client and the broker. Under the new structure, the broker will get compensated the same for saying, 'No, don't do that,' as for executing a trade."

But Ms. Solotar, the analyst, said she did not have high hopes for the flat-fee account, because "the fee-based accounts are very profitable for Merrill, but unless you are a very active trader they don't make much sense for the client."

Though analysts said Merrill's entry might also cause trouble for discount brokerage firms, David Pottruck, co-chief executive of Schwab, said he was not worried. "We think that Merrill Lynch dropping their prices to match Schwab is an endorsement of our value in the marketplace," he said. "We've been competing successfully with lower-priced discount brokers for years. Now we are competing with a very large new discount broker that has the same price we do."

Schwab has been moving to differentiate itself from cheaper competitors, like E*Trade, by offering more advice. Currently its telephone service representatives will recommend which mutual funds clients should buy. Within a year, Mr. Pottruck said, it will make buy and sell picks for individual stocks as well.

Mr. Cotsakos of E*Trade was similarly dismissive.

"They are late to the party, and there is nothing new here," he said.

What was new with E*Trade yesterday was a \$1.8 billion acquisition of the Telebank Financial Corporation, which offers banking over the telephone and the Internet. Mr. Cotsakos said the company hoped to combine Telebank's deposit products with its own brokerage service to create a one-stop on-line financial marketplace.

The price is astoundingly high by traditional measures. E*Trade is paying some \$25,000 for each of Telebank's 70,000 customers. That is more than the average customer has on deposit.

Mr. Cotsakos said that since E*Trade's stock was even more highly valued than Telebank's stock, the deal would nonetheless increase the company's per-share earnings. Moreover, he said that the principal purpose of the acquisition was to gain access to products that E*Trade can sell to its existing customers.

Mr. Burnham agreed that the deal is sound.

"You can't justify this on the ground of the accounts E*Trade acquired," he said. "What they got was a nine-month head start in bringing banking products to the market."

Brokerage executives, however, expressed skepticism that banking products would produce much value for E*Trade.

"The classic banking **business** that serves the mass market is not a very good **business**," said Mr. Pottruck of Schwab. "The margins are small and it earns a low P-E ratio."

Photo: David H. Komansky, the chairman of Merrill Lynch, answered a question at a news conference. (Associated Press)(pg. C26) Chart: "Brokerages on Line" Merrill Lynch announced yesterday that it, too, will be joining the growing ranks of on-line brokerages. Here's how Merrill's competition looked at the end of the first quarter. BROKER AVERAGE MARKET ACCOUNTS ASSETS DAILY SHARE (in thousands) (in billions)

BROKER	AVERAGE MARKET ACCOUNTS (thousands)	ASSETS (billions)	DAILY SHARE (billions)
TRADES Schwab	138,250	27.9	2,500
E*Trade	65,800	13.3	909
Waterhouse	57,800	11.7	615
Datek	50,345	10.1	205
Fidelity	49,981	10.1	2,300
Ameritrade	41,252	8.3	428
DLJ Direct	19,062	3.8	590
Discover	13,838	2.8	134
Suretrade	11,000	2.2	130
National Discount	6,580	1.3	125
Brokers Others	42,166	8.5	552
Total	496,074	100	8,488

\$523.1 (Source: U.S. Bancorp Piper Jaffray)(pg. C26)

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The New York Times

CARS AND THE ENVIRONMENT

Cars; Section G

Can Motor City Come Up With A Clean Machine?

By KEITH BRADSHER

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English

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WILLIAM C. FORD JR., the new 42-year-old chairman of the Ford Motor Company, became an environmentalist the way many baby boomers did. As a boy, he loved to hike, fish and go camping; he hated to revisit a spot only to find that someone else had made a mess of it. In high school, he volunteered to spend afternoons picking up trash along a nearby river. At Princeton University, he read books by radical environmentalists and stayed up late discussing how to save the earth.

Then he joined the family **business** as a vehicle-planning analyst in 1979, and got a shock when he tried to raise environmental concerns. "Coming to an old-line auto company, people looked at me like I was a Bolshevik for bringing it up, for even asking the questions," he said.

Whether the problems were air and water pollution from factories, or tailpipe emissions from the cars that came off the assembly lines, managers then had no interest in taking action, Mr. Ford said. As Ford's director of **business** strategy in the early 1990's, he sent out a memorandum calling a meeting on environmental policy -- only to be warned immediately by the company's lawyers that even writing the memorandum, much less holding the meeting, could be used against Ford in an environmental lawsuit.

On several occasions, Mr. Ford said, he reached the point where he told his wife that he was going to leave the company to form an environmentalist group. "My friends and my wife always convinced me that the impact I could have would be far greater if I stayed," said Mr. Ford, sitting in the same conference room where he had held his meeting on environmental policy over the lawyers' objections. "And they were right, ultimately, but they were more patient than I was."

After decades of often vociferous hostility toward the environmental movement, Ford Motor and the rest of the auto industry are beginning to show some interest in improving their records on pollution. While car makers are still capable of rousing the ire of environmentalists, notably by increasing their output of gas-guzzling but high-profit sport utility vehicles, attitudes within the industry are slowly but perceptibly changing.

A new generation of auto executives is taking charge, one that views environmental values as part of mainstream American life. Some, like Mr. Ford, are relatively young; some are older executives who have moved into the auto industry from other businesses, like detergent manufacturing, that came to terms with environmentalists long ago. While a few foreign auto makers, notably Honda, have touted their environmental records for years, domestic auto makers are just starting to see theirs as a marketing strength, giving them a financial incentive to compete on who can be greenest.

"Market survey after market survey tells us environmental issues are increasingly important to our customers," said Harry J. Pearce, the vice chairman of General Motors.

Until recently, virtually all of the auto industry's improvements were forced by Government **regulation** and were bitterly fought at every turn. To some extent, that is still the case; the industry fiercely opposes any tightening of fuel-economy regulations, for example, despite evidence that gasoline consumption contributes directly to global warming.

Yet now, many auto makers are also beginning to look for ways to clean up their factories and the vehicles they sell without waiting for regulators to step in. The main example so far has been Ford's decision, beginning with the 1999 model year, to make all its sport utility vehicles roughly as clean as cars, instead of continuing to exploit

a loophole in Federal regulations that allows the off-road vehicles to emit several times more pollution per mile than cars do. Ford is also buying junkyards, with a plan to reuse more auto parts instead of letting them clog landfills.

Other auto makers are also taking voluntary steps. All of Honda's American-made Civics and Accords now meet California's strict emissions standard, and its Odyssey minivan and Passport sport utility vehicle have very low emissions, although the CR-V sport utility does not. DaimlerChrysler is working on a host of initiatives, like working on low-pollution synthetic diesel. And General Motors has spent hundreds of millions of dollars to develop and market an electric car, while helping the Nature Conservancy to buy and then preserve the habitats of rare species.

Perhaps most surprisingly, the auto industry did fairly little lobbying against the Clinton Administration's proposal earlier this month to require much lower tailpipe emissions, particularly from sport utility vehicles and pickups. Instead, it demanded, and got, new Federal regulations requiring oil companies to sell much cleaner gasoline -- a decision that will make it easier to produce clean-burning cars, but enraged the oil industry.

Environmentalists are divided on how much credit to give the auto makers. Some, like John DeCicco, the transportation program director at the Washington-based American Council for an Energy-Efficient Economy, are fairly generous. "The management of the auto industry is part of our American **society**, which has internalized environmental values over the last three decades," he said.

OTHERS are more dubious. One is Daniel Becker, a vocal critic of the auto industry for nearly a quarter-century, first as an aide to Ralph Nader, and now as the Sierra Club's director for energy policy and global warming. Mr. Becker said that Ford's decision to clean up its sport utility vehicles was the only significant, voluntary step that Detroit had taken in recent decades to improve the environment, and he questioned whether other steps would come soon.

The auto industry still bankrolls various groups, like the Coalition for Vehicle Choice, that criticize Federal fuel-economy rules and international efforts to limit global warming, Mr. Becker noted. Auto advertising executives continue trying to persuade Americans that relatively unregulated, high-profit sport utility vehicles are appropriate substitutes for cars, he said. Indeed, with profits on full-size sport utility vehicles running at \$12,000 or more apiece, auto makers have increased production and sales in this category more than sixfold since the early 1990's. "In terms of policy decisions, in terms of product lines," Mr. Becker said, "I don't think the change has started in a dramatic way."

Auto industry leaders say they deserve more credit. John G. Smale, a marketer of soaps and detergents who became the chairman of Procter & Gamble and then of General Motors, said car makers had caught up with other businesses in understanding that environmental issues were important to consumers.

"I think G. M. was slower than P. & G., certainly in coming to that realization, but I think that's true of the rest of the industry too," said Mr. Smale, who is now chairman of the G. M. board's powerful executive committee. "I think, by and large now, the industry sees it the same way."

Nobody disputes that the sheer size of the auto industry makes it tremendously important to the environment. G. M., Ford and DaimlerChrysler are the world's three largest companies in terms of sales; their closest rivals are trading companies and retailers, which do not actually make the products they sell, followed by big oil companies. For all the attention that Internet and software companies receive, G. M. still has 11 times the sales of Microsoft and 22 times as many employees.

Without question, the most dramatic shift in environmental stance recently has been at Ford. Alexander Trotman, the company's chairman and chief executive until the end of last year, led auto industry criticisms of the efforts to limit global warming, questioning the scientific basis for environmentalists' concerns. He was also skeptical of moves to further reduce tailpipe emissions. The decision to build cleaner-burning sport utilities was led by another top Ford executive, Jacques Nasser, a 51-year-old ally of Mr. Ford's.

Mr. Trotman retired early this year, and Mr. Nasser replaced him as the company's chief executive; Mr. Ford became chairman. A great-grandson of Henry Ford's, he won the family's confidence to run the company, even though he was one of the younger members of the Fords' fourth generation. A nephew of Henry Ford 2d's, he had not grown up as heir apparent at the family-controlled company.

Mr. Ford and Mr. Nasser share a strong interest in the environment, although not necessarily the same interest in nature. The differences are apparent even in their offices. Mr. Ford's looks like a greenhouse: while one wall is a floor-to-ceiling window with a 20-mile view across metropolitan Detroit, most of the vista is obscured by potted

figus trees. More plants festoon the desk, coffee table and conference table, while the long shelf behind his desk is covered with peace lilies under special growing lights. "I need a machete," Mr. Ford quipped as he walked in.

MR. NASSER'S office next door is, by contrast, a desert. A single, small plant sits incongruously on the floor in front of a gigantic window as big as Mr. Ford's. The plant, which has coiled leaves that resemble spikes, does not look happy.

Nicknamed "Jac the Knife" because of his cost-cutting measures in Ford Motor's European operations during the early 90's, Mr. Nasser never mentioned camping or rivers or great books when asked how he became interested in the environment. Instead, he plunged into an 11-minute soliloquy on the importance of brands and how their images were formed in the public mind.

In an increasingly global economy, Mr. Nasser said, consumers increasingly turn to a few well-known brands, like Volvo's small but famous car-making division, which Ford Motor bought earlier this year. At the same time, **the rise of the Internet** and other forms of communications has made it possible for information about a company's activities in any city to spread quickly all over the world. So to have a popular, global brand that consumers will seek out, a company must be a good corporate citizen everywhere, Mr. Nasser concluded.

"Brands are becoming more important, and corporate image is becoming more important on a global basis," he said. "And it's very difficult, I think, in today's environment to have a global image that is substantially different from your local image."

In other words, car makers can no longer put big, polluting factories in out-of-the-way communities and hope no one will notice. Nor can they make particularly dirty vehicles and hope no one will notice. Rival auto makers estimate that Ford's cleaner sport utility vehicles are costing the company at least \$100 million a year, mainly for bigger catalytic converters, an expense Ford says it is not passing on to consumers. While a few other S.U.V.'s are being cleaned up, most are not, and rival executives are criticizing Ford for taking action.

Bernard Robertson, DaimlerChrysler's senior vice president for engineering, said Ford had to do something in response to criticisms of its huge Ford Expedition sport utility vehicle and its even larger Ford Excursion, which will go on sale this autumn. The Excursion will be the world's largest S.U.V., taller than Michael Jordan and weighing as much as three Ford Escorts; with its 44-gallon gas tank and a fuel economy as low as 10 miles per gallon, it has been dubbed the "Ford Valdez" by the Sierra Club. "With the Expedition and Excursion, Ford has gone to the extremes of consumption," Mr. Robertson said.

Mr. Ford said that he understood the criticisms of the Excursion. But he maintained that some auto maker was inevitably going to build such a giant vehicle, and at least Ford was designing it to be as clean as most cars.

SUCH excuses do not satisfy Mr. Becker of the Sierra Club, who said that while he believed that Mr. Ford genuinely cared about the environment, he doubted that such views had spread widely through the company. "This is a very large ship, and he's a small rudder so far," Mr. Becker said.

Mr. Ford has also shifted his company's position on global warming, but not as much as environmentalists would like. He said there was a scientific basis for concern, but that any international agreement to limit the problem would have to include developing nations. Many environmentalists believe this to be politically impossible.

Some environmentalists also fault the auto industry for not having sold many alternatives to the gasoline-powered car. All of the big auto manufacturers are spending heavily to research alternative technologies, like electric cars, which use batteries or, more recently, fuel cells, which generate electricity by combining hydrogen and oxygen without combustion. Yet alternative-fuel cars have become a chimera that has receded ever further into the future for most of this century. Regulators in California and New York required a decade ago that electric cars be widely available by now. They retreated from that goal, however, as technological advances proved inadequate and as gasoline-powered cars became steadily cleaner.

G. M. has actually put an electric vehicle, the EV1 coupe, on the market in California and Arizona. But its limited range and small passenger compartment have made it a marketing failure, with only 289 leased in 1997 and 264 last year, many by environmentalists and image-conscious celebrities. Mr. Smale said G. M. had learned some valuable technological lessons from the EV1, including how to develop better batteries for electric cars.

Ford sells most of the alternative-fuel vehicles in the United States, but these are mainly electric and natural gas-powered pickup trucks and vans purchased by utilities and Government agencies. Honda and Toyota plan to appeal to the public soon by selling small cars powered by a combination of a gasoline engine and an electric battery.

AMERICA'S small-car market is shrinking, however, and both companies plan to ship limited numbers of their vehicles here. They will also have to sell them below the high cost of manufacturing them.

Despite lavish Federal subsidies and numerous promises by auto makers to put high-mileage cars on sale by 2004, there is little sign of continuing public interest in fuel economy. This is probably linked to the fact that gasoline is still cheaper than bottled water in most of the country, even though gas prices recently rebounded.

The 10 most fuel-efficient cars on the market now account together for less than 1 percent of sales in the United States, while auto makers no longer even bother putting fuel-economy statistics in their advertisements. They have found that such information does not draw customers.

BARRING another energy crisis, the main environmental issue in the United States is likely to remain the ever-growing fleet of gasoline-powered cars being driven ever more miles, thereby contributing to smog and global warming. Alternative-fuel vehicles are most likely to be introduced in Europe and East Asia. That's where gasoline costs \$4 a gallon and up, and where people are more willing to accept small cars that are suitable for city driving but less so for the highway, said Robert C. Purcell, G. M.'s executive director of advanced **technology** vehicles.

G.M., in particular, used to have a grim reputation for refusing to acknowledge that environmental problems even existed. David Lewis, an automotive historian at the University of Michigan in Ann Arbor who worked as a speech writer for two G. M. presidents from 1959 to 1965, said company policy then was to insist it was the oil refineries and other businesses, not cars, that caused air pollution.

"If we were accused of contributing to air pollution, we would simply say nothing had been proved," Mr. Lewis said.

Not only did G. M.'s cars pollute the air, but so did its factories. Trying to show that the river next to one of its assembly plants was clean in the early 1960's, G. M. officials dumped in live fish in front of television cameras, which filmed the fish as they swam around. The next morning, after the cameras had left, Mr. Lewis said, workers returned to scoop out the fish, which were by then floating belly up.

G. M. has recently begun improving its efforts regarding the environment, with John F. Smith Jr., the company's chairman and chief executive, joining the board of the Nature Conservancy, following the lead of Mr. Smale, a longtime member of the conservancy's board.

Having seen customers avoid detergents that included phosphates in the early 1970's, Mr. Smale came to the chairmanship of G. M. in 1992 with a strong appreciation of the risks for companies tarred as environmentally insensitive. He began lecturing G. M. managers on the importance of the issue. The company's current executives, he said, "realize that a lot of people in the country care about environmental responsibilities."

Until the last few months, some of the strongest criticisms of environmentalists have come from the former Chrysler Corporation. Robert J. Eaton, the company's chairman, and Robert A. Lutz, the vice chairman, were outspokenly skeptical of claims that global warming might be a problem. A brilliant car designer who resents any criticism of his industry, Mr. Lutz published a **business**-advice book last year in which he briefly compared "environmental extremists" to Communists, saying that both sought to eliminate the public's freedom to travel.

Mr. Lutz retired last year -- he now runs a car battery company; Mr. Eaton, now a co-chairman of DaimlerChrysler A.G., is expected to retire soon. Since Chrysler was acquired late last year by Daimler-Benz A.G., a leader in research on fuel cells and other environmentally sensitive technologies, the combined company has shown more enthusiasm for cleaner vehicles.

To the constant irritation of Detroit auto executives, foreign auto makers have had relatively little trouble with American environmentalists. Most top-selling foreign cars are fairly fuel-efficient because they were designed in countries where gasoline is expensive. During the 1970's, Japanese auto makers came up with cleaner engines for their small cars at a time when American auto makers were still contending that low-emissions **technology** was unfeasible.

But while foreign cars may be ubiquitous in coastal cities like New York and Los Angeles, they remain less common in the Midwest. G. M. still sells more cars and other family vehicles in the United States each year than every Japanese and European auto maker combined.

The harmony between foreign auto makers and American environmentalists may yet fade, as the foreign companies have begun to sell larger vehicles. Toyota, in particular, has been moving aggressively into the market

for S.U.V.'s, while setting a fairly slow timetable for reducing their emissions. But after decades of hostility toward Detroit, most environmentalists still focus on auto makers based in Michigan.

The younger American auto industry executives want to change this pattern. They insist that as an older generation of leaders continues to retire, environmental progress will continue.

Mr. Ford said that during his 20-year ascent through the company ranks, he was often struck by how many other young managers were worried about the company's environmental performance. They were thwarted from doing much, Mr. Ford said, because "there were a few people in key management positions that didn't want to hear of it."

The growing number of environmentally committed people moving into positions of responsibility in the auto industry will enable further initiatives to clean up the world's air and water, Mr. Ford said.

He added, "I'm not sure, if I were chairman 10 years ago, that the world would have been ready for my views."

Photos: William C. Ford Jr., Ford's chairman, left, and Jacques Nasser, its chief executive. (Daniel Levin for The New York Times)(pg. G21); William C. Ford Jr. (Daniel Levin for The New York Times); (Marty Katz for The New York Times); (Nancy Carpenter); (Don Heiny for The New York Times); (By Fred R. Conrad/The New York Times. Chrome film processed as a color negative. Dual-exhaust system provided by Midas.)(pg. G1) Chart: "Ford's Mountain, and Its Mouse" The chart shows the new Ford Excursion, the worlds largest sport utility vehicle, with its environment friendly features. The chart compares it with the Think, a two -seat electric car. (Source: Ford)(Jim Perry)(pg. G21)

Document nytf000020010828dv5j00rj9

The New York Times

Business/Financial Desk; Section C

Hewlett-Packard Picks Rising Star at Lucent as Its Chief Executive

By JOHN MARKOFF

1,462 words

20 July 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

An article in **Business** Day yesterday about the appointment of Carleton S. Fiorina as president and chief executive of Hewlett-Packard misstated her starting date. It was Saturday, not at the end of the year.

CORRECTED BY THE NEW YORK TIMES WEDNESDAY JULY 21, 1999

PALO ALTO, Calif., July 19 -- Abandoning a long tradition of picking its leaders from within its own ranks, the Hewlett-Packard Company announced today that it had chosen as its next chief executive a woman who earned her power and reputation in the telecommunications industry.

Carleton S. Fiorina, the 44-year-old president of the global service provider **business** of Lucent Technologies will become president and chief executive of the company, the world's second-largest computer maker, at the end of this year after the retirement of Lewis E. Platt, who is now chief executive with the title of chairman.

The company said that Richard A. Hackborn, 60, a board member who once led Hewlett-Packard's laser printing **business**, would become nonexecutive chairman.

The unanimous decision by the board to choose a woman with an undergraduate degree in medieval history and philosophy to head Silicon Valley's pioneering **technology** company was widely hailed as a step for gender equality in an industry that is still largely dominated by men. However, Ms. Fiorina, who now heads a \$20 billion division of Lucent, is already one of the nation's highest-ranking female executives. And today she sought to play down the issue of gender in her new role.

"I hope that we are at a point that everyone has figured out that there is not a glass ceiling," she said in response to a reporter's question. "My gender is interesting but really not the subject of the story here."

At the same time, industry analysts said Ms. Fiorina's appointment was a clear statement by Hewlett-Packard -- known for its less-than-glitzy engineering culture -- that marketing and sales were taking a front seat.

"She has a \$50 billion company that she will be trying to inject a dose of marketing into," said Laura Conigliaro, a Wall Street analyst at Goldman, Sachs. "Nothing is broken at H-P, but the company needs to be re-energized, and that is her biggest challenge."

Ms. Fiorina said a top priority would be finding ways to bring technologies out of the company's research laboratories more quickly.

Several consultants who have worked with the company said it had developed a number of technologies in network switching, electronic imaging and display devices that have yet to be turned into businesses.

Indeed, while the company has been intent on breaking itself up under Mr. Platt's leadership, it has not found new businesses to insulate it from the computer wars, which are increasingly stripping away profit margins. In that regard, the toughest challenge facing Ms. Fiorina may be in grappling with difficult **technology** decisions, given her background in sales and management.

In introducing Ms. Fiorina today, Mr. Platt noted that the company had conducted a broad search for his successor. "Carly was quite simply the best person to lead H-P into the next century," he said.

Many people familiar with the company had believed that the insider most likely to be named as Mr. Platt's successor would be Ann M. Livermore, 40, who heads the company's \$15 billion enterprise computer systems **business**.

Ms. Livermore is responsible for its new effort to become a player in the Internet applications software **business**, which is booming as commerce increasingly moves on line.

"I was somewhat surprised that they chose an outsider," said Judith Hurwitz, president of the Hurwitz Group, a computer industry consulting firm. "What Carly represents is that she was responsible for the fastest growing part of Lucent."

Indeed it is Ms. Fiorina's track record as both a super saleswoman and a skillful manager who rose to power in the spinoff of Lucent from AT&T that brought her to the attention of Hewlett-Packard.

"She's very bright, and she knows telecommunications very well," said Michael Arellano, president of Degas Communications Group in New York. She also has managerial and deal-making expertise, he said.

As AT&T's head of corporate operations when Bell Laboratories was spun off, she oversaw most elements of the very successful start-up of Lucent. It was Ms. Fiorina who disposed of the high-volume and low-profit consumer electronics **business** that Lucent inherited, by selling it to Philips.

As head of Lucent's largest **business** unit, she deals directly with the company's largest customers. That fact proved irresistible for Hewlett-Packard; Mr. Platt said the company had singled out the telecommunications industry, which is expected to grow to more than \$650 billion by 2001, as one of its biggest growth opportunities.

Just as impressive was her success in accelerating Lucent's growth outside of the United States from 8 percent to more than 60 percent a year.

The global communications market is fiercely competitive, and Lucent is in an epic struggle with other global players like Northern Telecom of Canada, Alcatel of France, Siemens of Germany and Ericsson of Sweden. Moreover, the telecommunications **business** is being turned inside out by **the rise of the Internet**, which has led to a rapid shift away from traditional circuit-switching technologies toward Internet packet switching.

"She understands both philosophies well, and H-P is going to take advantage of her experience," said Mr. Arellano.

Today, both Mr. Platt and Ms. Fiorina said that among her first duties would be to help the computer maker complete the spin-off of its measurement **business**.

Mr. Fiorina said her larger goal was to help the company find a way to keep its legendary core values -- which she referred to as Hewlett-Packard's "soul" -- while at the same time increasing the company's execution speed and adding a new sense of urgency to its **business** mission. "It's clear that we do not have sufficient focus on speed, and a sense of urgency needs to be reinvigorated," she said.

The more pressing question is likely to be how well Ms. Fiorina's experience in the telecommunications world will translate to the computer industry, which is now locked in a vicious cycle of price cutting.

What no one questioned today were Ms. Fiorina's leadership skills. Several executives who have watched her career said today that they were only surprised that it was Hewlett-Packard and not Lucent that she was named to head.

"I remember seeing her speak and thinking, 'We're probably looking at the future C.E.O. of Lucent,' " said Ken Landoline, a former Lucent employee who is now a market research executive.

Popular wisdom in the industry is that Richard A. McGinn, Lucent's 52-year-old chief executive, is unlikely to leave that post anytime soon.

Her drive and her success in a male-oriented **technology** world are particularly unusual in light of the fact that Ms. Fiorina's career was not a traditional one. She was born in Austin, Tex., but later lived in the San Francisco Bay area and attended high school in Palo Alto, where she graduated from Stanford University.

She started law school at the University of California at Los Angeles but then dropped out. After trying various jobs, she says she joined AT&T as a sales representative with no firm plans to stay permanently. Nineteen years

later, she is preparing to leave Lucent not just as a top executive but arguably as the most powerful female executive in America.

Today, in a telephone interview, Ms. Fiorina said she was planning to move to Silicon Valley with her husband, David, who is a retired AT&T executive and is involved in volunteer activities.

Photo: Carleton S. Fiorina was named to succeed Lewis E. Platt as chief executive of Hewlett-Packard. (Peter DaSilva for The New York Times)(pg. C1) Chart: "Resume: Carleton S. Fiorina" BORN -- Sept. 6, 1954, Austin, Tex. JOB EXPERIENCE Twenty years at Lucent and AT&T. Jobs included: president, global service provider , Lucent; director of planning for Lucent's spinoff from AT&T; president of AT&T's North American network systems unit, and senior vice president of global marketing for AT&T DIRECTORSHIPS -- On the boards of Kellogg Company and Merck & Company EDUCATION Bachelor of Arts in history and philosophy, Stanford University, 1976 M.B.A., University of Maryland, 1980 Master of Science, M.I.T., 1989 FAMILY -- Married, with two stepchildren; her husband is retired INTERESTS -- Running, gardening, animals (pg. C23)

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The New York Times

Business/Financial Desk; Section C
Intel Planning Big Move Into Internet Services

By STEVE LOHR
617 words
23 April 1999
The New York Times
NYTF
Page 3, Column 3
English
(c) 1999 New York Times Company

The Intel Corporation, the leading maker of microchips, said yesterday that it was planning a big move into the Internet services **business** by building and running data centers around the world.

The move is a striking departure for the big microprocessor producer, known for pumping out millions of silicon Pentium chips that serve as the electronic brains of most personal computers. Analysts say the Intel announcement reflects just how far the company is willing to go in seeking new ways to grow as it recognizes the Internet as both a challenge and an opportunity.

"This is a stretch, but you have to give Intel's management credit for recognizing that the world is rapidly changing around them and trying to do something about it," said Drew Peck, a managing director of S. G. Cowen & Company, a securities firm.

Sprawling installations filled with powerful small computers, known as server farms, are used to handle electronic commerce and host the World Wide Web sites for other companies. Intel presented its plans for the data farms at a meeting with securities analysts yesterday in New York.

Though Intel's profits have held up well so far, many analysts believe that **the rise of the Internet** will inevitably erode its margins. Consumers are increasingly expected to use simpler, lower-cost devices -- from hand-held machines to television set-top boxes -- to gain access to the Internet.

The proliferation of these so-called Internet appliances, they note, will not replace personal computers by any means. But the Internet will fuel more diverse computing technologies and other access devices. This in turn will undermine the profits of the **technology** standard-bearers in the PC-centric era, that is, Intel and the Microsoft Corporation, whose Windows operating system runs most PC's.

"Intel has to look for other opportunities for future growth and server farms could be a reasonably good hybrid," Mr. Peck said.

Other analysts are quite skeptical. They say Intel is a late entrant into the fast-growing market for server farms, trailing established computer services powerhouses like the International **Business** Machines Corporation and Web hosting specialists like Exodus Communications Inc.

These analysts also doubt that Intel's skills as a chip maker give it any edge in running huge data centers. "This is not a **business** for Intel to be in," said Howard Anderson, managing director of the Yankee Group, a research company in Boston.

Intel insists that the server-farm plan fits neatly with its long-term strategy. "We want to be the building block supplier to the Internet economy," said Craig R. Barrett, the president of Intel. "And as part of that plan, we are going to make substantial investments to set up server farms around the world."

Intel already has a pilot operation in Santa Clara, Calif., equipped with a few hundred server computers, powered by Intel microprocessors. By the third quarter of this year, Intel intends to have its first data center with more than 2,000 Intel-based PC servers running, catering to customers including Excite, the Web directory service.

Soon after, the company plans to begin a network of data centers worldwide to host Web sites and handle electronic commerce for businesses. These huge computer farms, Intel says, are expected to cost more than \$100 million each and be crammed with more than 5,000 servers.

Intel views the server farms as "bit factories," said Gerry Parker, an executive vice president. The expertise the company has developed in planning, building and managing chip factories, he said, should translate well. "A lot of the same skills are involved," he said.

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The New York Times

Business/Financial Desk; Section C
Lucent and Level 3 Reach \$1 Billion Phone Gear Deal

By SETH SCHIESEL

614 words

24 June 1999

The New York Times

NYTF

Page 8, Column 5

English

(c) 1999 New York Times Company

Bolstering its cyberspace credentials, Lucent Technologies Inc. agreed yesterday to sell up to \$1 billion worth of equipment to Level 3 Communications Inc., the new long-distance communications carrier, for transmitting phone calls using **Internet technology**.

While Qwest Communications International Inc., perhaps the best-known new long-distance carrier, and older brethren like the AT&T Corporation use a range of communications technologies in their networks, Level 3 is trying a pure Internet approach. That requires finding ways to transmit not only Web pages but also phone calls and video signals using **Internet technology**.

Level 3 is using mostly high-speed Internet switches made by Cisco Systems Inc., the data communications giant, in the core of its network. But Level 3 has turned to Lucent, the former equipment arm of AT&T, to help replicate the strengths of the traditional telephone network using **Internet technology**.

Level 3 signed up as the first big company to use a new product that Lucent calls a "softswitch." The softswitch is software that runs on standard computer work stations and is meant to provide the reliability and features of traditional phone switches but at a fraction of the cost.

Because **Internet technology**, known as I.P., breaks communications down into small packets that can travel along different routes, it is often more efficient than more traditional communications systems.

"The Lucent softswitch, together with Level 3's I.P. network, will bring customers the best of both the traditional telephone network and the Internet -- ubiquity and reliability combined with rapid cost reductions and innovative new services," said James Q. Crowe, chief executive of Level 3. "Customers will be able to get the same quality of service but at lower cost, and they can further benefit from the continuously improving price-performance of **Internet technology**."

Cisco is developing a rival to Lucent's softswitch called a virtual switch controller, which is being tested by the Sprint Corporation, the No. 3 long-distance carrier. Both products are basically meant to help provide the telephone component for high-speed data switches, many of which were designed to carry E-mail and Web pages, not phone calls.

Lucent and Cisco are developing their technologies for standard computers instead of for their own systems in a bid to encourage other companies to develop applications that can fit in their frameworks. Lucent said that its softswitch had been developed for Sun Microsystems Inc.'s Solaris operating system, a version of Unix, and that it would be converted for use on the Microsoft Corporation's Windows NT system, the Hewlett-Packard Company's systems and potentially Linux, a free version of Unix.

Under the deal, Level 3 will buy at least \$250 million in equipment from Lucent over four years, though the relationship could grow to \$1 billion over five years. Only 50 percent to 60 percent of Level 3's spending will be on the softswitch, with the rest going for other Lucent products geared mainly for transmitting phone calls using **Internet technology**.

Shares of Lucent rose \$3, to \$65.6875, while Level 3 rose 43.75 cents, to \$70.

Lucent plans today to complete its \$20 billion acquisition of Ascend Communications Inc., one of Cisco's foremost rivals. But that deal will still leave Lucent without the sort of high-speed Internet router required by the softswitch.

That is one reason that Lucent is close to an agreement to acquire Nexabit Networks Inc., a private maker of high-speed Internet switches, for \$600 million to \$800 million, according to executives close to those talks.

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The New York Times

Business/Financial Desk; Section B
Chief Says Kodak Is Pointed in the Right Direction

By CLAUDIA H. DEUTSCH

2,115 words

25 December 1999

The New York Times

NYTF

Page 7, Column 3

English

(c) 1999 New York Times Company

ROCHESTER -- Maybe George M. C. Fisher should feel pretty glum right about now.

This is the man, after all, who in 1993 was hailed as the Eastman Kodak Company's shining star. Fresh from a successful stint as Motorola's chief, he was expected to steer Kodak from the frightened old-style photography company it had become into a robust, hugely profitable player in the digital imaging age.

Those first few years, it seemed all systems were go. Mr. Fisher was an absolute hero in Rochester, a city whose economic fortunes and self-image have long been tied to Kodak. Strangers would greet him in restaurants and markets, the local news **media** recorded his every move, and the national press -- along with numerous consultants and professors -- placed him up with John F. Welch Jr. of General Electric and Lawrence A. Bossidy of AlliedSignal among the premier management movers of the 1990's.

But Mr. Fisher never fulfilled that promise at Kodak. When Daniel A. Carp, a 29-year Kodak employee who has long been Mr. Fisher's heir apparent, officially accepts the chief executive's post on Jan. 1 -- a year before Mr. Fisher's contract officially runs out on Dec. 31, 2000 -- he will inherit a company that measures the performance of its digital portfolio in reduced losses, not stellar profits.

Its mainstay **business**, conventional photography, is under competitive siege from Fuji Photo Film of Japan. And even though the Japanese yen has risen in value, making Kodak more competitive against Fuji, the continued strength of the dollar against most other currencies keeps eating away at its overseas profits.

Consequently, Kodak's share price is mired; its stock topped \$80 a couple of times during Mr. Fisher's tenure, but always dropped precipitously again. Kodak shares closed at \$63.4375 on Thursday.

When Kodak announced the succession in June, many analysts speculated that Mr. Fisher had been pushed by a fed-up board to relinquish the helm earlier than he had planned. Mr. Fisher, who is 60, insists the succession plan is on schedule, and any suggestion otherwise is enough to send sparks flying from his generally calm eyes.

"I stayed longer than I intended to, and I really get angry at innuendos that the board booted me out, or that Dan staged a palace coup," said Mr. Fisher, who will remain Kodak's chairman until the end of 2000. "I should be getting high marks for managing a succession plan that was smooth as ice, yet everyone is looking for subplots. The fact is, some board members just didn't want me to leave, period."

Indeed, in a conversation in his Rochester offices, as a bright winter sun bathed his face -- "I'm a child of the sun, I'll take the window side in a plane just to enjoy the glare," he said with a laugh -- Mr. Fisher seemed anything but shaken or contrite.

"I never believed the hype about me going in, and I don't believe the bad things people say now," he said. "I never deserved to be put on a pedestal, but I also didn't deserve to be knocked off it so inappropriately."

As Mr. Fisher tells it, when he was persuaded by Roberto C. Goizueta, then chief executive of Coca-Cola and a Kodak board member, to take Kodak's top job in 1993, the company was a mess.

It was mired in debt. It had haphazardly diversified into pharmaceuticals and other areas it knew little about. Its growth, save the revenues it added on with ill-starred acquisitions, was flat. It was a high-cost manufacturer, with a bloated staff and a sleepy culture that was slow to make decisions. And it regarded digital photography as the

enemy, an evil juggernaut that would kill the chemical-based film and paper **business** that had fueled Kodak's sales and profits for decades.

"This was a great American icon that was going the wrong way, fast," Mr. Fisher said. "Roberto said, 'You've got to do this for God and America, you've got to get it directed into the next century, to make Kodak's own people understand that this company has a future.' "

Mr. Fisher believes he has done just that. He notes that today, Kodak is focused on pictures, nothing else. It is nearly 20,000 jobs lighter, and a lot nimbler, thanks in part to a set of culture-changing incentives that reward managers for fast decisions and even faster execution. Roughly a third of its senior managers are new in their jobs; the board includes many more outsiders. And the company has a huge presence in China and other emerging markets, where most experts think consumer use of cameras is poised to explode.

Finally, this year, Kodak started growing again, with sales up about 5 percent. Its per-share earnings are rising, while its debt is shrinking. Kodak also has a new "digitization strategy" for using digital **technology** to enhance, not replace, conventional film. Through Internet partnerships that let customers receive electronic versions of their photos by e-mail, through kiosks that let them manipulate and reproduce old photographs, and through archival services that let users store their photographs on CD-ROM's or on the Internet, Kodak has managed not only to salvage its profitable chemical-based photography **business**, it has added a technological veneer to it.

Now Mr. Fisher is ready to say goodbye. He has already sold his Rochester home, a 15-room house on 15 acres that Mr. Fisher, an avid horticulturist, said has the most beautiful trees of any place he has lived in. He and his wife, Ann, will move into a small apartment after the sale closes in March, but come 2001, it will be goodbye to Rochester.

"Sure, I feel sad, I loved that house, and I'll miss many Kodak people, but I always knew I'd leave town when the job at Kodak was over," Mr. Fisher said. "It would have been too difficult to stay on after being head of Kodak, you become such an icon."

Following are other excerpts from a nearly three-hour reminiscence session:

Q. There are those who view your tenure at Kodak as a terrible disappointment. Do you feel you've failed?

A. Not at all. I remember telling Roberto it would take three years to get Kodak on track. He said it would take five, and O.K., it's taken closer to seven. But the fact is, I've accomplished everything I set out to do. I get angry when I get mail from people complaining about my performance, or when members of the press select the quotes they use to paint negative stories. We're going to have the best financial year in the history of the company, and a lot of analysts do have buy ratings on Kodak stock these days.

I got Kodak pointed in the right direction, and if the new team gets all the credit for that, well, godspeed to them. Smart people will recognize that I laid the fundamentals. When you write the history of these last six years, you'll find that one of my greatest contributions was changing the culture here.

Q. But it was supposed to be turning Kodak into a digital profit machine.

A. In 1993 no one, not even Bill Gates, understood **the impact of the Internet**. Still, if you'd asked me then how big Kodak's digital **business** would be by now, I'd have said \$2 billion, maybe \$3 billion. Well, it's \$2.3 billion this year. Maybe my real failure is that I haven't communicated how powerful our digitization strategy really is.

Q. But you are losing \$100 million a year in digital, and shareholders are clearly unimpressed.

A. You call it losses, I call it investment. If this were a stand-alone start-up company, I'd be a hero on Wall Street. I'm growing the **business** 40 percent a year, and if I were losing \$100 million as a start-up, investors would say "big deal."

There are 117 dot-com companies out there who keep saying they'll eat Kodak and Fuji up. It amazes me how many smart people believe such stupid statements. I wish I could get investors to sit down and ask good questions, but some people are just too stupid.

I remember a time when Motorola's stock was down, and Bob Galvin, the chairman, asked me three things. Will I sell my Motorola stock? I said no, of course not. Am I doing the right things? I said yes. Am I doing the right things in the right way? I said yes again. He said, the stock price will take care of itself. It did there, and it will here.

Q. As you look back over the last six years, are there memories that make you wince?

A. 1997 was my year from hell. Everything went wrong. We lost the World Trade Organization decision [regarding Japan's market for photographic film]; the currency went south; the health organizations got aggressive in purchasing medical films; our CD-ROM prices collapsed; our leading film competitor got aggressive in pricing. Even our race car started losing all its races! There were days I wondered whether there was some gravitational field from the outer universe impinging on us. I never doubted myself, but there were times I wondered if I could handle one more piece of bad news.

I had no choice but to promise we'd take \$1 billion out of costs. And that meant cutting jobs. I'm a nice person, a good person; I don't like hurting people. I'd spent my first few years traveling all around Kodak, and I knew these people personally. These were people who really trusted me, put their faith in me. Cutting all those jobs, all at once and in such a harsh way, was one of the most painful things I've done in my life.

Q. More painful than knowing that many people think that you, too, were thrown out of your job against your will?

A. The main problem seems to be the perception of the press. The press doesn't understand how companies run. And yes, I was really caught off guard, and very hurt, by the negative perceptions that came out in so many articles when the succession was announced. I'm always surprised by the underlining meanness, about the selectivity of the quotes, about how the **media** will latch onto the neatest sound bite. In hindsight I guess I was naive. But I have the confidence of my brain, of knowing I can think and move in real time.

Q. What are you going to do now?

A. I get called quite frequently from high-tech start-ups looking for a chief. And I've sent signals out that I'd like to do some teaching, so the calls are starting to come in from universities. Right now I have the notion that I'd like to teach **technology** in an engineering school, although I may come to my senses before I take that plunge.

Q. None of those jobs are likely to yield the celebrity status you've enjoyed in Rochester. Will you miss the attention, and the perks and prestige of being a corporate chief?

A. Being Kodak's C.E.O. in Rochester is an unreal existence. In Chicago, when I ran Motorola, I could be hit by a truck and no one would notice. Here, if I sneeze, it's written about. It's not always an advantage.

I've never personalized the reasons I was getting in so many doors; it was the job, not me. If I miss the perks, well, I've been financially lucky enough so that I can provide them for myself. If I miss having a corporate plane, I'll buy a plane.

This **business** about being among the great C.E.O.'s of all time, that's something you folks in the press worry about, not me. My ego is under control. I don't run my life by what people think about me. I want people to like me, sure, but I hope over the next 40 years to do many more significant things. And if the press doesn't recognize those either, so be it.

Photo: George M. C. Fisher discussed his somewhat stormy tenure at Kodak. (Phil Matt for The New York Times)

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The New York Times

THE MARKETS: Market Place
Business/Financial Desk; Section C
Hello, Operator? Get Me The Internet

By SETH SCHIESEL

1,769 words

24 March 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

An article in **Business** Day on Wednesday about the transmission of voice calls using **Internet technology** misstated the location of the headquarters of Vocall Communications. It is in Mountainside, N.J., not Philadelphia.

CORRECTED BY THE NEW YORK TIMES WEDNESDAY MARCH 30, 1999

SAN JOSE, Calif., March 20 -- When John T. Chambers, chief executive of Cisco Systems Inc., walks into his windowless, cubicle-like office here each morning, he sees a dinosaur on his desk that he is intent on driving to extinction.

It sits to the left of his laptop computer's docking station: a standard office telephone made by Lucent Technologies Inc., the former equipment arm of the AT&T Corporation and North America's largest maker of traditional telephone gear.

Mr. Chambers likes to think of Cisco, the No. 1 maker of equipment for data networks, as the Anti-Lucent; his favorite two expressions are "new world" (read Cisco and the Internet) and "old world" (read Lucent and traditional communications). So just about every time he uses that phone he bristles.

"The dinosaur on my desk, or at home, I want gone in the next 12 months," he says.

What he means is that by this time next year he wants Cisco to be deploying phone systems based on **Internet technology** rather than on traditional communications systems. If nothing else, he wants almost all of Cisco's 17,000 employees using them.

While Mr. Chambers may exaggerate the gap for effect, there certainly are new and old worlds in the communications equipment **business**, and they are locked in a struggle to control the networks of the future and the tens, perhaps hundreds, of billions of dollars that will be spent to build them.

No part of that battle is more intense than the fight to control how standard voice telephone calls will be transmitted using the **technology** known variously as Internet telephony or voice-over-I.P. The I.P. stands for Internet protocol, the language of cyberspace.

The challenges of that battle are clearly evident right there on Mr. Chambers' desk. After all, Internet phones do exist today -- Cisco makes them -- but for now, Mr. Chambers uses the dinosaur. It is a battle between the reliable, pin-drop quality of today's telecommunications **technology** and the largely experimental, often garbled but fantastically promising Internet-based **technology** of tomorrow.

"This is about the hearts and minds of the network," said Howard Anderson, managing director of the Yankee Group, a leading high-**technology** consulting firm based in Boston. "For consumers, it's probably going to mean cheaper costs. The consumer is going to be using voice-over-I.P. without even knowing it."

Yet, for all of the promise, most of the communications industry agrees that Internet phone calls are not quite ready for prime time. While I.P. systems are selling well in niche phone markets, they are still too unreliable, often deliver low sound quality and are perhaps even too expensive to become the underlying network language for mainstream phone calls.

"There's a lot of hype," said Howard McNally, president of the AT&T unit that includes the company's small Internet telephony operation. "It's just not there yet."

The Sprint Corporation and MCI Worldcom Inc. are not offering voice-over-I.P. calls at all.

That is not to suggest that the long-distance giants are happily stuck in the old world. Each of the major carriers is getting set to upgrade the core of its network to use a **technology** called asynchronous transfer mode, which, like Internet protocol increases efficiency by breaking communications down into small pieces. But while it may sometimes not be as efficient as I.P., it has the advantage of being more reliable.

One strength of I.P., in addition to the allure of being the language of the Internet, is that it is relatively simple to deploy. But what makes it even more appealing is that it can be used on the millions of existing corporate and institutional networks based on Internet protocol and with the tens of millions of personal computers and other consumer devices for which Internet protocol is already a lingua franca.

For all these reasons, the belief in many parts of the communications industry that Internet phone calls are not ready for the mainstream right now is matched by an equally strong conviction that if Internet phone calls do not move to the mainstream, the mainstream will eventually come to Internet phone calls.

Today, Internet phone calls often require the use of prepaid calling cards. And generally their primary purpose is to avoid high international charges for conventional phone calls as well as the fees imposed by local phone companies for beginning and ending long-distance calls. But companies are also starting to embrace **Internet technology** as a way to save money by transmitting calls among branch offices using the computer networks they already have.

And if Mr. Chambers is ever to feel that his entire office has migrated to the new world, Cisco will have to come up with I.P.-based office phone systems that offer conference calling, call waiting, voice mail, call transferring and other features office workers take for granted.

But ultimately, Internet-based phone systems could offer services that no one takes for granted today, like easy integration with personal computer applications. Users could easily manage voice and E-mail messages or, where legal, digitally record and transcribe phone conversations.

"We feel that I.P. telephony services, as they develop multimedia and other capabilities that I.P. enables, are going to be the clear winner in the next two to three years," said David Greenblatt, chief operating officer of Net2Phone, the Internet telephone subsidiary of the IDT Corporation, one of the pioneers in Internet phone calls.

By no means alone in trying to develop Internet phone **technology**, Cisco faces competition from three kinds of companies: traditional equipment makers like Lucent, Ericsson A.B., Siemens A.G. and Northern Telecom; data networking companies like the 3Com Corporation and Ascend Communications Inc. (which has agreed to be acquired by Lucent); and upstarts like Vocaltec Communications Ltd. and the Clarent Corporation.

Lucent, Cisco's biggest and most important competitor, is also hard at work developing Internet telephony products, but its executives naturally have a different view of traditional phone systems.

"There isn't anything in the industry that provides the reliability, the scalability and the feature functions" of the traditional office phone system, said William T. O'Shea, who runs Lucent's office systems group. "There plain isn't another answer today."

But right now the bigger carriers appear to lean toward equipment made by the smaller companies vying for Internet telephony leadership.

While AT&T is testing Lucent's I.P. enhancement for existing telephone switches, the biggest carrier using Lucent's stand-alone Internet phone system is probably Vocall Communications, a private company based in Philadelphia. Meanwhile, Cisco's biggest Internet telephony client is ICG Communications Inc., a medium-sized communications carrier.

Still, many carriers believe the traditional telephone equipment companies will continue to have an advantage simply because they have more experience designing reliability into their systems.

Among that group is Noam Bardin, chief **technology** officer for Delta 3, the Internet telephone unit of RSL Communications, one of the world's biggest Internet telephony carriers.

Cisco, he said, has "a huge hurdle to conquer when you think about how people pick up the phone and expect to get a dial tone no matter what.

"The telecom companies," he added, "already have experience in those challenges."

Delta 3 mostly uses equipment from Ericsson, while IDT, tellingly perhaps, mostly designs its own equipment. IDT has also evaluated equipment from Siemens, which in turn has also worked closely with a small carrier called USA Global Link.

But the German giant Deutsche Telekom is among the international phone companies that have used equipment from tiny Vocaltec, and when Sprint wanted to evaluate an Internet phone system, it tried products from Clarent, a private company based in Redwood City, Calif.

Sprint decided against introducing a voice-over-Internet product, but Neil J. Grenfell, an engineering vice president at Sprint, said the decision would not have been different if another company's **technology** had been used.

AT&T has been perhaps the most eclectic carrier of all. The company refused to discuss its suppliers, but senior data networking executives and executives close to AT&T said the company initially used modems from U.S. Robotics and other equipment from 3Com, the company that acquired U.S. Robotics. AT&T has also, however, used significant amounts of Internet telephony equipment from Clarent, the executives said, adding that 3Com is trying to negotiate a new Internet telephony deal with AT&T.

Perhaps the biggest roadblock for Internet telephony is that different companies' systems almost never work with one another. Each wants to dictate the standard and is hoping the others will blink.

"In ideal conditions it's acceptable," Sprint's Mr. Grenfell said of I.P. telephony. "But I think it's just going to be a novelty for a while. We're really looking for a total integrated solution that is interoperable between vendors and works with what we already have."

Perhaps even with dinosaurs.

Photos: Kevin Kennedy, left, Don Scheinman, Mike Volpi, Larry Ling and Don Listwin are helping Cisco Systems move telephone calls to the Internet. (Darcy Padilla for The New York Times)(Photo montage: Naum Kazhdan/The New York Times) Chart: "How the Systems Work" TRADITIONAL PHONE CALLS Calls are sent over a circuit-switched network, keeping each conversation in its own path, or circuit. ADVANTAGES -- Very reliable, operates over vast existing network and offers good sound quality. DISADVANTAGES -- More costly and less flexible. INTERNET PHONE CALLS Communications are broken up into small packets of data and reassembled into intelligible communications at the other end. ADVANTAGES -- More efficient for the phone company and can cost less for consumers. Could eventually provide advanced services like voice recognition. DISADVANTAGES -- Generally inferior sound quality today. A large, new infrastructure needs to be built. WHERE THEY COME FROM Data networks Cisco Systems -- Leading developer of Internet connections 3Com -- Modem and network supplier Telephone Equipment Lucent Technologies -- AT&T spin-off, recently made a deal to buy Ascend Ericsson -- European equipment maker Northern Telecom -- Office phone systems and other devices Internet Startups Vocaltec -- Israeli developer Clarent -- Privately held network supplier

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The New York Times

ART/ARCHITECTURE

Arts and Leisure Desk; Section 2

A Bucolic Honeymoon for Art and Science

By ANNA NOVAKOV

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English

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PALO ALTO, Calif. -- THE exit heading east toward Xerox PARC from the Palo Alto freeway leads into the rolling hills that separate Silicon Valley from the Pacific Ocean, revealing a landscape that brings to mind the paintings of Thomas Hart Benton. The bucolic road continues past a sprinkling of horse ranches to the entrance of Xerox PARC, whose mother corporation has given the world the photocopier. This low, unassuming building houses some of the more unusual work being done in this teeming valley of **technology**.

Inside PARC (which stands for Palo Alto Research Center), the offices are comfortable, almost domestic in scale (not stark, arid cubicles) and tastefully decorated in a style more reminiscent of subdued northern California ranch-style homes than of high-tech corporations.

In the lobby, Rich Gold, who is not a scientist or engineer but an artist, greets a visitor and leads the way through several halls, past conference rooms furnished with oversize beanbag chairs to a small kitchenette to pick up coffee before sitting down in his office to talk. Like the PARC building and its surroundings, Mr. Gold's background is unexpected. He began as an artist, studying at the State University of New York at Albany and the California Institute of the Arts, then got his master's of fine arts in the contemporary-music department at Mills College in Oakland. He worked for Mattel toys, among other places, designing electronic computer games, and eventually landed a job with Xerox PARC in 1991 as part of its Ubiquitous Computing Project, a branch of the company that focuses on computation embedded in everyday objects. In 1993, Mr. Gold, with help from his colleagues, started PAIR, the PARC Artists-in-Residence Program, under which innovative Bay Area artists worked in teams with about a dozen scientists at Xerox PARC. Mr. Gold, knowing both the contemporary-art world and the high-tech corporate world, believed that there were compelling intellectual and creative points of contact between contemporary artists working with new **media** and cutting-edge scientists.

In order to explore and encourage this cross-pollination, he approached the management at PARC with a proposed series of partnerships that would join artists with scientists in an effort to encourage various personal exchanges. Pure research, rather than specific product development, was the goal that both Mr. Gold and the management had in mind. (A rather unusual idea in a traditional corporate profit-making structure.)

Two committees were formed to select the artists. The first was made up of Xerox PARC scientists; the second, according to Mr. Gold, consisted of "Bay Area art curators, gallery owners, heads of art departments, as well as people from Theater Artaud and the San Francisco Museum of Modern Art, all in an effort to get as much of a range as we could." One requirement for the participating artists was that they be well versed in new **technology** so that they could begin working on an equal footing with their scientist partners.

The PAIR project has a well-known historical precedent. In the mid-1960's, Billy Kluver, an engineer of Swedish origin working at Bell Laboratories in Murray Hill, N.J., became interested in the New York art world and in particular the work of Pop artists. He started a program in which engineers from Bell met with artists like Jean Tinguely, Robert Rauschenberg, Jasper Johns, Merce Cunningham, John Cage, Andy Warhol and many others. Through these collaborative pairings, Mr. Kluver along with Mr. Rauschenberg, Fred Waldhauer and Robert Whitman started a program called Experiments in Art and **Technology**, or E.A.T., in 1966.

SOME of the results of the E.A.T. collaborations, like Warhol's floating silver pillows and Mr. Rauschenberg's robots, were included in World Expo '70 in Osaka, Japan. Recently, Mr. Kluver, now in his 70's, has become something of a celebrity. He is on the international lecture circuit discussing more than 40 projects he completed with E.A.T. With the help of several assistants, Mr. Kluver is organizing the E.A.T. archives, stored in his home in

Berkeley Heights, N.J. These massive files offer a glimpse of the birth of the Art and **Technology** movement during the 1960's and 1970's. The San Jose Museum of Art in California is currently working on an interactive CD-ROM on the history of this period.

Naturally, when Mr. Gold thought of setting up a program linking artists and scientists at Xerox, he called Mr. Kluver for advice. Mr. Kluver at first discouraged Mr. Gold from undertaking the pairings, saying that artists and scientists were perhaps too similar in nature to be able to work productively together. He thought the only workable match would be between artists and engineers, seeing the engineers as the facilitators of the artists' work. According to Mr. Gold, "Kluver believed that artists needed engineers to help build their stuff."

The artists were initially invited to work at PARC for several months to a year. However, it soon became apparent that this was not a realistic time frame. Most of the artists ended up close friends with the scientists and stayed in contact and worked with them for three to four years.

Judy Malloy was one of the first artists to work in PAIR. She started in November 1993 with an office at PARC and access to the computer science labs. Ms. Malloy, a Bay Area hypertext writer, worked with the scientist Pavel Curtis on a project called "Brown House Kitchen," a narrative written by Ms. Malloy to accompany a text-based virtual-reality site created at PARC by Mr. Curtis. According to Ms. Malloy, this was a rare opportunity to create "public literature" in a virtual community.

"Unlike the Web," she says, "which is basically an information-delivery system, MUDS -- the Multi-User Dungeons we used -- are cohesive text-based universes that exist parallel to life, where stories that occur daily are usually observed only by the participants, just as they are in real life."

Ms. Malloy also worked with Cathy Marshal, a hypertext researcher, on a project called "Forward Anywhere." Ms. Malloy and Ms. Marshal's relationship started via E-mail as a way of getting to know each other. Both women had been using hypertext, which, according to Ms. Malloy, is the "way in which the reader navigates information on the Web by following/choosing links rather than moving sequentially."

"This way of reading," she continues, "allows for choices that determine the way the story unfolds, allowing each reader to see a different narrative." During more than four years working together, Ms. Malloy and Ms. Marshal met only twice. Somehow they found that "face-to-face meetings diluted the mystery and anticipation" of their collaborative relationship.

Even though the participating artists and scientists came from very different backgrounds, they usually had strands of similar interests that drew them together. For example, the collaborative artist team of Jeanne C. Finley and John H. Muse recall that "at Xerox PARC we were paired with members of the Work Practice and **Technology** area, W.P.T., a small group of anthropologists lead by Lucy Suchman, and computer scientists who study work and the practices by which workers take up technologies in creative and necessarily unpredictable ways." They said, in writing: "W.P.T. also uses video and interview-observation in their research. We shared not only technologies but also a concern for the ethical implications of using them to create and distribute images, texts and stories."

SINCE 1994, Margaret Crane and Jon Winet, another artist team, have been paired with the computer scientists Scott Minneman and Dale MacDonald. This collaboration, perhaps the most prolific of all of the PAIR groupings, lasted more than four years and perhaps influenced Mr. MacDonald's decision to enter the M.F.A. studio-art program at the University of California at Berkeley. Their work at PARC, Ms. Crane says, involved "exploring the intersection of art and **technology** and **the impact of the Internet** and interactive **media** on public space."

Among their many projects together, this team, working under the name C.M.M.W., produced "Nightfall," a hypertextual multimedia installation that was shown at the Yerba Buena Center for the Arts in San Francisco. The work, Ms. Crane explains, "examines personal relationships against the backdrop of social malaise and psychic unrest in the waning moments of the 20th century." The team also made "Sunset," an interactive narrative that was displayed on two Sony Jumbotrons on Sunset Boulevard in Hollywood as part of Siggraph 97's Electronic Garden.

In 1994, Paul DeMarinis, a multimedia electronic artist, started working with several different research groups at PARC. His project "Dinner at Ernie's" involved the production of four spinning turntables playing low-resolution music. He also worked on a project involving an electronic stringed instrument resembling a lyre that created a circuit between the viewer's body and the flesh of an orange.

Pamela Z, a performance and sound artist, was paired with the researchers Michael Black and David Levy. Through their conversations, three audio works emerged. Ms. Z made "Geekspeak," a section of "Parts of

Speech," a larger piece. "Geekspeak" was constructed through the use, in part, of Mr. Black's voice, which was then played back to him on the speakers in his office. Ms. Z and Mr. Levy's discussions often revolved around the idea of copies. Another one of Ms. Z's sound and installation works titled "Copies" uses a short audio text written by Mr. Levy.

The private relationships forged between two or three people at a time by the PAIR project is now getting a much more public face. Last month M.I.T. Press (Leonardo Books) released "Art and Innovation: The Xerox PARC Artist-in-Residence Program," edited by Craig Harris of Leonardo Electronic Almanac.

The PAIR project is continuing but always evolving. It is currently working with a graphic novelist -- once called a cartoonist -- on the future of reading. PAIR is ultimately an investigation into the nature of art and **technology** as a series of personal exchanges as well as more formal cultural systems. Even though, for the most part, the teams have produced little tangible work (read "product"), they have always been immersed in something that has in many ways been more lasting. They have been given the space and time to think, talk and learn from one another. In an age that values speed and transience, such an opportunity is always precious and increasingly hard to find.

Anna Novakov teaches art history, theory and criticism at the San Francisco Art Institute and has published several books on contemporary art, including "Veiled Histories: The Body, Place and Public Art."

Photos: Billy Kluver, in New Jersey, with a helium-filled pillow by Andy Warhol. (James Estrin/The New York Times); Paul DeMarinis's instrument, which creates music with fruits like oranges. (Don Carson); A frame from "Sunset," an interactive narrative displayed on Jumbotrons. (Jon Winet)(pg. 31); Computer scientists Scott Minneman, left, and Dale MacDonald and an artist, Margaret Crane, at Xerox PARC in California. (Deanna Horvath/Xerox PARC)(pg. 32)

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The New York Times

National Desk; Section A
Illness as a Metaphor for Computer Bugs

By JOHN MARKOFF

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English

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SAN FRANCISCO, June 13 -- The implications of the malicious software program that wove its way around the globe last week struck home for Bernardo Huberman, a physicist at Xerox, in the form of a terse voice mail he received at work on Thursday.

"Our computer system administrators sent me a message saying, 'The worm has hit Xerox, but we've hunted it down and killed it,' " he recalled.

To Mr. Huberman, who has studied computer networks for more than a decade, the biological allusions were an apt reminder that the explosive growth of the Internet has numerous parallels to natural systems -- and many are not reassuring.

"I believe that we are indeed living in a computational ecosystem which is more and more globally cross-linked," he said. Or to put it more simply, "It's an amazing system, and it's very vulnerable."

In a world where computers, once isolated work tools, are increasingly the very engine driving modern **business** life, computer researchers say they are detecting an ominous trend toward programs that mimic viruses and pestilence in the physical world.

The latest focus of concern is a program known among computer researchers as a worm. The one last week was apparently conceived in Israel and quickly spread to Europe and the United States, mailing itself from computer to computer and destroying its victims' files along the way. Called Explore.exe -- for the name of the file it contained that set off the damage -- the worm has affected thousands of computers worldwide and forced a number of corporations to abruptly shut their E-mail systems, in a frantic effort to control the spread of the infection.

Like biological diseases, which exploit the most basic mechanism of life -- the power of DNA to replicate itself -- a subculture of modern virus-writing now manipulates that same power of replication within the world of interconnected computers.

And while the dominance of a single environment -- the one powered by Microsoft software and Intel chips -- offers the benefits of compatibility among machines, some say it may share the vulnerabilities of fields planted with just one crop.

"The analogies are extremely close," said Richard Dawkins, a biologist at Oxford University. "When you make machines that are capable of obeying instructions slavishly, and among those instructions are 'duplicate me' instructions, then of course the system is wide open to exploitation by parasites."

Indeed, some computer scientists believe that in **the rise of the Internet** and the World Wide Web, **society** has struck a Faustian bargain -- gaining the potential of robotic software agents, which can flit from computer to computer to do their masters' bidding almost intelligently, but accepting as well the darker prospect of software infections that can spur cybernetic plagues.

"This may simply be the price you will have to pay for having the flexibility, adaptability, autonomy of this new networked world," said Kevin Kelly, author of "Out of Control: The New Biology of Machines, Social Systems and the Economic World" (Addison Wesley, 1994).

To be sure, biological metaphors used to describe the hostile software are only that, and the analogies do break down because the so-called computer viruses are manmade, not natural, and are frequently designed to be destructive.

But some researchers assert that such diseases are a direct outgrowth of the remarkable complexity emerging in the realm of networked computers. Increasingly, they say, Internet viral issues will come to resemble the modern world's perpetual public health crisis.

"You need to look at this the way the Centers for Disease Control approach things," said Vernor Vinge, a computer scientist at San Diego State University. "There are always new problems on their threat board."

In fact, computer scientists have known about these risks since the first worm programs were written by researchers at the Xerox Corporation's Palo Alto Research Center in the early 1970's.

Experimenting with the power of networked computers, scientists fashioned a wide variety of helpful programs, ranging from "vampire" worms that kept the network's computers laboring late at night to "diagnostic" worms that spread software repairs around the research center.

But a software error in one of the lab's early worms caused the program to run amok, crashing computers everywhere in the building.

Today computer researchers debate what distinguishes worms from viruses, both metaphors drawn from science fiction. The term "worm" first appeared in John Brunner's 1975 novel "Shockwave Rider" (Del Rey Books) while "virus" first appeared in a computer context in David Gerrold's "When Harley Was One" (Ballantine, 1972).

Traditionally, the term "virus" has been used to describe software codes that infect computers by attaching themselves to documents or programs that are passed along. A "worm," by contrast, has been self-propelling, that is, a program sent within the attachment that can then send itself along without any action by the person who receives it.

But the most recent generation of malicious programs -- like the Melissa virus, which spread rapidly around the world in late March, and Explore.exe, the worm that emerged in Israel last Monday -- blend aspects of both types.

The world of computer networks has not yet produced the most telling biological analogy -- evolution. But a particular class of hostile programs known as polymorphic viruses has been designed since 1993, with the ability to mutate to evade the pattern detection capabilities of modern antivirus scanning programs.

And antivirus researchers are also turning to "biological" solutions to face down hostile software codes. For example, last month the Intel Corporation, I.B.M. and the Symantec Corporation jointly released new antivirus software they call a "Digital Immune System."

Just as a biological immune system offers a systemic approach to illness, the new software shifts the antivirus response from the PC to an entire corporation's network, automatically relaying suspect programs for inspection and directly immunizing individual computers.

There have been other attempts to build systems that are immune from security threats. For example, the original intent of the Java programming language was to prohibit the kind of file havoc wreaked last week by creating a "sandbox" that limits a program's destructive capabilities.

Strikingly, the rapid spread of last week's outbreak was made possible because most of the world's users of personal computers now run Microsoft software. The worm was written to destroy documents written in Microsoft applications like Word, Excel and Power Point and certain programming files.

"This is the classic result of a computer monoculture," said W. Daniel Hillis, a computer scientist at Walt Disney's Imagineering unit. Like agricultural ecologies that become unstable relying on only one or a few crops, so the computer world is vulnerable to the degree it relies on Microsoft software.

Noting that the worm had attacked large American military contractors, including Boeing and General Electric, Art Amolsch, editor of FTC Watch, a Washington policy newsletter, suggested that the Government should insure software diversity among its agencies and contractors.

"I propose that no Government agency be allowed to run more than 34 percent of its personal computers on one proprietary operating system by a date certain," he said.

To Mr. Hillis, who in the 1980's experimented with advances in software programs using "evolutionary" techniques in which the programs adapt to their environment, a transition is under way in which computers will be viewed less like mechanical devices and more like organisms, which better accommodate imprecision and failure.

"Today we have the fragility of an engineered system where every part works" but the system itself can fail, he said. "But in the future we're going to engineer systems with the expectation that everything is broken all the time. That's how we treat biological systems today."

Chart: "Digital Dangers" As with diseases in the physical world, programs created to wreak havoc with computers have varied characteristics. Here are five types of infections and some prominent examples of each. Many have characteristics of more than one type. MACRO -- Preys on documents like spreadsheets and data bases. Concept (1995) -- Proved more than programs could be infected. Contained code that read And that's enough to prove my point. Melissa (1999) -- Tried to send itself to first 50 e-mail addresses found in victim's files; turned Word documents into templates. TROJAN HORSE -- Initially seems benign; may act as any type of infection thereafter. Happy99.exe (1999) -- Displayed a window titled Happy New Year 1999!! while showing fireworks to disguise the fact that it was copying itself over the Internet. Explore.exe (1999) -- Arrives attached to an e-mail, seemingly sent by an acquaintance. It is also a worm that, when launched, seeks to e-mail itself to other PC's and to destroy certain Microsoft Office and programmer file types. BOOT SECTOR -- Affects startup sector of floppy or hard disks. Stoned (1989) -- Every eighth time a PC was started from an infected 5.25 inch floppy, Your PC is now Stoned! appeared on screen. Michelangelo (1992) -- If a PC was started on March 6, the artist's birthday, it destroyed the hard disk. EXECUTABLE FILE -- Affects program files, not the files created by them. Friday the 13th (1987) -- Deleted any program launched on a Friday that fell on the 13th of the month. Chernobyl (1999) -- Erased hard drive and ROM BIOS (basic input/output system). WORM -- Self-propelled; can move and replicate through a network. Internet (1988) -- Exploited flawed network security to rapidly copy itself onto computers linked to the Internet, overloading thousands of computers with copies of itself. (Source: ICSA Inc.)

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The New York Times

Money and **Business**/Financial Desk; Section 3
Where the Start-Up Dance Is Still Hard to Do

By WAYNE ARNOLD

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English

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SINGAPORE -- WITH no hinterland or natural resources, Singapore's Government has long cultivated this island-state's stability as corporate pastureland, leaving citizens to reap what they call the five C's: a car, a condo, credit cards, cash and a career with a multinational.

Ben Lim, 37, had it all. He was running the global computer systems for a 150-year-old British bank and earning \$300,000 a year.

Then, in April, he did something that seemed contrary to everything Singapore Inc. stood for: he quit. Not to join another multinational company for more money, but to start a tiny high-**technology** company here with three other entrepreneurs -- a college buddy, a Japanese paraglider and a digital tinkerer who had helped authorities put urine detectors in Singapore's elevators.

Even stranger, the Government -- notorious for central planning and ironclad control -- wishes there were more people here like Mr. Lim.

Singapore is already a center for making high-**technology** hardware -- it is, for example, the world's largest producer of computer disk drives. And through the 90's, the Government has been plotting to make it an "intelligent island," a networked city that would be Asia's Silicon Valley.

But now, Singapore is peering into the Internet age and facing a quandary.

On one hand, less-developed neighbors with cheaper labor are taking away high-tech manufacturing jobs, even as virtual communities and borderless trade are eroding the advantages of geography and infrastructure that helped create cities like Singapore in the first place.

On the other, experts say, the creative germ that Singapore needs in order to compete in the information economy has been suffocated by the traditional Confucian culture and heavy Government control that form the bedrock of the city-state's **society**.

So the Government that for 34 years has micromanaged the economy, censored the **media** and brooked no dissent has now embarked on a far-reaching program to enliven Singapore, largely in the hope of encouraging independent-minded **business** people like Mr. Lim and his partners.

"We must create an environment where creative ideas and entrepreneurship can come about," said Teo Ming Kian, chairman of the National Science and **Technology** Board, which oversees Technopreneurship 21, one of several Government projects intended to prepare Singapore for the new century.

Otherwise, he said, "we could not be as relevant to the world as we'd like to be."

Critics say the plan is contrived, that ingenuity cannot be mandated from the top down. But the authorities here hope that by giving their laws, taxes and even school curriculums a more casual fit, they can lure foreign role models and synthesize a new breed of innovative Singaporean. As an added incentive, the Government has ponied up \$1 billion to kick-start new companies like Mr. Lim's.

Now if only Mr. Lim could get some of it.

His fledgling **business**, Pixelmetrix, aims to make equipment that will let digital television broadcasters monitor picture quality. Mr. Lim and his partners have lined up a customer in Japan and pitched in around \$71,000 to rent an office and start work. Having chosen Singapore over California and Japan for its tax breaks and financing potential, Pixelmetrix is hunting for \$1 million in venture capital.

But its founders are discovering something that has driven a number of Singapore's "technopreneurs" to Silicon Valley and that threatens to make the Government's campaign a slow and difficult one: Few Singaporeans even want to work for a start-up, let alone invest in one.

"There has to be a change in the mentality in the market that encourages people to take risks -- and risk big," said Scott Desmarais, a management consultant here with the Boston Consulting Group.

From Port to Ports

It wasn't always this way. The seafaring southern Chinese who settled in Singapore in the 1800's, eventually becoming the largest ethnic group here, risked everything, crossing pirate-infested seas to reach a tiger-infested British free port in the Straits of Malacca. Life in Singapore remained perilous into the 1960's, with the city notorious for its gang-ridden streets, fetid slums and simmering racial tensions.

When Singapore was ejected from the Federation of Malaysia in 1965 and became independent, many people doubted that it could survive. But the Peoples Action Party of Lee Kuan Yew, the founding Prime Minister, who served until 1990 and is still a voice of authority here, put a firm lid on opposition and began a program of urban renewal and pro-**business** reform that turned a squalid Singapore into a humming industrial Shangri-La.

Slums were cleared for charmless but immaculate public housing. Residents could buy their new apartments with Government-mandated savings, turning them into stakeholders in Mr. Lee's new venture. Social engineering by the Government also extended to matters like child-bearing, courtesy and clean public toilets, and the results are difficult to ridicule: incomes here are on par with those in Western Europe.

"We've always had it drummed into us that we have nothing -- no water, nothing, only our talent, our people," said T. K. Wong, 32, who returned from the Massachusetts Institute of **Technology** in 1991 to work for the Government and later started one of Singapore's earliest Internet companies, Silkroute Ventures. The company has evolved from developing on-line content to designing company Web sites and dreaming up new Internet businesses.

Singapore's growing affluence drew Mr. Lim here from Toronto in 1985. Originally from Malaysia, his family had gone to Canada in 1975 as Communists took over Vietnam and Southeast Asia's future looked dim. In Singapore, Mr. Lim started out at a local securities firm, then turned his computer engineering degree from the University of Alberta into a lucrative career in financial **technology**, moving to Andersen Consulting, Deutsche Bank and then Standard Chartered Bank, where he was in charge of its global networks and its Internet plans.

On a trip to Japan last fall, Mr. Lim visited a former classmate, Danny Wilson, who was working for Hewlett-Packard in Kobe. Over numerous cups of sake, the two groused about big-company life and discussed their own entrepreneurial ambitions. While steeping in a local hot spring, Mr. Lim convinced Mr. Wilson to draw up a **business** plan for Pixelmetrix.

The two men also recruited one of Mr. Wilson's colleagues from Hewlett-Packard, Hideki Takahashi, 34, an engineer and a paraglider. Mr. Takahashi said he would be happy to join their new company -- provided that they didn't base it in Japan, with its bureaucracy and high prices.

Mr. Lim suggested Singapore, which had become a digital convert 10 years earlier at the original source of its wealth, its port. In 1989, it installed a computer network linking shippers, suppliers and freight forwarders to Singapore's port authority. The time for processing customs declarations and permits fell from three days to less than three minutes. Tradenet, as the system was called, became a Harvard **Business** School case study.

Two years later, the Government asked a group of young technocrats, including Mr. Wong of Silkroute, to draft a more comprehensive plan. The result was IT2000, a plan that envisioned a nationwide network connecting every citizen and turning Singapore into a way station for information -- in short, a cyberport. Today, half of Singapore's homes have a personal computer and one of every four Singaporeans uses the Internet, according to the National Computer Board.

Big Plans or Big Brother?

The project has Orwellian overtones to many, an impression reinforced by the fact that Singapore's Internet services are required to block access to some Web sites that are deemed pornographic. Public misgivings were heightened this year when the news emerged that the Government's internal security agency had covertly inspected some Web surfers' computers, looking for hackers.

IT2000 also outpaced the public's technological appetite, something that critics say is typical of state-planned technological development. The project's flagship is a \$60 million high-speed fiber-optic backbone called Singapore ONE (for One Network for Everyone). The Government offered millions of dollars for developers to take advantage of the project, and even set up offices in San Francisco.

"Everybody and their mother came in, but there was nothing of strong value," said a consultant who advised the Government on the project. While Singapore ONE reaches 99 percent of Singapore homes, only 60,000 of the country's 3.2 million people use it.

Michael Yap, chairman of the National Computer Board, defends the network. "We knew it wasn't commercially viable," he said. "Industry couldn't go on its own, so we decided to share the risk."

The Rules Meet Reality

Such Government-knows-best attitudes, however, may have hobbled Singaporeans' ability to come up with their own solutions.

"The people I hire are too obedient," complained Louis Woo, a former Apple Computer executive from Macao who in 1997 formed a company here to make Chinese-language voice-recognition software. Last year, he sold a half-interest to Lernout & Hauspie Speech Products of Belgium.

Obedience has been taught from the time small children put on their school uniforms and line up like soldiers for morning assembly. The Government ranks schools by how pupils perform on standardized tests, and parents vie to send their children to the best, so pressure is high on both students and teachers to produce top scores. The same atmosphere, Mr. Woo and other employers say, has turned universities into factories for midlevel managers.

Eng-Siong Tan, a Singaporean who last year helped found a Web software company here called Third Voice, recalled his surprise on his first day at Purdue University in Indiana back in 1984, when counselors asked him what courses he wanted to take.

"In Singapore," he said, "they tell you your courses, they tell you your schedule and they tell you what books to buy."

Outside experts agree that group-think may hamper the city-state in the information age. "The thing that's going to stop Singapore more than anything is that its educational system is still not targeted at turning out people who question what they're taught," said David Farber, a University of Pennsylvania computing expert who visits Singapore regularly and is an adviser to the Government.

Point taken: In elementary schools, teachers are starting to take into account students' performance on projects, instead of basing their grades entirely on exam scores. Universities are reducing their emphasis on standardized tests and -- a liberalizing step here -- are introducing the American S.A.T., which is meant to evaluate students' analytical skills, not just their powers of recall.

"We cannot produce adaptable, innovative and creative students unless we have adaptable, creative and innovative teachers and schools," said Education Minister Teo Chee Hean in 1997, as he announced a new Government policy called Thinking Schools.

Impetus for Change

Last February, Mr. Wilson came to scout the city that Mr. Lim was proposing as their company's springboard. The Government offered grants, tax breaks and employment visas, but he still hesitated. For one thing, Mr. Wilson had been admitted to the Sloan School of Management at the Massachusetts Institute of **Technology**. For another, his Japanese wife loves flamenco dancing -- a surprisingly popular activity in Japan but all but unheard of in Singapore. "I'd been to Singapore before," Mr. Wilson said. "It's a little boring."

Of course, Singapore has a lot going for it. Green, clean and efficient, it is not prone to hurricanes or earthquakes or tornadoes, and schools do not need metal detectors. A short flight away are some of the world's best beaches

and tropical reefs. Still, the most common compliment from foreign residents is one that would apply to a sleepy suburb: It's a great place to raise children.

To entice foreigners to supplement its own pool of talent, Prime Minister Goh Chok Tong has called on Singapore to become more cosmopolitan. "Having fun is important," he said. "If Singapore is a dull, boring place, not only will talent not want to come here, but even Singaporeans will begin to feel restless."

Old habits die hard, however. When Singapore decided to legalize street performances in 1997, artists were required to audition and to donate any money collected to charity. The Government recently lifted a ban on audience participation, but the streets remain largely busker-free.

By March, Mr. Wilson had set aside his qualms and given up his plans to attend M.I.T. Mr. Lim said goodbye to Standard Chartered. And Mr. Takahashi began searching elsewhere in Southeast Asia for cliffs to leap from.

They brought aboard another University of Alberta alumnus, Tom Orlowski. Mr. Orlowski, 33, was already in Singapore, with a company that had developed a solution to a problem in Singapore's public housing. Now, if someone urinates inside an elevator here, the elevator shuts down and police are notified, thanks to the Urine Detection Device, which Mr. Orlowski helped invent.

Singapore may be no Manhattan, but Mr. Orlowski, who grew up in Edmonton, doesn't pretend to be an urban sophisticate. "I'll never need to be in New York," he said.

Some foreigners, however, may be disinclined to move to a nation that Freedom House, a human rights group based in Washington, calls only "partially free," with political rights and civil liberties on a par with Haiti, Kuwait or Malaysia.

After all, while Singapore discusses easing censorship, some less puritanical Asian **business** centers, like the Philippines and Hong Kong, are wooing high-tech investors to their own Silicon Valleys. Perhaps Singapore's most serious competition comes from Malaysia. The Prime Minister of Malaysia, Mahathir Mohamad, has promised that in his Multimedia Super Corridor -- the high-tech city he is building in what was once a stretch of oil-palm plantations -- night life will not have to shut down at 3 A.M. as it does in Singapore, and authorities will not censor the Internet.

The corridor's rising profile and layoffs by big electronics companies here during the Asian financial crisis convinced the Singapore Government that it needed to do more to compete.

"We've been really good at attracting brick-and-mortar businesses," Mr. Yap said. "But given the transformation into E-**business**, we need to rethink what's needed."

Bridging a Gap

In July, the Government started Technopreneurship 21. In addition to the \$1 billion venture fund for **technology** companies, the plan makes it harder to bankrupt small companies, decreases taxes on stock options, makes it easier for foreign entrepreneurs to obtain entry visas and allows taxpayers to deduct losses on investments in high-tech start-ups. It even lets aspiring Bill Gateses run their start-ups out of Government-built apartments.

But Friday the 13th of August nonetheless found Mr. Lim dejected. After being shuffled from office to office, he was finally told that the Government was simply overwhelmed with applications.

Officials promised to line up some potential private investors, but Mr. Lim was skeptical. "Looks like were on our own," he said.

In fact, it's unclear how much Technopreneurship 21 has achieved in its first two months. Officials of the National Science and **Technology** Board said fewer than 10 companies had received financing under the program so far. The experience of another program, the **Technology** Incubator Program, doesn't augur well: After fielding 149 inquiries since its creation a year ago, it has approved assistance for only four start-ups.

"There's a huge gap between entrepreneurs with an idea and reaching the money," said Mr. Wong of Silkroute, who moved the headquarters of his new E-commerce venture, Advanced Manufacturing Online, to Silicon Valley.

Perhaps, though, the Government is learning from its mistakes. Acknowledging earlier this month that it knows little about assessing the prospects of young high-tech companies, it decided to let more savvy venture capitalists determine how to use its \$1 billion fund. Specifically, the science board will invest \$250 million alongside private investors and venture capital funds. The remainder will be used by the Singapore Government Investment

Corporation, which is responsible for investing Singapore's foreign reserves, to buy into venture capital funds that invest in Singapore and to develop venture-capital ties overseas.

Still, start-ups being what they are, the path for Pixelmetrix will not be easy. Some venture capitalists have rejected its projected \$67 million in revenue by 2003 as not worth the paperwork. Another obstacle, Mr. Wilson said, is that "we're no dot.com."

The science board has found a so-called angel investor, a local set-top box maker, interested in investing in Pixelmetrix, with the board coming in as a co-investor. The devil is in the details.

"If I sell it cheap enough," Mr. Lim said after an initial meeting, "they're in."

As negotiations drag on, he has had to resort to a different source to tide the company over, one familiar to company founders in America as well: He's borrowing from a bank against his home.

Photo: The Internet age is inducing Singapore's Government to ease its ironclad control and find ways to encourage entrepreneurs like Tom Orlowski, left; Ben Lim, center, and Danny Wilson. (Munshi Ahmed for The New York Times)(pg. 13) Charts: "How Singapore Stacks Up" In a ranking of 55 countries, Singapore scores high on many technological measures, though not on those involving individual liberty. Over all A measure of information wealth and contributions to the global economy. 1 United States 2 Sweden 3 Finland 4 Singapore 5 Norway THE Internet Ranked by factors including , education and home users as well as E-commerce vs. nonfarm labor. 1 Singapore 2 Australia 3 United States 4 New Zealand 5 Sweden Information Ranked by factors including telephone lines per household and phone system errors, costs per call and TV ownership. 1 United States 2 Japan 3 Denmark 4 Finland 10 Singapore Computers Ranked by factors including PC shipments, PC's installed, networks and software-to-hardware spending ratio. 1 Singapore 2 United States 3 Sweden 4 Netherlands 5 Norway Social factors Including school enrollment, newspaper readership, press freedom and civil liberties. 1 Norway 2 Sweden 3 Finland 4 Australia 4 Singapore (Sources: International Data Corporation; World Times)(pg. 1) " Tigers" Already a world leader in manufacturing high- products, Singapore now wants to compete in Internet businesses. It starts out ahead of its neighbors in terms of use and spending. All figures are for 1998. Chart lists gross domestic product per person, spending per person, spending as a percentage of G.D.P., Internet users as a percentage of PC's and Internet users as a percentage of population, for the United States, Singapore, Hong Kong, Taiwan, Malaysia and the Philippines. (Source: International Data Corporation)(pg. 13) Illustrations by Tim Hussey (pg. 1)

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The New York Times

Foreign Affairs
Editorial Desk; Section A
Next, It's E-ducation

By THOMAS L. FRIEDMAN
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The two most telling stories about the 10th anniversary of the fall of the Berlin Wall actually ran in the **business** sections of The New York Times and The Washington Post.

One was a short article in the back pages of The Times that reported that the number of adults using the Internet in the U.S. had surpassed 100 million, meaning that roughly half the U.S. population is now online.

The other article, in The Post, noted that Amazon.com was shipping an extraordinary number of copies of Adolf Hitler's racist manifesto, "Mein Kampf," to buyers in Germany. It is illegal to sell "Mein Kampf" in bookstores in Germany or publish it there. But as we move from the world of Borders books to the world of borderless books, aka Amazon.com, Germans can order "Mein Kampf" online and have it delivered by mail, and their government is powerless to stop it. Indeed, Amazon shipped so many copies of "Mein Kampf" to Germany that over the summer Hitler made Amazon's top 10 best-seller list among German buyers. What these two little stories tell is that 10 years after the fall of the Berlin Wall a whole other set of walls is starting to fall, as we move deeper into the **Internet revolution**. And this is not simply an American phenomenon, nor, as the "Mein Kampf" example illustrates, will it automatically bring out the best in people.

So what comes next? With the first phase of this wall-destroying **Internet revolution** -- the e-mail and e-commerce phase -- now fully under way, I posed that question to John Chambers. Mr. Chambers runs Cisco Systems, which makes the routers that run the Internet. Beware: He has an obvious stake in touting the Internet. But note: His past predictions have proved extremely accurate.

Mr. Chambers argued that the second phase of the **Internet revolution** -- businesses absorbing the Internet and using it to relate to one another -- was now just taking off, and that this was going to be a monster market. There is barely a C.E.O. in the developed world who in the last six months hasn't said to himself: "Oh my God! This Internet thing is real. Somebody call me an Internet doctor and wire me up."

Once a C.E.O. understands that absorbing the Net into every aspect of his or her **business** "is the only way they are going to survive," said Mr. Chambers, "they are going to be spending big bucks on it. That's why I believe that Y2K will be short-lived, and after that we are going to see one of the best years the computer industry has ever seen."

So now that commerce has moved to the Net, and the Net is moving into **business**, what comes after that?

"Education," said Mr. Chambers. "The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make e-mail usage look like a rounding error" in terms of the Internet capacity it will consume.

What will drive it will be the demands on companies, in an intensely competitive global economy, to keep improving productivity. E-learning, insists Mr. Chambers, if done right, can provide faster learning, at lower costs, with more accountability, thereby enabling both companies and schools to keep up with changes in the global economy that now occur at Net speed. Schools and countries that ignore this, he says, will suffer the same fate as big department stores that thought e-commerce was overrated.

If universities move properly, they will offer the ideal combination of online and instructor-led learning, argues Mr. Chambers. But if universities don't reinvent their curriculums and how they deliver them, for an increasingly

Net-driven economy, many students, particularly in information **technology** fields, "will go to schools online," he says. Many big firms -- Cisco, G.E., I.B.M., AT&T -- are starting online academies to train new employees and to constantly upgrade the skills of existing ones.

"Unlike in the industrial revolution when you had to be in the right country or city to participate, in this new era capital will flow to whichever countries and companies install the best Internet and educational capabilities," says Mr. Chambers. Governments and unions will be powerless to stop this capital flow, which will affect the global balance of economic power. Although the **technology** exists today, this revolution will take about 10 years to be fully in place. But, insists Mr. Chambers, "it's coming next."

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The New York Times

Business/Financial Desk; Section A
Computer Age Gains Respect of Economists

By By STEVE LOHR

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English

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In a nation of technophiles, where Internet millionaires are minted daily, it seems heresy to question the economic payoff from information **technology** -- the billions upon billions spent each year by companies and households on everything from computers to software to cell phones.

But for more than a decade, most of the nation's leading economists have been heretics.

"You can see the computer age everywhere but in the productivity statistics," Robert M. Solow, a Nobel Prize winner from the Massachusetts Institute of **Technology**, once said.

For years, even as the computer revolutionized the workplace, "measured productivity" -- the output of goods and services per worker -- stagnated, barely advancing 1 percent a year. So it is easy to see how Mr. Solow's pithy comment became the favorite punch line of the economic naysayers.

Yet today, even renowned skeptics on the subject of **technology**'s contribution to the economy, like Mr. Solow, are having second thoughts. Productivity growth has picked up, starting in 1996, capped by a surge in the second half of last year, after eight years of economic expansion. That has drawn attention because past upward swings in productivity typically occurred early in a recovery as economic activity rebounded. Once companies increased hiring, it slowed again.

But something seems fundamentally different this time. It apparently relates to the increased speed and efficiency that information **technology** advances -- including the Internet -- is finally bringing to the mundane day-to-day tasks of millions of businesses.

The question, posed by economists, is whether the higher productivity growth averaging about 2 percent in the last three years, roughly double the pace from 1973 to 1995, is the long-awaited confirmation that the nation's steadily rising investment in computers and communications is finally paying off. The evidence is starting to point in that direction.

"My beliefs are shifting on this subject," Mr. Solow said. "I am still far from certain. But the story always was that it took a long time for people to use information **technology** and truly become more efficient. That story sounds a lot more convincing today than it did a year or two ago."

Another pillar in the pessimist camp was Daniel E. Sichel, an economist at the Federal Reserve. His work, along with another Fed economist, Stephen D. Oliner, in 1994, and on his own in 1997, found that computers contributed little to economic growth. But recently, Mr. Sichel ran similar calculations for the last few years and came to a different conclusion.

In a paper that has just been published in the quarterly **Business** Economics, he wrote that his new work points to "a striking step up in the contribution of computers to output growth." And the nation's improved productivity performance, he noted, is "raising the possibility that businesses are finally reaping the benefits of information **technology**."

Wanted: New Way To Measure Economy

The impact of information **technology** on the economy is more than an academic debate. If, as some experts assert, the **technology** dividend is a key reason for the nation's extraordinary run of high growth, rising wages and low inflation, there are significant policy implications. If the recent gains are not just a temporary blip, it

suggests that the Federal Reserve can be less fearful of inflation and keep interest rates stable rather than be forced to raise them to cool off what would otherwise be considered an overheated economy. The Fed chairman, Alan Greenspan, and the other Fed governors are scheduled to hear presentations on information **technology's** effect on the economy from several academics during a private meeting in Washington tomorrow.

Mr. Greenspan, for one, seems to believe a fundamental change is under way in the economy. He told Congress in January that the economy is enjoying "higher, **technology**-driven productivity growth."

The Fed governors will hear a forceful case for technological optimism from Erik Brynjolfsson, an associate professor at the M.I.T. Sloan School of Management.

Mr. Brynjolfsson asserts that the economic value of speed, quality improvements, customer service and new products are often not captured by Government statistics. "These are the competitive advantages of information **technology**," he said. "We need a broader definition of output in this new economy, which goes beyond the industrial-era concept of widgets coming off the assembly line."

The Government, after years of defending its figures, conceded two weeks ago that productivity growth may be understated. The core of the problem, Government economists say, is the increasingly complex challenge of defining and measuring output in much of the economy's fast-growing service sector, which includes the vast reaches of banking, finance, health care and education.

According to the official statistics, for instance, a bank today is no more productive than a bank was two decades ago. Yet that seems to take scant account of, say, 24-hour automated teller machines, which clearly benefit customers who no longer have to wait in lines to be served by human tellers during regular "bankers' hours."

Edwin R. Dean, chief of the productivity division of the Bureau of Labor Statistics, wrote in a recent research paper that the agency is increasingly concerned that its measurements do not "fully reflect changes in the quality of goods and services" or "capture the full impact of new **technology** on economic performance."

Still, the Government's methods of measurement will not be overhauled anytime soon. "These are tough, tough questions and we are not going to get instant solutions," Mr. Dean said in an interview.

Revolution Unfolds In the Back Offices

American corporations long ago made up their minds, voting for **technology** with their dollars. Investment in information **technology** -- computing and telecommunications gear -- has quadrupled over the last decade, rising as a share of all **business** spending on equipment to 53 percent from 29 percent, according to the Commerce Department. And that is only the hardware. There have been surges in corporate spending on software, consulting, technical support and training related to the field.

"The payoff from information **technology** is unquestionably there with individual companies and we're seeing it over and over again," said Chuck Rieger, a senior consultant at I.B.M.'s services division.

Of course, anecdotal evidence from individual companies is no proof of broad-based benefits in an \$8.5 trillion economy. But what many experts find encouraging is that the rapid introduction of low-cost **Internet technology** means most companies can now afford to set up electronic links with customers and suppliers. For example, a recent survey of 2,500 manufacturing companies, conducted by PricewaterhouseCoopers, found that the number of factories with Internet links to customers and suppliers doubled last year.

At more and more companies, these Internet-based networks are already streamlining the mundane chores of **business** life like invoicing, purchasing and inventory control. This is not the glamorous side of Internet commerce, occupied by Amazon.com and others selling consumer products. Yet if a **technology** dividend in productivity is at hand, the place to look is in the back offices of **business**. "That is where it will be," Mr. Solow, the M.I.T. economist, said, "in the wholesale automation of corporate transactions."

This **business-to-business** commerce over the Internet is projected to jump from \$48 billion in 1998 to \$1.5 trillion by 2003, according to Forrester Research Inc. During the same period, the research firm estimates that consumer sales over the Internet will rise from \$3.9 billion to \$108 billion.

Looking for Clues In the Service Sector

The service sector of the economy is where productivity gains appear to have been especially sluggish and where experts are looking most closely for evidence of an efficiency payoff from **technology**.

In Chicago, Michael Rushmore, a banker, said Internet computing has "fundamentally changed the way we do **business**" over the last three or four years. An example of this is the way corporate loans are syndicated among many banks, said Mr. Rushmore, who is a managing director of Nationsbank Montgomery Securities, the securities arm of the BankAmerica Corporation.

Until about two years ago, syndicating a large corporate bank loan meant distributing a lengthy offering document, often running more than 200 pages, to 50 to 100 banks. It was, Mr. Rushmore recalled, a nightmarish, inefficient process that involved waves of overnight mail, constant faxing and armies of messengers.

Today, much of that process is handled over the Internet on bank Web sites that other banks tap into to read and download the offering document, ask questions and exchange views. Mr. Rushmore estimates that the Internet-based system trims 25 percent from the time it takes to close a deal, not just improving the ease of the transaction but also saving an immense amount of work.

The rapid spread of Internet-based computing, experts say, promises to compress the time it takes for any new **technology** to enhance economic welfare in general. The classic study of the phenomenon, "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox," by Paul David, an economic historian at Stanford University, was published in 1990.

The electric motor, Mr. David noted, was introduced in the early 1880's but did not generate discernible productivity gains until the 1920's. It took that long, he wrote, not only for the **technology** to be widely diffused but also for businesses to reorganize work around the industrial production line, the efficiency breakthrough of its day.

"The process takes longer than people think, but I still believe that we will get a revival of productivity growth led by the spread of computing," Mr. David said.

Techno-Pessimists See an 'Arms Race'

His is a misplaced faith, according to the dwindling band of techno-pessimists whose own beliefs remain unshaken. Sure, they concede, there has been surprisingly strong productivity growth for the last three years. Could this represent a break in the trend? Possibly, they grudgingly admit, but only a tiny shift at best.

The real problem, they say, lies in the composition of the nation's vast service economy. More than half of all white-collar workers are what they term "knowledge workers" -- managers, executives and professionals like doctors, lawyers, teachers, even economists.

"The work they do does not lend itself to **technology**-driven improvements in productivity, and any gains are really difficult to eke out and are glacial," said Stephen S. Roach, chief economist at Morgan Stanley Dean Witter. "Paul David's electrical motor has nothing to do with the knowledge-intensive process of work in a service economy."

A leading **technology** cynic at the Fed meeting tomorrow will be Paul Strassmann, a former chief information officer of Xerox and the Pentagon. Mr. Strassmann, author of "The Squandered Computer," published in 1997, believes that much of corporate America's spending spree on information **technology** amounts to an "economic arms race," fueled by misguided management theories.

The recent improvement in productivity, according to Mr. Strassmann, is mainly attributable to the lower cost of capital because of low interest rates. His summary view, though at odds with those of **technology** optimists like Mr. Brynjolfsson of M.I.T., may also be received warmly by the Fed.

"The explanation for the productivity improvement is interest rates, not information **technology**," Mr. Strassmann said. "The hero here is not Bill Gates. It's Alan Greenspan."

Yet even Mr. Strassmann finds the **technology** undeniably useful, if not a productivity elixir. When asked a detailed question, he replied: "Just look it up on my Web site. It's a lot more efficient that way."

Graph: "Return on Capital" Corporate investment in seems to be paying off with solid gains in productivity since 1996. Graph tracks spending on information as a share of all spending on equipment, since 1985. It also tracks percentage change in nonfarm productivity, over the same period. (Source: Haver Analytics)(pg. C14)

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The New York Times

Business/Financial Desk; Section C
Chip Progress Forecast to Hit A Big Barrier

By JOHN MARKOFF

1,356 words

9 October 1999

The New York Times

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English

(c) 1999 New York Times Company

SAN FRANCISCO, Oct. 8 -- For more than three decades, it has been an unshakable principle of the computer industry: every 18 months, the number of transistors that will fit on a silicon chip doubles.

The phenomenon, known as Moore's Law for the semiconductor pioneer who first observed it, has been the basic force underlying the computer revolution and **the rise of the Internet**. As transistors have been scaled ever smaller, computing performance has risen exponentially while the cost of that power has been driven down. And it has been assumed in the industry that the rate of progress would hold for at least another 10 to 15 years.

But now a researcher at Intel, the world's leading chip company, has reported glimpsing a potentially insurmountable barrier to the advance of Moore's Law much closer at hand, perhaps early in the coming decade.

In an article in the journal Science, the Intel scientist, Paul A. Packan, says it is not clear whether the most common type of silicon transistor can be scaled down beyond the generation of chips that will begin to appear next year, because semiconductor engineers have not found ways around basic physical limits.

"These fundamental issues have not previously limited the scaling of transistors," he wrote in the Sept. 24 issue. "There are currently no known solutions to these problems," he added, calling it "the most difficult challenge the semiconductor industry has ever faced."

Dennis Allison, a Silicon Valley physicist and computer designer, said: "The fact that this warning comes from Intel's process group is really significant. This says that they see actual limits."

The report by the Intel scientist will be echoed by researchers from the University of Glasgow in a paper to be presented in December at a conference in Washington.

Without further advances in the miniaturization of silicon-based transistors, hopes for continued progress would have to be based on technologies that are promising but unproved: new materials, new transistor designs and advances like molecular computing, in which single molecules act as digital on-off switches.

To be sure, such dire warnings have been made periodically in the past -- an article in Scientific American in 1987 said Moore's Law was unlikely to be maintained through the 1990's -- and each time semiconductor designers have shown remarkable ingenuity to surmount seemingly impossible barriers.

Indeed, Moore's Law -- first stated in 1965 by Gordon Moore, an Intel co-founder -- proved to be understated; Moore had to revise his initial prediction of 24 months for each doubling of chip capacity. And while it is not an actual physical law, his observation has taken on an almost mystical quality as the clearest expression of the power of human science and engineering and many industry executives have come to see it as a self-fulfilling prophecy.

In the last decade the advances described by Moore's Law have had an accelerating impact on the personal computer industry, driving the cost of desktop machines down from \$3,000 to as low as \$500 while increasing their power.

The inventors of the original semiconductor design **technology** are for the most part still bullish about extending that progress, whatever the immediate hurdles.

"Historically the economic incentives to find new methods for device improvement have regularly overcome the predicted scaling limits," said John Moussouris, a physicist and semiconductor designer. "The physical challenges may be getting harder, but the people and financial resources to surmount them are also growing each year."

But for the first time the global semiconductor industry is grappling with transistors so small that the placement of individual atoms will soon become crucial.

For example, in the current generation of semiconductors, the wires that interconnect transistors are etched as fine as 0.18 micron -- one five-hundredth the width of a human hair -- and the individual insulating layers that are inside a transistor may be only four or five atoms thick.

Semiconductor factories in Japan plan to begin mass production of chips based on widths of 0.13 micron early next year, and such chips should be in widespread use within two years. But beyond that generation, the industry's leading researchers acknowledge there remain far more questions than answers.

The next step would be widths of 0.10 micron, a milestone that in the Moore's Law progression would be expected three to five years from now. But at that scale, Mr. Packan writes, transistors will be composed of fewer than 100 atoms, and statistical variations in this Lilliputian world are beyond the ability of semiconductor engineers to control.

Mr. Packan said he had written the Science article to challenge the industry and academia to focus on areas where breakthroughs are needed. "For the last 30 years we've been engineering the device, and now what's required is fundamental science," he said in a telephone interview today.

Intel executives cautioned against reading too much gloom into their technical papers, saying that while they did not yet have precise engineering solutions for breaking the 0.10 micron barrier, they were confident that answers would be found.

They suggested that part of the reason for Intel's recent pessimism might have more to do with the need for corporate secrecy than the arrival of fundamental technical limits.

"We face serious challenges," said Mark Bohr, an Intel **technology** development director and the co-author of an internal Intel technical paper that enumerates the company's unsolved problems. "We all have ideas to address some of these problems and admittedly they are iffy and not fully developed, and you don't want to tip your cards too soon."

And Carver Mead, a physicist and a pioneer in semiconductor design, says he still adheres to what has been the conventional industry wisdom, suggesting that Moore's Law will continue to account for the pace of silicon **technology** advances until at least 2014. "There are still some open issues," he said. "and so the Chicken Little sky-is-falling articles are a recurring theme."

But James Heath, a chemistry professor at the University of California at Los Angeles who is a co-inventor of the carbon 60 molecule known as the Buckyball, said the industry might be overly optimistic because it had such a vast investment in today's silicon **technology**.

With researchers at Hewlett-Packard, Mr. Heath has developed a prototype memory cell the size of a single molecule that operates on different principles from today's semiconductors.

"I think their optimism for being able to continue until 2014 is not very realistic," he said. "When you get to very, very small sizes, you are limited by relying on only a handful of electrons to describe the difference between on and off."

Executives at I.B.M., which along with Intel and Motorola is one of the nation's dominant chip makers, acknowledged that it might be accurate to warn of an impending limit to the shrinking of today's dominant chips, known as C.M.O.'s, or complimentary metal oxide semiconductors. But they said they believed they had found an alternative approach, known as silicon-on-insulator, that held great promise at dimensions of 0.10 micron and smaller.

"This paper is quite consistent with work we've published," said Randall Isaac, vice president for systems **technology** and science at I.B.M.'s Watson Laboratory in Yorktown Heights, N.Y. "But when a given **technology** saturates, it is usually replaced by a new one."

Chart: "Moore's Law" Gordon Moore, a co-founder of the Intel Corporation, has observed that the capacity of computer chips should double every 18 months. Up to now, that has largely been true. Here are the capacities of top-of-the-line Intel chips charted on an ordinary scale and on a logarithmic scale, which depicts comparable rates of change similarly. Graph illustrates the ordinary scale of computer chip capacity from 1971 through 1998. Graph illustrates the logarithmic scale of computer chip capacity from 1971 through 1998. (Source: VLSI)(pg. C14)

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The New York Times

Telecommunications Powerhouse

Business/Financial Desk; Section C

Goldman Sachs Rules as Industry Is Transformed in Europe

By LAURA M. HOLSON with ANDREW ROSS SORKIN

1,954 words

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The New York Times

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English

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For a brief period last month, it seemed that the Goldman Sachs Group might become a victim of its own international success.

Mannesmann, the German telecommunications giant, had filed a conflict-of-interest suit in London, arguing that Goldman should be barred from advising the British wireless company Vodafone AirTouch. On what grounds? Because Goldman had advised an investor in Orange of Britain, a wireless company Mannesmann itself wanted.

But the court called the suit hopeless, refusing to censure Goldman for having too many of a good thing -- clients. In the end, the episode underscored what investment bankers had known all along: Goldman Sachs had become a dominant force in the redrawing of Europe's telecommunications map.

Chalk it up to the appetites of acquisition-hungry Europeans eager to expand their network empires -- and to Goldman's years of positioning itself to direct and underwrite that action.

This year, Goldman has been an adviser on \$239 billion of telecommunications mergers in Europe. That represents an almost fourfold increase over 1998, according to Thompson Financial Securities Data, and enough to propel it from No. 11 to No. 1 on the list of bankers in European telecommunications mergers. Not only is Goldman the lead adviser for the voracious Vodafone, Britain's largest wireless concern, but it acts as counsel to other giants, most notably Deutsche Telekom, which Goldman took public in 1996.

This rise to prominence has come at the expense of European investment bankers like Lazard Freres & Company and Schroders, Britain's largest independent investment bank. They have not only fallen behind Goldman on their own turf but know that its most formidable opponent in the region is another American firm, Morgan Stanley Dean Witter & Company.

But the European bankers face more than bad luck. In a year when American-style corporate takeovers are overrunning the traditions of economic nationalism in Europe -- a few years ago, a hostile bid by a British company for a German telecommunications company would have been unthinkable -- the contestants need the American banks that know best how to play the game.

"They've outmuscled all of us because of their single-minded focus on winning," an investment banker at a European firm said of Goldman. To illustrate his point, he began humming the theme song from "The A Team," a 1980's television show about a group of rebels who brandished weapons to defeat their enemies. "Goldman's like the A Team. They're a real shoot-'em-up group."

Goldman began its march into Europe more than a decade ago when, anticipating a wave of privatization in telecommunications, the firm began calling on government agencies to help them sell stakes in state-owned telephone concerns. Scott Mead, a Cambridge-educated American, was one of the core team to set up shop in 1988 in London, where he is now co-head of Goldman's global communications, **media** and entertainment group. His counterpart is another American, Robert S. Harrison, a longtime Goldman partner who teamed up with Mr. Mead early this year and is based in New York.

One of the group's first deals was a public offering by Telefonica S.A., Spain's biggest telecommunications company, in the late 80's. Other stock underwriting assignments followed, including one by Britain's Cable and Wireless in 1989 and another by TeleDanmark of Denmark in 1994.

But Goldman's big break came when it was picked by the German government to sell a \$13 billion stake in Deutsche Telekom in a stock offering in 1996. The assignment became the cornerstone of Goldman's campaign to court top-tier European telecommunications players. "It was the franchising of our German office," Mr. Mead said. "People could see the German government had faith in us and this was a good thing."

Wooing Deutsche Telekom required a protracted courtship. Goldman bankers from both London and Frankfurt had approached the German company in 1990 about the prospects of a sale. They held regular strategy sessions with executives along with several smaller meetings, Mr. Mead recalled. Top executives from New York made regular visits and in 1994, a Goldman associate began working from an office in Deutsche Telekom headquarters.

Its established relationships with European telephone companies helped Goldman to pounce as new businesses like wireless communications and Internet access have spun out of the telephone industry.

"The Goldman strategy is if it was owned by the government, take it private," said Howard Anderson, chairman of the Yankee Group, a telecommunications research firm. "If it is private, take it public. Then merge it. They are a transaction machine."

Consider the case of Spain's Terra Networks S.A., a provider of Internet access and content in Spanish- and Portuguese-speaking countries, which Goldman took public last month and whose market value reached \$13.9 billion as of last Friday. Terra Networks is a unit of Goldman's oldest European telecom client, Telefonica.

Goldman's European base has also enabled the firm to enhance client relationships in the United States. In 1998, for instance, Goldman advised the Ameritech Corporation, the Chicago-based telephone company, on its purchase of a 34.4 percent stake in another Goldman client, Denmark's state-owned TeleDanmark, for \$3.1 billion. That deal led to Goldman's advising Ameritech on its sale earlier this year to SBC Communications Inc., Mr. Mead said.

This year, however, if any company has put Goldman on the map in Europe it has been Vodafone AirTouch. Few people in the United States had even heard of the company until last January, when it defeated Bell Atlantic in a bidding contest to buy AirTouch Communications, one of the largest American cellular phone companies, for \$77 billion. And then, as if to show there were no hard feelings, Vodafone followed up in the summer with the announcement of an \$80 billion cellular joint venture -- with Bell Atlantic.

Vodafone executives knew Goldman as far back as 1988, when the firm helped with the spinoff of Vodafone from Racal Electronics, a military-electronics company. In the early going, Goldman did not conduct much **business** for Vodafone because the telecommunications company was not actively pursuing deals, said Christopher Gent, Vodafone's chief executive. In fact, Goldman nearly lost the account altogether when it played lead banker for the 1996 initial stock offering of a Vodafone competitor, Orange, without conferring with Vodafone.

To make amends, Mr. Gent said, Goldman's chief executive at the time, Jon S. Corzine, called him personally to apologize. "We came to an understanding early on of what was expected of them," Mr. Gent recalled. "I expected them to commit to us."

It was not long before Mr. Mead began to call on Mr. Gent personally.

The two men hit it off, and Mr. Gent recalls a strategy meeting in 1997 where they came up with the notion that telecommunications companies like Vodafone would either "hunt or be hunted." To survive in a global market, Mr. Gent said, "we had to do it by transactions, not by being stealth."

Goldman leaped into action, dispatching teams from both Europe and the United States to begin working up a strategy with Vodafone, resulting in the AirTouch and Bell Atlantic forays and the ongoing effort to take control of Mannesmann.

But even Mr. Gent is mindful of the risk Goldman has taken by choosing to represent his company in the Mannesmann battle. Germany is one of its most lucrative markets, and if the strategy backfires, the Goldman name will surely lose some luster there. "It was a huge decision for them to back us in Germany because they are so strong there," Mr. Gent said. "It could hurt them. I'm sure there was a lot of discussion at Goldman about this."

Last January, Mr. Harrison, a longtime Goldman partner and friend of Mr. Mead's since their university days in Britain in the late 1970's, joined him at Mr. Mead's invitation to co-head the communications, **media** and entertainment group. Through the spring, over several dinners in Manhattan at Provence in SoHo and other French bistros, and through frequent trips between New York and London, the two mapped out their group's strategy for adapting to a fast-changing telecommunications world.

First, the Mr. Mead and Mr. Harrison decided that Goldman's 175 telecommunications bankers worldwide should focus on two types of concerns: "super league" telecommunications companies, of which they say there are some 60 worldwide, including the likes of Vodafone and Deutsche Telekom; as well as emerging telecom companies. "We are looking for the next Global Crossing, huge users of capital that require high-yield financing," Mr. Harrison said, alluding to an upstart telecommunications company that Goldman and others have advised, which is investing in undersea cables for Internet use. "Right now it is a question of finding them."

And it is a question of whether Goldman can service them. Goldman has always been strong in merger advice and taking companies public. But high-yield finance -- debt financing with sufficient risk that investors demand a higher interest rate -- has never been Goldman's forte. Hoping to change that, Goldman recently hired David Solomon, a noted Wall Street rainmaker and former co-head of investment banking at Bear, Stearns, to help lead its newly expanded global high-yield banking **business**.

Steve Galbraith, an investment banking and brokerage analyst at Sanford C. Bernstein & Company, is one of many in the industry who are closely watching Goldman's high-yield effort. "It is the only part of their arsenal they are missing," Mr. Galbraith said. "It will be interesting to see if this strategy works out."

And in a nod to the colliding worlds of **technology**, telecommunications and **media**, Goldman's **global communication** group has set up a joint venture with its **technology** team to represent Internet companies and telecommunications equipment makers. It is not unusual for **technology** and telecommunications bankers to cross paths, but until now they have typically called on clients separately in order to protect lucrative fiefs.

If Goldman's approach is successful, other investment banks might be tempted to follow suit. If not, Goldman may find its bankers divided by turf battles that could leave the firm vulnerable to competitors all too happy to swoop in and steal **business**.

"Their vision is: fortune favors the bold," Mr. Anderson, the Yankee Group chairman, said of Goldman's success in Europe. "We'll see how well they apply it to their own **business** in the coming years."

Photo: Scott Mead, left, and Robert S. Harrison are co-heads of Goldman's global communications, and entertainment group. (Jeffery A. Salter/The New York Times) Chart: "Goldman's Global Deals" Goldman, Sachs has become a leading investment banker in international telecommunications. Here are some of the firm's biggest assignments for overseas clients. BRITAIN 1996 Orange P.L.C. -- Lead banker in \$1.2 billion initial public offering of stock 1999 Vodafone AirTouch -- Adviser in \$77 billion acquisition of AirTouch Communications; Adviser in \$80 billion cellular joint venture with Bell Atlantic; Adviser on \$127 billion hostile bid for Mannesmann DENMARK 1994 TeleDanmark -- Lead banker in \$3 billion initial public offering GERMANY 1996 Deutsche Telekom -- Lead banker in \$13 billion initial public offering 1999 Deutsche Telekom -- Adviser in failed bid for Telecom Italia HONG KONG 1997 China Telecom -- Lead banker in \$4.2 billion initial public offering JAPAN 1998 NTT Mobile Communications Network -- Lead banker in \$18.4 billion initial public offering SPAIN 1987 Telefonica de Espana -- Lead banker in \$376 million initial public offering

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The New York Times

Business/Financial Desk; Section C
Microsoft Official Says Company Sought Cooperation

By STEVE LOHR
883 words
27 January 1999
The New York Times
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Page 2, Column 1
English
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WASHINGTON, Jan. 26 -- A senior executive of the Microsoft Corporation testified today that his company tried to convince its main rival in the Internet software market to become less of a head-on competitor.

Paul Maritz, the highest-ranking executive appearing as a witness at the Microsoft antitrust trial, portrayed the discussions with the Netscape Communications Corporation in 1995 as mainly an effort to find "common ground" between the two companies.

But the Government maintains that a June 1995 meeting was a crucial episode in its sweeping antitrust case. After Netscape rejected Microsoft's proposal, the Government contends, Microsoft embarked on what the prosecution regards as a pattern of practices intended to thwart competition.

David Boies, the Justice Department's lead trial lawyer, presented several Microsoft E-mails written shortly before the Netscape meeting saying that Microsoft wanted to make sure Netscape's software for browsing the World Wide Web did not become a **technology** "platform" for which software programmers would write applications -- making it a potential alternative to Microsoft's industry-standard Windows operating system.

In a June 1, 1995, E-mail, one Microsoft executive identified key goals as "move Netscape out" of Internet browser software for future versions of Windows and to "avoid a cold or hot war with Netscape," adding, "Keep them from sabotaging our platform evolution."

When asked to comment on this E-mail and others, Mr. Maritz replied, "We clearly had an agenda for making certain technologies common in the industry."

But in some of the sharpest questioning since the trial began last October, Mr. Boies persistently asked an elusive Mr. Maritz about the implications of Microsoft's proposal. If Netscape had agreed to shift its focus away from software that Microsoft deemed mainstream to its strategic interests, he asked, would Netscape have become a "less significant platform threat?"

That, Mr. Maritz conceded, was partly true. "At one level, yes," he said.

But he noted Microsoft was mainly trying to get Netscape to agree to Microsoft's preferred set of basic Internet technologies and nothing in their talks would have prevented Netscape from competing in other Internet-related software, including multimedia software, groupware and Java, an Internet programming language.

The result, he said, could have been that Netscape would have become an even more formidable rival. If Netscape had focused less on the browser and more on software and services that compete less directly with Microsoft, for example, Mr. Maritz said Netscape might have a "much more entrenched position within large corporations today."

In short, Mr. Maritz said the result of Microsoft's proposal might have been to reduce competition in certain niches of the software **business**, but not to diminish competition overall.

William H. Neukom, Microsoft's senior vice president for law and corporate affairs, said words matter less than actions in antitrust law. "After that meeting," he said, "there was full-fledged competition between Microsoft and Netscape."

Yet the Government replies that the head-to-head competition occurred only after Netscape rejected Microsoft's proposal. After the afternoon court session, Mr. Boies said, "It is significant for our case that Microsoft has admitted seeking to persuade Netscape not to engage in platform competition."

In the morning, the Government tried to raise questions about the credibility of Microsoft's current legal stance by accusing the company of engaging in a "concerted effort" to alter the words used to describe Internet software internally and in its public statements to suit the company's legal stance.

The Government pointed to company E-mail from early last year that said Microsoft had to make sure that the word "browser" was no longer used in referring to its Internet browsing software and that the "legal staff" be brought in to check the language.

The wording plays a role in the case because the Government contends that the software maker bundled its Internet Explorer browser into its Windows operating system to thwart competition in the Internet software market.

Microsoft replies that since **the rise of the Internet** the company had always planned to fold the software used to browse the World Wide Web into its operating system. The browser, Microsoft insists, is merely a feature of the operating system and not a stand-alone product.

In an E-mail in February 1998, a Microsoft executive, wrote that "saying 'put the browser in the OS' is already a statement that is prejudicial to us," and went on, "The name 'browser' suggests a separate thing." (OS stands for operating system.)

In another E-mail in February 1998, a Microsoft executive reported "good progress" in cleaning up the wording used on the company's Web site. "We don't refer to it as a product or even a browser," he wrote. "It's browsing software."

By early 1998, Microsoft was already being sued by the Justice Department in a related case concerning a 1995 antitrust consent decree. Mr. Maritz emphasized that the change in the approved corporate vernacular was mainly to clearly explain the consumer benefits of tightly integrating the browser with the operating system.

Still, Mr. Maritz said the legal environment also played a role, necessitating the use of "more precise language" as "this set of events was heating up."

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The New York Times

COMPANY NEWS

Business/Financial Desk; Section C

CONCENTRIC NETWORK TO BUY BRITISH INTERNET PROVIDER

Bloomberg News

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The New York Times

NYTF

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English

(c) 1999 New York Times Company

The Concentric Network Corporation, a provider of Internet services to businesses, said yesterday that it had agreed to acquire **Internet Technology** Group P.L.C. for \$146 million (\$235 million) to enter the European Internet-access market. Concentric, based in San Jose, Calif., will pay 253 pence for each **Internet Technology** share in cash and new Concentric shares. Concentric, of which the Microsoft Corporation owns about 4 percent, is buying **Internet Technology** for its Internet protocol network, the most extensive of any independent British Internet provider. Spending on Internet access in Europe is expected to balloon to \$12 billion in 2001 from \$2.5 billion last year. Concentric provides Internet services that allow businesses to communicate with their offices, customers and suppliers.

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The New York Times

Next Stage of the Cellular Tour

Business/Financial Desk; Section C

Forced to Compete, Japan Becomes a Global Power

By SHERYL WuDUNN

1,822 words

27 July 1999

The New York Times

NYTF

Page 1, Column 3

English

(c) 1999 New York Times Company

TOKYO, July 26 -- One of the nicest things the United States ever did for Japan, it seems, was to force it, kicking and screaming, to open its market for cellular phones.

That was five years ago. At the time, Japan was aghast at the idea of freeing up a market that was a groggy backwater. Japanese citizens were not even allowed to own cellular phones -- just rent them -- and Japanese companies were afraid that they were going to lose **business** to American rivals like Motorola.

Yet Japan buckled, and now, under the pressure of competition, it has leap-frogged to the front of the global pack. The country now has a higher concentration of cellular telephones -- including ones colored pink, pale blue or tea-green -- than does the United States.

More astonishing, Japan has caught up with Europe, the early pace setter, and plans to move ahead in 2001 by introducing the "third generation" of cellular phone **technology**, which promises much greater clarity and ability to transmit data and video.

Already, Japanese cell phones, which used to be second-rate and expensive, have been transformed into devices to buy and sell stocks, reserve tickets for trains and airplanes, transfer funds between bank accounts and send and receive text messages and simple drawings.

Moreover, as in Europe, they have leaped into the digital era under the umbrella of compatibility -- unlike in the United States, where competing technologies have actually stifled the advance of seamless and ubiquitous **communication**.

The latest mobile phone to draw oohs and aahs here has a tiny camera that sends a shaky TV-style color image to a small screen on the other party's telephone -- assuming that it too is a video phone.

That cellular video phone, made by the Kyocera Corporation, will be introduced this month, for about \$335, and it is as tiny as any other mobile phone, easily fitting into a shirt pocket. Meanwhile, Epson has merged phones with functions of a personal digital assistant like the Palm Pilot, creating a unit that is both phone and diary, and that can also send color images.

So, as Japan's economy still staggers along, one of the brightest opportunities in this country of 126 million people is a shimmering milky way of 50 million twinkling and tinkling portable phones.

Trials have already begun on an advanced wideband wireless transmission **technology**, and some say that Japan may drive the global standard and become a leader in the next generation of mobile phones.

"In Japan, we are at a turning point," said Jun Murai, a professor at Keio University and the leading cheerleader here for the Internet. Japan lags behind the United States significantly in information **technology**, he said, but with regard to potential technical power, "Japanese companies are not behind."

In many ways, at stake is Japan's pride at being a leader in a pivotal **technology** -- enormously important in a nation that has been economically wounded for the entire decade.

Japan is betting that mobile phones will enjoy explosive growth as they become a key accessory, as common as wrist watches, that people take when they leave home. Japanese companies are betting that mobile phones, rather than computers, will connect people here to E-commerce on the Internet.

Indeed, Japanese researchers are collaborating with American companies, like Sun Microsystems, so that they may also become a major link in controlling home appliances. Their goal, ultimately, is to transform mobile phones into the crucial digital device of the future.

They see a big market not just in the industrialized world but also in nations like China, where many consumers' first phone is cellular.

Japan's gamble, though, is by no means a sure bet.

"The next question is whether they take it from a cell phone to a full PC or whether it makes sense to browse the Net on the phone, for simple point-and-clicking," said Vinton G. Cerf, senior vice president for Internet architecture and **technology** at MCI Worldcom. "Japan is good at size, power and bringing the cost down. There's no better country to do it than Japan."

One big problem, though, is that few Japanese are plugged into the computing world. As recently as a few years ago, Japan was in the personal-computing dark ages, a nation where corporate offices were big rooms filled with paper-laden desks and where desktop computers were rare.

Even now, on average, only one person in four here uses a personal computer. And so far, only about 14 percent of Japan's population is plugged into the Internet, compared with 40 percent in the United States.

Personal computers have not been a bigger hit in Japan for several reasons. For one thing, keyboards intimidate many middle-aged Japanese, and tapping in the Japanese language -- with two alphabets and several thousand Chinese characters -- requires combinations of strokes that are far more complex than in English.

Another is that many homes are cramped, and PC's take up a fair amount of space. But that aversion to bulky computers and keyboards may actually serve to spur the development of mobile phones as a more compatible alternative.

At the same time, the high cost of traditional phone services may help advance cell phone **technology** even more. Hefty telephone costs, including a mandatory \$580 start-up fee for a telephone and charges that add up by the minute, currently make Internet surfing very expensive.

Initial costs for cell phones are so much cheaper than for a regular phone line that young Japanese, especially students, often have only a cell phone in their apartments. And the prospect of a transformation in mobile-phone **technology**, along with the hope of a new kind of gateway to the Web, is beginning to create a sense of optimism that Japan may be able to catch up in the **Internet revolution**.

"There's a huge penetration of mobile telephones in Japan," said Junichi Saeki, director of systems solutions at the International Data Corporation in Tokyo. "This will lead to the next generation of information **technology**."

The push has been driven by NTT's Mobile Communications Network, known as NTT DoCoMo, a cellular operator that commands more than 50 percent of the market in Japan. NTT DoCoMo is now working with American and Japanese companies to develop a new wireless transmission **technology**, called wideband C.D.M.A. -- short for code division multiple access -- that is supposed to ultimately enable people around the world to transmit data and video rapidly through a cell phone.

Many mobile phone operators here now use a fairly narrow band, which can send data at speeds as fast as 32 kilobits a second, faster than Europe's first-generation digital phones but slower than the interim standard expected next year. True wide band offers much more space and speed -- a potential of as fast as 2 megabits a second, 65 times the capability of existing phones.

Negotiators from around the world have settled on a format to move toward a wideband C.D.M.A. for the next generation of telephones, so that the same cellular phone could be used in almost any country. But carriers in the United States are still fighting over standards.

For now, the latest craze in Japan is a cell phone called the I-mode, which NTT DoCoMo started selling in February. As many as 10,000 of the phones are sold every day; already 779,000 owners use them to send E-mail, check news headlines, buy stocks, make bank transfers or plane reservations. They can gain access to specially formatted World Wide Web sites and even see simple graphics.

NTT DoCoMo is betting that Japanese consumers will get hooked on electronic commerce through I-mode phones, which rely on current **technology**. Once they get used to E-commerce, then the new wide band C.D.M.A. should begin, scheduled to commence in Japan in March 2001, probably several years before it will arrive in the United States and at least a few months ahead of Europe.

"I-mode is like black-and-white TV," said Keiichi Enoki, a director at DoCoMo who spearheaded the I-mode project. "C.D.M.A. is like color TV."

Kyocera is working on a competing product that would let users gain access to the Internet through a different Web protocol. In the meantime, Kyocera is promoting the notion that telephone partners will want to see each other.

Video phones have flopped in the past, and Kyocera officials admit they have not yet figured out how to market the new model. Still, when they introduced the product in May, they got some unexpected responses.

A professional matchmaker inquired about using the phones for clients on first-time dates, and a security company asked how the phones could be used to keep tabs on where its guards were patrolling.

The idea of a mobile "spy phone," though, is precisely what may scare off customers, even those directly involved in the **business**. The video phone is one of the pet projects of Kazuo Inamori, Kyocera's iconoclastic chairman.

But at a marketing strategy session this winter, not one in a crowd of 60 employees raised his hand when asked who would buy one. The reason? No one wanted to talk to the boss on a video phone. Kyocera went ahead anyway with the product, mainly to keep up with the competition.

Masahiro Inoue, Kyocera's director of product development for the phone, is crossing his fingers that the public will respond.

"If it is inside the home, a lady might not want to use it is because she might not have her make-up on yet and she wouldn't want to reveal her naked face," Mr. Inoue said. "But if she's outside, she's well prepared to be seen. So such an application is right for the market."

Photo: A new cellular telephone by NTT can make financial transactions and airline reservations. In Japan, cellular phones are envisioned as better devices to use for electronic commerce than personal computers are. (Reuters)(pg. C8) Drawings (Illustrations by Nancy Doniger)(pg. C1) Graphs: "A Wider Reach . . . With Better " Cellular telephones are much more popular in Europe and Japan than in the United States. Graph tracks percentage of population using cell phones in the U.S., in Europe, and in Japan, since 1996. While American companies are still battling over different cell phone standards, digital phones, which allow messaging and connections to the Internet, have proliferated in Europe and Japan. Graph tracks number of digital and of analog wireless phone subscribers in the U.S., in Europe, and in Japan, over the same period. (Source: International Data Corp; Japan's Ministry of Post and Telecommunications)(pg. C1)

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The New York Times

Business/Financial Desk; Section C
AT&T Profits Ease but Still Beat Forecasts

By SETH SCHIESEL

972 words

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The New York Times

NYTF

Page 1, Column 5

English

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An article in **Business** Day on Tuesday about AT&T's third-quarter earnings misstated the recent performance of its consumer long-distance telephone unit. While its revenue has declined, profit margins have increased recently, not fallen.

CORRECTED BY THE NEW YORK TIMES THURSDAY OCTOBER 28, 1999

AT&T, the nation's most widely held stock, posted quarterly results yesterday that exceeded analysts' expectations and underscored the increasing importance in the communications industry of new services at the expense of traditional products.

AT&T's earnings beat estimates by a penny a share, but the company's overall profit declined largely because of a dilution of its stock caused by the acquisition of Tele-Communications Inc., the cable TV giant.

Strong growth in the AT&T units that provide wireless phone service and that serve the complex **communication** needs of big businesses was largely offset by continued declines in the company's core consumer long-distance **business**.

Over all, AT&T demonstrated healthy revenue growth, especially compared with anemic revenue performance in recent years. But it was not able to maintain the pace of revenue growth it established in the second quarter, and the company still appears to be growing less quickly than the rest of the telecommunications industry, which is surging amid deregulation and **the rise of the Internet**.

A big problem AT&T has in keeping pace with the rest of the industry is that its finances are still largely tied to standard long-distance phone service, a market in which it remains No. 1. But AT&T's share of the long-distance market has steadily fallen for at least 15 years, and the financial erosion caused by that process recently accelerated as a price war broke out among the leading long-distance carriers. That squeezed long-distance profit margins thinner than a strand of optical fiber.

In terms of sheer growth, the hot areas for AT&T are its wireless unit and its outsourcing **business**, known as AT&T Solutions, which seeks to serve large businesses. And the company has made progress in earnings growth by cutting billions in costs.

"Today's results are all about delivering on our commitments to investors by growing top-line revenues, meeting earnings targets and reducing our costs," C. Michael Armstrong, AT&T's chairman, said in a statement. "Our strong third-quarter performance also reflects the benefits of our investments in growth areas such as wireless and outsourcing services, where revenues were up by more than 40 percent each."

Counting the effect of AT&T's acquisition of I.B.M.'s network unit, the AT&T Solutions **business** more than tripled its revenue, to \$983 million in the quarter, up from \$285 million in the period a year earlier. The wireless unit reported revenue growth of 44.2 percent, to about \$2.1 billion. Excluding the effect of the acquisition of Vanguard Cellular and the sale of AT&T's paging unit, revenue in the group grew 40.9 percent compared with a year earlier.

But all was not well in the wireless unit. The company added 269,000 customers in the quarter, down 17.4 percent from the period a year earlier. AT&T said it had reined in its wireless marketing efforts because of "network capacity challenges in some markets and a supply shortage of digital multinet network phones." It did not identify the shortage with any particular equipment vendor.

Only last year, AT&T's **business** services unit, which is separate from the AT&T Solutions operation, surpassed the consumer long-distance **business** in revenue. Now, the **business** unit is almost 12 percent bigger, having increased its revenue in the quarter, to \$6.3 billion, 5 percent higher than in the period a year earlier. At the same time, the consumer unit shrank 4.7 percent, to about \$5.6 billion in revenue.

Excluding the effect of acquiring Tele-Communications Inc. and of the I.B.M. network unit, AT&T's revenue for the quarter grew 5.3 percent compared with the period a year earlier. Accounting as if TCI and the I.B.M. unit had already been a part of AT&T lifts the company's revenue growth for the quarter 5.6 percent, to \$16.3 billion from \$15.44 billion.

That is an improvement for AT&T over years past, but it is less impressive than the 6.7 percent growth in the second quarter, to \$15.8 billion from \$14.8 billion.

But even as the TCI and I.B.M. unit acquisitions help increase revenue growth, the TCI deal especially has been a killer for AT&T's earnings.

Excluding the two deals, operating earnings were 81 cents a diluted share, compared with 68 cents a share in the period a year earlier. But including the effect of the two deals, operating earnings were \$1.75 billion, or 54 cents a share, down from \$1.84 billion, or 68 cents a share, a year earlier. Analysts had expected the company to earn 53 cents a share, according to First Call/Thomson Financial, which tracks company earnings.

Shares of AT&T rose \$1.6875, to \$44.6875, on the New York Stock Exchange yesterday.

Including all special charges and the effect of all its deals, AT&T officially reported earnings of \$1.6 billion, or 50 cents a share, down from \$2 billion, or 78 cents a share, in the period a year earlier. Demonstrating the effect of the deals, revenue for the quarter was \$16.3 billion, up from \$13.7 billion.

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The New York Times

PRACTICAL TRAVELER

Travel Desk; Section 5

Hotels Mobbed, But a Bit Less So

By EDWIN McDOWELL

1,566 words

5 December 1999

The New York Times

NYTF

Page 4, Column 5

English

(c) 1999 New York Times Company

IF you've tried to book a hotel room in a major American city lately, you may have trouble believing this. The latest figures from the hotel industry, covering the first nine months of this year, show that occupancy rates are still in decline, continuing a trend that began in 1997. In fact, occupancy through September 1999 was down from the same period last year in 17 of the nation's 25 biggest markets, according to Smith Travel Research, the scorekeeper for the United States hotel industry. And industry analysts project falling occupancy for each of the next two years.

But don't be lulled into thinking that it is now easier to book the room of your choice at the last minute, or that room rates will plummet to reflect lower demand. The nine-month occupancy rate, 65.2 percent, is still slightly above the 25-year industry average of 65 percent. And unless you are willing to stay in the boondocks or at the Hotel Last Resort, city-center hotels, luxury and full service hotels may be as tough as ever to get into, while room rates, which have averaged \$81.06 so far in 1999, are likely to continue rising.

To understand why, consider this: while occupancy rates have slipped this year in New York, Atlanta, Boston, Chicago, Miami-Hialeah, Minneapolis-St. Paul, New Orleans, Philadelphia, San Francisco, San Diego and Washington, occupancy in all those markets remains in the 70-percent range.

Furthermore, the slippage in those cities has ranged from less than 2 percent in Minneapolis-St. Paul (1.7 percent, to be exact) to a minuscule 0.1 percent in Philadelphia. And in most of those cities, rooms that are centrally situated or in trendy outlying neighborhoods are still scarce unless booked well in advance. (There is another possibility for reserving a desirable hotel on short notice, but you'll have to read on to learn how.)

In fact, occupancy rates have been virtually flat in the most expensive markets -- those with average room rates over \$100 a night -- so the pattern is much the same as in each of the past several years. For example, occupancy is down only 0.6 percent in New York, where the average room rate is a whopping \$178.60; 0.4 percent in San Francisco (\$135.01 a room); 1.0 percent in Boston (\$131.36), 0.4 percent in New Orleans (\$113.94), 1.0 percent in Chicago (\$109.51), 1.6 percent on Oahu (\$107.54), 0.9 percent in Miami-Hialeah (\$107.40) and 0.5 percent in San Diego (\$103.23). So far this year, only Washington has had room rates averaging above \$100 (\$108.90) as well as increased occupancy (up 1.5 percent).

More Rooms, Higher Rates

Largely because of a glut of new hotels, after seven consecutive years of good financial news for the industry, even hotels in cities with big drops in occupancy this year have raised room rates modestly. These include Houston (a drop of 5.4 percent), Dallas (down 5.3 percent) Seattle (5.3) and Orlando (3.4). A notable exception is Denver, where occupancy has fallen 3.8 percent this year, to 69 percent, but where room rates have also declined a smidgen, to \$78.68 from \$78.80.

By contrast, in only 2 of the top 25 markets have room rates dropped at least 0.5 percent this year: Phoenix, where rates dropped 1.6 percent, to \$98.35, and occupancy fell 4.1 percent, to 62.9; and Oahu, where despite a slight rise in occupancy, room rates fell 4.1 percent, to \$107.54. While Phoenix was affected by a 10.3 percent increase in available rooms, Oahu's prices were driven down largely by the perception that too many of its hotels are overpriced and in need of refurbishment.

The industry expects a boost in occupancy and room rates in the fourth quarter, a period that includes multitudes in search of fall foliage, the Thanksgiving holiday, legions of fans following college and professional football teams, as well as the runup to Christmas and New Year.

In fact, room rates nationwide have risen each year since 1995, when the average was \$66.11, to \$81.06 through this September, and according to a forecast two months ago by PricewaterhouseCoopers, rates will rise to \$84.15 next year and to \$87.25 in 2001.

But even hotels in cities outside the top 25 markets -- including Cleveland, Raleigh-Durham, N.C., and Providence, R.I. -- are having banner years. A recent survey by PKF Consulting in San Francisco turned up occupancy rates above 70 percent this year in Austin, Tex.; Baton Rouge, La.; Nashville; Boise, Idaho; Colorado Springs; Portland, Ore.; Santa Fe, N.M., and Sacramento. Salt Lake City's occupancy is 71 percent for this year so far, 4.1 percent less than the 74 percent over the same period last year.

A Room in Brooklyn

One of the more interesting occupancy rates is at a single hotel, the New York Marriott Brooklyn. When it opened in July 1997, it was the first new hotel in Brooklyn in almost 70 years, and the hotel, which has 376 rooms, had an occupancy rate of almost 83 percent during the first six months of this year. Marriott expects it to hit 85 percent by year-end, driven by the high holiday demand in New York and the fact that it is the only notable hotel in the borough.

This year's overall occupancy rate of 65.2 percent is all the more significant (especially to hotel owners) in view of the PricewaterhouseCoopers finding that United States hotels had achieved a record low break-even occupancy rate, the rate at which expenses and revenues are equal. From a 62.6 break-even rate in 1992, it is now down to 55.5 percent. That lower rate, according to Bjorn Hanson, chairman of the lodging and gaming group of PricewaterhouseCoopers, is attributable to the rising room rates, lower debt and equity costs for the industry, and more emphasis on revenue from rooms than from low-margin food and beverage operations.

Many travelers are likely to be surprised to hear "low margin" used to describe hotel food and beverage, especially in view of the trend even in upscale restaurants toward breakfast and lunch buffets, which require far less labor than traditional menus. And anyone who has eaten in luxury hotel restaurants, or ordered room service, is almost sure to regard "low margin" with suspicion.

Nevertheless, Mr. Hanson said that at the same time that top chefs with celebrity status are in greater demand than ever at luxury hotels, the food and beverage share of overall hotel revenue has fallen from as much as 50 percent in 1960 to about 20 percent today. And after subtracting the cost of credit card commissions, insurance, energy, marketing and other expenses, he said, "food and beverage operations usually result in a financial loss for hotels."

Stanley Turkel, a hotel consultant in New York, also said that hotels lose money on food and beverages, except for banquets. "Even Las Vegas, where they used to practically give rooms and food away, is now trying to make food and beverage profitable," he said. (Las Vegas, the No. 1 hotel market in the United States, is not included in Smith Travel Research reports because of its unique attractions and reliance on gambling, but its 120,444 rooms, the most of any city, have averaged a torrid 89.2 percent occupancy so far this year.)

The rise of the Internet is having a growing impact on hotel bookings, especially in enabling potential guests and travel agents to view guest rooms, lobbies and hotel exteriors. Hotel Reservations Network, a Dallas-based consolidator that sells discount rooms in 38 cities worldwide, said that it derived more than 85 percent of its revenues from the 1.2 million room nights a year that it books on the Web, and Priceline.com and some other Web discounters are sprouting up.

Internet bookings are poised to soar -- to some \$3.1 billion in revenues by the year 2002 from less than \$100 million in 1997, according to a forecast by Bear, Stearns & Company. "The introduction of toll-free telephone service in the 1960's was the last great **technology** innovation to greatly affect the economics of hotel booking, and that's nothing compared with the mighty punch of the Internet," said Jason Ader, who heads the Bear, Stearns hotel, gaming and leisure research group.

Still, so far the Internet has had little overall impact on room rates or availability.

Finally, about booking a hotel room on short notice: the surest way is to plan your stay for Sunday night, because it is the slowest day of the week. Try for an upscale chain hotel, the segment with the biggest falloff in occupancy on Sunday, according to Smith Travel Research. The drawback is that you will probably have to vacate your room

the next morning; but you might get a break on the price, which gives a thrifty traveler a chance to enjoy a different lodging experience.

EDWIN McDOWELL, a **business** reporter for The Times, covers the travel industry.

Drawing (Roxanna Baer)

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The New York Times

National Desk; Section A

High-Tech Advances Push C.I.A. Into New Company

By JOHN MARKOFF

1,187 words

29 September 1999

The New York Times

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English

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PALO ALTO, Calif., Sept. 28 -- Hoping to insure that the nation's spies have the latest information **technology** in the rapidly changing Internet age, the Central Intelligence Agency has established a venture capital company to nurture high-tech companies, company executives and former C.I.A. officials said.

The C.I.A. has chosen a veteran Silicon Valley software executive to head the effort, which has an office in Washington with eight employees and will have a second office in Silicon Valley.

With a nod to nostalgia for the mythic gadget-laden spycraft of the James Bond era, the agency has named its new nonprofit venture In-Q-It, in a reference to Major Boothroyd, a.k.a. Q, the master technologist whose basement laboratory develops advanced gadgets for the fictional British super-agent. It will be headed by Gilman Louie, an executive in the Hasbro toy company's on-line business group.

The decision by the nation's spy agency to turn to Silicon Valley for **technology** assistance underscores the growing diversity of high-tech companies and the accelerated development of computer technologies. Unlike in the cold war, when the most advanced technologies trickled down from a handful of supercomputer companies, the most powerful technologies are increasingly being developed first by consumer electronics companies that now have vast markets to finance the developments of powerful systems and applications.

In-Q-It is being financed with \$28 million appropriated last year by Congress as part of the C.I.A.'s budget, which is classified. The company will seek joint projects and investments in crucial **technology** areas.

"There is a tremendous information explosion today," said John McMahon, former deputy director of the C.I.A. and an In-Q-It board member. "As a result, the agency was always one step behind. The agency got the idea that maybe what it needed was something that would not only appreciate its needs but be an umbilical cord that was plugged in to the brightest minds in the Valley."

Mr. Louie said today that the purpose of the new company would be to move information **technology** to the agency more quickly than traditional Government procurement processes allow. The agency, he said, was struggling with many of the same aspects of the Internet that are vexing to other Web surfers, including **privacy** and security.

"The current model isn't working," Mr. Louie said. "The **technology** world has totally changed, and one day the C.I.A. woke up and realized they needed to go through the same change."

The new company will supply venture capital in some cases, and in others it will hire contractors or partner with entrepreneurs in four areas: integrating **Internet technology** and applications into the C.I.A.'s work; developing new security and **privacy** technologies; nurturing data mining technologies to take better advantage of the agency's vast storehouses of records, and modernizing the agency's computer systems.

Mr. Louie said that none of In-Q-It's work would be classified and that the organization would not be limited to the four areas he outlined. In contrast to many of its other activities, he said, the agency was taking pains to make the activities of In-Q-It highly visible and public.

That stands in striking contrast to the agency's past approach to high-tech projects. For many years there have been reports that the United States intelligence community created shell companies when it had a particular high-**technology** problem to solve.

Indeed, the C.I.A. worked secretly with Howard Hughes during the 1970's when it needed to develop specialized salvage **technology** to retrieve a sunken Soviet nuclear submarine in the Pacific Ocean.

While In-Q-It will operate on a nonprofit basis, Mr. Louie said his intention was to invest in such a way as to make the organization self-sustaining.

Jeffrey H. Smith, the new company's legal counsel and former general counsel to the C.I.A., said, "The Government will have the opportunity to use the intellectual property developed by In-Q-It for Governmental purposes, but In-Q-It will own and have the ability to use the **technology** it develops for commercial purposes."

Mr. Louie said that while this was not the first effort to find innovative ways to move new technologies quickly to the Government's needs, he believed it was the first time a Government agency had adopted a venture financing effort that mimicked a private sector model.

Venture capitalists said today that the problem the C.I.A. faces is a challenge faced every day by large organizations: attempting to keep up with the nimble pace of the Valley's **technology** start-up companies.

A number of large multinational companies have in recent years set up investment funds in the valley in an effort to tap into the entrepreneurial spirit of the region.

"There are a number of models on which the jury is still out," said James Breyer, managing partner of Accel Partners, a venture firm in Palo Alto, Calif.

Companies like Lucent Technologies and the AT&T Corporation have become venture investors in the valley in recent years, he noted, and SRI Research International had less success in trying to spin out its research projects with an internal venture arm.

"The most important aspect is to have an outstanding outside management effort overseeing the process," he said. "It appears in this effort the C.I.A. has chosen well."

Previous Government efforts at financing **technology** have been highly focused efforts to promote the development of specific technologies either needed to keep the nation competitive or to meet national security needs.

For example, during the 1970's through 90's various military research agencies like the Defense Advanced Research Projects agency and the Office of Naval Research financed academic and corporate projects not as investments but as contract research.

In the early 1990's, the Government financed the Sematech computer consortium in an effort to maintain an independent semiconductor equipment industry in the United States, which was being threatened by Japanese and European competitors.

Mr. Louie, 39, said today that he would work on both coasts and was now looking for an office in Silicon Valley. He said he had become involved in the new company after meeting a headhunter from Heidrick & Struggles at a mock-aerial dogfighting contest this year.

Mr. Louie is a lifelong computer gaming aficionado who a year ago sold his computer gaming company, Microprose, to Hasbro. He has been a widely known figure in the Silicon Valley software world since creating his first computer gaming company while he was a student at San Francisco State University in the early 1980's.

Among the new company's board members are John Seeley Brown, director of the Xerox Corporation's Palo Alto Research Center; Lee Ault, director of Equifax; Alex Brown; Stephen Friedman of Goldman Sachs; Norm Augustine, chairman of Lockheed Martin, and William Perry, former Secretary of Defense.

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The New York Times

Business/Financial Desk; Section C

Nortel Is Ready to Fire New Salvo in Internet Telephony War

By SETH SCHIESEL

583 words

8 June 1999

The New York Times

NYTF

Page 8, Column 1

English

(c) 1999 New York Times Company

Firing the latest volley in the battle to transmit phone calls using **Internet technology**, the Nortel Networks Corporation of Canada plans to announce today that it is developing almost a dozen new products to help corporate customers integrate their phone and data communications networks.

Nortel, formerly called Northern Telecom, is North America's second-largest maker of traditional telecommunications equipment, behind Lucent Technologies Inc. Nortel and Lucent are locked in battle not only with each other but also with leaders in data networking, including Cisco Systems Inc., to develop **technology** for unified voice and data networks.

Such unified networks could allow companies to reduce the amount they spend maintaining separate voice and data systems, and could even open the door to new sorts of services, such as phones that communicate with address book software.

Developing so-called Internet telephony **technology** requires big engineering commitments, and Nortel has recently appeared to lag in that effort behind Lucent, Cisco and small Internet telephony start-ups like Vocaltec Communications Ltd. and the Clarent Corporation.

Some of the products that Nortel intends to introduce today will not be commercially available for another year or so, but the announcement seems sure to add momentum to Nortel's efforts to become a leader in Internet telephony.

While data networking companies like Cisco have appeared more aggressive in encouraging customers to anticipate scrapping their traditional phone networks in favor of more advanced Internet-based systems, older companies like Lucent and Nortel have encouraged a more evolutionary approach. That approach is geared to appeal to companies that could be concerned about the reliability and capabilities of Internet phone systems.

"The fact is that most alternatives offered to customers for telephony over I.P. have been very primitive in the features they offer," said James R. Long, president of the Nortel group that sells products to **business** customers, referring to Internet protocol, the language of cyberspace. "What we are announcing are a spectrum of products that allow customers to implement a converged network along a whole spectrum, from continuing to run separate networks to using an advanced Internet protocol network."

That spectrum of products ranges from Internet add-ons for existing office phone systems made by Nortel, which will be available immediately, to phone systems designed around **Internet technology** from the ground up, which are not scheduled to become available until the second quarter of next year.

If Nortel meets that goal, it will find itself in roughly the same ball park as its major competitors. Cisco wants to deploy Internet-based office phone systems broadly early next year. Lucent plans to sell Internet-based phone systems for small customers this fall and to expand the products for large companies early next year.

Mr. Long said that among the institutional customers that have agreed to try Nortel's Internet phone **technology** are the University of Texas at Austin; Countrywide Credit Industries, the mortgage company; Kinko's Inc., the copy shop chain; Safeway Inc., the supermarket company, and the Symantec Corporation, the software maker.

But developing systems for **business** customers is only part of the Internet telephony equation. The other big part is developing Internet phone **technology** for communications carriers like the AT&T Corporation. Nortel's

competitors seem slightly ahead in that part of the industry, but the Internet telephony market for carriers is immature and the eventual **technology** winners remain undetermined.

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The New York Times

Business/Financial Desk; Section C
Qwest Is Near to a Partnership with Cisco

By SETH SCHIESEL

385 words

17 June 1999

The New York Times

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Page 22, Column 1

English

(c) 1999 New York Times Company

Even as investors continue to digest Qwest Communications International Inc.'s unsolicited \$55 billion bid to acquire U S West Inc. and the Frontier Corporation, announced earlier this week, Qwest is pushing ahead with deploying its advanced fiber optic communications network.

Yesterday, Qwest was close to a partnership worth as much as \$1 billion with Cisco Systems Inc., the leading maker of data communications gear. Under the agreement, Cisco will supply equipment while the two companies jointly develop advanced communications services based on **Internet technology**.

The deal is structured so that Qwest pays only for equipment that is actually in use, executives close to the deal said. That could allow Qwest to better manage its cash flow by paying only for gear that is generating revenue rather than for truckloads of equipment that might not be put into use for weeks or months. The value of the deal could fluctuate depending on customers' acceptance of the new system and services, the executives added.

The deal "gives us a partner that can help us on the **technology** side," said Lewis O. Wilks, president of Qwest's Internet unit.

As Qwest moves from standard telephone networks to systems based on **Internet technology**, Mr. Wilks said, "Cisco is helping us architect it so that transition is seamless."

Donald J. Listwin, the Cisco executive vice president in charge of selling products to big communications carriers, said, "This is a partnership that is going to enable Qwest to have really the first all-Internet-based network and is of substantial importance for us in that we are going to get the lion's share of the infrastructure **business**."

Cisco may well get most of Qwest's spending on Internet gear, but Qwest has not said it will build an all-Internet-based network -- something a rival long-distance carrier, Level 3 Communications Inc., has said it plans to do. Instead, Qwest has said it would use a range of protocols, including **Internet technology** but also other systems with an older pedigree.

Mr. Wilks said the Qwest deal would not accelerate the demise of the other systems in Qwest's network, but added, "It continues to point to what we think is a technological trend."

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The New York Times

Business/Financial Desk; Section C
Internet Phone Venture Will Sell Stock

By SETH SCHIESEL

702 words

3 May 1999

The New York Times

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Page 2, Column 1

English

(c) 1999 New York Times Company

In what would apparently be the first initial public offering of stock in a company that focuses exclusively on transmitting phone calls using **Internet technology**, RSL Communications Ltd. plans to announce today that it intends to sell stock in its Delta 3 subsidiary.

Delta 3 is one of the leaders in the still-developing field known as Internet telephony -- a technique for carrying phone calls using Internet systems that whatever the sound quality so far, can be more efficient than traditional telephone networks. Many analysts expect **Internet technology** to become one of the main means for carrying phone calls as more communications companies focus their networks on Internet-based data, audio and video applications.

"In order to attract eyeballs and to provide more products and services, we decided to give Delta 3 the ability to do financing on their own," Itzhak Fisher, RSL's chief executive, said on Friday.

RSL, which is registered in Bermuda but has its operating headquarters in New York, is a small but fast-growing company focused on selling international communications to small and medium-sized **business** customers. The letters RSL are the initials of the company's controlling shareholder, Ronald S. Lauder, the cosmetics heir. RSL's shares, which trade in the Nasdaq market, closed on Friday at \$32.75, up 87.5 cents a share.

Mr. Fisher would not say how much money the company hoped to raise in the offering, but RSL plans to offer 20 percent of the Internet telephony operation to the public and to retain the rest.

RSL plans to file registration documents with the Securities and Exchange Commission by next month and to offer Delta 3 shares to the public in the third quarter.

So far, the Net2Phone unit of the publicly held IDT Corporation, based in Hackensack, N.J., is considered the biggest Internet telephony operation. IDT has not announced any plans to issue separate stock for Net2Phone. Most of the other Internet phone companies are small and still private, which would position the Delta 3 offering as perhaps the first "pure play" investment in Internet telephony.

But the **business** case for Internet telephony is in flux. In the past, transmitting international phone calls using **Internet technology** was profitable because carriers could avoid the high tariffs levied by many foreign countries on traditional phone calls. The arbitrage between high tariffs on normal phone calls and no or low tariffs on Internet communications enabled Internet-based companies to undercut traditional carriers and still make money. Sensing this opportunity, RSL acquired a controlling stake in Delta 3 in 1997 and the entire company last year.

But those foreign phone fees are coming down, partly as a result of global trade agreements, and the arbitrage opportunity is fading.

So RSL has been trying to reposition Delta 3 as something other than a bargain-basement option for budget-sensitive consumers. (The sound quality of Internet phone calls, while improving, still does not generally equal that of traditional calls.) The new goal is to become an integrated provider of voice communications over the World Wide Web.

"In a world that is deregulating that fast, where the cost structure is going so rapidly down, the ability to use I.P. as an arbitrage opportunity is going away," Mr. Fisher said, referring to Internet Protocol, the language of cyberspace. "It has worked for us for the last two years very well and it will continue to work for us in some countries. But now we will be offering value-added services."

Among the services Delta 3 aims to provide are phone calls from computers and billing on the Web.

Last week, RSL announced quarterly financial results that were better than most analysts had expected. The company reported a loss of \$57 million, or \$1.08 a share. But the consensus prediction of Wall Street analysts had been for a loss of \$1.30 a share. Revenue more than doubled, to \$340.3 million from \$131.6 million in the first quarter of last year.

Photo: Itzhak Fisher of RSL says Delta 3 needs to "attract eyeballs." (Jeffery A. Salter/The New York Times)

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The New York Times

DOWNTIME

Circuits; Section G

Cruises, Cars, Cash And No Stamps to Lick

By BONNIE ROTHMAN MORRIS

1,758 words

13 May 1999

The New York Times

NYTF

Page 13, Column 1

English

(c) 1999 New York Times Company

EVERY day, Wendy S. Limaugé spends an hour on line entering sweepstakes and contests, chasing after the four C's -- computer, cruise, car and cash -- the tantalizing prizes coveted by sweepstakes entrants everywhere.

Since January of this year, Ms. Limaugé has won 21 prizes, including candy, 5,000 frequent flier miles, \$200 in cash, a mountain bike and bike helmet worth \$700, and a CD by Kari Wuhrer, an actress and pop singer. (Ms. Limaugé had no idea who Kari Wuhrer actually is.) She didn't win a cruise, she didn't nab the car, and the cash prize barely covered her monthly fuel bill, but she is thrilled because her son won a \$2,000 laptop computer in an on-line contest.

"People think I'm super lucky or I'm crazy," said Ms. Limaugé, 38, of Ledyard, Conn., a full-time computer instructor and mother of three who owns a company called The Computer Lady. "I get to win things I would never, never buy or couldn't afford to buy." Ms. Limaugé has been entering sweepstakes and contests fervently for five years, both on and off line. Last year, she spent \$1,200 on postage entering mail-in contests. This year she has set her mail budget at \$400 because she is entering more contests free on line.

Ms. Limaugé's perseverance is not unusual for the hobbyists who call themselves sweepstakers. The spread of sweepstakes and contests on the Internet is causing the ranks of sweepstakes enthusiasts to swell, and, not surprisingly, increasing the number of dinky prizes whose initials are more like C for crab meat or B for beef jerky.

Mike Reilly, who is the Webmaster at www.sweepstakesonline.com, a Web site at which 60,000 users have chosen to register, opened his virtual doors in 1995. Back then, there were 20 new sweepstakes to list every week, he said, but hundreds of new ones are now opening daily. Mr. Reilly, who said he had inherited the sweepstakes hobby from his mother, said his Web site listed 20 to 50 new sweepstakes a day.

On any given day, Mr. Reilly's site is a portal to thousands of contests. In late April, one could log on and link to a national contest for a trip to Lake Tahoe. Another contest's grand prize was a signed poster of George Strait and the Dixie Chicks, while second prize was a George Strait CD. Other contests listed prizes like small amounts of cash, software and bouquets, for instance.

"There's always plenty of bottom-feeder-type sweepstakes on the Internet," said Evan Neufeld, a senior analyst at Jupiter Communications, a new-media research company. "High-level sweepstakes, where you can win a million dollars, is a relatively new medium. A lot of people who design sweepstakes haven't gotten their heads around it, but I think it's coming."

Sweepstakes, on line or off, are games of chance in which entering is free and the winner is chosen from a random drawing. Contests are games that require the contestant to perform a task to enter, like answering trivia questions. Sweepstakes and contests are time-honored approaches to the marketing of consumer products and services. On a grand scale, these games are time-sensitive advertising campaigns meant to prompt a specific action by consumers by offering the lure of enormous winnings. Sweepstakes and contests, which require contestants to fill out forms with personal information, have also been used by marketers to generate new leads and mailing lists. Before **the rise of the Internet**, sweepstakes and contests were all about what marketing people call branding. On line, the objectives are to attract traffic to the site and to collect personal information.

Colin Webster, the president of a small auction site, www.edeal.com, routinely runs what Mr. Neufeld might refer to as a "bottom feeder" contest but which serves his marketing objective perfectly. In April the company promised

to give away a multimedia CD player that plays downloaded music off the Internet to new registered users. The prize cost the company \$199. By mid-April, Mr. Webster said, he had toted up about 800 new registered users on the site. For sweepstakers, the Edeal contest is a golden opportunity. The odds of winning -- 800 to 1 -- are exceptionally good. In a contest sponsored by Deliver.com (pronounced Deliver-ee), the odds of winning a Volkswagen Beetle, for instance, are estimated at 300,000 to 1. For a new Buick promotion, the odds of winning are a million to 1.

"On line, all you see is the prize -- branding is almost irrelevant," said John Feldman, an associate at the Washington office of Arent, Fox, Kitner, Plotkin and Kahn who specializes in sweepstakes and contest law.

Since Herb Smith began entering sweepstakes on line last August, he has won a Halloween costume, an eight-piece Tupperware set, "a ton of T-shirts" and computer software. He has also won a pair of Levi's in the wrong size. "Now they're having trouble getting back to me about exchanging it," said Mr. Smith, 50, of Bay City, Ore., a senior technician at a hardware factory. Mr. Smith said he entered about 150 contests every day on line, going through www.webstakes.com, a Web site with direct links to promotions, and through leads that he finds through the www.sweepstakesonline.com site. Mr. Smith recently won a Sony Playstation, a device he has no use for. Now he has vowed to enter contests only if they have prizes he's itching to win.

The forms that contestants fill out on line, often quite detailed, enable the company running the promotion to try to sell something to that consumer with an exquisitely appropriate message once the contest ends, said said Andy Batkin, the chief executive of Interactive Marketing and the co-chairman of the Interactive **Media** Council of the Promotion Marketing Association.

"The buzz word on line is permission marketing," Mr. Batkin said, adding that the marketing message may then be perceived as content, rather than an advertisement, and may have more impact.

Contest entrants do have some safeguards against being bombarded with E-mail, after entering a contest. At the bottom of on-line contest entry forms -- at least the ones with rules written by lawyers -- there is generally a click-on box that asks if the consumer wants more information from the company. It is up to the consumer to agree to receive more mail or not.

Sweepstakes players say they rarely receive unwanted commercial E-mail, or spam, for that very reason. Unlike less diligent contestants, they are more likely to read the rules, every last one of them, looking for loopholes that increase their chances of winning. Perhaps the most visible rule is the one that casual sweepstakes entrants might look upon dubiously. It says the contest "requires no purchase to enter," and it is usually at the top of most rules pages. Who hasn't believed that buying magazine subscriptions increases the odds of winning the Publishers Clearing House sweepstakes, for instance?

"A purchase cannot impact one's odds of winning," Mr. Feldman wrote in an E-mail message. Purchasing products to enter a contest on line, he explained, is almost a non-issue. The on-line playing field, then, appears to be a more level one for the sweepstakes neophyte. On line, he wrote, "the idea of making a big deal about whether you bought something or not doesn't come up with great frequency."

Still, sweepstakes players look for ways to beat the system to win. Norman Posner, of Pikesville, Md., won his first contest in 1969. His prize was a trip to Miami Beach for his own wedding, with Bob Hope serving as the best man. Since then, Mr. Posner has won cars, cruises, trips to Europe, television sets and T-shirts galore. He said he was lucky, yet he added that gimmicks helped. For mail-in contests, he folds his envelopes, which he said added surface area and made the envelope more likely to be grabbed. He draws rainbows across the stamps to attract attention to them. He also visualizes himself winning or using the prize.

Entering contests over the Internet is trickier, admitted Mr. Posner, a parole officer and professional hypnotist. Last year, to enter a local radio promotion conducted via E-mail, Mr. Posner colored in the background on his entry. "I didn't know if they would receive the color -- it might be gray," he said. Mr. Posner's efforts, colored background or not, won him a trip to London.

While other sweepstakes quests for the big prizes may not be as fruitful as Mr. Posner's, contestants say they all get a thrill when they find packages waiting for them at their front doors. Even if it's a cup of candy.

Sweepstakes Shortcuts

MANY sites link directly to sweepstakes and contest pages that enable entrants to bypass the home pages of the sponsoring companies. These Web portals are a boon to sweepstakes hobbyists who enter as many contests as they can as quickly as possible every day.

But to contest sponsors, who are probably seeking to drive traffic to a particular site, "this is less than good," said Evan Neufeld, a senior analyst at Jupiter Communications.

To avoid fraud and spam E-mail, entrants should read the rules carefully. If a fee is required for entry, the contest should be based on skill. Many states have laws that govern the size of the prize in such a contest. Legally, all sweepstakes in which the winner is decided by chance must be free.

At www.sweepstakesonline.com, the owner, Mike Reilly, has written software, Autosweep Desktop, that automatically fills in contest entry blanks. It is available for a trial run from the Web site. Contest links may also be found at www.sweepthenet.com, a newsletter, and at the www.winsweeps.com site.

Photos: ENTRIES BY E-MAIL -- Wendy Limauge enters so many sweepstakes that she has a bar chart of her winnings. On-line contests have allowed her to cut her postage bill sharply. (George Ruhe for The New York Times); MEMORIES OF WINNERS PAST -- Norman Posner, a sweepstakes enthusiast, won his first contest in 1969, a trip to Miami Beach for his wedding, with Bob Hope as his best man. (Ann Grillo for The New York Times)

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The New York Times

Business/Financial Desk; Section A
As Testimony Ends, Microsoft's Judge Waits for Motions

By STEVE LOHR
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The New York Times
NYTF
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WASHINGTON, June 24 -- The heated accusations of monopoly, the lively E-mail flavored with capitalist aggression and the spirited testimony alleging and denying misconduct came to a close today as the last witness stepped off the stand in the Microsoft antitrust trial, eight months after proceedings began.

The trial is by no means over, but it will sharply shift gears as the daily theater in the courtroom gives way to a more sober weighing of facts and law. "Now the showmanship ends and the legal maneuvering really begins," said Andrew I. Gavil, a Howard University law professor.

Today the Government got in a parting shot by introducing an E-mail from William H. Gates, Microsoft's chairman, that appeared to contradict a central defense contention: that America Online was in a position to challenge Microsoft's dominance of operating systems for personal computers. [Page C4.]

Most of the points in the courtroom drama went to the Justice Department and 19 states suing the Microsoft Corporation, alleging that it illegally used its dominance to thwart competition. Led by its lead trial lawyer, David Boies, the Government team caught Microsoft's witnesses off guard again and again, presenting embarrassing E-mails or previous statements that appeared to undermine their testimony.

Even William H. Neukom, Microsoft's general counsel, has found the Government performance impressive, if not convincing. Since the start of the trial, Mr. Neukom notes he has fielded expressions of concern that things are going badly for the company from many of his colleagues, even his wife. "The Government has put on a great performance," he said, "but it does not add up to a solid antitrust case. It's all fluff legally."

Joel I. Klein, Assistant Attorney General in charge of the Justice Department's antitrust division, counters that the evidence and testimony presented in court has been occasionally entertaining but consistently incriminating. It adds up to a detailed and convincing portrait, Mr. Klein said, of "Microsoft's ability and willingness to do whatever is necessary in using its market power to protect its monopoly."

The legal reckoning that matters, however, will be made by Judge Thomas Penfield Jackson, who will rule in this trial without a jury. Both Microsoft and the Government will make further written and oral arguments over the summer and fall.

Judge Jackson must then comb through the mountains of evidence to try to answer one essential question: What are the appropriate legal restraints on the behavior of a powerful company in a dynamic high-**technology** industry?

The issue extends well beyond the Microsoft case, and the stakes are high. The ruling could set ground rules for competition in the modern economy, affecting companies and consumers alike for decades.

The legal guideposts to help Judge Jackson reach his decision, antitrust experts say, are not clear-cut. The major antitrust rulings over the last two decades are few, and they mostly involve mundane businesses including ski resorts in Colorado, a rural Ohio newspaper, a bowling alley in New Jersey and an egg processor in Indiana.

In some ways, the plaintiffs brought a very traditional antitrust suit. The Government says Microsoft repeatedly and illegally used its market power to block new competition represented by **the rise of the Internet**, especially software for browsing the World Wide Web. Microsoft, according to the Government, used exclusionary contracts and threats to defend its monopoly product -- the Windows operating system, the software that serves as the central nervous system of 90 percent of the personal computers sold today.

"It is mainly an old-fashioned contract case," said Herbert Hovenkamp, a professor at the University of Iowa law school and leading antitrust scholar, who is advising the Government. "There is nothing novel about the practices. The one thing that is novel is that the case is in the software industry."

Yet the industry context is a crucial consideration. The software **business** is regarded as the forerunner of what has been called "the new economy" -- a fluid environment in which market leadership can be fleeting, but **technology** can also hasten the concentration of market power and the creation of monopolies. In short, new-economy theories can cut both ways in antitrust cases. There has been plenty of talk of "network effects" and "winner-take-all markets" from both sides in the Microsoft trial.

The fact that the Microsoft case focuses on a fast-moving, technically complex industry complicates the legal judgment the court must make. "It makes the toughest issues that courts have to deal with in antitrust cases -- determining market power, evaluating the significance of conduct and designing remedies -- far more difficult," said William Kovacic, a professor at the George Washington University law school.

Still, many antitrust experts who have followed the trial expect that Judge Jackson will side with the Government on some of its many charges against Microsoft. They base that view partly on a reading of Judge Jackson's behavior -- openly questioning the testimony of some Microsoft witnesses, and showing impatience with Microsoft's lawyers -- and partly on a reading of the law, that some Microsoft contracts with on-line services and personal computer manufacturers did inhibit competition from software rivals.

If the judge rules against Microsoft, the court will then focus on remedies. The Government says it is too early to discuss sanctions publicly. But among the proposals being studied are limiting the contract restraints Microsoft can place on PC makers, forcing Microsoft to publish the price it charges PC makers for Windows, and requiring broad disclosure of the interfaces in Windows used by software developers to write programs. The goal, Government officials say, would be to change the balance of power in the computer industry and limit Microsoft's leverage over partners and rivals.

Microsoft is by no means conceding defeat in Judge Jackson's Federal district court. But Mr. Neukom suggests that its legal strategy is to prevail on appeal. "The thing to remember is that we're engaged in a legal decathlon, and we're still at an early stage," he explained.

Unless the two sides reach a settlement, Judge Jackson's ruling, expected by the end of the year, will certainly be reviewed by a Federal appeals court and possibly by the Supreme Court as well. If it goes to the Supreme Court, the Microsoft case may well not be finally determined until 2002, legal experts say.

A crucial decision by Judge Jackson a month before the trial began last October determined what the courtroom proceedings became: a sweeping portrayal of Microsoft by the Government as a bullying monopolist, supported by a parade of industry witnesses making a litany of allegations.

The Government's original complaint, filed in May 1998, charged that Microsoft was "engaged in a series of anticompetitive activities." But it focused largely on the company's tactics in the browser market against the Netscape Communications Corporation, and specifically on Microsoft's decision to fold its browser into its industry-standard Windows operating system. Microsoft, the Government contended, had illegally tied a second product to its monopoly product in a predatory effort to stifle competition and reduce consumer choice.

But a month later, the Government's tying theory suffered a severe blow when a Federal appeals court ruled in a related case that Microsoft should be free to blend its browser into Windows as long as it can make a "plausible claim" of **business** efficiency or consumer benefit from doing so.

Over the summer, the Justice Department and states continued investigating Microsoft's dealings with other companies and came up with new evidence involving Intel, Apple Computer and others -- all of it, the Government said, fit into Microsoft's "pattern of behavior" intended to stifle competition.

Over Microsoft's objections, Judge Jackson permitted the new evidence. Suddenly, the focus of the case widened well beyond the "browser wars" to a broad, multifaceted scheme by Microsoft to protect its monopoly.

With the retooling, the Government case also acquired a broad narrative theme that rose above the arcane details that are an inevitable part of a high-tech antitrust trial. Whatever the legal merits, the approach made the Government's case a much more compelling story to tell in court. So when an Intel executive testified to a "credible and fairly terrifying" threat from Microsoft or when an America Online executive testified that it had no choice but to adopt Microsoft's browser in return for a coveted place on the Windows desktop, it all added detail to the Government's picture of Microsoft as an arm-twisting monopolist, stifling competition and innovation.

The Government and states believe that they have shown not only that Microsoft crossed the legal line repeatedly, but also that its monopoly is fairly durable, a crucial consideration for the courts.

"If you think that Microsoft's operating system monopoly is going to go away in two or three years, then we shouldn't have brought this case," said Mr. Klein of the Justice Department. "But I obviously don't believe that. What this case is about is protecting innovation to make a dynamic industry even more dynamic and innovative."

Microsoft agrees that innovation is the goal, but counters that heavy-handed antitrust enforcement is the real threat. Microsoft's legal team insists that the law is on its side in this case, despite the evidence presented by the Government. They point to a general drift of pro-defendant rulings in antitrust cases over the last two decades, which speak approvingly of "fierce, no-holds-barred competition" and "the great race of competition."

"A lot of what's in the Government's case doesn't sound good, but it doesn't rise to the level of an antitrust violation," said Steven Holley, a Microsoft lawyer.

In its defense, Microsoft has leaned on two key themes. The first, in essence, is: Our actions may have hurt some rival, but where is the harm to competition in general and to consumers? And the second theme, linked to the first, is: This is a vibrant industry.

The harm, the Government and states reply, is that Microsoft's actions would be fine if it were still a scrappy entrepreneurial upstart rather than an industry-dominating force. "What Microsoft did not recognize is that it had crossed the line to become a monopolist, so its behavior had to change," said Thomas Miller, the Iowa Attorney General.

Microsoft disputes the monopolist label, but argues that the rules for dominant firms are not much different. "We should be competing as hard as we can for the next customer because that behavior is good for consumers," Mr. Neukom of Microsoft said.

In the end, clarifying the rules of legal behavior for powerful companies in the modern economy could well be the lasting legacy of the Microsoft case. "This case can really determine the boundaries on the conduct of dominant firms for decades," observed Mr. Kovacic of George Washington University.

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The New York Times

Planet Earth Calling Iridium
Business/Financial Desk; Section C
Can the Satellite Phone Service Achieve a Soft Landing?

By DAVID BARBOZA

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NYTF

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English

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PHOENIX -- Iridium L.L.C., the global satellite telephone venture that was supposed to offer communications "with anyone, anytime, virtually anywhere in the world," is in trouble, but don't tell that to Raymond J. Leopold.

He and two colleagues at Motorola Inc. dreamed up the global telephone service here in the Arizona desert more than a dozen years ago. And now, even as the venture hobbles through Chapter 11 bankruptcy, he remains optimistic.

"Iridium can make it; it's got great **technology** that's working today," Mr. Leopold said here recently at Motorola's satellite communications headquarters. "There are too many people who put too much money into it to walk away. You can't just go out and pawn a constellation of 66 satellites."

Yet just nine months after Vice President Al Gore inaugurated the service with a satellite call to the National Geographic **Society**, Iridium is fighting for its life. It may have great, even revolutionary, **technology**, but interviews with a broad array of experts suggest that even the most enlightened restructuring plan may not stave off liquidation.

"No matter how much you cut costs or how much you write off, there is not enough of a potential market," said Herschel Shosteck, an analyst in Wheaton, Md. "Not many people travel by camel."

Iridium has serious problems. It is \$3 billion in debt and starved for cash. Top executives have departed, including the chief financial officer, who recently left after just five months in office. And the stock price plummeted 90 percent before trading was halted in August.

After spending more than \$5 billion in the last decade to create a network of 66 low-orbit satellites capable of serving the most remote places on the planet, Iridium has just over 20,000 subscribers and little prospect of reaching the million many believe it needs.

Iridium executives, however, dismiss any talk of liquidation. After a series of financial missteps and marketing blunders, they say they are working feverishly to restructure debt and overhaul the cost structure.

"We've done a public launch into a fish bowl," said John A. Richardson, Iridium's chief executive, referring to the early scrutiny the company faced. "Yes, there were problems, but now the constellation is working correctly and the demand is there; I can see it, and I can sense it."

If Iridium cannot reverse course, however, and hammer out agreements with an array of debt holders in the coming weeks, its satellites may go on the auction block.

Motorola, which designed and built the satellites, continues to support the venture. But if it fails, Motorola will face huge losses. Just to be safe, Motorola has set aside reserves at a time when its own business is flourishing. (Its stock price has risen sharply the last year, despite its large stake in Iridium.)

Still, the fiasco could threaten another Motorola-backed venture: Teledesic, an even more ambitious \$10 billion project that calls for 288 satellites to create an "Internet in the sky" by 2004. Motorola is preparing to build this constellation with the backing of Boeing, William H. Gates of Microsoft and Craig McCaw, the cellular telephone pioneer.

Recent events are a far cry from the vision of Motorola engineers in 1985. With cellular service in its infancy, Motorola conceived a plan to use a network of satellites to deliver global telephone service. By 1994, Motorola raised \$1.6 billion, the largest private placement in history, and created a company called Iridium.

By the time Iridium came to market in November, though, cellular service had grown rapidly. Iridium said it wanted to serve the business traveler and began offering \$3,000 handsets and satellite service at up to \$7 a minute. Few signed up. (Prices have since been cut more than half.)

There were technical difficulties, distribution problems, and even esthetics: the handsets were big -- 16 ounces. One observer said they were the size of bricks, another said French baguettes. And few were willing to pay so much to carry a phone that could only be used outdoors, with its antenna raised.

Niche markets also balked. Military officials, United Nations officers and **media** organizations shunned the service because of cost and reliability questions. United Nations officials said they were unwilling to take a chance on an expensive, unproved and apparently flawed service in the early days. CNN said the system malfunctioned in Bosnia.

Iridium also lacked data capabilities, an increasingly important feature, particularly for the **media**.

Iridium executives, however, say they have fixed many of the early glitches, and, the company says, customers are satisfied. Although Iridium would not release figures, the company says some large orders have recently come through, including one for 1,000 phones in South Korea.

The size of the market, however, remains in question. A year ago, analysts had put out enthusiastic buy ratings on Iridium with headlines like "Iridium Up, Up and Away!" There was supposed to be a huge potential market, 42 million users by 2002. But early indications cast doubt on those numbers.

"There just aren't customers out there," said Bryan Prohm, an analyst at Dataquest Inc.

Now, Iridium -- while fully expecting to tap a broader market with smaller handsets next year -- says the market is not about millions of subscribers, it is about usage. The company is focusing on specialized users: the military, the news **media** and the maritime industry. Today, the dominant player in a specialized market is Inmarsat Inc., which has 150,000 subscribers. The company, which is based in London, markets laptop-size satellite phones that offer voice and data. Iridium is also planning to offer data service.

If there is not a broad market, however, experts say Iridium and other satellite offerings, like Globalstar Telecommunications, which is backed by Loral Space and Communications, may not be viable.

Before Iridium can fully tap that market, however, it must restructure its operation. The company, which says it has enough cash to operate for the next few months, has already defaulted on an \$800 million bank loan, and angry debt holders are pressing for change.

With new rivals coming to market, and class-action suits piling up against Iridium, Mr. Richardson is trying to negotiate with the banks and bondholders and win cost concessions from Motorola and the independent franchises.

Iridium wants debt holders to swap debt for equity, and investors to plow in \$500 million more, and then wait patiently for Iridium to grow into the market.

"I would think we have to show a viable business plan with incremental growth on investment by year four," Mr. Richardson said. "And if they are patient enough over the next two or three years, they stand a good chance of getting their investment back."

Cost cutting is critical, persuading franchises to overhaul their structure and Motorola to reduce a \$50 million-a-month contract to operate the satellite service -- those payments to Motorola have been deferred. "We are not paying that right now, and we have no intention of paying that," an Iridium official said.

Maintaining and launching low-orbit satellites is expensive, but Iridium is being squeezed, analysts say.

"That contract is absurdly lucrative for Motorola," said Armand Musey, an analyst at Banc of America Securities. "Iridium needs to cut that by half and then get between \$500 million and \$1 billion in new investments."

Iridium may be running out of time. It filed for bankruptcy last month only after bondholders forced its hand. Motorola, which had said it would not invest more money if others did not, later said it was confident an

agreement could be worked out within 30 days. But Leo Mondale, the chief financial officer of Iridium, just resigned, and Mr. Richardson said in a recent interview that he did not expect a restructuring agreement that soon.

Smaller handsets will not be available until the new year, he said.

Iridium is also facing new competitors. Globalstar is expected to begin its service later this month, hoping to capture a broader market by, in part, undercutting Iridium with smaller handsets and lower prices.

"The Iridium experience has no comparison to us," said Bernard L. Schwartz, chief executive of Globalstar. "You're talking about a three-legged race horse. It wouldn't work if they wiped out all their debt. It's simple mathematics."

ICO Global Communications, another competitor, may or may not be ready in the new year. It filed for Chapter 11 bankruptcy reorganization shortly after Iridium did. Meanwhile, Inmarsat is expanding its offering and insisting it has lost few subscribers to Iridium.

Even if Iridium restructures its debt and outmaneuvers its competitors, it still needs a huge influx of cash. Even 100,000 subscribers -- which some believe is unlikely in the next year -- at \$1,000 of service apiece would mean revenues of just \$100 million. Under the terms of Iridium's contract with Motorola and its interest payments (\$250 million a year), Iridium needs more than \$75 million a month to operate and market its products.

There are also signs of tension among the 12 independent franchises, which operate the gateways that handle customer service, billing and distribution. At least one executive says the business is growing and will continue to grow, with or without Iridium, but he expects a solution to be worked out.

"We operate the business day-to-day," said Jim Walz, chief executive of Iridium North America. "When the dust settles, there will be a satellite system no matter who owns it. Motorola and the gateways are not going to let the customers walk away. If Iridium L.L.C. walks away, we would continue to operate the constellation."

To that, Mr. Richardson snapped, "Let him come and try to run this thing." But Mr. Walz says many early projections and costs were inflated or flat out wrong. The system is viable with 500,000 subscribers, not the millions envisioned by Iridium's executives.

Caught in the middle is Motorola, whose top executives refused to be interviewed for this article. Many analysts are calling for Motorola to avoid getting tied up in a multibillion-dollar quagmire.

But it was a Motorola invention; Motorola now has a huge contract to develop the handsets and to operate the service through 2004. And analysts say that if Motorola flees, it may raise questions about the viability of Teledesic, which is far more complicated because it envisions delivering high-speed Internet access via satellite.

Indeed, here in Arizona, Motorola has already cleared land for a larger facility for Teledesic. More than 100 acres have been set aside, and two adjacent farms are being sought to expand the proposed site, which is why all eyes are on Iridium.

Failure of Iridium would lessen Teledesic's chances for success, said Mr. Musey at Banc of America Securities. "Teledesic is much more sophisticated," he said. "It's Iridium times two."

Photos: Bill Greenen manning the controls earlier this month for Iridium's Space and Systems Group in Phoenix. (Scott Troyanos for The New York Times)(pg. C1); A rocket launched in 1997 from Vandenberg Air Force Base carried five Iridium satellites. (Reuters)(pg. C2) Graph: "Iridium Can't Hold Orbit" While Iridium was able to make a satellite-based system work, it did not make enough money to repay the debt amassed by the venture. Graph tracks the company's share price, since June 1997. JUNE '97 -- Iridium raises \$240 million in a public offering of 12 million shares. JULY '97 -- Raises \$800 million in high-yield debt, bringing three month debt total to \$1.9 billion. AUG. '97 -- Iridium reports loss of \$48 million. OCT. '97 -- Reports loss of \$85 million. JAN. '98 -- Gets \$14.5 million contract from U.S. military APRIL '98 -- Reports loss of \$205 million. MAY '98 -- Iridium says phone and pager orders exceed expectations. JULY '98 -- Two satellites from system are lost. SEPT.-OCT. '98 -- Concerns arise about poor quality and delayed roll out. NOV. '98 -- Commercial service begins after 3d qtr. loss of \$364 million. FEB. '99 -- Iridium says will miss target for subscribers. APRIL '99 -- Chief executive and second chief financial officer in as many months resign. APRIL '99 -- Reports from Kosovo indicate \$5 billion system does not work well. JUNE '99 -- Iridium will cut staff and drop prices to win clients. AUG. '99 -- Trading is halted, Iridium files for bankruptcy protection. MAJOR INVESTORS MOTOROLA -- Inventor and primary contractor for Iridium Stake -- 17.3% NIPPON IRIDIUM -- Formed by DDI Corp. and Kyocera, of Japan, to serve Japan Stake -- 11.1%

O.TEL.O -- Formed by Veba and RWE, of Germany, to serve 21 European countries and Israel. Stake -- 8.8%
IRIDIUM WORLD COMMUNICATIONS -- Public shareholders Stake -- 8.6% KRUNICHEV -- Russian company
that launched some Iridium satellites. Stake -- 4.3% (Source: Bloomberg Financial Markets)

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The New York Times

E-Commerce; Section G

Latest Hit on Campus: Crescendo in E-Major

By MARY B. W. TABOR

1,802 words

22 September 1999

The New York Times

NYTF

Page 12, Column 1

English

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WHEN it comes to offering degrees, the halls of academia are not immune to fashion. Colleges and universities bank on blue-blazer classics like history and philosophy. But they also like to try what's hot every now and then.

What's sizzling right now, given the successes of the dot-com crowd, is the E-commerce credential. In what many professors and administrators say is the fastest trend to take hold in the slow-changing world of higher education, colleges and universities nationwide are rushing to turn the study of **business** on the Internet into degrees, majors, minors, concentrations, specialties, certificates, fellowships and research centers.

"While the University of Alabama does not have an E-commerce program yet, we are working full speed to set one up," wrote Bill Gerdes, a university spokesman, in an E-mail response to a query about E-commerce degrees on the Tuscaloosa campus.

There are as many variations on E-commerce instruction as there are institutions offering it. Of the dozen or so programs now available, some focus on **Internet technology**, with training in Web-site design, electronic data interchange and authentication **technology** along with marketing and consumer services. Others concentrate on entrepreneurship and the basics of running a **business** on the Web, including keeping tabs on finances and inventory.

Some involve intensive curriculums and undergraduate degrees in subjects like computer science or finance. Others make fewer course requirements and would appeal to students who are not necessarily facile with computers.

Carnegie Mellon University's graduate **business** school in Pittsburgh just introduced a master's of science program in electronic commerce that combines instruction in **business** and in computer science. The yearlong program, which began last May, costs \$38,000 and, the university said, should enable graduates to build and run a company's on-line system from the floor up.

The master's of science program at Marlboro College in Marlboro, Vt., which began in 1997, offers on-line instruction in basic Web design, marketing and strategic planning for Web businesses. The 11-month program requires students to be on campus every other weekend and costs \$15,000. "We focus less on deep, technical infrastructure and more on teaching students to orchestrate Internet strategies," said Paul J. LeBlanc, the college's president.

At the University of Florida in Gainesville, a certificate in E-commerce as part of a two-year M.B.A. program is awarded after completion of seven E-commerce courses that cover subjects like pricing of information services and products and one-to-one marketing over the Internet.

Any student at LaSalle University in Philadelphia may qualify as an E-commerce "fellow" by attending two E-commerce courses; courses in other disciplines with an E-commerce component, or a seven-part lecture series. All fellows must write a 2,500-word research paper and work in the field -- for a company or a community service organization, for example -- for 40 hours. The fellowship designation appears on graduates' transcripts, and fellows walk away with portfolios of E-commerce work.

Student interest in new E-commerce degrees and programs has been strong, university administrators say. Carnegie Mellon said it had received 180 applications, from which it chose its initial 37 candidates. Paul R.

Brazina, the executive director of LaSalle's new Electronic Commerce Institute, said that 470 students had shown interest in applying to the institute's fellowship program, which is beginning this month.

At Vanderbilt University in Nashville, 110 students, or a quarter of the M.B.A. candidates, have chosen E-commerce as either a concentration or specialty.

Corporations are even more enthusiastic about E-commerce training than college and university administrators. Many companies think that employees with an intimate knowledge of modern computer technologies and E-commerce strategies might give them a competitive edge. Some companies are helping to sponsor E-commerce research centers, sometimes as a means for converting their **business** problems into case studies that students can try to solve.

"The breadth of companies asking for E-commerce experience, from CS First Boston to General Electric, to start-ups, like Priceline.com, is amazing," said Robert F. Bonner, the director of the career management office at the Wharton School of the University of Pennsylvania. "A few years ago, companies would say E-commerce experience on a student's resume was 'nice to have.' Now they are saying, 'must have.' "

Wharton, which started its Electronic Commerce Forum three years ago as a research center for corporations, students and faculty members, has stepped up plans to introduce an E-commerce major for graduate students this fall. School officials said they were also considering offering a master's degree in electronic **business**.

Changes in salaries reflect the growing demand. Five years ago, a new Wharton graduate with experience in E-commerce could expect a starting salary of \$62,000, not including a bonus or stock options, Mr. Bonner said. Today, those offers start at \$80,000, about \$10,000 more than other **business** fields.

It is not just the computer literate who are making money. The academic foray into E-commerce has been profitable intellectually and financially. In most cases, the new programs have been a financial boon, bringing in tuition dollars and millions in grants to set up E-commerce research centers and faculty chairs.

At Bentley College in Waltham, Mass., a new M.B.A. concentration, known as E-**business**, and a graduate-level certificate in electronic **business** have become part of a shift to **technology** in the entire **business** curriculum. School administrators said the change in focus had brought in \$500,000 in additional tuition this fall along with at least \$7 million in related grants and contributions for program support and development.

Georgia Institute of **Technology** in Atlanta and Drexel University in Philadelphia have received \$1 million each from corporations to establish E-commerce research centers. Both plan to offer E-commerce certificates or concentrations next year.

The new programs also give colleges, universities and graduate schools a drawing card to attract accomplished students who help to improve the overall quality of their applicant pools.

"E-commerce is moving so quickly that people don't have time to wait for experience to teach them," said R. M. Erik Gordon, the director of the Center for Retailing Education and Research at the University of Florida's **business** school. "The E-commerce credential sends the signal that someone knows something about E-commerce and that they've learned it in a focused and strategic way."

But many professors and **business** executives dismiss E-commerce degrees and programs as more marketing ploy than academically sound initiative.

"I object to the E-commerce degrees profusely," said Amit Pazgal, a marketing professor who teaches E-commerce at Washington University's John M. Olin School of **Business** in St. Louis. "I think it's a fad and that universities are just jumping on the bandwagon."

At the University of Virginia in Charlottesville, Ryan Nelson, the director of the McIntire School of Commerce, said he turned down a professor's request to start an E-commerce program, arguing that the subject should be an integral part of the **business** curriculum. Edward A. Snyder, the dean of the university's Darden Graduate School of **Business** Administration, agreed. "E-commerce degrees are silly in the same way that teaching international **business** in a global economy is silly," he said.

HARVARD and Stanford have one or more courses devoted to E-commerce, but Harvard, at least, says it has no plans for a separate concentration or E-commerce degree.

"We have a good number of cases that focus on E-commerce throughout the curriculum," said Maura A. Byrne, a Harvard **Business** School spokeswoman. "But we are a school of general management. That's what it comes

down to. Obviously, E-commerce is a hot and important industry to look at. But H.B.S. is about educating leaders and the best managers."

Other objections to starting more E-commerce programs include a shortage of qualified professors and of comprehensive, up-to-date textbooks. Because **technology** is advancing so quickly, the few E-commerce textbooks, articles and case studies available quickly become obsolete.

There is no shortage of faculty members willing to teach E-commerce courses, administrators say. They generally come from closely allied fields, like computer science or information **technology**; recent Ph.D.'s whose dissertations were in E-commerce; faculty "gear heads," who have pursued consulting or research on behalf of Web-based businesses, and "disciplinary migrants" -- young and midcareer faculty members looking for fields in which they can become pioneers and make their reputations. The challenge, administrators say, is finding faculty members who are more expert on computers than the students they will be teaching.

With the E-commerce programs still in their infancy, it is unclear what real value they will have, many professors and corporate recruiters say. "Someone who has been exposed to a lot of dot-com successes and failures, even in an academic setting, would be viewed as more attractive, all things being equal," said Randall Kelley, a managing director with the executive search firm of Spencer Stuart in San Francisco and the head of its **technology** services practice.

Michael P. Sherman, the executive vice president of the Fingerhut Companies, said, "I don't know exactly what an E-commerce degree is, but if it means more skills in the E-commerce area, we are interested." But Richard Alexander, who runs his own executive recruiting firm in Lawrenceville, N.J., said that until the E-commerce degree and its recipients established some kind of track record, "it has little credibility."

"It's ludicrous right now," he said. "It's not the Web-site person that companies are looking for. It's the person who has strategic experience and can apply it."

Still, students like James W. Walker see no downside to earning an E-commerce degree. Last May, Mr. Walker, a principal at American Management Systems, an information **technology** consulting firm in Denver, became one of five students from his company to join Carnegie Mellon's inaugural E-commerce class.

"I looked at the program and was amazed at what they were doing," he said. "I saw that I could further my knowledge of the Internet and acquire the soft skills that many engineers lack. Those are skills I need to move up in management."

Photo: Beth Staples, left, a senior majoring in English, and Bonnie Sanville, a sophomore in nursing, have enrolled in the fellowship program at the new Electronic Commerce Institute at LaSalle University in Philadelphia. The institute's executive director is Paul R. Brazina. (Michael Branscom for The New York Times)

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The New York Times

Business/Financial Desk; Section C

Cisco to Offer More Details On Wireless Technology

By JOHN MARKOFF

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English

(c) 1999 New York Times Company

A new wireless technology is about to join the contest to provide high-speed Internet connections to homes and businesses.

Cisco Systems, a leading Internet technology company, plans to brief analysts and reporters on Wednesday about a new approach to wireless communications that would be offered as soon as next year to provide both voice telephone service and Internet access. The technology is meant to be a nonmobile -- or fixed -- wireless alternative to the telephone industry's high-speed digital phone lines and cable television industry's Internet modems.

Cisco's briefing will be the first detailed plans to follow an announcement last month by the company, Motorola and 10 other equipment makers and service providers who said they would create an industry-standard format for sending Internet data over a long-existing, little-used set of microwave frequencies.

That frequency band, known as multichannel multipoint distribution services, or M.M.D.S., was set aside years ago for a form of wireless subscription television that was meant to compete with cable television but never really caught on. More recently, M.M.D.S. has been seen as a way for telecommunications giants like Sprint and MCI Worldcom to compete with the regional Bell operating companies to provide direct connections to local telephone customers.

Now Cisco and other equipment makers are trying to push M.M.D.S. into a full-blown voice and Internet-access technology.

Use of the M.M.D.S. frequencies requires licenses from the Federal Communications Commission. But the commission has also set aside wireless frequencies in a band called the Unlicensed National Information Infrastructure. This second, unlicensed frequency band is meant to encourage experimental uses of the airwaves without the expense of buying or applying for licenses.

Because Cisco's technology will also work with this unlicensed band, the company predicts that smaller Internet service providers and communications companies will be able to quickly enter and compete in the market for high-speed -- or broad band -- Internet access at relatively low cost.

"Fixed broad-band wireless access will change the world of telecommunications as profoundly as mobile telephony," said Dale R. Pfau, a financial analyst at CIBC World Markets in San Francisco.

Cisco executives predicted that consumers would be able to buy broad band wireless transmitter-receivers -- known as transceivers -- for less than \$500 by the end of 2000.

At the heart of the Cisco-led alliance's plans is a new wireless approach developed by a Silicon Valley designer, which deals with a thorny problem known as "multipath interference" that has long bedeviled communications engineers. At certain frequencies, wireless communications systems must contend with echoes from secondary signals that are reflected from buildings or hills and that arrive at the receiver slightly after the original signals.

Television broadcasts, for example, have long been plagued by the phenomenon, commonly known as ghosting.

The problem became an intriguing challenge to Greg Raleigh, a longtime Silicon Valley engineer, who in the early 1990's returned to Stanford University to study for an advanced degree. Mr. Raleigh realized that with the vast

amounts of computer power now available to perform signal processing it would be possible to transform multipath interference from a disadvantage into a benefit.

Mr. Raleigh knew that, besides ghosting, there is typically a second drawback to fixed wireless communications: reliable transmissions require a clear line of sight between the transmitter and the receiver. That requirement poses special challenges to network designers attempting to reach tens of thousands of receivers in an urban area.

But by using special encoding techniques, Mr. Raleigh reasoned, it might be possible to offer reliable two-way communications that would not require direct lines of site, but would instead use ghosting echoes as intentional signal paths rather than treating them as unwanted interference.

With two of his Stanford classmates, Mr. Raleigh founded a company, Clarity Wireless, in an extra room in his home. There, they developed his theory into a **technology** called vector orthogonal frequency division multiplexing, or V.O.F.D.M.

Cisco acquired Clarity Wireless in 1998 and recently decided to freely share its **technology** in an effort to quickly establish it as an industry standard. So far, besides Motorola, Cisco has secured commitments from Toshiba, Samsung, Texas Instruments and others to help develop components of the broad band wireless infrastructure.

Cisco's is not the only approach in the M.M.D.S. broad-band data market, however. The company's wireless competitors will include Spike Technologies, ADC Telecommunications and Adaptive Broadband. But Cisco's prominence as an **Internet technology** vendor, along with the powerful alliance it has built, could give the company an inside edge, some analysts said.

"There is no real leader as yet, but Cisco has quite a strong story," said Tim Luke, a financial analyst at Lehman Brothers in New York.

Still, some telecommunications analysts point out that M.M.D.S. occupies a relatively limited frequency band. That means, they say, that communications carriers would need to set up a large number of transmitters in order to subdivide a metropolitan area into numerous cells to allow the same channels to be reused in different parts of the region.

Cisco executives nevertheless contend that broad-band fixed wireless **technology** can be a cost-effective alternative to cable modems and digital phone lines in urban areas. As for rural areas, Cisco says that broadband wireless will hold dramatic advantages over traditional wired or fiber optic networks, which can be costly ways to provide service in sparsely settled places.

Certainly the Cisco alliance, if its **technology** proves viable, will be in a position to compete for the many companies and consumers that seem to have developed an insatiable appetite for Internet data communications bandwidth.

Service providers like Winstar, Nextlink and Teligent have already developed a significant business providing so-called point-to-point broad-band wireless communications in urban areas. Those services permit corporations and buildings in urban areas to bypass local telephone and fiber optic communications links and connect directly to Internet providers or long-distance carriers or to connect to another branch office in the same metropolitan area.

Cisco intends to make these point-to-point customers the first target for its new V.O.F.D.M. **technology**. In fact, later this month the company will begin selling a high-speed wireless system that will permit companies to extend communications between buildings over relatively short distances.

The point-to-point wireless microwave equipment market, according to Mr. Pfau of CIBC World Markets, was about \$2.56 billion in 1998 and is expected to grow to \$5 billion by 2003.

The more versatile point-to-multipoint market, which will develop for consumer and commercial applications, is forecast to grow to \$3 billion in 2004 from less than \$200 million next year.

Mr. Raleigh, of Cisco, said that he believed the Cisco **technology** had a promising commercial future in part because of new radio spectrum that will be made available for interactive data applications.

In Europe, for example, there will be soon be an auction for radio spectrum at the 3.5 gigahertz frequencies. Meanwhile, in the United States, the Federal **Communication** Commission plans to auction spectrum for

interactive data in the frequency band that until now has been used solely for ultrahigh frequency, or UHF, television.

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BUSINESS DIGEST

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English

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Paul Allen's Cable Company Plans Initial Public Offering

Paul Allen, the co-founder of Microsoft who has built a cable **media** empire called Charter Communications, plans to sell shares in the company.

Charter expects to raise about \$3.4 billion in an initial public offering that it will use to finance part of three pending cable acquisitions. These deals are for Falcon Communications, Fanch Communications and Avalon Cable Television. The combined value of the three purchases is about \$6.8 billion. [Page C8.]

Back to Programming at Microsoft

Paul Maritz, a senior Microsoft executive, is returning to his roots as a programmer as the company seeks to persuade software developers to continue to rely on its **technology** despite **the rise of the Internet**. In an E-mail to colleagues on Monday, Mr. Maritz said that he was handing off most of his day-to-day management duties to work more closely with William H. Gates, the chairman, to help "set technical direction in the company." [C2.]

G.O.P. Rejects Democratic Tax Plan

Republicans in the Senate turned aside a Democratic plan to limit the size of their proposed tax cut, even as centrists from both parties laid out a middle ground on which a compromise could eventually be forged. [A1.]

Democrats say Republican tax-cut proposals give the rich gargantuan tax reductions compared with those for everyone else. Republican leaders respond that their large tax cuts are fair because high-income families pay a major share of Federal taxes. Economic Scene: Michael M. Weinstein. [C2.]

Computer Stocks Buoy Nasdaq

Computer-related stocks lifted the Nasdaq market to its second consecutive gain. The market was otherwise lackluster as investors braced for today's reports on employment costs and the gross domestic product. The Nasdaq composite index was up 26.51 points, to 2,705.84, but the Dow Jones industrial average lost 6.97 points, closing at 10,972.07. The Standard & Poor's 500-stock index closed up 2.56 points, to 1,365.40. [C10.]

Pharmacia Profit Matches Forecast

Pharmacia & Upjohn, the maker of the top-selling glaucoma treatment Xalatan, said that its second-quarter profit rose 15 percent on stronger sales of that drug and Detrol, its incontinence pill. The company also sold more of its older products, such as Nicorette smoking-cessation products. Though the results matched analysts' expectations, shares of Pharmacia fell \$1.9375, to \$55.9375. [C8.]

CBS TV President Gets New Deal

CBS has locked Leslie Moonves into a long-term deal to continue as president of CBS Television. CBS reached more viewers in prime-time programming last season than any other network, its first No. 1 finish since 1993. [C8.]

Accounting Board Rescinds Plan

The Financial Accounting Standards Board, which sets accounting rules, has backed away from a plan to bar companies from immediately writing off unfinished research and development projects acquired in mergers. [C8.]

Durable Goods Orders Rise 0.3%

Orders for durable goods rose a less-than-expected three-tenths of a percent in June, restrained by reduced demand for industrial machinery, Government figures showed. [C8.]

Miller Brewing Reassigns Accounts

Miller Brewing abruptly turned over advertising assignments for its two largest beer brands, Miller Lite and Miller Genuine Draft, from unconventional agencies to mainstream shops that work for Miller's parent, Philip Morris. Stuart Elliott: Advertising. [C8.]

Chart: "YESTERDAY" Dow industrials -- 10,972.07 down 6.97 30-yr. Treasury yield -- 6.00% down 0.01 The euro -- \$1.066 up 0.004 The dollar -- 116.12 yen down 0.24 Graph: "TODAY" plots percent change in the G.D.P., from fourth quarter 1997 through first quarter 1999. Second quarter 1999 figures due today. Expected: 3.4%

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MEDIA

Business/Financial Desk; Section C

An Entrepreneurial Exception Rides The Internet in Japan

By SHERYL WuDUNN

1,364 words

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Page 10, Column 1

English

(c) 1999 New York Times Company

TOKYO, July 25 -- Masayoshi Son seems an unlikely deal maker in the bubbly and free-spirited world of the Internet.

Short, boyish-looking and soft-spoken, Mr. Son -- while in Japan -- wears the Japanese **business** uniform of a white shirt and an immaculately pressed black suit. In public, he sometimes stands stiffly and smiles only slightly. He bows often to emphasize his humility.

Moreover, he lives in Tokyo, the risk-averse capital of the world, where the Internet is still a foreign concept to many.

But if there is such a thing as an Internet financial and **media** empire, Mr. Son's company, Softbank, may be it. Mr. Son, 41, and Softbank are already among the most powerful financial forces in cyberspace, controlling key stakes in 100 Internet information providers in the United States and 20 such companies in Japan. The stakes in publicly held companies, worth \$15 billion to \$20 billion, are sprinkled widely. Softbank now owns 28 percent of Yahoo, and it has important stakes in Geocities, E-Loans, E*Trade, USWeb, Message **Media**, and TheStreet.com.

And Softbank is intensifying its focus on the Internet with new deals all the time. Last Tuesday, for example, it agreed to pay \$20 million for a 40 percent stake in Webhire, an on-line recruiting company. And Softbank may sell much of its 70 percent stake in Ziff-Davis, the publisher of such magazines as PC Week.

"If you want a global player in the Internet, they are the player," said Jarett F. Wait, chief operating officer in Asia for Lehman Brothers, which recently released a 195-page report on the company. "There's nobody else that comes close."

But while Mr. Son is Japan's leading entrepreneur, the oddity, and perhaps the reason, is that he is not ethnically Japanese.

A Chinese-Korean, he grew up poor in southern Japan, closed off from normal avenues in Japan's corporate world because of discrimination against the Korean minority. Denied a chance to succeed at a leading company, he started Softbank and has become one of Japan's richest men.

Softbank's aim is to become a global Internet "zaibatsu," a Japanese-style empire with investments in many linked companies. Softbank has begun Internet ventures through Yahoo in Germany, France and Britain; it has investment alliances with Rupert Murdoch's News Corporation in Europe, and a joint venture in South Korea.

"For the next 10 years, we do nothing but Internet," Mr. Son said, speaking in English during an interview in his spacious office. "Because that's where the whole **society** is going to have a big revolution."

Now, after building the foundations of his Internet kingdom in the United States, Mr. Son is turning back to Japan -- one of the least entrepreneurial societies. Last month, he and Frank G. Zarb, chairman of the National Association of Securities Dealers, announced a plan to form a new trading exchange, a Japanese version of Nasdaq, that could become a center for electronic brokerage activity, electronic research and entrepreneurial ventures in Japan.

Mr. Son will feed that entrepreneurial spirit with venture-capital funds that aim to pour \$85 million into building Japanese start-ups and grooming hundreds of Softbank wannabes. On June 29 Mr. Son held a reception for 1,400 budding entrepreneurs. He spent the morning of July 5 with Prime Minister Keizo Obuchi and other Government officials to offer some ideas for reviving Japan's economy. The entry of Mr. Son, an entrepreneur from the Korean minority, into the Prime Minister's residence underscores the changing times in Japan.

Yet he faces some enormous challenges. So far he has been a kind of venture capitalist, backing Internet enterprises early and riding on their success. But he does not manage or plan them. And the soaring value of Internet stocks has perhaps exaggerated his ability to pick individual winners.

Mr. Son's appetite for expansion has often outstripped his financial ability. Even now, he often taps the bond markets, and is carrying about three times as much debt as equity.

If there is a shake-out in the Internet, or if Internet stocks prove to be a bubble that pops, then Softbank may falter. Moreover, as Mr. Son ventures into relatively new territory -- like the stock exchange -- he is taking risks in areas in which he has no proved expertise.

Still, no one seems eager to bet against him. And almost no one is better than he is at adjusting to a new situation; he sometimes comes across as a chameleon.

He can backslap and talk in colloquial English with American investment bankers and then discuss the details of new computer chips with the techies. He can also turn somber and bow and speak in polite Japanese to melt into a Japanese **business** crowd.

This knack for mixing comes from his personal background, which has haunted and helped him since his days growing up in a small town on the southern Japanese island of Kyushu. Mr. Son's grandparents came to Japan from Korea, where his family had lived for 21 generations after migrating from China.

His father and other Koreans illegally built their houses on land owned by Japan National Railways, which led to a long-running conflict with the authorities. It was on that land that Mr. Son's father raised pigs and chickens and illicitly made sake. The home brew was apparently lucrative, for he became the first person in town to buy a car.

When Mr. Son's family moved out of its Korean neighborhood so he could attend a better school, to try to melt into **society** the family took a Japanese last name, Yasumoto.

"I was a good student, but in those days I had a darkness in my mind all the time," Mr. Son wrote in an essay in 1992. "It was because of my nationality. When I was with friends, I was very happy. When I came back home alone, I had the feeling that I was hiding something from my friends."

He took on his real Korean-Chinese name, Son, when he went to the United States at 16 to attend high school and then on to the University of California at Berkeley. It was his American experience, he says, that laid the groundwork for his career.

"If I had stayed all the time in Japan," Mr. Son said, "I probably would have become much more conservative, just as other Japanese."

One important element in the effort to change attitudes of young people will be to expand opportunities for them to finance their companies and to reward them with stock options -- and that is where the new stock exchange comes in. In February, Mr. Son met John L. Hilley, an aide to Mr. Zarb for the first time through a mutual friend.

Over dinner at a French restaurant at the Royal Park Hotel, close to Softbank's offices, Mr. Hilley began pouring out his frustrations over trying to break into the Japanese market. He had been in meetings his whole trip and had received very little encouragement.

"I said, 'Maybe we can help, maybe you went to the wrong place,' " Mr. Son recalled. He told Mr. Hilley, "You need someone who has the entrepreneurial spirit to make this happen."

Mr. Son and Mr. Zarb then began talking about setting up a new exchange, an idea made possible by recent changes in the securities regulations under Japan's financial liberalization. The idea also dovetailed with Mr. Son's ambition to help shape electronic brokerage and the Internet in Japan.

Even if this proposal fails and Mr. Son suffers a blow to his reputation, he still has his bet on the Internet. He says that as **Internet technology** evolves, the potential for returns from the information that travels on the network will be far greater than anything realized so far.

"That's my fortune-telling, " he said. "I'm betting on that."

Photo: Masayoshi Son, without the usual black suit, in his office in Tokyo. (Stuart Isett/Sygma for The New York Times)

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The New York Times

WHAT'S NEXT

Circuits; Section G

Promising an End to Cable Spaghetti

By KATIE HAFNER

971 words

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English

(c) 1999 New York Times Company

BY early next year, computing and communications devices will begin showing up on the market with a communications **technology** called Bluetooth built into them. Their arrival, the companies supporting the Bluetooth **technology** say, will signal the beginning of the personal-area network.

Bluetooth, which is the creation of a consortium of computer and communications companies -- Ericsson, I.B.M., Toshiba, Nokia and Intel -- was conceived two years ago as a way to eliminate the tangle of cables that plague device-happy computer users. It has since evolved from a way to reduce last-minute trips to Radio Shack for that missing nine-pin serial connector into a **technology** for a broad range of wireless applications.

Bluetooth works by allowing high-speed **communication** among devices that are within 33 feet of one another. While some current mobile devices can communicate through infrared signals, those signals must have a clear, straight path from one device to the other. Bluetooth, in contrast, operates on a radio frequency, so its signals can penetrate walls and briefcases. That means an electronic organizer in your pocket could transmit a phone number to the cell phone in your briefcase and initiate a phone call -- all part of your personal-area network.

With Bluetooth, your digital camera could send a photo straight to your printer. Or seconds after you snapped a photo from a ski lift, the digital camera could send the image to the cell phone in your pocket, which could then send the photo as an E-mail attachment to friends back home.

Consider slightly more far-out scenarios, too: You arrive at the airport and buy a ticket simply by walking past a wireless terminal, which confirms your identity, issues an electronic ticket and bills your credit card. And a flight attendant would no longer ask passengers to turn off their electronic devices. The plane's master Bluetooth device would shut them all down automatically for takeoff and landing.

The rather mystifying name Bluetooth for this blend of hardware and software was the inspiration of a group of engineers from Intel and Ericsson who are admirers of King Harald Bluetooth, who ruled Denmark from 940 to 985 and is known for unifying the country.

Such seamless integration is Bluetooth's goal as well, said Per-Erik Svensson, the Bluetooth marketing manager at Ericsson Mobile Communications.

By this Christmas, a limited number of devices containing Bluetooth will be announced. Ericsson, for instance, will introduce a wireless cell phone headset. The headset will come with a small clip-on adapter for the phone with a Bluetooth chip in it. In the first half of 2000, PC cards with Bluetooth chips will be introduced; high-end cell phones and laptop computers will begin to appear in the second half of the year. Peripherals, digital cameras and personal digital assistants won't be far behind.

"Bluetooth will be in virtually every product within three to four years," Mr. Svensson predicted.

Bluetooth's 2.4-gigahertz frequency (a gigahertz is a billion cycles per second), which also happens to be the frequency for microwaves and a new generation of cordless phones, does not mean that a Bluetooth device will start your oven or make your phone ring, said Brent Miller, a senior engineer who specializes in Bluetooth at International **Business** Machines. Bluetooth uses spread-spectrum **technology**, which means that the signals are sent over a wide range of frequencies and jump from one frequency to another.

"It's the frequency hopping, the hopping pattern and hopping speed that mitigates any interference problems," Mr. Miller said.

Mr. Miller added that technical safeguards insured that a cluster of Bluetooth devices in, say, an airport lounge would not suddenly start talking to one another.

Bluetooth won't be cheap. Initially, the add-on cost to manufacturers for incorporating Bluetooth into devices will be around \$25. That will drop to about \$5 as volumes increase. The cost to the consumer will, of course, be still higher.

That added cost has given some manufacturers pause. "Bluetooth is an interesting **technology** that everybody is taking a serious look at," said Mark Lowenstein, a senior vice president at the Yankee Group, a **technology** research company in Boston. "But there has not yet been a solid commitment because the economics for deployment are not quite there yet."

Still, more than 1,000 companies have signed on as Bluetooth adopters, which means that they are interested in incorporating the **technology** into their products and services. Once Bluetooth gains widespread acceptance, said John Patrick, vice president for **Internet technology** at I.B.M., "you won't buy a product without it."

"Would you buy a Sony Walkman without Dolby?" he added. "I'm dying to have it, personally."

Despite creative efforts at hiding them, Mr. Patrick said, cables run rampant in his office at home, connecting his computer to an MP3 player, label printer, fax-printer, Audible player, palm-size device and **business** card scanner. When he travels, his briefcase is filled with mobile devices and their attendant cables and cradles and often weighs more than his suitcase.

Bluetooth will allow people to be more inventive with the communications. You might be wearing a piece of jewelry, for instance, that was actually a wireless headset for your cell phone. Or you might shake someone's hand and exchange electronic **business** cards via your Bluetooth shoes.

But Mr. Patrick would rather not emphasize those futuristic applications. "Frankly, I think that stuff turns people off a bit, where we're irrelevant and we're all just a carcass, carrying a computer," he said. "But the idea of cleaning up the cable mess and simplifying your personal productivity environment -- now, that's a big deal."

Drawing (Mary Ann Smith)

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Circuits; Section G

For Help With a Benefits Package, Help Yourself

By SUSAN J. WELLS

2,312 words

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English

(c) 1999 New York Times Company

AT many companies and government agencies, open-enrollment season -- that annual ritual in which workers choose or change their employer-sponsored benefits for the coming year -- has just ended. Some employees may leaf through plan summaries or peruse health-care provider directories to make their choices, but at an increasing number of companies, employees are doing things differently. These tasks are, or soon will be, completed electronically, from the desktop at the click of a mouse, and by the people getting the benefits, not by human resource departments.

At the Oracle Corporation, the Boeing Company and Charles Schwab & Company, for example, workers surf internal corporate computer networks and Web sites set up by benefit providers to check their 401(k) account balances, switch health-care plans or update W-4 forms, all tasks that were once exclusively the job of human resources employees. Other companies, like the Marriott Corporation and Anheuser-Busch Companies, are using self-service call-in centers that link employees with benefits data; many of these systems present employees with a series of menus that enable them to make benefit choices.

Known in the industry as employee self-service, this self-help notion is quickly sweeping the workplace, as companies use **technology** to shift the responsibility for many benefits-related tasks directly to employees.

Employers embrace the notion as a way to automate their human resources departments, cutting costs and increasing efficiency. Employees either like it or hate it. Some find it empowering to be able to see their files and change their choices. But others find it frustrating to be left to sort out the merits of an insurance plan on their own, trying to decipher the coverage limits described on an insurer's Web site without the benefit of a human being to help explain them.

That inherent tension leads some observers to question whether low-tech human assistance is better than high-tech self-help in the area of employee benefits, or in at least some parts of the benefits process. And experts and users seem divided on whether self-service systems guarantee employees the depth of information they need to make timely benefits decisions.

"I've seen corporations try to replace the human touch with **technology**, and it doesn't always work," said Donna Malinak, president and chief executive of Forward Mobility, a management consulting company in Bernardsville, N.J. "I don't believe that one can completely replace the other."

But one thing is certain: companies are quickly moving in that direction. Automating benefits through Web-based **technology**, called virtual H.R. (for human resources), is growing fast. Fifty percent of 466 companies surveyed now conduct at least some human resources transactions over the Web, nearly double the rate in 1997, according to a survey conducted last year by Watson Wyatt Worldwide, a consulting company in Bethesda, Md. The use of Web-based applications outpaces other methods, like interactive voice-response systems and free-standing kiosks that offer workers access to their files, the survey showed.

"It's very, very clear that this is where companies are going," said Steve McCormick, the virtual H.R. consultant at Watson Wyatt. "To the extent that it has a network and PC's, I think every company intends to move toward some type of self-service of its H.R. functions."

Cost savings are driving the trend. Mr. McCormick cited a large pharmaceutical company that had moved parts of its benefits information on line through a local corporate network after figuring that it spent \$16.40 each time it had

to process an address change filed on paper. When the company multiplied that times its estimated 100,000 address changes a year, "the cost savings become just so obvious," he said.

Moving data on line can also give employees easier access to their benefits files so they do not have to wait for a paper statement. Schlumberger Ltd., an oil-field services company based in New York, offers its 16,000 employees in the United States 24-hour access to personal benefits information through its interactive Web-based system. Employees can conduct investment research, change 401(k) contribution rates or send E-mail to their benefits administrator.

"The biggest gain is that employees can have access when they need to make a decision," said Lillian Petty, Schlumberger's benefits manager for North America. "There's a difference between pushing information to employees or letting them pull out what they want."

The site, called the Schlumberger Automated Benefits Link, has received an average of 320 visits per day since it opened in May. Next up: full benefits enrollment on line this year. "Our goal is to have paperless benefits administration," Ms. Petty said.

That is an attractive goal for any **business**, but can it work for every employee at every company, even those who do not have daily access to personal computers or phones at work?

Such a shift can present a classic divide between haves and have-nots, people who have studied the trend say: employees with computers have access to information that those on the shop floor do not. In that case, companies must take a different approach. At Schlumberger, for example, 52 self-service kiosks at its manufacturing centers give employees without computers access to the information that is available to other workers on line.

A similar approach is being taken by Hard Rock Cafe International, a restaurant chain based in Orlando, Fla. It plans to introduce an interactive CD this month that will carry information on all company benefits, including its 401(k) and health plans. The CD's will be sent to its 45 restaurants and played at publicly available monitors in break rooms. Kitchen training is already conducted via interactive CD's at all the restaurants. The videos are interactive; by using touch screens, Hard Rock employees will be able to learn about their benefits programs and monitor the growth of their retirement-plan contributions.

"We told ourselves that we could continue to do it with our current method -- shipping at least 6,000 benefits kits to employees, holding two to three meetings a year with each restaurant and traveling to and from -- or we could look at our own motto, 'Save the Planet,' and put a stop to all this paper," said Anthony Amato, director of compensation and benefits. Mr. Amato estimated that the company used six tons of paper, at a cost of 20 cents per page, to inform employees about benefits each year. "When we added up how much we were spending," he said, "it was clear what we needed to do." Employees will be able to get answers to benefits questions by entering a personal identification number and password, Mr. Amato said.

The concept of self-service benefits for employees is not new, but its acceptance has been slowed somewhat by a persistent image problem, Year 2000 compliance problems and by the need for companies to invest in **Internet technology**.

"We have more than enough **technology** to bring this about," said Joel Lapointe, vice president for management consulting at the Hunter Group in Baltimore. He said he coined the self-service phrase and developed the concept in the 1980's, and many of his peers in the industry agree with that. "The roadblock continues to be a culture-acceptance problem," he added.

On one hand, employees who are comfortable with **technology** enjoy having access to their own information and control over it, and they want more of it, Mr. Lapointe said. "Employees know that companies have these sets of data about them," he said, "but the source of the data is always the employee -- it all belongs to them."

On the other hand, some workers may think that the trend shifts to the employee an unwanted chore that used to be management's job, say consultants who have worked on the new systems.

One person who has studied management and employee benefits is Richard Hadden, president of Corporate Education Systems in Jacksonville, Fla., and co-author of "Contented Cows Give Better Milk: The Plain Truth About Employee Relations and Your Bottom Line" (Saltillo Press, 1998). Employees tend to see this newfound empowerment as either "enablement or abandonment," Mr. Hadden said. "If it enables them to do better things, that's good. If it leaves them feeling abandoned, that can be detrimental. If employees can't use or perceive they

can't get what they need, which is so often the case with benefits issues, they'll be frustrated, and abandonment sets in."

Some companies have tried to take steps to address that problem. In 1995, Marriott, based in Bethesda, Md., began a telephone benefits-enrollment system called Marriott Telephone Information and Enrollments, or Martie. Marriott's 100,000 employees can enroll in a health plan or change their choices by using touch-tone phones. But the company's system also lets workers bypass the voice-response system and reach a person at any time during the call, said Maureen Brookbank, vice president for benefits planning at Marriott.

"It's nice to know that a person is available if I need one, but it's also nice not to have to go through them as a required part of getting the job done," said Laura Paugh, 44, vice president for investor relations at Marriott, who joined the company in 1980, when benefits enrollment was handled on paper by the human resources department.

Once employees have chosen benefits through Martie, a written confirmation of what they have signed up for is sent to them for their approval.

Being user-friendly also helps. Employees asked Marriott to simplify the language explaining the new system by substituting phrases like "the people at Martie" for "Martie customer service representatives" and "push-button steps" rather than "touch-tone telephone instructions."

Maintaining the **privacy** of the data is also a concern. At Schlumberger, for instance, an automatic password security check is done each time an employee logs on to retrieve personal information. If the check determines that the password can be easily broken, a message appears warning the employee that the code is weak and suggesting that a more secure one be devised.

Experts acknowledge that the concept of self-service employee benefits is still in its early stages and that managers are still grappling with how to make employees feel at ease with the idea and master the **technology**.

And the **technology** itself is still evolving, said Susan Obijiski, an analyst with the Gartner Group, **technology** consultants in Stamford, Conn. Many companies do not have the **technology** to support self-service systems based on the Web or are relying on the decades-old **technology** of voice-response systems -- which Mr. Lapointe said could become "voice-mail jail" as callers got trapped in a seemingly endless maze of menu choices and button-pressing.

The companies offering software packages that give workers access to their own records via Web browsers include the Edify Corporation in Santa Clara, Calif., Seeker Software in Oakland, Calif., and Foundation Technologies in Waltham, Mass.

A survey made public last month by Benefits Access, a benefits administration company in Hartford that is a subsidiary of the Cigna Corporation of Philadelphia, found that 60 percent of 906 benefits managers of companies with 1,000 to 10,000 employees wished that they could provide workers with enough information to make and manage their own benefits decisions. Only 42 percent of the respondents said their employees were fully satisfied with the service they received from their benefits departments.

Does that suggest that automating the process would improve things? Maybe, maybe not.

"On-line benefits has a lot of potential, but not if you lose the end user in the process," said Ms. Malinak, of Forward Mobility. "It's important for employers to be able to provide both low-tech and high-tech options for getting employees the information they need to make decisions."

Site-Seeing: Health-Care Information

Many companies are placing more responsibility in the hands of employees by setting up electronic benefits services to handle things like enrollment choices, address and dependent changes, insurance claims and shifts in investment allocations. Making such choices is no small feat, considering that some large companies let their workers choose from among as many as 150 health maintenance organizations. For consumers who want information that goes beyond what a company or benefits provider may make available during open enrollment, several Web sites are available. Here is a sample.

HEALTH PAGES: www.thehealthpages.com-- This is an on-line service, based in New York, where you can search a database of more than 500,000 doctors, managed care plans and other health care providers in the United States. The information is based on current data at state health and insurance departments, Federal and

state health data organizations, professional licensing boards and provider directories. The site also lets visitors review comments from patients about particular health-care providers.

NATIONAL COMMISSION ON QUALITY ASSURANCE: www.ncqa.org-- This group, in Washington, tracks quality levels at most major managed care organizations in the United States. It began accrediting managed care organizations in 1991; since then, it has expanded the range of organizations it certifies. Through its Consumer Page, you can find the accreditation status of health plans or download the entire list. The commission also produces Accreditation Summary Reports, which are more detailed decision-making tools for consumers and employers.

HEALTHFINDER: www.healthfinder.gov-- The Federal Government furnishes information on how to choose quality health care. SUSAN J. WELLS

Photos: WEB LINK -- Companies like Schlumberger Limited are setting up interactive benefits systems. (pg. G1); IN CONTROL -- Lupe Cortez, a Schlumberger employee, checking on his benefits. (F. Carter Smith for The New York Times)(pg. G6)

Document nytf000020010828dv17001g9

The New York Times

Science Desk; Section F

From Two Small Nodes, a Mighty Web Has Grown

By GEORGE JOHNSON

2,309 words

12 October 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

Thirty years ago, on Oct. 29, the inaugural message was sent over the first thin reed of what was to become the Internet. It was nothing so portentous as "What hath God wrought," the words christening the telegraph in 1844. It was just the simple word "login."

There were only two nodes on what was then known as the Arpanet, the precursor to the Internet built by the Defense Department's Advanced Research Projects Agency. As the story has become enshrined in the folklore, a U.C.L.A. student named Charley Kline tapped out the letters "l" and "o," which were dutifully echoed back by a computer at the Stanford Research Institute, a center about 300 miles northwest in what was not yet Silicon Valley. When he typed the third letter, "g," the S.R.I. computer was supposed to recognize and complete the full command.

Instead, the letters caused a memory buffer to overflow, bringing down the system. But it was an exceedingly minor crash, said Bill Duvall, who was tweaking the connection on the Stanford end. The buffer size was increased and the first connection was flawlessly made.

"I guess that I really don't care to be known as 'The First Guy to Crash the Internet,' " Mr. Duvall wrote in an E-mail message. What sticks in his mind is the satisfying feeling of getting the pieces of the complex system to mesh. The S.R.I. computer had to be fooled into thinking it was talking to a regular old teletype machine, a "virtual user," which might as well have been in the same room. Stanford had practiced for the occasion by running simulations of the network connection. But there is no substitute for the real thing.

"Quite a bit of thought went into debugging the initial network connection," Mr. Duvall recalled. "When the S.R.I. end came up, I was pretty happy. I guess that it is a bit like a symphony -- it's the last note that is remembered, not all of the stuff in between."

No one apparently thought to take a picture. And no one recalls what messages followed. "It seems like it should have been 'Watson, come here! I need you!' " Mr. Duvall said, referring to Alexander Graham Bell's first, urgent telephonic command (he had just spilled battery acid). "That would not have been out of character. But, alas, I really don't remember."

And so the revolution quietly began. With one scarcely noticed milestone after another, the planetary nervous system envisioned in the early 60's -- cyber rhetoric is as old as a Beatles tune -- unceremoniously began insinuating itself into **society**. A strange amalgam of Defense Department money, engineering expertise, and even a dab of countercultural idealism, slowly brought on the Net we know today.

There was no big ribbon-cutting a month later when a third node was installed at the University of California at Santa Barbara, or the following month, when the reach extended outside California to the University of Utah. No golden spike was hammered into the ground to commemorate the joining of the coasts with a link to Cambridge, Mass., where a small consulting company called Bolt Beranek & Newman had won the contract to build and run the Arpanet.

What was emerging would be barely recognizable today. There were no @ signs, no dot coms, no World Wide Web, nothing called E-mail. The main purpose was to let university-based researchers for the Defense Department agency share computer resources, allowing someone in, say, California to run a program on a machine in Massachusetts. Many system administrators were reluctant. Computer power was scarce. Why should they share it with strangers?

But from very early on, a handful of visionaries realized the synergistic power that would come from someday putting a computer on everybody's desk, then gradually weaving them into one great matrix. In an age when computers were still identified in the public mind with punch cards and spinning reels of tape, some of the early fomenters of the information age showed stunning prescience.

As long ago as 1945, in *The Atlantic Monthly*, Dr. Vannevar Bush, the engineer, educator and government research adviser, came up with the basic idea of the personal computer, a device he called the memex -- a mechanical extension of human memory. Never mind that it was as big as a desk and that it stored all your documents, including encyclopedias and reference libraries, on super-fine-grained microfilm shuffled by nimble mechanical fingers and projected onto translucent screens.

Though embodied in the clunky technologies of the time, the memex would work something like an associative memory -- or, less grandiosely, a relational database. A user researching the history of the bow and arrow might start by calling up an encyclopedia article. When he found another relevant passage in a book, he would link the documents with a few keystrokes, encoding them with crude hyperlinks, and even add his own annotations. "Thus he builds a trail of his interest through the maze of materials available to him," Bush wrote.

To his credit, Bush also speculated that going beyond "dry photography," the data might be stored as magnetized dots on metallic sheets using the **technology** that already existed for recording voices on spools of wire. And for entering data, he even envisioned the scanner, an outgrowth of the radio facsimile machines that already existed in his day.

The big thing Bush missed was electronic networking. He imagined the researcher conferring with someone a few years later who wanted to incorporate the bow-and-arrow material into his own study on **technology**. "He sets a reproducer in action, photographs the whole trail out and passes it to his friend for insertion in his own memex," he wrote, "there to be linked into the more general trail." He had invented the World Wide Web with messengers on bicycles in place of high-speed digital T-3 lines.

A decade and a half later, Dr. J. C. R. Licklider, one of the most visionary computer scientists of his day, took another leap with his predictions of a "Galactic Network" linking everyone to a universe of information. In a later paper titled "The Computer as a **Communication** Device," he and Robert W. Taylor, who would go on to direct the Arpanet project, imagined nothing less than "a labile network of networks, ever-changing in both content and configuration."

"What will go on inside?" they asked. "Eventually, every informational transaction of sufficient consequence to warrant the cost. Each secretary's typewriter, each data-gathering instrument, each dictation machine, will feed into the network."

There would be no need for letters, telegrams, telephone calls or even **business** trips. People would simply link their computers. Dictionaries, encyclopedias, investment advice, tax counseling, advanced scientific modeling programs -- all would be available within the Net.

On-line communities would form with people selected "more by commonality of interests and goals than by accidents of proximity." And, more ominously, the two researchers speculated, those denied the benefits of this "intelligence amplification" might be relegated to an information-deprived underclass. Both the bright and dark sides of today's Internet were anticipated years before the first message was sent.

For all the grandiosity of the vision, the Internet developed haltingly. To make Licklider's Galactic Net a reality, scientists and engineers had to design a communications system that operated like none that had come before.

The obvious example to emulate might have been the telephone network, in which long-distance calls from one small town to another were routed like airline flights through one or more central hubs.

But in the early 1960's, researchers began to realize that a computer network would be much less vulnerable to failure if it was more widely spread out -- less like the air travel system than like the network of back roads weaving together every municipality in the country. Each point is connected to its nearest neighbors by several redundant paths. If a connecting node between A and B fails, it is easy to find an alternative route.

But there was an even more radical difference between the networks of old and the one that was about to take root. In an ordinary telephone system, two phones were linked by forming a temporary circuit, a dedicated physical channel through which the electrified voices flowed. The telegraph used a different **technology** called message switching: each telegram was given an electronic address, then sent into the Net, where it would be relayed, node by node, to its destination.

Paul Baran at the RAND Corporation and Donald Watts Davies at the British National Physical Laboratory independently saw the advantages of taking this "store and forward" model a step further. A message from one computer to another would be chopped up into many little packets, which would be sent swarming through the network to find their way. Some would take this route, some would take that. Each would carry a destination label along with instructions for where the packet fit inside the overall message. No matter in what sequence the pieces arrived, they could be reassembled.

In this system, called packet switching, there would be no need to tie up a circuit for a single transmission. And since the messages were broken into smaller fragments, the flow would be smoother. Finally, if a packet got corrupted, one could just resend it and not the whole transmission.

Around the same time, Dr. Leonard Kleinrock, who would preside over the establishment of the first node at U.C.L.A., was using a mathematical tool called queuing theory to understand how data would flow in a packet-switched network. By 1966, with these and other basic ideas in place, Lawrence Roberts, recruited by ARPA from the Massachusetts Institute of Technology, mapped out the plan.

Two years after the first transmission, the number of host computers grew to 23. The @ symbol was invented in 1972, and a year later 75 percent of the Arpanet traffic was E-mail. It was starting to look like the Net.

Before long, other organizations, like the National Science Foundation, wanted their own networks. By the late 1970's, Dr. Robert Kahn and Dr. Vinton Cerf of ARPA were putting the finishing touches on the lingua franca, inelegantly called TCP/IP, that would weave the patches into the electronic quilt called the Internet.

And that is just a fraction of the contributions. No one stands in relation to the Internet as Bell to the telephone or Morse to the telegraph. There was no single moment when it all came together. From the beginning, it was a continuous collaboration. And any attempt to recite the history in less than a book must be notable for its omissions.

It was not until 1984, when the Net had grown to include 1,000 host computers, that the domain name system was established that lets Amazon.com be Amazon.com and not 208.216.182.15. And in 1991 came the World Wide Web followed by Mosaic, the graphical interface, or browser, that inspired Netscape and Explorer. The number of Internet hosts quickly exceeded a million, and this year that number multiplied fiftyfold.

Before long the barbarians were at the gates. Scientists on the Net were suddenly getting E-mail from journalists, then from their own parents, and then from children asking for help with their homework. The Pentagon was sharing the Web with pacifist groups, cyberspace mirroring the conflicts of the physical world.

And what a powerful tool it has become. Simply by typing "Watson, come here" into a search engine, one can now find a scanned image of Bell's original notebook pages at the Library of Congress. There on the yellowed paper, in his own handwriting, is what he really said (slightly different from what's often quoted): "Mr. Watson -- come here -- I want to see you."

Sitting up in the futurist's perch, where Licklider put himself almost half a century ago, today's visionaries talk about the arrival in the first decades of the coming millennium of "ubiquitous computing." Hand-held computers will merge with cell phones, talking to computers hidden in the office walls and the trunks of cars, all linked into a pervasive net. With a spoken command, a person will have instant access to the invisible ether of information.

Writing in 1960, Licklider called this kind of technobiological mind meld "man-computer symbiosis" and ventured that bringing it together might take 15 years. "The 15 may be 10 or 500," he added more realistically, "but those years should be intellectually the most creative and exciting in the history of mankind."

As the Internet inevitably recedes into the background, it can almost be taken for granted -- the ultimate compliment. It has become the platform on which its successor will rise. When the 40th anniversary or the 50th rolls around, it will be even harder to untangle the individual contributions to something so much bigger than its inventors.

Photos: Dr. Leonard Kleinrock, a pioneer in the development of , standing next to the first Internet switch, an interface message processor, at U.C.L.A. (Ed Carreon for The New York Times)(pg. F1); Bill Duvall, who helped develop the Arpanet, the precursor to the Internet built by the Defense Department. (Susan Spann for The New York Times); The developers of the first Internet switch, from left, Truitt Thatch, Bill Bartell, Jim Geisman, Dave Walden, Frank Heart, Ben Barker, Marty Thorpe, Will Crowther, Severo Ornstein and Bob Kahn, of the company Bolt Beranek & Newman, in 1970. The switch was installed at U.C.L.A. in 1969. (Courtesy of BBN Systems and Technologies)(pg. F2)

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The New York Times

Section G

BIG BLUE CASTS ITSELF AS BIG BROTHER TO BUSINESS ON THE WEB

By Steve Lohr

93 words

22 September 1999

New York Times Abstracts

NYTA

Pg. 50, Col. 1

English

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International **Business** Machines Corp has refashioned itself as Internet leader, exploiting Internet growth to rejuvenate company; rise of Internet played to IBM's traditional strengths, requiring powerful centralized computers to serve up data to millions of viewers; company has revamped image by running Web sites for small businesses; larger companies remain IBM's bread-and-butter **business**, often hiring IBM to help them use power of **Internet technology** in **business**-to-**business** commerce; photos

(M)

Photographs

Document nyta000020010828dv9m01e2y

The New York Times

COMPANY NEWS

Business/Financial Desk; Section C

MERRILL LYNCH TO PURCHASE D. E. SHAW UNIT

Dow Jones

136 words

20 February 1999

The New York Times

NYTF

Page 3, Column 1

English

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Merrill Lynch & Company confirmed yesterday that it had signed a definitive agreement to buy D. E. Shaw & Company's **Internet technology** unit as part of a plan to compete in the on-line trading **business**. Financial terms were not disclosed. Merrill Lynch said it expected to begin on-line entry of some customers' orders for securities and mutual funds in the next few weeks. The Wall Street Journal reported yesterday that Merrill Lynch was likely to pay \$25 million to \$35 million for the unit, D. E. Shaw Financial **Technology** L.P. Merrill Lynch intends to offer investors services, including trading, at roughly the same fees it now charges for securities sold through brokers, The Journal reported.

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The New York Times

Business/Financial Desk; Section C
Microsoft Puts Its First Witness On the Stand

By STEVE LOHR
1,126 words
12 January 1999
The New York Times
NYTF
Page 1, Column 5
English
(c) 1999 New York Times Company

WASHINGTON, Jan. 11 -- The Microsoft Corporation began its defense in the Government's antitrust lawsuit today with an economist from the Massachusetts Institute of **Technology** bearing a massive tome of written testimony with a simple message: Microsoft's business practices are good for consumers, and any Government meddling with the software industry would likely do more harm than good.

The 328-page testimony by Richard L. Schmalensee of M.I.T. is a sweeping rebuttal to the Justice Department's two-and-a-half-month attempt to prove that Microsoft used its monopoly in personal computer operating system software to thwart competitive challenges posed by **the rise of the Internet**.

The Government's case, Mr. Schmalensee wrote in his direct testimony, amounts to "speculation" based on a "morass of E-mails" from Microsoft executives that at first glance may seem damaging, but are not. Forget the atmospherics, he tells the court, and focus on the outcome -- what he insists is a lack of measurable harm, current or future, to consumers from Microsoft's business practices.

"Proper economic inquiry into whether a company is engaged in anticompetitive conduct should end if it concludes that consumers have not been harmed by the conduct at issue and are not likely to be harmed in the future," Mr. Schmalensee wrote.

High and rising product prices are typically the litmus test of whether a monopolist has the power to punish competitors and gouge consumers. The Government's evidence shows that Microsoft has increased the price it charges personal computer makers for its Windows operating system in recent years, even as the prices of other components of computer systems have declined. Still, the cost of Windows accounts for less than 5 percent of the price of a typical personal computer -- not really evidence of the kind of price-gouging normally associated with a monopolist, as some economists have noted.

But the Government's case is focused as much on the future as on the recent past. If Microsoft is allowed to continue to thwart competition, the Justice Department says, consumers will surely suffer from less product choice, less innovation and higher prices in the long run.

The case will be decided by Judge Thomas Penfield Jackson in this nonjury trial based on his determination of which side the "preponderance of the evidence" favors. Microsoft's objective is to convince the court that there are enough flaws in the Government's case that the balance should tip toward the company.

In his testimony, Mr. Schmalensee describes the suit by the Justice Department and 19 states as "fundamentally inconsistent."

The Government asserts, he notes, that Microsoft has an enduring monopoly because its Windows operating system controls the basic operations on more than 90 percent of personal computers sold, and that barriers to entry in that market are high. On the other hand, he adds, the Government says that Microsoft invested hundreds of millions of dollars because it was scared of losing its dominance to an upstart maker of Internet browser software, the Netscape Communications Corporation.

"What is striking about the late-night E-mails and the almost frantic concern over competitive threats is that they show that Microsoft itself was extremely insecure about its leadership in operating systems," Mr. Schmalensee said.

David Boies, the Justice Department's lead trial lawyer, replies that Microsoft was indeed deeply worried and "did work to improve its software, but it also had its thumb on the scale."

The Government has made several allegations against Microsoft, but a central one is that the company used its market power to prod personal computer makers, Internet service suppliers and Internet programmers to enter into "exclusionary" contracts that limited the distribution and promotion of Netscape's rival browsing software.

The Microsoft defense, again, is that the outcome in the marketplace shows that Netscape could and did widely distribute many millions of copies of its browser despite Microsoft's purportedly anticompetitive business practices. In the last two years, Mr. Schmalensee notes, Netscape has gained an additional 14 million users of its browsing software.

But to gain these 14 million users, the Government replies, Netscape distributed about 200 million copies of its browsing software at considerable extra cost, even as Microsoft gave away its browser for free and bundled it with Windows.

Such Microsoft tactics, the Justice Department asserts, are part of a pattern of predatory practices intended to stifle competition. Mr. Schmalensee counters that Microsoft's contracts requiring personal computer makers to ship the company's browser with Windows "offer more choices to consumers" and are "therefore pro-competitive."

His testimony is an advocate's brief, so Mr. Schmalensee, like the 12 prosecution witnesses, seems to interpret the evidence to suit his argument. For example, when the experience of America Online Inc. supports the Justice Department, Mr. Schmalensee refers to the leading on-line services company as "Microsoft's fickle partner and bitter rival."

But roughly 200 pages later in his testimony, Mr. Schmalensee cites America Online's success against Microsoft's MSN on-line service as proof that bundled placement on the Windows desktop screen -- an advantage MSN enjoyed since 1995 -- does not thwart rival products from being distributed. America Online, Mr. Schmalensee writes, "skillfully exploited the many distribution channels open to it (or any other competitor) to beat MSN."

Far from being the most valuable real estate in cyberspace, Mr. Schmalensee declares, the Windows desktop is not an "even particularly important channel of distribution" -- a view not held by Microsoft executives, according to several internal E-mail messages in evidence.

Mr. Schmalensee also attacks the Government's case for trying to apply outdated "textbook models of competition" and "chalk board theories" to the fast-changing facts of the software industry.

The Government replies that the economist's stance amounts to trying to get an antitrust exemption for Microsoft and the software business. "He is very close to saying you should never intervene in dynamic, high-**technology** industries," said Daniel Rubinfeld, a senior economic adviser to the Justice Department's antitrust division.

In courtroom action today, Judge Jackson closed the trial to the news **media** and public while he heard testimony from Franklin M. Fisher, an economist and Government witness, about the prices Microsoft charges personal computer makers for Windows. The company-by-company pricing data, the judge explained, was "confidential, sensitive, commercial information."

Lawyers for several **media** organizations appealed. But they only asked that the closed sessions be as limited as possible and that the judge consider releasing transcripts with the sensitive price data redacted. The judge reopened the courtroom in the afternoon, and Mr. Fisher continued his testimony, which is expected to end Tuesday.

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The New York Times

Circuits; Section G
Parents Log On to Campus Life

By SUSAN J. WELLS

1,131 words

11 February 1999

The New York Times

NYTF

Page 7, Column 1

English

(c) 1999 New York Times Company

IT'S no secret that college campuses today are wired, with high-speed Internet hookups in dormitory rooms, on-line applications and distance-learning programs.

But Gettysburg College (www.gettysburg.edu), a private liberal arts college with 2,200 students in Gettysburg, Pa., has taken the electronic campus a step further by allowing students and parents access to an interactive Web-based system that tracks and links many aspects of college life.

The system, called the College Navigation Project, was started about a year ago as a way to link students to one another and to a wide array of campus information, like financial records, grades and course descriptions. A version for parents was added at the end of October.

Students can customize the College Navigation Project to meet their own needs. Don Redman, a Web programmer and analyst with the project, compares the system to a "giant puzzle builder." Students can feed the system different bits of information about themselves, their studies, career goals or personal interests to create a student profile, he said. That dossier is then matched with information about courses, campus events, faculty members, internships -- and even other students.

The system can even act as a counselor, analyzing the courses a student has done well in and suggesting ways to build on academic and career strengths. "We made the conceptual jump from basic Web pages to a smart machine," said Mike Martys, vice provost for information resources at Gettysburg.

Gettysburg programmers say that customization sets the College Navigation Project apart from Web systems at other colleges. "Other schools are publishing information on the Net," Mr. Redman said, "but as far as we know, we're about the only ones taking it to the next step by making it personally useful."

For example, students who need rides out of town for the weekend can tell the system where they want to go, when they want to leave and how close they need to get to their destinations. The system will try to find them rides, sending E-mail to notify students of matches.

The project also makes available course archives. The college maintains an annotated record of the 600 courses offered each semester. Through the project site, visitors can pull up a vivid description of what a class was like 3, 5 or even 12 years ago, complete with its syllabus, the students who took it and comments from students or teachers. "It's really a snapshot in time," Mr. Redman said.

The College Navigation Project was designed and built in the past three years at a cost of about \$250,000 and is used regularly by 78 percent of enrolled students, Mr. Martys estimated. Ninety percent of the students have active system accounts, he said.

Many other colleges and universities are taking steps to use **Internet technology** to link systems, students and former students. Cornell University (www.cornell.edu), for example, is in the process of changing its Bear Access campus network software into Web-enabled software that will expand the system's offerings and access, said Steven Worona, an assistant to the vice president for information technologies at Cornell, which has 20,000 students. The school already gives all new students a personal E-mail address, which they can keep and use for life.

Bear Access was created with tools from Project Mandarin (www.mandarin.org), a software consortium of 32 colleges. Many consortium members have collaborated to create their own electronic campus information

services, like Pennsylvania State University's Oasis (Open Access to Student Information Systems), the University of Arizona's UAInfo, the University of Michigan's Wolverine Access and Washington State University's WSU Infonet.

At Gettysburg, parents were invited to set up College Navigation Project accounts because students were giving their personal log-on names and passwords to their families. "We would see an on-campus sign-on, and then minutes later, the same ID would be signing on from another location far away," Mr. Martys said. "Our security system would flag it each time."

The parents' version of the system was introduced at a family weekend at the campus last fall. School officials say they have 132 active parent accounts and more than 200 applications for accounts from interested parents.

There is one caveat: parents cannot get access at all unless their children agree to it. Parents and children have to agree on exactly what parents have access to.

Federal law protects the **privacy** of student education records, including many of those that can be viewed through the College Navigation Project. While the Federal Family Educational Rights and **Privacy** Act gives parents certain rights with respect to their children's education records, those rights transfer to the student when the student reaches age 18 or attends any post-secondary school.

Mr. Martys said students' **privacy** had been an important issue in the development of the system. Students can regulate what information concerning them that others can see by turning various menus on or off -- and they can change their choices daily. Students have generally chosen to be very open with one another but wary of giving outsiders full access to personal information, Mr. Martys said.

The idea of parents' peering into their children's lives on campus also raises some interesting questions, Gettysburg officials and others concede. "We are wondering if there are battles brewing over who gets to see what," Mr. Martys said, jokingly.

One Gettysburg parent, David Frohlich of Rochester, called the college's system "a great aid to **communication**." His 18-year-old son, Michael, is a freshman majoring in political science at Gettysburg and is in the college's choir. To get details about a holiday concert on campus, Mr. Frohlich and his wife, Laraine, were able to tap into the College Navigation Project.

"It gives us the ability to check on things ourselves without having to bug him," Mr. Frohlich said. "We're five and a half hours away. We want to be involved, but we don't want to be intrusive."

Course descriptions in the system are much more comprehensive than the small paragraphs typically found in class-schedule directories, Mr. Frohlich added. "There's a tremendous amount of detail, so it allows us to have input on what he may be choosing," he said.

"I think Gettysburg recognized the desire on the part of people other than just students wanting this information and that giving it to a much larger audience would be a wise trend," Mr. Frohlich added. "I think it's going to turn out to be a tremendous tool."

Photo: FAST FACTS -- Bridget Smith and Valerie Stiassni check the Gettysburg College network. (Ann Grillo for The New York Times)

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The New York Times

Business/Financial Desk; Section C
Nortel Is Said To Be Seeking Deal on Optics

By SETH SCHIESEL

711 words

9 December 1999

The New York Times

NYTF

Page 1, Column 5

English

(c) 1999 New York Times Company

Bidding to stay on top of the fast-changing optical communications market, the Nortel Networks Corporation is nearing a deal to acquire the Qtera Corporation for \$2.5 billion to \$3.5 billion in stock, executives close to the talks said yesterday.

The executives said a deal could be announced within a week but cautioned that the negotiations could still fall apart. One person close to the talks said there was an 85 percent chance that the two companies would complete a deal. Another person close to the negotiations estimated that chance at 90 percent.

Spokesmen at Nortel, which is based in the Toronto suburb of Brampton, Ontario, and Qtera, which is based in Boca Raton, Fla., declined to comment.

Qtera, which is underwritten by venture capitalists, is among a group of young, little-known companies that are developing the next generation of optical communications **technology**. Along with deregulation and **therise of the Internet**, the quick pace of optical development has been a main factor in the communications revolution, allowing glass fibers thinner than a human hair to carry billions of bits of digital information each second.

Big communications equipment companies like Nortel and Lucent Technologies, the former equipment unit of AT&T, spend billions of dollars each year on research and development. But because there are so many technologies to pursue, the big players often find themselves acquiring start-up companies that have focused on niche areas that end up becoming important.

Qtera is developing **technology** that allows fiber optic lines to carry signals farther than they usually do now without regeneration.

Generally, optic signals that are carrying billions of bits a second must now be regenerated every 250 to 375 miles, analysts said. When the optical signals are regenerated, they are usually converted into electrical signals, then amplified and reconverted into pulses of light. The need for such regeneration adds cost and complexity to the construction and operation of continent-spanning fiber optic networks. Such networks are being built worldwide.

Along with other companies like the Corvis Corporation, Qtera is developing a system meant to allow signals to travel as far as 2,000 miles without such regeneration.

"If you can kill electrical regeneration, you eliminate a huge cost element; it's a huge cost advantage," Sender Cohen, an analyst for Lehman Brothers, said yesterday. "Qtera has the right solution to carry very high bandwidth traffic over very long distances cost effectively, more cost effectively than just about anything on the market today. The only other company that has a comparable solution is Corvis."

Both Qtera and Corvis, which is based in Columbia, Md., have tested their systems with Qwest Communications International Inc., the upstart long-distance communications carrier that has agreed to acquire U S West Inc., the regional Bell company. Qwest also happens to use a lot of Nortel's optical transmission gear.

Nortel is considered the world leader in equipment that can transmit 10 billion digital bits a second on a single optical fiber. It would appear logical that Nortel would want to maintain its optical leadership by integrating Qtera's **technology** into its optical communications products.

But some analysts wondered yesterday whether Nortel's pursuit of Qtera bespoke a Nortel weakness.

"The thing that grabs me is, why is Nortel Networks making this investment in a space that you would think they would own?" said Frank Dzubeck, president of Communications Network Architects, a networking analysis and consulting firm in Washington.

Referring to the prominence of Cisco Systems in the market for Internet switches and of Lucent in the market for traditional phone systems, Mr. Dzubeck added: "It's like Cisco making an investment in a routing company. It's like Lucent making an investment in a telephone switch."

Qtera has yet to ship its product in significant quantities, but the communications equipment market has become so heated that a \$3 billion valuation would not appear unreasonable, analysts said.

Sycamore Networks Inc., for example, another new optical communications company -- albeit one in a different segment from Qtera -- had revenue of only \$11 million in its last fiscal year but has a market capitalization of almost \$20 billion.

Document nytf000020010828dvc901vfu

The New York Times

THE MEDIA BUSINESS: ADVERTISING
Business/Financial Desk; Section C
Battle Begun on Internet Ad Blocking

By LAURIE J. FLYNN

1,849 words

7 June 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

The Advertising column in Business Day on Monday, about software that can prevent "banner" ads from being displayed with Web pages, referred incorrectly to limits imposed by some sites on such ads. Yahoo, America Online and many other site operators have restricted the file size -- not memory size -- for banners on their sites.

The column also misstated the purpose of the tiny files known as cookies, transmitted from some Web sites. A cookie labels the user's computer for identification if it later connects to the same site; the cookie does not collect data about the user's activity on the Internet.

CORRECTED BY THE NEW YORK TIMES WEDNESDAY JUNE 09, 1999

An emerging category of World Wide Web software that blocks advertising is challenging the Web industry and rankling the nerves of some Internet executives.

Known by such names as At Guard, Internet Junkbuster Proxy, Intermute and Web Washer, these programs work by blocking ads before they appear on the user's screen. For Web users, ad-blocking software can mean faster performance, because files that contain ads laden with graphics and animation take far longer to load than files with text.

For Web site operators, though, ad blocking is anything but a benefit. Many executives of Web-based businesses contend that ad blocking, were it to catch on significantly, could clog their revenue stream and challenge the fundamental structure of the emerging Internet industry. Invariably, industry officials draw a comparison to television: If users want free Web content they, like network television viewers, will need to put up with the advertising that pays for it.

"If ad blocking is freely available how will everyone's needs be met?" said Scott Mathias, managing editor at ITVWorld.com, a producer of on-line programming. He said that widespread adoption of ad blocking would seriously damage his small but growing business. "The audience already allows overt advertising in mainstream media," he said, "so they must be tolerant in the context of the on-line model as well."

Last month, in the wake of complaints of that sort, the multimedia software company Real Networks canceled plans to continue distributing another company's ad blocker, At Guard. Real Networks' primary customers, which operate Web sites that employ its software for transmitting audio and video material, complained that Real Networks had no business promoting a product like At Guard that could threaten their advertising revenue.

Certainly a lot of money is at stake. Last year, advertisers spent nearly \$2 billion to reach on-line audiences. Most of that spending was for so-called banner advertisements -- ads, often flashing or otherwise animated, that appear at various spots on Web pages and beckon users to click for further information. By next year, barring a mass adoption of ad-blocking software, the Internet research firm Jupiter Communications expects banner ads to represent \$4.4 billion a year in Web advertising revenue.

Ad-blocking programs have been available for several years. But only recently have significant numbers of people begun using them as a way to speed up their Web surfing. While market analysts have yet to begin tracking sales of ad blockers, individual companies report sales are on the rise lately. Siemens A.G., the German electronics giant that produces Web Washer, estimates that roughly a million people have begun using the program since it

was released in December. And Internet Mute Inc., the Cambridge, Mass., company that makes Intermute, has had rising sales in the same period.

The numbers may still be small, compared with the estimated 67 million Web surfers in the United States. But producers of ad-blocking software predict that more people will adopt their products, driven by the increasingly frenetic tactics of the advertisers themselves.

Surveys show that the number of people who click on banner ads has dropped steeply in the last year, indicating that people are becoming desensitized to the ads. Nielsen-Netratings, which tracks Internet advertising, says the click rate is now about half the level of 1.35 percent that surveys measured a year ago, meaning people on average now click on a particular ad fewer than once in 100 viewings.

Advertisers nonetheless contend that ad banners help them build brand awareness, even when consumers do not actually click on them. But Web site operators complain that when an ad is blocked it is not downloaded from the advertising server computer, which means they do not get paid for "serving" an ad to that visitor to the site.

Clamoring for the attention of these increasingly jaded consumers, advertisers are adding more graphics and sound to their Web ads -- which, in turn, means that Web surfers end up waiting longer and longer for the ad-supported pages to appear on their screens.

"There is a war going on for surfers' attention; it's spoiling the Web experience," said Jason Catlett, founder and president of Junkbusters Inc. Although his company's main revenue source is consulting fees for helping companies and individuals find ways to filter out junk E-mail, the company also offers an ad-blocking program called Internet Junkbuster Proxy. Like many other providers of ad-blocking software, Junkbusters offers its program free for downloading from its Web site.

Several other new ad-blocking programs have recently appeared on the market, including Web Washer from Siemens. And ad-blocking utility programs are increasingly offered as standard fare in software tool kits sold to individuals to speed up Web performance or enhance consumer **privacy**, such as the \$30 At Guard program, which also includes a personal "firewall" for preventing intrusions by hackers and a feature that prevents Web sites from collecting data about a visitor's activities.

Siemens, after announcing its Web Washer program in January, immediately received numerous complaints from publisher groups and on-line advertisers, said Horst Joepen, an executive with Siemens' computer systems business development operation in Munich, Germany. But he said that Siemens was standing firm. The company, which hopes to become a leader in **Internet technology**, wants to curb the surfeit of information on the network and encourage the industry to develop forms of advertising that are better tailored to the medium.

Like many ad blockers, the Siemens program is free, distributed through the company's own site and others.

"We believe that this paradigm shift -- in a significant part initiated by Web Washer -- is widely recognized and irreversible," Dr. Joepen said. "The demand for Web Washer indicates clearly that the current form of on-line ads is not attractive for the users and does not make use of the interaction capabilities of the Internet."

To many Web site publishers, though, blocking ads is akin to trying to get something free. After all, they say, you would never expect to get an ad-free version of an ad-supported magazine. "It's like a shoplifter coming and taking your money away," said Charles Arruda, a vice president of Channelseek, which offers an on-line guide to live events on the Web. In fact, Mr. Arruda feels so strongly that ad blocking is a form of thievery that his company has written software code that prevents anyone using an ad blocker from even logging onto the company's site.

But advocates of ad blocking say the comparison to television, magazines and other **media** is misguided. "The Web is the only real medium that can take over your device," said Anne Marshall, product marketing manager at WRQ Inc. in Seattle, which sells At Guard. Compared with a Web advertisement, which ties up the computer for as long as it takes the ad to download, "a TV ad won't lock up your set when an ad runs," Ms. Marshall said.

If a commercial comes on while you are watching television, she points out, you are free to change channels. And in television, Ms. Marshall said, there are industry standards governing the length and loudness of commercials. By comparison, the Web is a free-for-all, and advertisers are taking full advantage of new **technology** to make ads as attention-grabbing as possible.

Yahoo, America Online and many other Web sites have apparently gotten the message, and have imposed a memory size limit on banner advertisements. Still, ad-blocking advocates argue, not all Web sites make an effort

to keep ad sizes down, and users should be given a choice whether they want to endure the performance problems that huge ads create.

"Users want more control over their experience," Ms. Marshall said. "If Web sites kept ad sizes down to a reasonable level, that would be a different thing."

It might also be a different thing when Internet access speed is no longer an issue. For people who surf the Web from work, where a user is more likely to have high-speed access, banner ads have far less effect on Web performance. But even though cable modems and other fast links are becoming available to home users, most households still connect to the network through relatively pokey dial-up modems connected to telephone lines.

And even if network speed were not a factor, **privacy** might be. Besides blocking advertisements, most of these programs also prevent the installation of "cookies" -- downloaded files that install themselves on the hard drive of Web users' computers and invisibly collect data about their Web activities, such as which sites they visit and which pages they look at.

And some people employ ad blockers because they simply prefer to remove the clutter of advertisements while they are trying to read text or perform research.

So why aren't even more people using ad-blocking software? For starters, according to some analysts and Web site operators, many consumers like to view advertising -- particularly if it is aimed specifically at them, as ads increasingly are on the Web.

But Mr. Catlett of Junkbusters, and many analysts, say that most people simply do not want to bother with installing the software. After all, American consumers are exposed to advertisements all day long and many have learned to tune them out.

"The most effective ad blocker people have is the one right between their ears," said Jim Nail, an analyst with Forrester Research in Cambridge, Mass.

Besides, Mr. Nail points out, advertisers might be better off not spending money to reach people who do not want to see their ads. "Most people aren't going to bother installing one of the programs, but if they do, they're not who you want to advertise to anyway," he said. "They're a waste of money."

Photos: The Web pages are examples of sites with an ad blocker, above, and without. (pg. C1) Graph: "The Hand That Feeds the Internet" Advertising is a primary source of Internet revenues and is expected to grow strongly in the next few years. Graph tracks spending on advertising on the Internet and Internet advertising as a share of total advertising dollars, from 1996 through a projected 2002. (Source: Nielsen NetRatings)(pg. C17)

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The New York Times

Business/Financial Desk; Section C
BUSINESS DIGEST

541 words
19 July 1999
The New York Times
NYTF
Page 1, Column 1
English
(c) 1999 New York Times Company
Broadcom Plans to Acquire Hothaus for \$280 Million

Broadcom, a leading maker of high-speed communications semiconductors, has agreed to buy Hothaus Technologies for \$280 million in stock. Broadcom will issue two million of its Class B shares for Hothaus, a closely held developer of software that enables communications over broadband networks.

The acquisition will enhance Broadcom's position in the emerging market for phone calls using **Internet technology**. [Page C2.]

U S West Agrees to Qwest Merger

The takeover battle for U S West and Frontier ended in a compromise Sunday as U S West accepted an unsolicited merger offer from Qwest Communications International and Global Crossing said it would stay with its merger partner Frontier. [The Metro Section.]

Boston: Hub of **Technology** Journals

Harvard and the Massachusetts Institute of **Technology** are two reasons that Boston has become a center for publications about **technology** and **business**. There are the old-timers like International Data Group, which started Computer World magazine 35 years ago and now produces more than 300 publications, and Inc. magazine, which has called Boston home for two decades and recently added another publication: Inc. **Technology**. Sprinkled around the city are Fast Company, **Technology** Review, Harvard **Business** Review, PC Week and Electronic **Business**, to name just a few. [C10.]

Israel Orders Lockheed Martin Jets

Israeli Prime Minister Ehud Barak said Israel planned to buy 50 new F-16E fighter bombers from Lockheed Martin at a cost of \$2.5 billion, and has an option for up to 60 additional jets for another \$2 billion. Israel already has more than 250 F-16's. [International News.]

Keeping Up on News, in Elevators

Captivate Network, a start-up company in Westford, Mass., is providing entertainment for fidgety people in elevators. It has begun to install network terminals that pull information like weather, traffic, sports and stock updates off the Internet. [C6.]

Service Set to Monitor the Internet

A monitoring service called Leading Web Advertisers is being introduced to provide information about advertising on Web sites. It will offer subscribers data on which marketers are running ads, when and where those ads appeared and what they looked like. The goal is to bring accountability to the Web as ad spending in cyberspace continues its rapid growth. Stuart Elliott: Advertising. [C12.]

Digital Music 101

The Recording Industry Association of America's Secure Digital Music Initiative last week released a set of standards that consumer electronics companies will have to adopt if they want to make devices that play commercially recorded music. But don't presume they will be the same a year from now. [C6.]

Will Users Pay for Internet Service?

Internet investors, entrepreneurs and analysts have convinced each other that the only truly Internet-centered **business** model is one in which on-line users pay nothing for content. But this concept is starting to crack. [C6.]

Imus Dropped by Boston Station

WEEI radio station in Boston said it decided to drop the Don Imus show because Mr. Imus had been losing his edge. [C10.]

Photo Drawing Chart: "LAST WEEK" Dow Industrials -- 11,209.84, up 16.14 30-yr. Treasury yield -- 5.88%, down 0.12 The Dollar -- 120.98 yen, down 1.40

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The New York Times

Section C

WEB CONCESSION FROM MICROSOFT

By Saul Hansell

101 words

2 July 1999

New York Times Abstracts

NYTA

Pg. 16, Col. 3

English

(c) 1999 New York Times Company

Microsoft Corp, in symbolic concession that it cannot control all facets of **Internet technology**, agrees to license latest audio and video player from Real Networks rather than favor its own less popular competing product; Real Networks developed Real Audio and Real Video formats that Internet services use to put sound and video clips on their Web sites; Microsoft's competing **technology** is Windows **Media** Player; WebTV, which Microsoft bought for \$425 million in 1997, offers service that allows people to surf Internet through their television sets; it has 800,000 subscribers

(S)

Document nyta000020010828dv7200yp9

The New York Times

Section C

MERRILL LYNCH TO PURCHASE D. E. SHAW UNIT

43 words

20 February 1999

New York Times Abstracts

NYTA

Pg. 3, Col. 1

English

(c) 1999 New York Times Company

Merrill Lynch & Co to buy D E Shaw & Co's **Internet technology** unit, D E Shaw Financial **Technology** LP, as part of plan to compete in on-line trading **business**

(S)

Document nyta000020010828dv2k008zp

The New York Times

Business/Financial Desk; Section C
Browser Foes Drop Enmity to Run Start-Up Together

By STEVE LOHR
960 words
21 April 1999
The New York Times
NYTF
Page 2, Column 3
English
(c) 1999 New York Times Company

For the last few years, Hadi Partovi has been a front-line warrior in the "browser war" -- the blood feud between Microsoft and Netscape in the market for Internet browsing software, the focus of the Government's sweeping antitrust case against Microsoft.

As the lead product manager for the Microsoft Corporation's Internet Explorer, Mr. Partovi, in a flourish of competitive zeal, once led a group that loaded a giant script "E" -- for Explorer -- on a truck and drove to Mountain View, Calif., where they plopped it on the front lawn of the Netscape Communications Corporation's campus. When a videotape demonstration that Microsoft presented two months ago at its antitrust trial proved embarrassing, he was summoned overnight to set things right. Mr. Partovi, a 26-year-old Harvard graduate, speaks movingly of his emotional bond to Microsoft and its people.

But this week, having just left Microsoft, he is joining a Silicon Valley software start-up founded by a pair of his former enemies from Netscape, Michael McCue and Angus Davis, and backed by Jim Clark, the co-founder of Netscape.

The move, uniting onetime adversaries, seems a sure sign that the browser war is over. Microsoft and Netscape still compete in the browser market, of course. But it is no longer seen as the arena of excitement, corporate life-and-death rivalry and cutting-edge innovation that lures the young, entrepreneurial talent that keeps the frontiers of the software **business** moving ahead at a dizzying pace.

To the youthful entrepreneurs at Tellme Networks Inc., the browser **business** is suddenly a backwater. They speak of it as "mature" -- no compliment in Silicon Valley, whose **business** culture is dedicated to pursuing the technologically new and hot, the Next Big Thing.

"Browsers are an evolutionary **business** now," said Mr. Davis, a former browser product manager at Netscape. "What you want to do is walk into a space and make a revolutionary change."

Mr. Davis speaks with the wisdom of 21 years. He joined Netscape at 18, becoming its youngest employee. For Mr. McCue, 31, Tellme Networks is the second start-up. He joined Netscape in early 1996, when it bought his small company, Paper Software Inc., for an estimated \$20 million. At Netscape, he was vice president for **technology**.

They are part of a growing number of former employees who have left Netscape, mostly to form start ups. In Silicon Valley, they are known as Netscapees, and their numbers are likely to increase now that the purchase of Netscape by America Online Inc. is complete. Among others, Tellme has signed up John Giannandrea, a senior programmer at Netscape, who led efforts to put Java, an Internet programming language of Sun Microsystems, into the Netscape browser.

Mr. McCue, who left Netscape in December, said that the purchase by America Online was not really the reason he departed, but a further prod to take the entrepreneurial path again. Just what slice of the Internet software **business** Tellme is aiming at is a closely held secret.

"All I can say is that we're not going after some niche market," Mr. McCue said. "We want to use **Internet technology** to revolutionize an industry again."

Venture capitalists and industry executives believe that Tellme intends to use some combination of natural-language and speech-recognition **technology** to give users a simpler way to find information on the World
Page 162 of 249 © 2025 Factiva, Inc. All rights reserved.

Wide Web or retrieve it from a computer, probably with a telephone. The industry experts base their speculation on the name of the company, the backgrounds of its founders and recent **technology** trends.

The industry experts say the goal is to allow people to speak a simple question or command -- such as "What is the weather forecast for San Francisco today?" or "Send me my E-mail" -- and receive replies by either voice or E-mail. "Natural language **technology** is at the very forefront of commercialization now," said Richard Shaffer, a principal of Technologic Partners. "But a lot of companies are working on it, so if that's where Tellme is going, it will find a lot of competition."

Whatever the **business** plan, it proved alluring to Mr. Partovi. By leaving Microsoft, he walked away from unexercised stock options worth "millions," he says. To try to keep him, Mr. Partovi says, Steven Ballmer, the Microsoft president, offered him a corporate staff position working directly for him -- a chance that would be regarded as a career-boosting prize at Microsoft.

"Talking to Steve Ballmer was the hardest thing about leaving," Mr. Partovi observed.

Yet Mr. Partovi, too, had decided to leave the big-company environment and join a start-up. He looked at a dozen companies, he said, but found Tellme the most promising.

Mr. McCue knew Mr. Partovi well from the browser wars and, he said, wanted him on his side in the new venture. Is there any residual hard feeling from the days of bare-knuckle competition -- including some Microsoft tactics that the Government has called illegal -- when the browser war was at its height?

Hardly, says Mr. McCue, who looks back at the Microsoft-Netscape confrontation as a pragmatic capitalist, not as a lawyer. "It was mainly a lot of heavy-duty, good clean competition," he said. "We viewed that experience as an asset in recruiting Hadi."

Mr. Partovi offered his own retrospective olive branch. "There was nothing really personal about the browser wars," he said.

Photo: Co-founders of the Tellme Networks in a jovial mood outside their temporary offices in Palo Alto, Calif. Michael McCue, at right in foreground, is joined by Angus Davis, left, and Hadi Partovi, at top. (Peter DaSilva for The New York Times)

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The New York Times

Business/Financial Desk; Section C
Small On-Line Brokers Raise Share of Trades

By DAVID BARBOZA

1,048 words

1 February 1999

The New York Times

NYTF

Page 1, Column 5

English

(c) 1999 New York Times Company

In a new world order that is melding Wall Street and Silicon Valley, the **business** of buying and selling stocks for smaller investors is being shaped as much by lesser-known on-line brokerage firms as it is by the big brand-name firms.

While Charles Schwab & Company and E*Trade have established themselves as the most recognizable on-line names, the fastest-growing firms are Waterhouse Securities, a discount broker turned on-line provider that does relatively little advertising, and Datek Online, a broker that caters to what some in the **business** call "hyperactive traders."

And that, analysts say, is another hint that when it comes to the retail market -- that is, smaller investors -- the shape of things to come may be trickling up from below.

"All the big Wall Street firms are looking at how these companies are shaping on-line trading," said Bernard L. Madoff, a member of the Securities Industry Association, which represents many of the big investment houses. "Nobody at this point can or should ignore it; it's not a passing fancy."

So while on-line trading grew by a record 34 percent in the fourth quarter, according to a study by Credit Suisse First Boston, a number of large banks and Wall Street firms have been trying to find ways to buy into that success.

Morgan Stanley Dean Witter is tapping into the market through its on-line subsidiary, Discover Brokerage; Merrill Lynch is planning its own on-line operation, though not so geared toward active trading, and Goldman, Sachs & Company and E*Trade recently joined forces to invest \$50 million in Archipelago, a computerized system that electronically matches stock trades.

The system is not unlike Island E.C.N., an electronic **communication** network developed by Datek. Trading volume in Island -- which some call an electronic stock exchange -- has been explosive in the last year. It is many times larger than Archipelago, analysts say, and according to the Nasdaq stock market, it is the leading trader in such stocks as Yahoo and Amazon.com.

"All this **Internet technology** has been developed on the edge of the market, and now it's moving to the core," said Bill Burnham, an analyst at Credit Suisse First Boston.

Indeed, officials at Datek say that Island, which gets much of its **business** from active day traders, or speculators, now accounts for about 10 percent of all Nasdaq volume. Datek says it is gaining on Instinet, the electronic system owned by Reuters, which matches institutional trades.

"If we're not really ahead of them, we're in striking distance," said Robert Bethge, a spokesman for Datek.

Instinet officials, however, say that there are numerous complications in counting stock trades. A spokesman, Terry Mulry, also says that Instinet's market share in Nasdaq has remained consistent over the last few years.

But no one doubts that Island has become a force in the industry, one big enough to attract the interest of E*Trade, which officials close to the company say was at one time in talks to either shuttle its trades through Datek's system or acquire the system.

Because of the tremendous success of on-line brokerage firms, shares of Schwab, E*Trade and Ameritrade have been soaring in recent months. And last week, the Toronto-Dominion Bank, which owns Waterhouse Securities, said that it would consider spinning off a portion of the brokerage firm to the public.

A sticking point with the smaller on-line brokerage firms, though, is that many on Wall Street are wary of linking up with a firm whose fortunes are tied too heavily to speculative, volatile trading in Internet stocks, in which companies like Datek specialize. Even on-line brokers like E*Trade are moving toward more mainstream customers whose trading activity may be more steady and less volatile.

"It's not uncommon for day traders to trade 60 times a day," said Mr. Madoff, who also operates Bernard L. Madoff Securities, a market-making firm. "This is not investing; it's a casino mentality. Very few Wall Street firms want to be involved in on-line day trading. There's a lot of risk involved."

Datek has another problem. Last May, the Manhattan District Attorney's office said it was investigating whether Datek had taken part in a money-laundering operation as well as other possibly fraudulent activity related to a day-trading subsidiary that had been spun off a little earlier.

Datek officials have denied any wrongdoing and called such accusations "baseless and defamatory."

Analysts say that smaller companies like Datek have been leading the push toward faster, more efficient trading technologies. Datek is now considering registering Island as an independent stock exchange with the Securities and Exchange Commission. If the S.E.C. approves this, some analysts say, Island could further reduce transaction costs and possibly even generate stock-quotation revenue that now goes to the Nasdaq market.

Joseph Ricketts, president of Ameritrade, which is one of the largest on-line brokers, says his firm is also considering linking up with an electronic **communication** network, or E.C.N.

"If you register as a stock exchange, you can charge for quotes," Mr. Ricketts said. "The Nasdaq and the New York Stock Exchange make hundreds of millions of dollars selling quotes. That money doesn't belong to the exchanges; it belongs to the customers. One way we can get it back is through an E.C.N."

Chart: "On Line, No Shortage of Brokers" The on-line brokerage industry, which now handles about one in seven stock trades, is becoming more competitive, with some upstarts, like Datek and Waterhouse, beginning to challenge more-established firms, like Schwab and E*Trade. SHARE OF ON-LINE TRADES IN 4Q 1998 Average daily total -- 340,000 Schwab -- 27.4% Waterhouse -- 12.4% E*Trade -- 11.8% Datek -- 10.0 % Fidelity -- 9.4% Ameritrade -- 7.6% Others -- 21.4% CHANGE IN TRADE VOLUME FROM 3Q 1998 to 4Q 1998 Datek -- +59.7% Waterhouse -- +58.5% E*Trade -- +45.7% Ameritrade -- +44.2% On-line industry -- +34.4% Fidelity -- +31.9% (Source: Credit Suisse First Boston)(pg. C9)

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The New York Times

Money and **Business**/Financial Desk; Section 3
A Tiger Fights To Reclaim His Old Roar

By RICHARD A. OPPEL Jr.

3,093 words

19 December 1999

The New York Times

NYTF

Page 1, Column 5

English

(c) 1999 New York Times Company

WE probably got a little fat and happy," acknowledged Julian H. Robertson Jr.

Mr. Robertson, the man behind Tiger Management, was giving one reason that his hedge fund family had dwindled from more than \$22 billion in assets at its peak last year -- when it pulled even with George Soros's hedge fund shop -- to about \$8 billion today.

For Mr. Robertson, who is widely regarded as one of the best investment managers of his time, the humbling comedown is perhaps the most dramatic reversal of recent memory in the money management **business** -- not only because Tiger has lagged severely behind the broad stock market over the last 15 months, but also because its previous record was so dazzling.

The loss of capital -- from both investor withdrawals and investments -- has made Mr. Robertson, a 67-year-old billionaire who in recent years has started spreading some of his wealth to philanthropies like Lincoln Center, intent on righting the firm before he retires. He has already made big changes in some practices -- resulting in a different **business** model, Tiger officials say. But he remains committed to other practices, notably "value" investing, which has been out of favor lately on Wall Street. As he ponders who will succeed him, he continues to have the final say over most investment decisions -- and is trying to persuade investors, who have removed \$5.3 billion in the last year, not to retreat further.

Mr. Robertson blames the huge outflows, in some measure, for Tiger's dismal performance -- and it is not clear when investors will stop leaving the fund. Tiger's fourth-quarter redemptions will be paid in a few weeks, and people on Wall Street say the number could be close to \$1 billion.

And though about \$1.3 billion of Tiger's money is largely locked up until July 2002 -- money raised in a special offering two years ago by Donaldson, Lufkin & Jenrette -- Mr. Robertson was confronted by some of those investors at a contentious meeting on Nov. 1. One asked whether an exception to the lockup could be made for longtime Tiger investors; Mr. Robertson replied that he would have to look at that idea. But a person close to Mr. Robertson said Tiger was not considering letting investors out early.

Tiger officials confirmed that the meeting had become contentious, but they declined to comment on fourth-quarter withdrawals, except to say that they would be less than expected. A person close to the firm also said that while investors in the special offering are allowed to withdraw a small amount each year, they took out less than one-fifth of what they could have this year.

Tiger remains one of the few large players in hedge funds, the \$300 billion world of secretive partnerships that is off-limits to all but institutions and the wealthiest individuals. Many of Tiger's investors, which include multimillionaires, endowments and universities, had to invest at least \$10 million to get into the fund. Like mutual funds, hedge funds invest pools of investors' money. But they are different in that they can borrow huge sums to make freewheeling bets on stocks, bonds, derivatives and other speculative investments.

Scrutiny of the industry has grown after the bailout of Long-Term Capital Management, the Greenwich, Conn., fund that roiled markets last year when its huge bets soured. Congress is weighing measures that could bring greater disclosure of industry practices.

BUT the recent experiences of Tiger and some other large hedge funds may signal that the days are over when big "macro" funds -- betting on currencies and interest rates -- could profit by rattling world markets. Globalization is rapidly curtailing market inefficiencies that Tiger and other funds have been so adept at exploiting.

Tiger's problems began in October 1998, when the firm lost \$2 billion in a single day after the backfiring of a bet on the price of the Japanese yen relative to the dollar. Tiger has since largely eliminated such macro moves. "We decided primarily to return to what brought us to the party," Mr. Robertson said -- referring to plain old stock-picking.

Mr. Robertson has bounced back from bad periods before -- making big gains in 1996 and 1997, for instance, after two subpar years. But even some current investors question whether he can recover this time in similar fashion.

"Is Tiger going to be able to rebound the same as it did then?" asked one Tiger investor, who spoke on condition of anonymity. "I don't know. One would certainly hope so, but I'm not sure anybody can say with certainty that it's going to happen again." Succession, this investor added, "is an issue for every investor in any sort of investment."

"If Julian were to say, 'I'm retiring tomorrow,' it would be an issue, as well," the investor added.

In the eyes of Tiger's loyalists, terrible years are inevitable for any great investor. They say that when **Internet, technology** and large growth stocks eventually falter, Mr. Robertson's relative returns will improve greatly. They see his problems largely as a result of logical but untimely and unlucky bets, as well as of opportunistic attacks by others hoping to profit from Tiger's travails. And they say the heavy redemptions show how one bad year can make fickle investors forget how Tiger has beaten the Standard & Poor's 500 stock index by an average of 11 percentage points a year for nearly two decades.

Mark Kenyon, chief executive of Union Bancaire Privée Asset Management, the United States investment arm of a private Swiss bank and a longtime Tiger investor, said Tiger's poor results were "simply a case of a great value investor in a market that's not value-oriented."

He added: "We're in a fickle time for investors, where they look at the paper every day and see someone has just made some 21,000 percent return on some Internet-related stock. It is the most difficult market we've had in the last 25 years, a period in which Julian has been an outstanding buyer of value."

Lee S. Ainslie III, who left Tiger six years ago as a managing director and is now managing partner of Maverick Capital, a Dallas hedge fund, described his former boss as "an extremely competitive person with a great deal of pride."

"I believe his primary motivation has not been economic," Mr. Ainslie said. "It's been for reputation, and I'm sure he feels it's awfully important that he work hard to restore his investors back to the footing they expect."

Mr. Robertson has gained a reputation for being tough on his critics, an image that results in large part from a libel suit he filed against **Business** Week after an unflattering cover article in 1996. Mr. Robertson dropped the suit a year later after the magazine, which made no payment to Mr. Robertson, ran an editors' note saying its predictions about Tiger's future performance were not borne out by subsequent results, which included a 38 percent gain, after fees, in 1996, and a 56 percent gain in 1997. Still, many people decline to be identified as saying anything remotely critical of Mr. Robertson.

MR. ROBERTSON concedes that part of the problem in the last year was his own fault. "During the golden years," he said, the firm got too casual about its research, "and did not really improve it the way we always had in the past." Most notably, he said, the poor stock-picking manifested itself in disastrous wrong-way bets on **technology** stocks. That included selling some stocks short -- betting that they would fall by selling borrowed shares in hopes of buying them back later for less.

"We had really lost an enormous amount of money in **technology**, and that was primarily from being short," he said, noting that some other short-sellers managed to do much better. "Look, it has been very disappointing. It is a big, horrible morale hurdle. No winning team likes to lose, and that's just fact."

If the market turns in Tiger's favor, then "we're geniuses," he said. "But right now, we're dodos. That's just the way it goes."

A native of North Carolina, Mr. Robertson spent much of his career as a stockbroker and money manager at Kidder, Peabody. But in 1980, he left and founded Tiger with \$8 million in capital, taking a name suggested by one of his young sons.

Tiger's investments soared from the start, as the firm beat the S. & P. 500 by at least 20 percentage points, after fees, in five of its first six years. Through last December, Tiger had an average gross return of 36 percent a year.

After subtracting the firm's cut of one-fifth of investment profits, Mr. Robertson's original investors have booked an average annual return of 29 percent -- far ahead of the 18 percent average for the S. & P. 500 index. An investment of \$100,000 when Tiger opened in May 1980 would have been worth more than \$11 million by last year, compared with about \$2.1 million for a similar investment in the S. & P. 500 index.

But beginning in the fall of 1998, Mr. Robertson seemed to step into every pothole he had avoided during those 18 years.

First was the October currency loss. Later in that year, Tiger placed enormous bets against stocks in two hot sectors -- telecommunications equipment and **technology**. Tiger lost big amounts, for example, short-selling shares of Lucent Technologies and Micron **Technology**, said one person close to the firm. Tiger now owns shares of both Lucent and Micron, this person said, and it has invested heavily in some other **technology** stocks this year, including Cisco Systems, Microsoft and Intel. Tiger finished last year down 3.9 percent.

Mr. Robertson declined to comment on specific short sales, but he acknowledged that Tiger officials had mistakenly made big bets against some companies without being "as aware of their close ties to the Internet." Trying to sell short in this market, he said, is like being "run over by a train that's going to derail a mile down the road."

But while Tiger has changed its opinion somewhat, Mr. Robertson is highly skeptical of most Internet valuations and says the day will come when money will bolt and flood into value stocks. "The Internet thing is just beyond belief," he said.

In the last year, Mr. Robertson has hired a number of top analysts in the **technology**, telecommunications and health care areas, most notably Thomas Kurlak, a former Merrill Lynch semiconductor analyst. Tiger now has the best analyst teams it has ever had to research those sectors, Mr. Robertson said. Some hires have been guaranteed sizable long-term pay packages in part to make up for the effects of Tiger's "high water mark" clause in its contracts with investors. The clause states that the firm cannot collect its 20 percent cut of profits until investors first recoup the losses of the last year -- thus taking away a big component of employee compensation.

"We have spent a fortune on that, an absolute fortune," Mr. Robertson said. The new **technology** hires have already shown results, he said, including a 62 percent return on a sub-portfolio started with \$200 million in March.

But Mr. Robertson's main focus remains on value stocks, which contributed greatly to Tiger's 22.5 percent loss this year through November. "Some of these companies are selling at literally five and six times earnings and selling at two and three times cash flow," he said. "It's just wild."

In August, Mr. Robertson's frustration with his largest holding, a 22.4 percent stake in US Airways, prompted him to file a 13-D form with the Securities and Exchange Commission indicating that he might seek to have the airline sold. As to whether Tiger was searching for a buyer for the airline, Mr. Robertson said only that "we have done some work in that area."

But barring a buyer willing to pay a very large premium to the airline's recent price of \$30 a share, look for Mr. Robertson to hold his shares. At Tiger's annual investor meeting in October, he acknowledged that he had misjudged the outlook for US Airways. But he noted that the company had repurchased about 30 percent of its stock over the last 19 months, and he predicted it could generate as much as \$640 million in free cash flow in 2001 -- or about a third of the company's current market value. "We're not about to sell our shares," he said.

IF the difficulties with currencies, **technology** short-selling and value stocks were not enough, Tiger had another problem: As part of reducing the amount of borrowed money it had invested and raising cash for investor withdrawals, Tiger has unwound more than \$100 billion of its positions since October 1998. Its total exposure -- stocks, short sales, currency and interest rate bets, derivatives and other holdings -- has fallen to less than \$25 billion, from \$125 billion. That includes selling more than \$40 billion worth of stocks.

In other words, a fire sale. Philip Duff, Tiger's chief operating officer, said: "How many financial institutions could have a \$100 billion downsizing of their balance sheet, or an 80 percent reduction? Few of those would probably survive."

The asset sales have given others on Wall Street a chance to make easy money at Tiger's expense by selling their top holdings short, with the knowledge that the firm would probably have to sell big blocks to meet redemption demands or to stabilize its portfolio. Other investors who owned those stocks also sold them, fearing that they would lose value if Tiger dumped many shares.

For Mr. Duff, confirmation of this effect came last June, after a report that Tiger could face \$3 billion in second-quarter redemptions. (The real number was about \$1 billion.) Within 15 minutes, he said, the computer generating Tiger's real-time profit-and-loss statement showed that the firm had lost \$72 million while the overall market stayed flat.

As the worry over Tiger reached a frenzy in late summer, short positions in many of its big holdings soared. From August to October, for example, the number of US Airways shares sold short rose to 3.8 million from 1.6 million. Federal-Mogul, the auto parts maker, saw total short sales leap from 3.7 million to 6.5 million between September and October.

Tiger's efforts to reduce the amounts it had borrowed to make investments are now largely complete, and the heavy pace of redemptions cannot continue indefinitely. Of the firm's \$8.1 billion under management, about \$2 billion is locked up for several years, and another \$2 billion is held by Mr. Robertson and other Tiger officials. Tiger had also considered limiting longtime investors to redeeming shares only twice a year instead of quarterly, but Mr. Robertson said he had since decided that beginning in January that policy would apply only to new investments.

The problems of the last year aside, uncertainty about who will succeed Mr. Robertson is of great importance to Tiger investors and, one former Tiger employee said, has contributed to decisions by some valued analysts and traders to leave Tiger.

The issue "caused people to increasingly question or doubt" their future role, this person said.

Tiger's alumni include a number of rising industry stars, like Mr. Ainslie and Lawrence Bowman of Bowman Capital Management in San Mateo, Calif. Some of this year's departing traders have already set up their own funds, including Andreas Halvorsen, a former director of equities at Tiger who now runs Viking Global Investors in New York. He declined to comment.

SUCCESSION remains an open question, Mr. Robertson said, adding that one reason he hired Mr. Duff, a former Morgan Stanley chief financial officer, last year was to help map out succession as well as to give the firm more structure. "We are all unfortunately aware of my age, and Phil is busily addressing that as well as he can," Mr. Robertson said. "It's a little hard, psychologically, for me to be talking about death, but on the other hand, it has to be thought about. Frankly, I don't want to be doddering around here at age 90 running this portfolio."

One possibility, he said, could spring from the start earlier this year of five subportfolios -- each run by a team of analysts with minimal oversight by Mr. Robertson -- in **technology**, telecommunications, health care, Japanese stocks and financial stocks. Their performance could help identify people to promote, Mr. Robertson said, but he does not rule out bringing in someone from the outside. Tiger is also considering starting sector hedge funds to invest in specific industries like **technology** or telecommunications.

Tiger, which has about 100 employees, has lost one-fourth of them this year -- including some who quit and some who were asked to leave. But Mr. Robertson plays down any notion that either uncertainty about the firm or his sometimes rough management style -- "Look, I have a temper," he acknowledged -- has created a brain drain.

"We've had a history of losing people," he said, but "as long as you have a stream of good people coming through here, that doesn't affect you in the least." Tiger has hired 15 analysts this year, people there say.

It is anybody's guess how long Mr. Robertson will remain at Tiger's helm. But one longtime hedge fund consultant, Lee Hennessee, whose family has known the Robertsons most of this century, noted that Mr. Robertson's father kept going to work until he turned 94. "Once the dust settles," she said, "I think he'll be just like his father."

Photo: Julian H. Robertson Jr., 67, has made many changes recently at Tiger Management but says he remains committed to a philosophy of value investing. (Rebecca Cooney for The New York Times)(pg. 18) Graph: "Ahead

of the Market, Most of the Time" shows annual market performance of Tiger Management from '80 to '99 (pg. 19)
Chart lists top 10 Tiger holdings of domestic stocks as of 9/30/99, in millions (Sources: Tiger Management,
Securities and Exchange Commission filings) (pg. 19)
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The New York Times

Business/Financial Desk; Section C
AT&T Has Set Itself Some Tough Challenges

By SETH SCHIESEL

1,298 words

26 April 1999

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NYTF

Page 1, Column 5

English

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Following the AT&T Corporation under C. Michael Armstrong has become an experience akin to watching one film sequel after another in the "Jaws" series.

Just when you thought that Mr. Armstrong, AT&T's chairman of 18 months, could not possibly bite off another big deal, he does just that, and the masses in the communications industry are sent fleeing to find ways to cope.

Last week's casualty may have been the Comcast Corporation, the big cable television operator. Just when it looked as if AT&T had settled down to manage its own \$31.8 billion acquisition of Tele-Communications Inc., the No. 2 cable carrier, Mr. Armstrong swam into the middle of Comcast's pending \$53 billion deal for the Mediaone Group and roiled the waters with an unsolicited bid for AT&T to buy Mediaone for \$58 billion.

Comcast may still win the battle, but many analysts say that AT&T, with its superior financial power, will likely beat Comcast and win Mediaone -- if regulators allow it. That would make AT&T the nation's No. 1 cable television company, in addition to the nation's No. 1 long-distance telephone carrier.

But like a voracious shark that ends up with a bunch of old license plates in its belly, AT&T may have a tough time digesting everything it has tried to swallow. The main question for AT&T now is whether its appetite has exceeded its ability to integrate its businesses into the lean yet powerful communications machine that Mr. Armstrong wants AT&T to become.

As Mr. Armstrong propels AT&T headlong into the future he has envisioned, the company faces mounting challenges -- not only of management and strategy, but also of **regulation** and **technology**.

Perhaps the most daunting management challenge for AT&T is the sheer breadth of Mr. Armstrong's strategic ambition. After John Zeglis, AT&T's president, was conspicuously absent during the company's Mediaone announcement last Thursday, several analysts wondered where he was.

It turned out he was in Japan. There, over the weekend, AT&T and British Telecommunications, AT&T's new international partner, announced a joint investment of more than \$1.8 billion to acquire a 30 percent stake in Japan Telecom, a communications carrier backed by the main Japanese railroad company.

AT&T and British Telecommunications will also fold into Japan Telecom two of their existing Japanese ventures, with combined annual revenue of just more than \$200 million.

The announcement's near simultaneity with the Mediaone bid was either impressive or unnerving, because it demonstrated Mr. Armstrong's comfort with juggling multiple deals. In fact, the Japan Telecom and Mediaone deals "are part of the same strategy," Mr. Zeglis said over the weekend. "We want to go end-to-end delivering services for our customers on our own architecture."

Despite AT&T's common goal of controlling its own architecture, or electronic infrastructure, there is a big difference between these two deals. AT&T's overseas ventures are aimed at serving big-ticket multinational corporate clients, while the company's cable television expansion is aimed at serving everyday residential consumers. And it is the company's hunger for residential customers that best explains AT&T's seeming feeding frenzy.

It is clear by now that AT&T is terrified of the prospect of at least one of the local Bell phone companies, probably Bell Atlantic, being poised to win regulatory approval to enter AT&T's core long-distance **business** this year.

By way of a harbinger, AT&T is well aware of what happened in Connecticut after the Southern New England Telecommunications Corporation, which did not need special approval, began offering long-distance service to Southern New England's local phone customers. Large numbers of Connecticut customers dropped long-distance service from AT&T, among others, to take a single package of local and long distance from S.N.E.T.

AT&T's strategic planners hate to contemplate the millions of local phone customers who might drop AT&T phone service once Bell Atlantic is freed to offer long-distance service to customers along the Eastern Seaboard, or even just in New York. It is a much bigger worry for AT&T than for its principal long-distance rivals, MCI Worldcom and Sprint, because AT&T derives a much higher proportion of its long-distance revenue from residential consumers than do MCI and Sprint.

Mr. Armstrong has decided that the solution is to counterattack the Bells by taking the war to a new front -- off the conventional local telephone network and onto cable TV systems. Through those cable lines, AT&T intends to offer local and long-distance calling, as well as Internet service.

It will probably take a few years to determine whether that strategy is visionary or foolhardy. AT&T would like to offer its cable-based services using a variant of **Internet technology**. Because this is a largely experimental approach, it poses large technical challenges. It may, however, prove easier in Mediaone territories than in TCI areas, because Mediaone's network is generally more technically advanced. That is why AT&T is willing to pay more for Mediaone than it did for TCI, even though TCI has more customers.

The cable strategy also raises management questions. AT&T is well practiced in telephone-network **technology**, but linking so much of its future to cable television networks means the company needs to rely on experts from outside the AT&T tradition. Foremost among them is Leo Hindery, the former No. 2 executive at TCI who now runs AT&T's cable operation -- but who is still largely unfamiliar with AT&T and its culture in offering telephone service. The same could be said for the highly respected Amos B. Hostetter, Mediaone's largest shareholder, who AT&T has said will become chairman of its cable and Internet unit if its Mediaone bid succeeds.

But before Mr. Hostetter can come aboard, AT&T must not only fend off Comcast, but also convince Federal regulators that a combined AT&T-TCI-Mediaone would not wield disproportionate power in the cable television industry. Under Federal Communications Commission ownership rules, no single entity can control cable systems that together are available to more than 35 percent of the nation's households. But those rules have been suspended pending a review by the F.C.C.

And there are financial imponderables. AT&T -- with backing from Chase Manhattan Bank and Goldman, Sachs & Company -- seems set to raise \$30 billion in cash to support its Mediaone bid. But Standard & Poor's, the credit-rating agency, said on Friday that it was considering downgrading AT&T's debt to reflect the big financial burden the company will take on if it acquires Mediaone.

The stakes for Mr. Armstrong, not to mention AT&T, are high. And they keep escalating. If the cable strategy works well, he will become known as one of the most visionary and dynamic executives of his day. If it does not, **business** history might one day recall him as a former I.B.M. executive who was passed over for the top job at that company and who, later, when given the chance to run AT&T, tried to prove too much.

For now, at least, dynamic seems to be winning. And Mr. Armstrong, presumably, is looking for his next "Jaws" sequel.

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The New York Times

TECHNOLOGY: The Outlook for Cable Access

Business/Financial Desk; Section C

An AT&T-AOL Deal Would Rain On Excite@Home's Parade

By SETH SCHIESEL

2,024 words

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NYTF

Page 1, Column 2

English

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As the AT&T Corporation, the nation's biggest telephone company, has marched into the cable television **business**, it has found itself locked in a battle of legal briefs, lobbying salvos and public relations campaigns against America Online Inc.

The fight over "open access" to AT&T's cable systems has raged in local communities from Broward County, Fla., to Portland, Ore., and America Online, the nation's largest gateway to cyberspace, has consistently argued that AT&T must let Internet carriers link directly to AT&T's cable systems. Such connections would bypass communications systems and Web services developed by Excite@Home, an Internet-over-cable company that is backed by many big cable television players -- including AT&T.

All along this battlefield, AT&T has taken an adamant stance: Because it is investing billions of dollars to upgrade its cable networks to carry Internet data, AT&T has argued that it should have exclusive right to determine how those systems are used for Internet access.

But behind the scenes, a side deal may now be in the works -- one that could eventually undermine Excite@Home's **business** model. According to executives close to the companies, AT&T and America Online are considering an arrangement that would diminish the role of Excite@Home by giving America Online and perhaps other Internet providers enhanced access to AT&T's systems.

Such a deal could be more than politically expedient; it would enable AT&T and America Online each to tap the technical and marketing strengths of the other.

AT&T and America Online declined to comment.

The competitive dynamics of the marketplace and the industry's strategic landscape make a compelling case for America Online and AT&T to approach the digital future as partners rather than foes. After all, America Online already has 18 million Internet subscribers, and AT&T owns or has agreements to acquire cable systems with 16 million customers, though it plans to sell some systems.

For Excite@Home, the potentially unsettling implications of such an arrangement became evident about two weeks ago, when its board convened just before the company staged its first conference for financial analysts since the merger in May of the At Home Corporation and Excite Inc.

C. Michael Armstrong, AT&T's chairman and an Excite@Home director, voiced concern that At Home's use of cable modems to link consumers to the Internet might not be a great strategic fit with Excite's Web portal service, according to a person at the meeting. Mr. Armstrong, arguing from the strength of AT&T's 58 percent voting stake in Excite@Home, said that it might make more sense for At Home to focus on delivering high-speed communications links, while exploring a sale or spin-off of Excite's Web content **business**, according to this person.

Mr. Armstrong's view is anathema to the Excite@Home management team and to the venture capitalists from Kleiner Perkins Caufield & Byers who helped build the former At Home. They contend that the company cannot thrive as simply a "dumb pipe." Instead, they want to leverage the communications system built by At Home to provide a rich information and entertainment package offered by the combined Excite@Home that would directly compete with America Online -- from the customer's mouse to the farthest reaches of the Web.

"Our job is to execute, so we have as many users as possible and have built as strong as possible a brand relationship with them so that those people are loyal Excite@Home customers," Thomas A. Jermoluk, Excite@Home's chairman, said.

But AT&T has said it does not want to be in the so-called content **business**. And even though Excite@Home has built an extensive network and has signed up more than 600,000 cable modem customers across the country, in the grand scheme of the communications **business**, AT&T does not really need Excite@Home.

The former At Home's early cable partners -- which included Tele-Communications Inc., the cable giant now owned by AT&T -- invested shortly after At Home was founded in 1995 to develop systems for delivering Internet data at high speed over cable wires.

In exchange for At Home's developing the **technology** and related Web content, the cable companies contributed money and granted At Home exclusive deals for the Internet-access rights to their systems, generally for seven years.

At AT&T, it was only after Mr. Armstrong created management stability by taking over as chairman in 1997 that the company seemed to develop a coherent long-term plan, one meant to reassert its primacy in the communications **business**, especially with residential consumers. Stymied in its attempts to merge with the regional Bell company SBC Communications Inc. and unsatisfied with leasing local telephone access from phone companies, AT&T began unspooling its cable strategy.

Last summer AT&T announced its \$31.8 billion deal to acquire TCI and later agreed to acquire Mediaone Group Inc. for another \$58 billion. By acquiring TCI, AT&T inherited not only the largest stake in At Home but also the agreement to give At Home exclusive Internet use of its cable systems into the next decade.

By the time AT&T completed its acquisition of TCI this year, At Home had already agreed to acquire Excite, the big Web portal service. From At Home's perspective, adding Excite's Web content would let the company offer a full package of services to compete against America Online.

But from AT&T's perspective, the Excite acquisition, coupled with the existing At Home exclusivity arrangement, seemed to pose yet another strategic restraint, according to people close to the company.

For AT&T, the main enemy is not America Online -- as it is for Excite@Home. Instead, AT&T's main competition is posed by the Baby Bell local phone giants.

A prime motive for AT&T's entering the cable **business** was that the Bells are intent on getting into the long-distance phone **business** and eviscerating AT&T. At the same time, the Bells are belatedly deploying a high-speed **Internet technology** for telephone networks called digital subscriber line, or D.S.L. As a counter force, AT&T wants to use its cable lines to deliver local phone service, as well as long-distance, digital TV and high-speed Internet access.

That is where America Online comes in. Its 18 million customers give the company a far bigger market share than any other Internet provider and a clientele that is presumably in a better position to appreciate the benefits of a high-speed service than people who have not yet ventured on line.

To AT&T, therefore, a deal with America Online might seem a good way to increase penetration of cable modem service. And once customers took AT&T cable television service and some sort of AT&T cable modem service, that might make them a much easier prospect for the big-money local and long-distance phone services that will travel over those same cables.

For its part, Excite@Home contends that greater market penetration is not an issue because the pent-up demand for cable Internet service already exceeds the supply of Internet-ready cable systems. "We're a long way from being a demand-limited system," Mr. Jermoluk said. "We have 38 million registered Excite users. You think we have any problem generating demand?"

In any case, from America Online's perspective, it may make sense to cut a deal with AT&T, rather than to continue waging a political war that might drive AT&T into a wholehearted commitment to the full-service concept of Excite@Home.

Analysts say it is highly unlikely that AT&T and American Online could strike a major deal until Excite@Home's exclusivity pact expires. And unless that exclusive arrangement is overturned by the courts before then, AT&T cable customers will probably still have to pay \$9.95 a month if they want cable-modem access to America Online

-- on top of the \$40 cable-modem customers generally pay for Excite@Home, 65 percent of which goes to the cable partner.

For America Online to work cooperatively with AT&T while it is still under obligation to Excite@Home, all parties would probably have to accept less money from each customer.

And after Excite@Home's exclusivity pact with AT&T runs out? It would be foolish for AT&T to totally turn its back on the national Internet network that At Home developed and to forswear use of At Home's **technology** for managing local networks. And for America Online, it might make economic sense to lease access to that **technology**, rather than spend money duplicating it all.

The issue, in the end, is content -- whether AT&T cable-modem customers will get America Online's gateway to chat rooms, E-mail, E-commerce, news and information or use the Excite@Home-brand portal to many of the same kinds of offerings out on the Web.

It is the portal piece of the network where the Excite content **business** could end up perhaps the biggest loser in this battle for cable access. In the end, even Mr. Jermoluk of Excite@Home may have little choice but to go along with whatever course the AT&T chairman, Michael Armstrong, sets.

"Mike's goal is to maximize the total number of subscribers on his system by whatever means at his disposal," Mr. Jermoluk said. "The only way we have to win is to make AT&T successful doing what it is that they're doing."

Charts: "Piecing Together a Network" Customers who want cable-modem Internet access on AT&T's cable systems must now take a package of services from AT&T and Excite@Home, in which AT&T is a shareholder. But America Online argues that it should have direct access to AT&T's cable customers, bypassing the other pieces of the AT&T-Excite@Home system. (pg. C1) "Drawing the Line" AT&T and America Online are fighting over where and how America Online will get access to AT&T's cable systems. On the surface, each company has very different ideas about what should be done. But, the companies may settle their differences and come up with a compromise suitable to both. AT&T's VIEW America Online wants to plug into AT&T's cable systems directly, without having to use the routing and management services provided by Excite@Home. America Online argues that because it already is an Internet service provider, it does not need Excite@Home and that forcing it to use Excite@Home is anticompetitive. AMERICA ONLINE'S VIEW As the owner of the cable systems and with its sizable stake in Excite@Home, a company that provides high-speed Internet connections as well as Internet content, AT&T argues that America Online should have the same access to its customers as any other Internet content provider. POSSIBLE COMPROMISE In the end, AT&T may not cave in to America Online's demand for direct access to cable customers. But, America Online's unmatched brand power on the Internet, and its universe of 18 million subscribers, may entice AT&T to offer America Online the right to serve as the portal through which cable customers connect to the Internet, instead of the Excite@Home portal. (pg. C5)

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The New York Times

TECHNOLOGY

Business/Financial Desk; Section C

Selling Backpacks on the Web Is Much Harder Than It Looks

By LESLIE KAUFMAN

2,323 words

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The New York Times

NYTF

Page 1, Column 2

English

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Head south on Interstate 5 from downtown Seattle and you cannot miss the huge terra-cotta office tower that commands the horizon from a nearby peak.

The structure is the new home of Amazon.com, the ever-expanding Internet retailer that most other Internet retailers worship and strive to emulate. The Amazon creed is to break the budget on acquiring new customers -- on the theory that big profits will come later, once the company's name is established and the Web's lower operating costs make it impossible for brick-and-mortar competitors to keep up.

But drive another 20 minutes down the highway from this shrine to E-commerce, and you come to an undistinguished, low-lying office park in the industrial suburb of Kent. Here, an E-**business** with a very different philosophy is blossoming: rei.com, the Internet division of the outdoor gear and apparel retailer Recreational Equipment Inc.

Though rei.com is small compared with Amazon.com -- only \$50 million in annual sales versus \$610 million -- it is similarly dominating its market. One of every \$100 spent on outdoor gear this year will pass through rei.com.

Like Amazon's management, the people who run rei.com are proud of their results and have big plans for the future. But unlike Amazon, rei.com turns a profit. Recreational Equipment Inc., generally known as REI, also operates real-world retail stores, giving the outdoors company a first-hand basis for comparing the on-line with the old-line **business** models. And REI's experiences run counter to the main assumptions that have grown up around E-commerce and have contributed to the stratospheric stock prices of Web retailers like Amazon.

Contrary to the myths, rei.com says:

Running brick-and-mortar stores has turned out to be not a liability but a huge advantage. The operating costs of the Web site have consistently gone up -- not down. And whatever the barriers that **Internet technology** may pose to potential rivals, that advantage has been largely offset by the start-up's own, daunting technical challenges.

"This is not an inexpensive way to do **business**," said the chief operating officer, Dennis Madsen. "As most of the pure plays have shown, there is not a lot of profit in it, and I don't see the economics changing in the foreseeable future."

Which is not to say that REI doesn't view E-commerce as an important part of the company's future. Nor does it mean that industry experts see REI as a bumbler. "They are a great company," said Kate Delhagen, a senior E-commerce analyst with Forrester Research. "I use them all the time as my poster child for success."

As a behind-the-screens look at REI's Web operation makes clear, the point is simply that on-line retailing is one tough **business**. That is true even for an offbeat company like REI, whose quirks have offered serendipitous advantages.

REI, which was founded in 1938, is a cooperative, which means that at the end of each year, 85 percent of its profits are divided among 1.5 million customers who have paid an annual membership fee. REI was receptive early on to the Internet, going on line in September 1996, at a time when most traditional retailers were still taking a wait-and-see stance.

REI also benefited from the demographics of its active, outward-bound customer/members -- a whopping 83 percent of whom have Internet access at home or at work, almost double the national average. Finally, having a catalogue operation that already brought it more than 5 percent of the company revenue by 1996 gave the retailer an important head start in warehousing and distribution.

Yet even with these advantages, the effort to build rei.com into a viable **business** has been far from a cakewalk for the executive in charge: Matt Hyde, a sinewy 36-year-old mountain climber.

Mr. Hyde, who is now vice president for on-line sales, has been with the company since he graduated from Oregon State with a degree in geology but quit twice, once in his mid-20's to start a **business** that ran climbing trips in exotic locales like Afghanistan and Chile. His easygoing manner softens but does not mask his intense, 16-hour-day personality. And he compares building a Web site to ascending an oxygen-less 23,000-foot peak: "You do it because it's a challenge, not because it's fun."

It is Mr. Hyde who is the list keeper for the most common Internet **business** myths, and his favorite is the idea that a physical store is more expensive to run than a Web store.

Amazon's founder, Jeffrey P. Bezos, has been known to brag that he employs but a third of the staff of his biggest competitor, Barnes & Noble, to achieve a proportional amount of book sales. Internet ventures may have smaller staffs, Mr. Hyde concedes, but they must pay those staff members considerably more.

"Technical people are a lot more expensive than part-time salesclerks," he said. Now, for example, REI's flagship store in Seattle employs roughly 300 people, while all of rei.com has but 60. Yet Mr. Hyde says the payrolls for that store and for rei.com are about the same.

And soon, he says, the balance will tilt toward the Web site, as the cost of the site's payroll rises steadily. Competition for information-**technology** expertise is so fierce that every three or four months Mr. Hyde reviews published studies on salaries in the industry and, if he is lagging, automatically offers raises to his technical team. The industry average for a skilled technical position, like programmer or systems manager, is about \$80,000 a year.

Mr. Hyde also rebuts the notion that operating real stores -- with four walls, air-conditioning, shelves to restock and so on -- is more expensive than keeping their virtual counterparts running. It is true that the average REI store costs \$6 million, including everything from building costs to new fixtures, and is remodeled every 5 to 10 years. Rei.com, in contrast, spent \$500,000 for its original opening, including all machinery and programming. But the rei.com upgrades have never ceased -- and probably never will, according to Rod Ketchum, the operation's senior Web adviser.

As the person in charge of "Web karma," as he puts it, Mr. Ketchum is the one who is called whenever the system has glitches, however small. "Usually at 3 A.M.," he said genially.

Mr. Ketchum said he had ordered four upgrades in the last two months. The most recent was a \$500,000 overhaul by I.B.M. to enable the system to use its processing power more efficiently. Rei.com has also rebuilt its Web page from the ground up twice, completely remodeling such features as the search engine and the graphics, and will do so again next March. Minor changes will also be made when rei.com officially links up with Outside magazine's new Web site next month.

None of this has been cheap. Mr. Hyde estimates that he has spent in excess of \$15 million since 1996 on upgrades and remodeling.

But Mr. Hyde, who previously managed REI's adventure travel program and its direct-mail operation, had expected the **technology** costs. Some other expenses have come as a surprise.

In setting up the operation, Mr. Hyde thought he could piggyback off the photographic, distribution and warehousing capacities of the company's catalogue operation. But for displays in its catalogue, for example, REI shoots film, and rei.com managers quickly realized that digital images worked better for the Web. And so Mr. Hyde has had to build three \$20,000 stations for digital photography.

The vaunted advantage of a Web site is that it can offer a far more complete selection of merchandise than a catalogue or even a flagship store. Rei.com keeps 56,000 items in stock. Apparel styles change twice a year; "hard" goods like tents, sleeping bags and bicycles are redesigned by their manufacturers annually.

Which explains, in other words, why the best-known Internet merchants sell mainly books and compact disks. Such items are standardized and do not require the same merchandizing finesse as, say, REI's Gramicci

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Serpentine knit cotton shirt or the Dagger Delta Expedition Kayak. As Bill Curry, an Amazon spokesman, said, his company "either scans in the covers or gets the images from the publisher."

Other reasons help explain why even REI's extensive catalogue distribution and warehouse system have not translated fluently into Web commerce. "The big difference between a catalogue customer and an Internet customer is that the Internet customer expects the order faster," said Clark Koch, the manager in charge of order fulfillment.

From kayaks to crampons, rei.com ships 93 percent of its Internet orders within 24 hours. That is 3 percent better than last year, but it is still not as complete as Mr. Hyde and Mr. Koch would like. They are planning a new "just in time" system that would allow them to process orders within an hour of placement.

But unlike booksellers, which work mostly with a handful of distributors accustomed to shipping small quantities of their products at light speed, REI has more than 1,000 vendors. Some have modern assembly-line operations that can deliver products overnight. Others, like Metolius Mountain Products, a tiny company in Oregon that makes rock-climbing harnesses, cannot work as quickly. Mr. Hyde has been bringing his vendors to the warehouse in small groups to explain the Web **business** and to help find ways to operate at Internet speed, but he acknowledges that "these things take time."

Because rei.com is not publicly traded -- and its executives say it is not likely to go public because they are not interested in losing control to the market -- it does not have access to a bottomless well of outside capital. The parent company, which does \$587 million in sales annually, has been supportive enough that the start-up has had to make few sacrifices. Still, some belt-tightening has been unavoidable.

Among the cuts that caused some soul-searching was a recent decision to give vendors the job of writing the detailed product descriptions that appear next to the photos on the Web. That was a distinct departure for a retailer that prides itself on knowledgeable in-store salespeople who can interpret the baffling array of capacities and features that high-tech outdoor gear offers.

Yet, while Mr. Hyde acknowledges that he envies the venture-capital or stock-market riches of Internet pure plays, he does not cede them the on-line advantage. "There is a very synergistic role between on-line and retail," he said. "It is just a matter of leveraging your advantages."

Marketing, as expected, is a big advantage. Surveys show that most REI Web customers already knew the retailer's name before they logged on.

Fears of potential disadvantages like cannibalization -- that is, that the Web operation would take customers from REI stores -- have not been realized.

True, REI estimates that 50 percent of the people shopping with them on line are repeat customers. But the company has also found that customers who are "multichannel" shoppers -- using stores and the Web, say -- spend on average \$150 more a visit than single-channel shoppers. "This is really about being able to serve our best customers better," explained Shelley Olds, rei.com's marketing manager. And, presumably, to get them to spend even more.

Some American retailers have talked of using the Internet as a way to sell globally without opening stores overseas. Today rei.com plans to open a Web site in Japanese, japan.rei.com. But that is simply prelude to, not in place of, opening a Japanese store, as REI plans to do in Tokyo next April.

Mr. Hyde explained that having a real store in Japan would benefit his entire Web operation, because obstacles like tariffs, exchange rates and customs regulations can make it costly and cumbersome to ship overseas.

He predicts that within a year rei.com will sell more than any one of the company's stores. But he says he still cannot imagine a time when rei.com will be a cash mother lode.

"If this becomes a lot easier, and for some reason the **technology** and operation costs go down, I still do not think we are going to make a big profit," he said. "I don't think our customers would let us get away with it, and I don't think our competition would let us get away with it. For now we are just trying to eke out a **business**."

Photos: 1. To keep the on-line store running for the outdoors equipment and apparel retailer REI, Rod Ketchum, the company's Webmaster, in the control room above, must be ready to answer 3 A.M. cries for help. 2. Because the photos for REI's printed catalogue are not suited to the needs of the Web site, the company has installed three digital photography studios like the one above, where a backpack is shot for on-line display. 3. So that an order can be shipped within 24 hours, as Web shoppers expect, a product 'picker' in the REI distribution center in

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Sumner, Wash., uses a wrist-mounted laser bar-code reader to locate a requested item in the warehouse, before putting it on the conveyor, left, that will carry it to the shipping center. (Photographs by Dan Lamont for The New York Times)(pg. C1); Matt Hyde, rei.com's vice president for Internet sales, is also a mountain climber. (Don Lamont for The New York Times)(pg. C4)

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The New York Times

THE MEDIA BUSINESS

Business/Financial Desk; Section C

Trying to Turn Stocks Into a National Pastime

By JOSEPH KAHN

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Page 1, Column 2

English

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Three years ago, corporate America thought that the mostly male audience watching the World Series aspired to drive Chevy pickup trucks, shave with Gillette's razors and drink Coors beer -- judging by the amount of money that was spent on expensive ad time to promote those brands.

This year, General Motors still hopes World Series fans will buy trucks and Anheuser-Busch expects that they will quaff lots of Bud. But if ad spending in the series between the New York Yankees and the Atlanta Braves is any indication, millions of baseball fans are mainly angst-ridden about which of the Internet brokerage firms they should use to trade stocks.

On-line investment firms, many of which did not exist two years ago, have collectively bought more World Series ad time than any other industry, displacing even G.M., the marketing monolith of sports, according to people who placed the ads. During nearly every inning break and throughout the pregame shows, FMR's Fidelity is pitching its offerings against E*Trade or Merrill Lynch, with Datek and Ameritrade also vying for a slice of baseball fans' household income.

The spending binge is part of the investment world's attempt to turn stock trading into a new national pastime, perhaps with room for baseball, too. The number of Americans who own stock has soared to just below half, according to a recent survey. The richest investors also seem to have developed a passion for talking and trading stocks and outsmarting the market -- turning investing itself into a sport, or, some critics say, a wager.

"Stock trading for some people is a serious activity, and for some it's legal gambling," said Todd Gitlin, a professor of culture, journalism and sociology at New York University. "These brokerage firms are the house."

That house has gotten a little crowded. More and more investors are trading stocks on their own, but they are spoiled for choices about where to do so. About 130 Internet brokerage firms are competing for a universe of on-line traders that now numbers about 10 million. Large brokerage firms, many of which have never tried to sell their services during mass-market events like the World Series or the Super Bowl before, are trying to make sure they are not left behind.

"Stock investing is more a part of the American mainstream than it's ever been," said Stephen Cone, head of consumer marketing at Fidelity Investments and one of this year's biggest World Series advertisers. "It's water-cooler conversation. We want to be heard along with everyone else."

The on-line brokerage companies, and their off-line rivals, are in a vicious fight for market share that happens to have heated up this fall. Many of the large investment companies have in recent weeks announced that they will double or in some cases triple their ad spending to get their message out. They are collectively expected to devote \$1.5 billion over the next year on marketing, more than companies spend to promote Coke, Pepsi, Miller Lite and Tylenol combined. None of the companies would say how much they are spending on the World Series alone.

Baseball and NBC, the network owned by General Electric that is carrying the series, are the beneficiaries. Network executives have had their hands full placing all the ads in time slots that are not back to back. The idea of exclusivity -- sole sponsor of the pre-game show, for example -- has gone the way of full stock trading commissions.

Even the New York Stock Exchange sees sports and Wall Street as natural allies. The exchange, which is preparing to become a public company itself in the near future, has hired a bevy of high-price sports talent, including Sammy Sosa, the Chicago Cubs home-run slugger, to promote the theme that the Big Board is "at the center of the sports universe."

The paradox is that baseball, compared with golf, tennis and even football, is everyman's sport. Its loyal fans are more ethnically diverse, more male and less likely to have a fat investment portfolio than those of other leading sports, advertisers say. Moreover, the stock market is not as red hot as it was early in the year, and on-line brokerage accounts are not growing as fast.

So why the rush? E*Trade, one of the first Internet brokerage firms, made a splash by buying expensive air time on the World Series last year. Its account growth soared not long after. E*Trade has since increased its ad spending to \$350 million for fiscal 2000 from \$250 million the year before. The new level is roughly what Burger King spends to promote its brand name. Now, Charles Schwab, Ameritrade and some old-line brokerage firms, including Merrill Lynch and Morgan Stanley Dean Witter, are trying to match E*Trade's marketing blitz.

"Money is just flooding in as people want to build brand awareness," said Len Short, head of marketing for Schwab, which has bought some advertising slots from local stations during the World Series but is not a national sponsor. "Most of it, frankly, is uneconomical. Prime time does not give you bang for the buck. But with all the noise people are trying to create momentum."

Fans are a little overwhelmed. On a television hanging from the ceiling at the Carriage House of Sports in Brooklyn, Penn and Teller, the celebrity magicians who promote Fidelity's on-line trading service, compete for attention with loud conversation and the clack of balls on the bar's pool table during Game 2. Adam Bertapelle, 25, is a devoted Yankees fan but no active trader.

"I just blank it out," he said of the brokerage advertising. "I don't know anyone who has enough loose money lying around to bet on stocks."

At Park Avenue Country Club, a Manhattan sports bar where an attendant stands guard in the marble restroom, the ads are closer to their target. Scott Kephart, 36, who works for a computer networking company, has an E*Trade account and trades stocks every week.

"They are going after everyone with income. They're trying to say anyone can do it, just try," he said, just after a World Series commercial break featuring Merrill's pitch for its overhauled brokerage service.

Owning stock is becoming a normal thing for the majority of Americans, said Mr. Gitlin, the New York University professor. But the majority of people who hold stock, often in mutual funds, do not trade very often. He said he thought that the brokerage firms were capitalizing on broader stock ownership to inculcate a culture of trading.

"If owning stock is normal, why can't trading be normal?" he said. He added, however, that the firms appeared to be fighting for a relatively small percentage of Americans who have enough money to invest significant amounts in relatively high-risk trading accounts.

Whether the costly ads ever pay off in terms of new on-line trading accounts is questionable, many in the industry acknowledge. They consider World Series advertising to be brand promotion, not carefully focused marketing. And, with the tumult in the financial world resulting from **the rise of the Internet**, some of the advertisers are talking as much to Wall Street, and even to their own employees, as much as to potential customers. The subtext is that with all the change going on in the industry, they are here to stay.

Merrill is an example. The largest traditional brokerage house, Merrill is simultaneously promoting its own new on-line offering and seeking to reassure customers, and its own brokers, that the old way of doing business with the company is not about to disappear.

"This is the best place right now to put out a mass message, and that's important to us," said Charles V. Mangano, senior director for brand management at Merrill. "We are reinforcing the message with the press, our employees, the analysts who cover our company. They all watch the World Series."

Photo: A Merrill Lynch commercial features an employee reassuring a customer that things will stay the same, despite changes like on-line trading. (pg. C9)

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The New York Times

Business/Financial Desk; Section C
Oracle Takes Aim at Two Small Software Rivals

By LAWRENCE M. FISHER

1,890 words

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English

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SAN FRANCISCO, May 23 -- Investors, analysts and customers of the Oracle Corporation have grown accustomed to hearing its executives make caustic remarks about competitors. Usually, they aim their sharpest invective at giants like the Microsoft Corporation and I.B.M. or top executives at those companies.

But lately, Lawrence J. Ellison, chairman and chief executive of Oracle, and his lieutenants have directed their scorn at two little-known neighbors in Silicon Valley: Siebel Systems Inc. and Ariba Inc.

Why has Oracle, the No. 2 software company in the world behind Microsoft, directed shots at two tiny rivals?

In a word, growth.

In its third quarter, Oracle reported that sales of its applications, which big companies use to manage accounting, personnel and manufacturing processes, grew 5 percent, down from 19 percent in the second quarter. Sales of Oracle data base software, which keeps track of all of an enterprise's transactions like sales, inventory levels and records, grew 10 percent, down from 26 percent in the second quarter.

In the same period, Siebel, which has seized the lead in software for managing sales staff and service operations, had an 81 percent surge in revenue. At Ariba, a leader in procurement software, which big companies use in purchases of goods and services, sales were up more than 10 times, albeit from a relatively small base.

Oracle shares closed on Friday at \$25.75, up 43.75 cents for the day, but off by more than one-third from their 52-week high.

Analysts say that although Oracle appears well positioned for the long term -- with strong **Internet technology**, and with the recently distracted Mr. Ellison apparently re-engaged in daily operations -- the company is under substantial short-term pressure. Microsoft's SQL Server continues to eat away at the low end of the market for Oracle's core data base program, Oracle 8i, which alone contributes more than 70 percent of company revenue. At the high end, International **Business** Machines' powerful DB2 data base software has taken the lead over all, according to a March report by Dataquest.

Silicon Valley is also rife with rumors that Raymond J. Lane, president and chief operating officer of Oracle, is about to leave. Executives close to Mr. Lane have said that he is at the top of a short list of candidates to succeed Lewis E. Platt as chairman and chief executive of the Hewlett-Packard Company after it spins off its test and measurement **business** later this year. Mr. Lane joined Oracle in 1991 from the consulting firm Booz, Allen & Hamilton, where he had headed the information **technology** consulting group.

Insiders say that executive meetings previously run by Mr. Lane are now run by Mr. Ellison or by Gary L. Bloom, an executive vice president, who many believe is being groomed for the president's job. Mr. Lane's departure would disturb Wall Street, which credits him with saving Oracle as the company faced financial disarray in 1990. Soft-spoken and direct, Mr. Lane has been viewed as the perfect balance to Mr. Ellison.

Mr. Lane was not available for comment, and other Oracle officials declined to discuss his potential departure.

Just before gathering at Oracle headquarters earlier this month, several analysts cut their earnings estimates for the company's fourth quarter, which ends on May 31. They said after the meeting that they had heard nothing to change their views. "Oracle completely dodged questions regarding the current quarter and probably successfully

refocused people on the future," said William Epifanio of J. P. Morgan. "They're very cautious. They are very uncertain about what's going to happen in the quarter."

At recent analysts' meetings and user group conferences, Mr. Ellison has said that his company will "kill" Siebel and Ariba the way it "killed" Sybase, Informix and Peoplesoft, each of which has indeed suffered from a combination of Oracle's aggressive competition and self-inflicted wounds. A new ad campaign that takes aim at Siebel is reminiscent of a 1980's ad that portrayed an aerial dogfight in which Oracle sent the Ashton-Tate Corporation, maker of dBase, flaming to the ground.

Analysts say that with sales of Oracle's traditional back-office applications, like those for accounting and personnel slowing, the move to front-office programs, like sales-force automation, is logical. Along those lines, SAP of Germany, the leading producer of back-office software, with application sales several times Oracle's, has announced a new suite of front-office programs.

But Oracle has been rolling out a mixture of homegrown and acquired front-office products since 1995 with little to show for it. And early evaluations of Oracle's latest customer-relationship-management software, released this month, say it does not measure up to competitors' products. Oracle customers with long memories may remember other category-killer announcements that did not pan out, like Oracle Documents, which was positioned as a Lotus Notes killer, and Oracle Power Objects, which was supposed to kill Powersoft, a popular product, now owned by Sybase, that is used by programmers to create applications.

Mr. Ellison said Oracle's offerings differed from those of Siebel and other vendors by their breadth and integration and by their use of **Internet technology**. Oracle offers a suite of programs covering everything from acquiring customers to managing service calls, and they can all be operated from a simple Web browser, he said.

"We are the only ones in the world with a complete C.R.M. suite," Mr. Ellison said of customer-relationship-management software. "Just as SAP unified the back office with a suite of products, we will integrate the front office, beat Siebel tactically and beat SAP strategically."

But according to a May 7 report by the Gartner Group, Oracle's products for managing customer relationships "are too immature and untested for most moderate and conservative companies, and too weak for aggressive companies." Wendy Close, who wrote the report for a group of 19 analysts, said Oracle was unwilling or unable to furnish customers to interview who were using the programs in production. "Just because you spend some marketing dollars, and have your C.E.O. talk about it, doesn't mean you have a decent product or reference-able customers," Ms. Close said.

Mr. Ellison brushed off the report's conclusions. "The good news is our front-office stuff is new, all Internet-based; the bad news is it's new," he said. "We're the only C.R.M. vendor that integrates Web selling with call-center selling with field-sales selling."

But Thomas M. Siebel, chairman and chief executive of Siebel, disputed his assertions. "Every competent person who has looked at what they're proposing to ship has concluded that there's nothing there," he said. "The fact of the matter is, outside of the data base **business** and the consulting **business**, you will not find anything Oracle has succeeded in."

Mr. Siebel, a former Oracle executive who founded his company in 1990, said Mr. Ellison's attacks had prompted him to start bundling Siebel's applications with I.B.M.'s DB2 data base rather than with Oracle 8i, and he predicted other companies would follow suit. "They're alienating all their old partners," he said.

If so, Oracle's push into applications would seem to benefit I.B.M., which has been heavily marketing its DB2 data base as a foundation for electronic commerce. Companies like Charles Schwab, Wal-Mart Stores and Macy's run their Web-based businesses on DB2.

"The relationships we have with Siebel, SAP, Peoplesoft and Baan are very important to us," said Janet Perna, general manager of data management for I.B.M.'s software group. "Oracle competes with many of these vendors on the application front. It's sure making DB2 look better to them."

Ariba officials were unable to comment because the company is in a quiet period before an initial public offering. But John Ramacciotti, vice president for procurement at Cypress Semiconductor, said he chose Ariba's software after evaluating Oracle's offering, primarily for its ease of use. Cypress uses Oracle's data base, financial-accounting program and other back-office applications. "The biggest issue with Oracle was the huge amount of training needed to get anybody, even my procurement experts, up to speed," he said. "Their

Web-based solution was just a semi-friendly face on the same old bill of goods. It was so difficult to use that even the people doing the demo couldn't use it effectively."

To be sure, some analysts say it is still too early to count Oracle out in front-office applications. Though its current offerings may not be world class, it has substantial resources to throw at the problem, and it has one asset that all the other application vendors lack: its data base software. Analysts say Oracle 8i remains an excellent data base management program that has been thoroughly updated to work over the Internet, and indeed it is the engine behind such high-traffic sites as Amazon.com and Dell.com. By owning the data base platform upon which its front-office applications run, Oracle has an advantage.

"Oracle, to win, does not really need to sell front-office applications," said Curt A. Monash, president of Monash Information Services of Cambridge, Mass. "Oracle needs a big wave of automation of front-office functions running on the Oracle data base."

Bobby Cameron of Forrester Research says Oracle has all the technical tools needed to make great applications: the data base, which does all the heavy lifting of transaction processing and record-keeping; network computing, which shifts computing tasks from the desktop to central servers, a must for Web-based programs; support for the Java programming language that makes browser-based applications possible; directory services, to keep track of everyone using the system, and security, to protect the data from prying eyes.

"All of that is excellent," Mr. Cameron said. "The question is whether the people creating the applications will use all of that."

As companies shift their businesses to the Internet, he said, there is a bigger opening for a new approach than for incremental improvements. "The challenge for Oracle is not to build a better mousetrap to beat Siebel," Mr. Cameron added. "The challenge is to leapfrog Siebel and be part of the next round."

Photo (Associated Press)(pg. C1) Graphs: "Bumps on the Highway" Though Oracle remains the No. 2 software maker, its growth rate has slowed, and Lawrence J. Ellison, the company's chairman and chief executive, right, is taking a more active management role. Graph tracks the company's daily closing stock price, since May 1998 and its quarterly net income (for fiscal years ending May 31) since 1997. (Source: Bloomberg Financial Markets)(pg. C1) "Treading Water" Oracle's share of the data base market has not grown as fast as I.B.M.'s over the last year. 1998 MARKET BREAKDOWN Total sales = \$7.0 billion Oracle -- 29.6% (+0.7 percentage points from 1997) I.B.M. -- 31.7% (+2.3 points) Microsoft -- 10.3% (+0.5 points) Other-- 28.4% (-3.5 points) (Source: Dataquest)(pg. C10)

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NEWS SUMMARY

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English

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INTERNATIONAL A3-11

U.S. Makes a Final Effort To Avoid Balkans Bombing

The United States dispatched a special envoy, Richard C. Holbrooke, to meet with President Slobodan Milosevic of Yugoslavia in what officials described as a final effort to persuade him to accept a peace agreement for Kosovo and avoid a NATO bombing. A1

NATO Near Accord on Strategy

NATO appeared to be moving toward agreement on an American plan that would authorize heavy bombing against elite Serbian units carrying out attacks on ethnic Albanians in Kosovo. The new plan may be approved on Monday. A10

Serbian forces, taking advantage of the departure of 1,300 unarmed foreign monitors, pressed an offensive into the guerrilla heartland of Kosovo, an area known as Drenica. A10

OPEC Plans Production Cuts

OPEC, in partnership with major oil producers like Mexico and Norway who are not members of the group, plans to take more than two million barrels of oil a day out of world markets starting in April. The action, at an emergency meeting on Tuesday in Vienna, would mark the first time in 13 years that the cartel had taken such a drastic measure, largely because of the pressing needs of the largest producer, Saudi Arabia, and other producing countries to generate more revenue, experts said. A6

Chechen Leader Attacked

Aslan Maskhadov, the leader of the separatist region in the Caucasus area of southern Russia, survived when a bomb exploded near his motorcade in the Chechen capital of Grozny, wounding several people. The attack came two days after a bomb in Vladikavkaz, the capital of the North Ossetia region 30 miles from Chechnya, killed more than 50 people. A7

Balloonists Land in Egypt

The first balloonists to circle the globe touched down in southern Egypt after a final night soaring across North Africa, and then spent hours waiting for a ride home. A8

U.S.-Saudi Tension on Iraq

Nearly three months of American bombings against Iraq are proving an irritant to ties between the United States and Saudi Arabia, as Saudi officials acknowledge that the kingdom refuses to allow Saudi-based American warplanes to take part in what it regards as punitive raids. The kingdom is the main base for American warplanes in the region. A6

Irish Premier Sees Progress

Prime Minister Bertie Ahern of Ireland said there would be a settlement of the dispute over Irish Republican Army disarmament in time for the Northern Ireland peace effort to advance by an Easter deadline. A3

Mexican Rebels' Referendum

Mexico's Zapatista rebels, in a characteristically imaginative but one-sided attempt to put their isolated movement back in the limelight, held a nationwide referendum on their proposals for peace. A5

NATIONAL A12-18

Few Dwellings Meet Rules On Access for the Disabled

A Federal law enacted eight years ago that requires new multifamily dwellings to be accessible to people with disabilities has been widely ignored, the Justice Department and advocates for the disabled say. Surveys conducted by the advocates indicated that only a tiny percentage of the multifamily buildings in their communities were in compliance. A1

Victims of Train Crash Recalled

Townspeople gathered in Bourbonnais, Ill., to remember the 11 people killed when a train crashed into a truck last week, and to honor those who helped in the rescue effort. A12

A Candidate With a Voice

John R. Kasich, an Ohio Congressman, is only one of several Republican Presidential candidates who wants to cut the Federal income tax. But Mr. Kasich, unlike the others, is the chairman of the House Budget Committee and has an influential role in fiscal policy. The budget plan he helped to draft is scheduled for a House vote this week. A13

A Survivor Lives With Grief

Jim Larson's sad celebrity comes from having two high-profile murderers, in otherwise unrelated crimes, sentenced to die for killing women he loved. And as a relative of the victims, he has the legal right to watch both men die. A14

New Rules for Coal Dust

The Federal Government is about to revamp its 25-year-old rules setting limits on coal dust, which can cause black lung disease and other respiratory illnesses. A15

Medicare Debate Intensifies

Dr. Donna E. Shalala, the Secretary of Health and Human Services, is resisting proposals to raise eligibility ages for Medicare or reduce its benefits and said the Administration will not accept any plan that would "make people sicker or poorer." A17

NEW YORK/REGION B1-8

Response to Diallo Case Is Criticized by Pataki

With the grand jury investigation of the Amadou Diallo case wrapping up and the daily protests over Mr. Diallo's slaying by police gathering momentum, Gov. Pataki described the case as horrific and suggested that the Giuliani administration was not "responding appropriately to criticism" over the matter. A1

Calm Amid the Mayor's Storm

Joseph J. Lhota, who became New York's Deputy Mayor for Operations last year, has stood out as the most easygoing member of Mayor Giuliani's tightly knit, tightly wound inner circle, known for his willingness to talk openly and his insouciant humor. B1

New Life for Labor Unions

A new cast of union leaders is starting to make New York City's labor movement more vigorous -- and more combative -- than it has been in decades. B1

ARTS E1-10

'Shakespeare' and 'Life' Win

Gwyneth Paltrow won the best actress Oscar for "Shakespeare in Love," and Roberto Benigni became the first actor in a foreign language film, "Life is Beautiful," to win for best actor. E1

OBITUARIES A18-19

SPORTSMONDAY D1-10

These Four Are Final

Duke, Connecticut, Michigan State and latecomer Ohio State are headed to the 61st Final Four. D1

Heavyweights to Meet Again

Evander Holyfield and Lennox Lewis will fight again. D1

BUSINESS DAY C1-18

Internet **Privacy Technology**

The Novell Corporation plans today to announce an **Internet technology** intended to give Web surfers greater control over their identities as they travel through cyberspace. Novell hopes the **technology**, called Digital Me, will gain acceptance as a standard means of controlling identity on the World Wide Web, permitting network users to reveal or retain personal information. C1

Banking Revolution in Italy

Italy was bracing for a banking revolution as its third-largest bank, Unicredito Italiano, offered to buy the smaller Banca Commerciale Italiana in an exchange of stock that would create a major European player to be called Eurobanca. C2

Cable's New Generation

Cable television programmers, in search of shows that can feed off the ground-breaking tone of "South Park" and professional wrestling, are seeking to up the ante in terms of the "edginess" and "outrageousness" of their new programming. C1

Business Digest C1

EDITORIAL A20-21

Editorials: Mr. Primakov comes calling; the new abortion rhetoric; Floyd Norris on trade wars.

Columns: William Safire.

Bridge E6

Public Lives A12

Crossword E7

TV Listings E9

Met. Diary B2

Weather D7

Photos

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The New York Times

Metropolitan Desk; Section A

NEWS SUMMARY

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19 July 1999

The New York Times

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Page 2, Column 3

English

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INTERNATIONAL A3-9

Barak Has a Schedule For Middle East Peace

Ehud Barak, the Prime Minister of Israel, set a target deadline of 15 months for achieving a comprehensive framework for peace in the Middle East, a timeline chosen in part to dovetail with the American political calendar and the Presidential election, Israeli officials said. Opposition leaders in Parliament criticized Mr. Barak for defining a time period that could prove too short for a complex set of negotiations on different fronts at the same time. A1

Israel confirmed that it planned to add at least 50 more F-16's to an already formidable jet fighter fleet, signaling a determination to maintain decisive regional air power superiority even as it pursued peace deals with its neighbors. A6

Israel has agreed to release the longest-serving Palestinian prisoner from jail, after holding him without charge or trial for nearly six years, officials said. A6

Milosevic Amnesty Suggested

Vuk Draskovic, left, a leading Serbian opposition politician, said the best way to get President Slobodan Milosevic out of power would be to get him to resign by promising immunity from arrest or extradition. A1

Colombia Peace Talks Falter

Negotiations between the Colombian Government and left-wing rebels were indefinitely postponed, the result of a dispute over the role that international observers would play. Shortly after, five soldiers and a guerrilla were killed when an army patrol was ambushed in a working-class neighborhood of Bogota. The action seemed intended to press President Andres Pastrana into further concessions. A9

Congo War Continues

Fighting continued in Congo, more than a week after the signing of a cease-fire accord to end the war. The rebels said they had captured more territory, and the countries embroiled in the year-old conflict traded accusations that the agreement had been violated. The refusal by the two main rebel groups to sign the accord appears to have prevented it from being carried out. A3

High Death Toll in Iraq Attack

United States air strikes in southern Iraq killed 14 civilians and wounded 17 others, the Iraqi military said. The death toll is the highest reported by Iraq since it started challenging the planes maintaining the no-flight zones over northern and southern Iraq in December. American officials did not confirm the toll. A6

Turkey Attacks in Iran

Turkish warplanes attacked targets in northwestern Iran, killing 5 people and wounding 10, Iranian news **media** reported. Turkey has been waging a counterinsurgency campaign in its southeastern provinces against members of the Kurdistan Workers Party. Turkey previously accused Iran of harboring Kurd guerrillas, which Iran denied. (AP)

NATIONAL A10-14

Kennedy Search Continues As Hope for Survival Fades

Searchers found more debris believed to have come from the single-engine airplane that disappeared Friday night carrying John F. Kennedy Jr., his wife and her sister. The Coast Guard gave up the search for survivors after conducting an intensive sweep of 364 square miles off the southern coastline of Martha's Vineyard. Efforts will now be focused on locating debris and recovering remains. Officials discounted the significance of a single ping from an emergency beacon that had been detected by a search aircraft, saying it may have been emitted by a Coast Guard marker. A1

Federal aviation officials have found no rule or **regulation** that was broken during Mr. Kennedy's ill-fated flight from New Jersey to Martha's Vineyard. National Transportation Safety Board investigators said there was no evidence yet as to whether pilot error, a mechanical flaw or something else had caused the plane to vanish. A12

Obituaries of Mr. Kennedy and Carolyn Bessette Kennedy. A14

U.S. Crime Continues Decline

Violent crime dropped 7 percent last year to its lowest level since the Government began tracking the figure in 1973, the Justice Department said. Attorney General Janet Reno attributed the improvement to more police officers and prosecutions, tougher sentencing, a healthy economy and better prevention programs and liaison among agencies. Republicans noted the passage of anti-crime legislation since their party took control of Congress in 1995. A10

Shuttle Gets Go-Ahead

NASA cleared the shuttle Columbia for liftoff shortly after midnight tonight, shrugging off last-minute technical concerns about the \$1.5 billion telescope that is to be placed in orbit. It will be the first shuttle flight commanded by a woman, Col. Eileen M. Collins of the Air Force. A10

More Forceful Tactics

Senator John McCain, a Republican sponsor of legislation to overhaul campaign finance laws, said he would start using parliamentary tactics this week to try to force the issue to the Senate floor unless the majority leader agreed to set aside time for the bill's consideration. A11

NEW YORK/REGION B1-8

Second Day at 98 Degrees; Power Is Reduced in Bronx

The temperature in New York City climbed to 98 degrees for the second straight day, but the heat index, the combination of temperature and relative humidity, which had reached 108 on Saturday, dropped to 105. Officials said 36 people were hospitalized, and Con Edison reduced power for several hours to 80,000 households in the Bronx to avoid a blackout after two of the area's four feeder cables burned out. Mayor Giuliani urged New Yorkers to use as little electricity as possible. B1

A Popular Visitor

Hillary Rodham Clinton helped give a White House dinner for Prime Minister Ehud Barak of Israel, a few hours after Mayor Giuliani conferred with Mr. Barak in New York City. B4

Mafia Turncoat Surfaces

Salvatore Gravano, the mob enforcer whose testimony in 1991 about the top echelons of Mafia life led to the jailing of 36 mobsters, including John J. Gotti, is living outside the witness protection program in Phoenix and told a newspaper he had no intention of "running from the Mafia." B6

SPORTSMONDAY D1-10

A Perfect Day at the Stadium

David Cone pitched a perfect game to lead the Yankees over the Montreal Expos, 6-0. Cone's achievement came on Yogi Berra Day, when Don Larsen, the only pitcher to throw a perfect game in a World Series, tossed the ceremonial first pitch to Berra, who caught that game. A1

A Scot Wins at Home

Paul Lawrie came from 10 strokes back to win the British Open at Carnoustie, Scotland, in a three-way playoff against Jean Van de Velde and Justin Leonard. D1

ARTS E1-8

Library Getting Archives

The New York Public Library is to announce today that it has acquired the archives of Yaddo, the renowned artists' retreat upstate. E1

OBITUARIES A15

Donal McCann

An actor regarded by many as Ireland's best, he was 56. A15

BUSINESS DAY C1-16

Telephone Takeover Battle

Qwest Communications International said U S West, the smallest of the regional Bell companies, had agreed to a \$36.5 billion strategic merger. Global Crossing said it would continue with its pending \$11 billion acquisition of Frontier, a long-distance carrier. The announcement resolved a fierce takeover battle between Qwest and Global Crossing. B6

The 2100 Computer Problem?

Experts are beginning to express concern that date-related computer problems are more pervasive than anyone realized and will continue well past Jan. 1, 2000. C1

The Decline of Taste

Some television executives and social scientists say the rapid dissipation of taste and language restrictions in mass **media** is fueled by shifting standards and the financial need to present programming that appeals to audiences. C1

Deal on Internet Phone Calling

Broadcom, a leading maker of high-speed communications semiconductors, agreed to buy Hothaus Technologies for \$280 million in stock, to enhance its position in the emerging market for phone calls using **Internet technology**. C2

Markets Higher in Tokyo

Stock prices in Japan were higher today. At the midday break, the benchmark Nikkei 225-stock index stood at 18,426.70, up 178.40 points, or just under 1 percent. (Bloomberg News)

Business Digest C1

EDITORIAL A16-17

Editorials: Tragedy revisits the Kennedys; Russia's nuclear defense; an opening for campaign reform.

Columns: William Safire.

Bridge E6

Public Lives A10

Crossword E4

TV Listings E8

Metro Diary B2

Weather D10

Photos

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The New York Times

Business/Financial Desk; Section C
Cisco Planning an Alternative To Traditional Switch Systems

By SETH SCHIESEL

640 words

20 January 1999

The New York Times

NYTF

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English

(c) 1999 New York Times Company

In a challenge to makers of traditional communications gear, Cisco Systems Inc., the No. 1 maker of Internet equipment, says it is close to introducing a device that will allow communications carriers to route voice, video and data traffic on a single system, and at a fraction of current costs.

The device, which Cisco calls a virtual switch controller, is based on **Internet technology** and is meant to augment or replace existing communications switches made by companies including Northern Telecom Ltd. of Canada and Ericsson A.B. of Sweden.

But it is Lucent Technologies Inc., invigorated by its recent \$20 billion deal to acquire Ascend Communications Inc., that Cisco has identified as its main competition. And it is Lucent, North America's No. 1 maker of traditional switching gear, that is the main target of Cisco's new product; Cisco said yesterday that the virtual switch controller would give it inroads into an \$8 billion chunk of Lucent's **business**.

Much of the **business** of companies like Lucent and Northern Telecom is based on equipment that uses "circuit switch" **technology**, which gives each voice conversation its own communications lane. Some communications experts believe that circuit-switch **technology** will eventually be replaced by systems that can perform more efficiently by breaking down communications into small pieces. Those pieces, known as packets, can then share a common communications pipeline, only to be reassembled into intelligible messages at their destination. By agreeing to buy Ascend, Cisco's closest competitor in the data communications market, Lucent took a big step to beef up its Internet-based offerings.

"The real significance is that circuit-switching is a very limited **technology** and a proprietary **technology**," Donald J. Listwin, a Cisco executive vice president who manages the company's relationship with big communications carriers, said yesterday in an interview. "This allows us to move voice over onto high-speed data infrastructures and it's opening it up to offer competition and innovation."

When phone companies that use switches from companies like Lucent or Northern Telecom want to add new services, such as call forwarding or Caller ID, they must often purchase that software from the company that made the switch. Cisco says its new product, which it intends to formally announce by the end of the quarter, will incorporate open standards that allow carriers to buy new software from a variety of vendors.

All that, Cisco says, will come at a price as little as 10 percent of that charged by its older competitors.

Still, Cisco will have to overcome the traditional providers' deep pockets, deep reputation for reliability and deep relationships with big communications carriers.

"From the standpoint of service providers, over all the thing that's really driving them is quality of service," said Daniel C. Stanzione, the president of Lucent's Bell Laboratories unit, speaking generally about Lucent's strategic outlook. "They want to be able to offer reliability beyond what you currently see in Internet switching."

Mr. Stanzione added that with Ascend under its belt, Lucent intended to keep up with new technical standards and to set new ones.

"We have our own very very strong developments in new switching technologies," he said.

But Some communications behemoths have already thrown in with Cisco. Marty Kaplan, the chief **technology** officer at the Sprint Corporation, the No. 3 long-distance carrier, said yesterday that Sprint intended to deploy Cisco's virtual switch controller as soon as this summer.

"It is a very efficient play that allows carriers to converge all of their services on a single platform," Mr. Kaplan said, using communications jargon for a integrated suite of technologies. "It would allow voice traffic over a data structure at a high degree of reliability and at a lower cost."

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The New York Times

Magazine Desk; Section 6
I'm O.K., You're Selfish

By Andrew J. Cherlin
2,264 words
17 October 1999
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NYTF
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English
(c) 1999 New York Times Company

America's mythic sense of self rings out from the very words "rugged individual." Think of the Deerslayer, Davy Crockett, Amelia Earhart, Clint Eastwood. At times, though, the stereotype has failed to ring true; in truth, individualism has run in pronounced cycles. Just in the last 50 years, it was precisely the lack of individualism that prompted William H. Whyte's "Organization Man" and David Riesman's "Lonely Crowd," best sellers articulating public concern about the dangers of conformity. Americans, it was feared, had become too worried about fitting in, too afraid to be independent. "Do not fold, spindle or mutilate," the instruction on computer punch cards, became a slogan against docile regimentation.

Now, to judge by new evidence, the cycle has swung back again to individualism, indeed swung past self all the way to selfish. The evidence comes from a New York Times survey conducted for this special issue. The selfishness is not shameless; in fact, the public seems somewhat conflicted. People bemoan the self-centeredness they see around them. They regret that family ties are weakening. They complain that they can't trust most people. But at the same time, they express starkly individualistic views. When presented with a list of basic values, they strongly identify with personal responsibility, self-sufficiency and self-expression. And not many see the contradiction -- that if everyone puts highest priority on one's own interests, then family and community ties may weaken further. The watchword has evolved from Rugged Individual to I'm O.K., You're Selfish.

Individualism may feel like a natural condition, but many of its aspects did not develop until the last thousand years. Surnames, for example, did not emerge until the mid-1300's. Before then men typically were identified only by the names of their fathers -- John, son of Henry; Martin, Peter's son -- and women took the names of their fathers or husbands. In eastern Europe, Jews typically did not have last names until the early 1800's, and in America, far into the 19th century, slaves were not permitted to have surnames unless given one by their owners. As for the idea of personal space, it was not until the 1700's in England that corridors were first included in the homes of the well-to-do. Until then, to get from room A to room E, one had to walk through all the rooms in between.

The newest aspect of individualism is that more people can aspire to it. A rising standard of living has freed most Americans from having to spend every waking hour satisfying basic needs. Middle-class affluence has also reduced the need to rely on parents or children and has enabled many more people to go it alone. A hundred years ago, few people lived by themselves; today 1 out of 4 households contains only one person.

Meanwhile, the character of individualism has changed. The older style, echoing Franklin and Emerson, turned on self-reliance, achievement -- what sociologists call utilitarian individualism. That is still much evident. But a newer style has blossomed in recent decades, what is called expressive individualism. That is about emotional gratification, self-help, getting in touch with feelings, expressing personal needs. Utilitarian individualism is going West, on Horace Greeley's advice, to find your fortune. Expressive individualism is going to the forest, on Robert Bly's advice, to find your inner essence.

Expressive individualism has flourished as prosperity has given more Americans the time and money to cultivate their own emotional gardens. It was not always so: if my grandparents had been asked about the importance of communicating their feelings, they might not have understood the question. They were too busy running a grocery store, raising 10 children and trying to survive the Great Depression.

The responses to The Times's survey display both styles of individualism, as well as Americans' ambivalence about them. The survey asked people how much importance they attach to each of 15 values. What's notable is

how, comparatively, people rate each value. Old favorites like being involved in your community or having a lot of friends fare poorly, relative to the others. The value rated as "very important" by the highest percentage of people was "being responsible for your own actions." It is utilitarian individualism in its pure form. More than 95 percent call this very important, in every major category -- white, black and Hispanic; women and men, poor and rich, liberal and conservative. In fact, three of the four highest-rated values reflect personal responsibility and self-expression. "Being able to stand up for yourself" came next at 89 percent and "being able to communicate your feelings," which is sheer expressive individualism, followed at 78 percent, just ahead of -- remarkably -- having faith in God," at 75 percent.

Yet the survey also suggests that Americans are uneasy about the extent to which they have pursued the individualistic dream. Many responses reflect the "I'm O.K., you're selfish" pattern. Only 17 percent say they are overly concerned with themselves but 60 percent think that most people are overly concerned with themselves. Only 12 percent say that the people they know personally would take advantage of others, but 37 percent think that most people would do so. Asked whether "most people are just looking out for themselves," only 17 percent say that applies to their own acquaintances, but 43 percent say it applies to most people. In other words, there are lots of self-centered people in America, but nobody seems to know them.

Maybe these answers mean that Americans imagine **society** generally to be worse than the world they inhabit in real life. But I think there's a harsher answer. When people are asked questions like these by a poll taker, I suspect they're projecting their anxieties about themselves onto others. And often they don't like what they see. "Most people are selfish," in the view of Rachel Davis, a 21-year-old student from Helena, Ark., interviewed after the poll. "If they're volunteering, they're doing it to clean up their resume, not because they really want to help." She then adds: "Sometimes I'm overly concerned with myself. I just think it's a 'me-me' world. Everything is focused on what you can accomplish, what you can do and how far you can go. "

The survey also shows a declining level of trust. When asked, "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people," only 35 percent say that most people can be trusted. That's somewhat lower than responses in surveys from the 1970's and 1980's. The people least likely to trust others are the poor and near-poor, whose daily encounters have left them distressed. Beverly Webster, a 25-year-old unemployed housekeeper from Dallas, says: "I don't think you can be too careful with people who aren't either your family or people real close to you. If they know that you're easygoing, they will try to mistreat you and misuse you. Most people are just looking out for themselves."

The responses to questions about family life also show the tensions in Americans' sense of self. When asked, "What aspect of your life is most fulfilling or satisfying," more than half mention family, children or marriage -- far more than any other aspect of life. And yet most people (77 percent) agreed that "because of such things as divorce, more working mothers, single parents, etc., family ties in the U.S. are breaking down."

Americans also view religion in an individualistic way. Although 75 percent agree that having faith in God is important, far fewer (56 percent) agree that being religious is very important. The difference is that "being religious" implies actively participating in worship, fellowship and other aspects of organized religious life. Most Americans don't think religious participation is as important as one's faith and moral code. "Religion to me means belonging to a specific congregation or denomination, and that is not very important to me," says Beth Parth, a 42-year-old hair-salon owner from Empire, Mich. "Faith means something I found myself, not something I learned in grade school or something someone told me I had. It's very much a personal thing."

In fact, other surveys have shown that most people don't have a great deal of confidence in the people running organized religion. The sociologist Alan Wolfe, who interviewed middle-class Americans in eight suburbs, wrote of their "quiet faith": many don't worship regularly and most are tolerant of the religious beliefs of others. To be sure, some are very spiritual. One in five people in The Times's survey say they have had an encounter with an angel or a devil or some other kind of supernatural experience.

This wariness of organized religion and lack of interpersonal trust could be taken as evidence of a broader change in Americans' sense of self: declining involvement in civic groups, neighborhoods and communities. Alexis de Tocqueville thought that American democracy worked, in part, because of the many local citizens' groups that could influence government and counter its power. But over the past few decades, membership in groups like the League of Women Voters and the Masons has plummeted. In their place, advocacy groups like the American Association of Retired Persons and the Children's Defense Fund have proliferated. Americans mainly contribute to these groups not by attending meetings but by writing checks.

The Times's survey reflects this shift. "Being involved in the community" ranked No. 13 on the list of 15 values, well behind "having enough time for yourself." And 35 percent said that, in recent years, they had increased the amount they give to charity, compared with 10 percent who say they have decreased the amount.

In an influential 1995 article, "Bowling Alone: America's Declining Social Capital," the political scientist Robert Putnam warned of the consequences for democracy of the decline in civic engagement. (More people than ever are bowling, Putnam reported; but far fewer are bowling in leagues.) Other commentators suggest that the picture isn't so bleak. The sociologist Robert Wuthnow argues that Americans are forming "loose connections" that can compensate somewhat for the decline in other forms of civic life. For instance, despite the declining membership in service clubs, more Americans are volunteering for service projects now than a few decades ago. Most volunteer projects are short-term and focused, like spending a few hours a week at a food pantry; but they serve nevertheless to create social ties. **The rise of the Internet** also helps: it provides E-mail links among family and friends, and bulletin boards connect people with common interests.

Let us grant Wuthnow's point that Americans are not turning into a nation of self-involved stay-at-homes. It nevertheless seems clear that the fabric of public life has frayed. The reasons may include changes in the economy since midcentury. One notable change is the loss of job security, which uproots workers and undermines community. Another is the infusion of many more women into the work force, meaning more two-earner families and more employed single parents. "Between work and taking care of my children, who are 3 and 5, I don't have much time for community involvement," says Delisa Hunter, a 23-year-old cashier from Norfolk, Va.

As The Times's survey shows, Americans like to lament their individualistic bent, all the while pursuing it. They also care about commitments to others, all the while changing partners, jobs and neighborhoods. Both sentiments -- individualism and commitment -- are genuine, and both have a long history in this country and in Europe. But the most fundamental quality of the American sense of self, suggests the sociologist John Hewitt, is neither individualism nor commitment but rather our continuing ambivalence as we steer a life course between them.

The higher living standard of advanced capitalism has reduced the need for support from others and thus for strong lifetime commitments. It has allowed more Americans to steer toward individualism. They relish the levels of personal achievement and emotional gratification that they have attained as a result. But as is clear from their complaints about others and their anxieties about themselves, they're beginning to recognize the price.

The New York Times Survey

This essay and the accompanying illustrations draw from the results of a special survey conducted by the News Surveys department of The New York Times. It was designed by Marjorie Connelly, staff editor, under the direction of Michael Kagay, head of the department. A total of 1,178 adult Americans were interviewed by telephone between July 17-19, 1999. Sampling error could account for variations of plus or minus 3 percentage points in major findings.

Andrew J. Cherlin is professor of public policy in the department of sociology at Johns Hopkins University and president of the Population Association of America.

Drawings: "Being responsible for your own actions" rates first among a list of values that people consider "very important."; While 60 percent say that "most people" are overly self-involved, only 17 percent feel that they have such an attitude.; Communicating your feelings is very important to 78 percent; only 28 percent think it very important to have a lot of friends. (Christoph Niemann) Graph shows how Americans rank 15 personal values.

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The New York Times

Trying to Read a Hazy Future
Money and **Business**/Financial Desk; Section 3
Another Metamorphosis For Barnes & Noble Chief

By DOREEN CARVAJAL
3,273 words
18 April 1999
The New York Times
NYTF
Page 1, Column 5
English
(c) 1999 New York Times Company

WHEN Leonard Riggio was a night student at New York University, he coped with the droning tedium of **business** lectures by snatching a strategic seat behind a student with a broad back and, he says, losing himself in the pages of the "History of the Peloponnesian War."

He found the classes in **business** policy and management so dull, in fact, that he dropped out in 1965. But life is a circle and now Mr. Riggio's \$3 billion company -- engaged in its own battles -- is a case study for first-year M.B.A. students at N.Y.U.

The graduate students are pondering the rise of Mr. Riggio, a Brooklyn-bred entrepreneur, from bored student to chief executive of Barnes & Noble, the nation's largest bookselling chain. And for their final exam this month, they will try to answer the very question that confronts the complex and restless Mr. Riggio:

In an industry roiled by technological advances, with bookselling reduced to bits and bytes and two-day delivery and profits a distant concern for the company's most worrisome competitor, what exactly is Barnes & Noble's future?

As he searches for answers, the chief executive may want to crib the students' notes.

"For the first time in my lifetime, I can't see five years ahead the way I used to," Mr. Riggio said, both of the book **business** and retailing in general. "I can't see it clearly."

At 58, with salt-and-pepper hair and Brooklyn still in his voice, Mr. Riggio has presided over so many transformations in his 30 years of bookselling that it seems no surprise that he says one of his favorite books is "The Metamorphosis" by Franz Kafka.

Mr. Riggio was largely responsible for the book industry's last metamorphosis -- the advent of the superstore, which in the 90's has come to dominate the literary landscape with airy temples of titles, comfortable chairs and the fragrance of espresso.

Now, Mr. Riggio is navigating his New York-based company through another metamorphosis. A pioneer among big, traditional retailers, he is taking his on-line **business**, Barnesandnoble.com, public, as Amazon.com and the Internet spin their web around eager investors and growing numbers of book customers.

This time, the challenges and risks are greater than ever for a man who considers himself at his core a shopkeeper -- albeit one with a private jet, a de Kooning bronze on the three-acre lawn of his Hamptons estate and a Picasso displayed in his Manhattan townhouse.

With his industry's future in flux, Mr. Riggio is hedging his bets, anticipating that customers will feel equally comfortable lingering in superstores to scan the latest hardcovers, or shopping for exotic titles on line or downloading a bestseller from a home computer into a 22-ounce electronic reader. As in many of his transforming acts, he is building on others' early work -- in this case Amazon's, much as he did before by following Borders Group with a cafe or expanding on Bookstop's development of the superstores.

"There was a period at the beginning of the Internet where I didn't get it. Most people didn't get it," Mr. Riggio said in one of a series of interviews over the last few months. "I came to it at first slowly, and then very, very quickly."

Ultimately, he said, "we jumped into the Internet **business** head first; we made big investments in capital, big investments in organization, big personal commitments to the **business**."

Man of Metamorphoses

His first transformation came almost 35 years ago, when, as a 24-year-old dropout, he invested \$5,000 of borrowed money in a bookstore called Student Book Exchange near the N.Y.U. campus. Six years later, in 1971, he bought Barnes & Noble, then a floundering bookstore in Manhattan's Flatiron district.

Later Mr. Riggio expanded into popular books, buying the B. Dalton mall store chain in 1986. And today, his more than 520 superstores plus 500 mall stores are so much a part of the landscape -- and seen as so threatening by independent booksellers -- that the conflict provided the story line for the recent movie, "You've Got Mail."

Not that Mr. Riggio has seen the film. There's little spare time in his life for movies or the novel that he's been promising to write for some 10 years. He dutifully clears his schedule for his 15-year-old daughter's basketball games, but his chip shot is languishing.

Instead, his mind is on the hazy tomorrow.

"It's not just the changes in the book **business**, it's the changes in retail, the changes in the way we live," Mr. Riggio said. With the **Internet revolution**, he said, sometimes "I wake up and say that any **business** created before 1997 is going to be a fossil by the year 2010."

An avid collector of late 20th-century art, Mr. Riggio compares the fluid future to a Fred Sandback art installation -- two strings suspended from ceiling to floor. The gap between them is like everything that existed before and after the Internet, Mr. Riggio said; successful people will understand intuitively, he said, that the space is "real and not imaginary, yet be able to walk through it, whole, on the other side."

Skeptics may look at the strings and see just strings. But Mr. Riggio is trying to lead his company on both sides of the divide, steadily building new superstores into a chain that he expects could eventually number 1,000 (though the expansion has slowed to about 50 this year from about 90 a year) while investing heavily in the Internet.

Last month, the company said that it would make a \$200 million initial public offering of shares in Barnesandnoble.com; an offering announced in September was postponed because Bertelsmann A.G. bought a 50 percent stake in the electronic venture. The intent is to spend much of the proceeds to market the Web site, which had on-line sales of \$70.2 million for the year, versus \$610 million at Amazon.com and \$4.6 million at Borders. (Barnes & Noble has a **business** tie to The New York Times, selling books through links from the newspaper's Web site.)

The trouble, of course, is that Amazon unabashedly declares that it loses money on every sale as it grabs market share from Barnes & Noble and other traditional bookstores.

Some analysts estimate that by the end of this year, on-line sales will account for about 5 percent of the popular book market. And while it is still not clear what percentage of customers are shifting their purchases to the Internet, projections show sales growth online far exceeding gains at superstores over the next few years.

For industry experts that raises the question of whether Mr. Riggio's electronic offspring will only speed the process, cannibalizing sales from his bricks-and-mortar outlets -- a scenario that could place some of his superstores in the same jeopardy as the independent bookstores forced to close when they could no longer compete.

"I'm sitting in a Citicorp building with a Barnes & Noble in the building, and I just feel like it's throwing away money to buy a book in their store, because it's cheaper and easier to find a book on line," said Craig Bibb, a managing partner at Jasper Funds, a hedge fund that has sold its Barnes & Noble's holdings. "You're already seeing a market-share shift, and to reduce that difference, they're going to have to cut prices at the stores, which could have a tremendous negative effect on the company."

(Indeed, by offering discounts up to 40 percent on hardcover books and 20 percent on paperbacks, Barnesandnoble.com is already undercutting the superstores, although shipping and handling fees narrow the price difference.)

Other investors seem anxious, too. Barnes & Noble stock rose more than 20 percent on the news of the planned Internet spin-off, but at a Friday close of \$36, the shares are still down 15 percent for the year.

By comparison, Amazon, which closed the week at \$190, is up 77 percent for the year. And while the No. 2 bookseller, Borders Group, got a nice bounce in the market last week when executives made clear that they planned to concentrate on terra firma, not the Internet, its stock has fared even worse than Barnes & Noble's. (Borders closed on Friday at \$17.1875, down 31 percent for the year.)

Mr. Riggio has a much more expansive view of the horizon. Electronic commerce, he said, will become a seamless part of his empire, ultimately increasing the amount of purchases per customer.

He is reluctant to talk in any detail about Barnesandnoble.com because the company has entered the quiet period after the registration of its public offering. But in general, he said that "there's no question that the book market is expanding -- rapidly expanding -- because of the Internet."

At times, though, it seems as if he is still getting accustomed to the new world.

During the rollout of the superstores in the early 90's, he was known to calculate where the sun would fall on a potential real estate location or demand a sudden change in lighting at 4 A.M. before a store opening.

He is leaving those kinds of details to others at Barnesandnoble.com, where he is chairman. Though Mr. Riggio has dreamed up some of the Internet unit's bold advertising, he says he has time to log onto the Web site itself only about once every two weeks. Earlier this month, his secretary asked that an E-mail for Mr. Riggio be sent to her; his computer had crashed.

Loyal, But Prickly

But Mr. Riggio is a man of many contradictions -- tough, yet shy; generous with charities and his employees, yet prickly about criticism, whether it comes in news articles or Wall Street analyst reports or the public comments of publishers and literary agents.

His wife of 18 years, Louise Riggio, says her husband keeps to himself because "it's his way of functioning." That private nature is reflected in the couple's low-key approach to charity. They recently donated more than \$700,000 to the Children's Defense Fund to create a library on the farm of the late author Alex Haley in Tennessee. Instead of placing their names on the building, they suggested the poet Langston Hughes.

The eldest son of a dressmaker and a cabdriver, Mr. Riggio grew up in Bensonhurst. He skipped two grades, and says that he hustled at sports to make up for being younger than his classmates.

He lived in a neighborhood of southern Italian immigrants where "everyone was poor, but was not aware of that fact," recalled one boyhood friend, Angelo A. Volpe, president of Tennessee Tech University, in Cookeville. Mr. Volpe remembered games of stickball, sandlot baseball and afternoons spent lingering outside Tony Millaci's Candy Store. "Almost everyone had a name which ended in ee: Johnny, Jimmy, Patsy, Joey, Vinnie, Albie, Angie and, of course, Lenny."

Even today, Mr. Riggio is known as Lenny at corporate headquarters on Fifth Avenue and 18th Street in Manhattan, across from the original Barnes & Noble store. His youngest brother, who is vice chairman of the company and presides over Internet and retail acquisitions, is Stevie. The middle brother, Jimi, works for a trucking company that provides services to Barnes & Noble.

Many employees have worked with Mr. Riggio for decades -- and benefitted from his generosity in giving stock options to lower-level workers when he took Barnes & Noble public in 1993.

They have also benefited from his loyalty. Bill Maloney, a senior vice president at Mr. Riggio's privately held Barnes & Noble College Bookstores, has worked his entire 28-year career for the company. Five of Mr. Maloney's relatives also work in Barnes & Noble stores. Twelve years ago, when Mr. Maloney's wife was dying of cancer, Mr. Riggio visited her in the hospital to promise that he would pay for her children's college expenses.

"Lenny does some of the most thoughtful things," Mr. Maloney said. "He stopped and thought of what would be on this woman's mind beyond getting well. And he just wanted to take those things off her mind."

Mr. Riggio can become emotional discussing the mentors in his life -- among them his father, Steve, whom he describes as "a highly-ranked prizefighter whose claim to fame was in twice defeating Rocky Graziano, which had never happened before." So it is no surprise that Mr. Riggio's soft side is balanced by a sharp edge readily exposed to counterparts in negotiations or conversations.

"He likes to have his way," said one publisher who has encountered Mr. Riggio's fixed stares during discussions about sales terms. "He looks across the table and says, 'Let me get this straight: After all the money I've invested in these stores, and all the sales increases you've had since, you want to come in my office and say you're changing your terms? I don't think you want to do it and I'm not going to accept it.' "

Even partners pick their words carefully in describing Mr. Riggio. Thomas Middelhoff, Bertelsmann's chief executive, declined to talk about him for this article, instead issuing a brief statement. Mr. Riggio's "energy and vision," it said, have "been a tremendous source of inspiration for those who are serious about the book **business**."

John Ingram, chief executive of the Ingram Book Group, a wholesaler that Barnes & Noble is acquiring for \$600 million as a back office for its Internet push, was even more circumspect. "He is fair and consistent in his views," Mr. Ingram said repeatedly, preferring not to say more.

Not Ancient History

When N.Y.U.'s new class of 400 **business** students started examining Mr. Riggio's book empire this year, some did so with the zest that he says he once applied, at roughly the same age, to reading Thucydides.

Dividing into more than 70 teams, they studied census figures to determine customer growth and to calculate the total book-buying population. They examined competitors' strategies. They considered electronic devices, like the \$500 Rocket E-books made by Nuvo **Media**, in which Bertelsmann and Barnes & Noble have invested. Essentially, these are miniature computers with enough memory to download about 10 books.

The teams have not delivered their presentations yet. But one group has decided that Mr. Riggio needs to make some of the choices that he so far has avoided.

"There are too many strong competitors on too many fronts, and the Internet is such a risky undertaking," said Jenny Rigg, a 25-year-old student from Boston. "Barnes & Noble needs to make a decision to streamline their **business**. They have to decide whether it's a superstore or an Internet company."

Like Wall Street's analysts, the students questioned whether there would be enough growth in book sales to sustain both the on-line explosion and the steady addition of new superstores. Ms. Rigg's team favored pursuing electronic commerce but tapering off the construction of new superstores to as few as six in 2003 and taking steps to make stores indispensable to their communities.

Professional analysts have arrived at similar conclusions. Of all booksellers, "the big-box superstores are the most at risk," said Kate Delhagen, who tracks Internet commerce for Forrester Research.

But however daunting the future seems, Mr. Riggio is not prepared to concede anything. Certainly not the on-line market. The Internet, he said, is the "most exciting thing that ever happened -- not only in our industry, but I do believe in our lifetime, and sometimes, I believe, in the history of human affairs."

And he isn't going to retreat from the brick-and-bookshelf world, either. He said Barnes & Noble was working to make stores more efficient. But he is reluctant to say more.

"The time from which you say you are going to do something and it is copied, is like that," Mr. Riggio said with a snap of his fingers. "So I don't want to say anything. I just want to do it."

Photos: Leonard Riggio from high school yearbook of June 1958.; Exterior of Barnes & Noble at 18th Street and Fifth Avenue. (James Estrin/The New York Times); Amazon.com's distribution center in Seattle. (Dan Lamont for The New York Times); A university student looking at college guide books at the Barnes & Noble store on 82d Street and Broadway. (Carol Halebian for The New York Times); Graduate students at N.Y.U., including Reina Shteyngart and Parag Vora, worked recently on their case study of the Barnes & Noble empire. (James Estrin/The New York Times)(pg. 6); (Photograph by Naum Kazhdan/The New York Times)(pg. 1) Drawing (Illustration by Lars Leetaru)(pg. 1) Chart: "Big Chains Dominate Bookselling..." Share of consumer adult books sold in 1997 Total units sold: 1.07 billion On line: 0.3% Other: 22.3% Warehouse clubs and discount stores: 14.6% Small chain/independent bookstores: 17.2% Large chain bookstores*: 25.2% Book clubs: 20.3% *Barnes & Noble, Borders Group, Crown Bookstores, Books-a-Million and Lauriat's/Encore Share of bookstore sales in 1997 Barnes & Noble: 25.3% Borders Group: 20.5% Other: 54.2% (Sources: Book Industry Study Group; J.P. Morgan Securities Inc.)(pg. 1) Graph predicts annual growth in all consumer book categories until 2002. (pg. 1) Chart: "Literary Rivals" Under Leonard Riggio's leadership, Barnes & Noble has set the pace for the growth of bookselling in the United States and its transformation into a battleground for giant merchants. But Amazon.com

has seized the imagination of readers and investors over the last two years, even if its sales are a fraction of Barnes & Noble's and its losses steep. 1965 Leonard Riggio buys a college bookstore near New York University, Student Book Exchange, with a \$5,000 loan. 1971 Mr. Riggio borrows \$1.2 million to buy Barnes & Noble, a floundering 100-year-old Manhattan landmark. 1986 Barnes & Noble becomes the nation's largest bookseller by acquiring B. Dalton, the mall chain. November 1989 Barnes & Noble acquires Bookstop, a Texas-based chain of 24 superstores. September 1993 Mr. Riggio takes Barnes & Noble public to finance a rapid rollout of more superstores. May 1997 Two years after Amazon.com's debut on the Internet, Barnes & Noble enters on-line commerce with the debut of Barnesandnoble.com. October 1998 Barnes & Noble sells a 50 percent stake in Barnesandnoble.com to Bertelsmann, the German conglomerate, for \$200 million. November 1998 Barnes & Noble announces its acquisition of the Ingram Book Company, the nation's largest book wholesaler, for \$600 million. March 1999 Mr. Riggio prepares to take Barnesandnoble.com public with the goal of raising \$200 million. (Source: Bloomberg Financial Markets)(pg. 6) Graph compares Amazon.com and Barnes & Noble's monthly closing prices since each went public. (Source: Bloomberg Financial Markets)(pg. 6) Graphs compare Amazon.com and Barnes & Noble's net sales and net income or loss since the beginning of the 1999 fiscal year. (Source: Bloomberg Financial Markets)(pg. 6)

Document nytf000020010828dv4i00lit

The New York Times

Science Desk; Section F
Genius or Gibberish? The Strange World of the Math Crank

By GEORGE JOHNSON
2,031 words
9 February 1999
The New York Times
NYTF
Page 1, Column 1
English
(c) 1999 New York Times Company

The letter, dated Christmas Day 1998 and addressed to a professor at the Niels Bohr Institute in Copenhagen, began portentously: "Nowadays, we seek to comprehend our comprehensions and call that comprehensiveness knowledge in the mistaken belief that as a science it is immortal. Such omniscience diffuses like Helium-3 into the penitralia mentis of omnipotent impotency within any God-head such that any caveat actor is saved. . . ."

Within a few sentences, the writer was holding forth on Heisenberg's Uncertainty Principle and "the concept of nothing" as the empty set, before launching into speculations involving number theory: "It's enough to make me conjecture that infinity's prime and Riemann's Zeta function accounts for fractional charge subatomically just for the Higg's boson with an involucral matrix of ogdoad parity as midwife!"

The letter was typed single-spaced with the tiniest of margins and embellished with hand-drawn diagrams and colored annotations. Copies were sent to a list that included the linguist Noam Chomsky, the physicists John Archibald Wheeler, David Deutsch and Stephen Hawking, and the mathematician John Casti.

"It has all the hallmarks of a crank," said Dr. Casti, who is affiliated with the Technical University of Vienna and the Santa Fe Institute in New Mexico. "It's amazing all the stuff you can get onto a single piece of paper."

But was it not just possible that couched in the obscure mix of mathematics, physics and Egyptian mysticism ("ogdoad parity" refers to four pairs of gods with names like Darkness, Absence and Endlessness), there lay an important insight?

Didn't two Cambridge University mathematicians dismiss the great self-taught Indian number theorist Srinvasa Ramanujan as a crackpot when he sent them long eccentric letters from India early in this century? Only their colleague G. H. Hardy had the foresight to recognize Ramanujan as a genius. And didn't the great German mathematician Carl Friedrich Gauss foolishly throw away unread a groundbreaking paper from his young Norwegian colleague Niels Henrik Abel, calling it "another of those monstrosities"?

Dr. Casti was not too worried about the possibility. Though the stories of Ramanujan and Abel may linger in the backs of mathematicians' minds as they aim the latest unsolicited epistle toward the wastebasket, most become quickly jaded.

"After several hundred of these things you get into that mode," said Dr. Ian Stewart, a mathematician at Warwick University in England. "It has to do with your self-preservation."

"The writers of these letters range from pretty good amateur mathematicians who have made a mistake somewhere or skipped over an important step to people who are completely mad," he said. "You get very strange mail in 17 different fonts and 14 colors and with an idiosyncratic grammar." Many of the correspondents are intelligent, well-meaning, indefatigable souls who, in their untrained way, share the fascination mathematicians feel for the invisible world of numbers. And many are simply cranks.

The equipment necessary for discovering a subatomic particle in your own home costs too much and would never fit inside a basement laboratory or even a very large backyard. But with nothing more than a pencil and paper, and maybe a compass and straightedge, even an amateur can explore the mathematical nether world, stumbling across important new truths.

That, anyway, is the dream or obsession that drives would-be Ramanujans all over the world to send mathematicians letter after letter crammed full of diagrams and equations promising answers to unsolved

problems ranging from squaring the circle or proving (in a simpler way) Fermat's Last Theorem to revealing, through the wonders of mathematics, the meaning of life.

Physicists get their share of mail from amateurs attempting to reconcile quantum mechanics and general relativity or to show that Einstein was wrong. But the greater ease with which one can speculate about numbers has caused the mathematical crank to become enshrined in academic folklore. The phenomenon is even documented in a book called "Mathematical Cranks" (Mathematical Association of America, 1992), by Dr. Underwood Dudley, a mathematician at DePauw University in Indiana.

"I've been at this for a decade and still can't pin down exactly what it is that makes a crank a crank," said Dr. Dudley, who has met a few in person. "They are usually men, old men," he said. "All are humorless. None of them are fat," a characteristic he attributes to their obsessive personalities. "It's like obscenity -- you can tell a crank when you see one."

With recent films like "Good Will Hunting" and "Pi" giving mathematics a romantic sheen and popular new biographies romanticizing the lives of the mathematicians Paul Erdos and John Nash, the flow of crank mail will only increase, predicted Dr. John Allen Paulos, a mathematician at Temple University in Philadelphia.

Add millennial anxiety, including the Y2K problem, Dr. Paulos speculated, and the time he and his colleagues spend opening and discarding letters peppered with strange symbols and grand claims is bound to increase. "Popular mathematics used to be an oxymoron," he said, "but happily that's not true anymore." The celebrity, though, has its price.

"It's a real dilemma," said Dr. Reuben Hersh, professor emeritus of mathematics at the University of New Mexico in Albuquerque. "Who is going to stroll through pages and pages of stuff that is very hard to understand when you don't have to do it? From the point of view of these guys, we are arrogant, unwilling to reconsider ideas. And why shouldn't they expect a responsible scientist to look carefully at some new idea that might be important?"

"You can't just say Ramanujan was a genius and these other guys were cranks," Dr. Hersh said. "With a superficial look, there is hardly any visible difference. There is not always a sharp line between eccentric mathematicians and intelligent but maybe obsessed amateurs."

Until recently much of the mail contained supposed proofs of Fermat's Last Theorem. But since Dr. Andrew Wiles of Princeton University recently proved this famous puzzle and number theory, Dr. Paulos said, the focus has shifted to disproving Dr. Wiles. Another favorite diversion is Goldbach's Conjecture, which holds that all even numbers are the sum of two primes. Though no one has found a counter example, this would-be theorem remains unproven, unless the solution has been crumpled up in a math department wastebasket somewhere.

Mathematicians are especially impatient with letters claiming to have solved one of the three classical problems of Greek mathematics: trisecting an angle (dividing it into three equal parts), doubling a cube, or squaring a circle (constructing a square with the exact same area as a circle) using only a compass and an unmarked straightedge. The reason for imposing these restrictions was to see how much mathematics could be derived from two basic concepts, the line and the circle.

Solving the three classic problems this way has been proved impossible. In 1882, for example, the German mathematician Ferdinand Lindemann established that trying to square the circle was hopeless. The reason is that pi, the ratio of the circumference of a circle to its diameter, is not only irrational (its infinitely long string of decimal places never repeats) but transcendental (it is not a solution of any polynomial equation with whole number coefficients).

Amateur attempts at squaring the circle generally amount to rounding off pi to a close approximation like 22/7 or 355/113. At best the result is a square that is very close but never exactly the size of the circle.

"These people don't know what impossible means," Dr. Dudley lamented. "They think it just means very hard."

Or the writers do not believe the impossibility proofs. "They start by saying they know there is a theorem that says it is impossible but they've done it anyway, so there must be something wrong with the theorem," Dr. Stewart said. "They are operating in a conceptual vacuum. It leads to strange things."

One of the rules mathematicians soon learn is never to answer a possible crank. The mail often comes with cover letters assuring that the work has been "endorsed" by a certain Harvard or Stanford professor, say, or even a member of the United States Senate. The attached letters are usually no more than polite brushoffs: "Thank you

for your interesting letter. . . ." A mathematician who makes a perfunctory reply can count on its being stapled to the next round of mailings.

Dr. Hersh replied to a letter from an amateur mathematician in India. "This guy wrote very well," he said, "in a good expository style. His penmanship was fine. What he said made enough sense that I thought I would try to explain and straighten him out."

Over several years, Dr. Hersh realized that his correspondent had come to believe that the whole edifice of mathematics was about to crumble because of a dreadful mistake made centuries ago. Dr. Hersh finally wrote back in exasperation: "I've done all I can for you. I can't do anymore." The writer answered that he did not consider himself Dr. Hersh's student but rather his opponent in a debate.

Surprisingly, **the rise of the Internet** has not increased the amount of mathematical crank mail. Most of the letters still come typewritten, often on what appear to be manual typewriters. "Cranks are always about one level of **technology** behind," Dr. Dudley said. Dr. Casti said he imagined some of his correspondents as "penniless guys in cold-water flats." They save paper and postage by single-spacing and often type on both sides of the page.

Sometimes, just sometimes, a mathematician finds that it pays to answer an unsolicited letter, one that does not have what Dr. Stewart calls "the strange fairy dusting of lunacy." He once received a clearly written letter from a man in China who believed he had trisected the angle. "I knew it had to be a fallacy, but it gave me a spur to try and see where it was wrong," Dr. Stewart said. "There were three points in the diagram that looked as if they were on a straight line, but actually were not." Dr. Stewart wrote back and received a reply thanking him for pointing out the error. "It is the only time I've had any success convincing someone like this that they were wrong," he said.

Several years ago Dr. Stewart heard from a man -- in India again -- who had found a new, simpler proof for an obscure, pointless theorem in number theory written by Ramanujan and a collaborator. According to the Ramanujan-Nagell theorem, the only numbers one can square and add 7 to, yielding an answer that is a power of 2, are 1, 3, 5, 11 and 181. For example, squaring 3 and adding 7 gives 16, which is the fourth power (the square of the square) of 2.

Dr. Stewart was surprised to realize that the proof was correct, but it was badly typed on strange paper and cast in an idiosyncratic style that would have given any journal editor the impression that the writer was a crank. Dr. Stewart advised the writer to find an Indian number theorist who could teach him how to present a proper paper. Several years later the result was published, and soon after came another publication from the same man. "It is worth reading these things occasionally," Dr. Stewart said.

But only occasionally, Dr. Dudley advised. "There is always that chance of success, but it is so small," he said. "I've gone through enough reams of crank stuff to know that the probability is close to zero."

Photos: Dr. Underwood Dudley, author of "Mathematical Cranks," says that even though he cannot pin down what makes a crank a crank, "you can tell a crank when you see one." (Mary Ann Carter for The New York Times); The self-taught Indian number theorist Srinvasa Ramanujan, left, was dismissed as a crackpot until G. H. Hardy realized that his university colleagues were mocking a genius. (Master and Fellows of Trinity College, Cambridge)(pg. F5)

Document nytf000020010828dv290080f

The New York Times

Section C

COMPANY NEWS: CONCENTRIC NETWORK TO BUY BRITISH INTERNET PROVIDER

Bloomberg **Business** News

37 words

9 September 1999

New York Times Abstracts

NYTA

Pg. 4, Col. 1

English

(c) 1999 New York Times Company

Concentric Network Corp agrees to acquire **Internet Technology** Group PLC for 146 million pounds (\$235 million) to enter European Internet-access market

(S)

Document nyta000020010828dv9901awc

The New York Times

Section A

CORRECTIONS

18 words

30 March 1999

New York Times Abstracts

NYTA

Pg. 2, Col. 5

English

(c) 1999 New York Times Company

Correction of March 25 **Business** Day article on transmission of voice calls using **Internet technology**

Document nyta000020010828dv3u00hal

The New York Times

Section G

LATEST HIT ON CAMPUS: CRESCENDO IN E-MAJOR

By Mary B W Tabor

57 words

22 September 1999

New York Times Abstracts

NYTA

Pg. 12, Col. 1

English

(c) 1999 New York Times Company

Colleges nationwide are rushing to offer courses, degree and certificate programs and research centers devoted to Internet commerce; some focus on **Internet technology**, along with marketing and consumer services; others stress entrepreneurship and basics of running **business** on Web; photo

(M)

Photographs

Document nyta000020010828dv9m01e1t

The New York Times

Section C

INTERNET PHONE VENTURE WILL SELL STOCK

By Seth Schiesel

110 words

3 May 1999

New York Times Abstracts

NYTA

Pg. 2, Col. 1

English

(c) 1999 New York Times Company

RSL Communications Ltd plans to sell stock in its Delta 3 subsidiary; this would be first initial public offering of stock in company that focuses exclusively on Internet telephony, technique for transmitting phone calls using **Internet technology**; so far, Net2Phone unit of IDT Corp is considered biggest Internet telephony operation; IDT has not announced plans to issue separate stock for Net2Phone; most other Internet phone companies are small and still private; Delta 3 offering is first 'pure play' investment in Internet telephony, but it comes at time when **business** case for Internet telephony is in flux; photo

(M)

Photographs

Document nyta000020010828dv5300ncd

The New York Times

Section C

BELLSOUTH AGREES TO \$5 BILLION CONTRACT WITH NORTEL

Bloomberg **Business** News

41 words

25 June 1999

New York Times Abstracts

NYTA

Pg. 3, Col. 1

English

(c) 1999 New York Times Company

BellSouth Corp to buy at least \$5 billion of equipment and services from Nortel Networks Corp, as it seeks to update its worldwide networks with **Internet technology**

(S)

Document nyta000020010828dv6p00xiw

The New York Times

Metropolitan Desk; Section A

Corrections

38 words

30 March 1999

The New York Times

NYTF

Page 2, Column 5

English

(c) 1999 New York Times Company

An article in **Business** Day on Wednesday about the transmission of voice calls using **Internet technology** misstated the location of the headquarters of Vocall Communications. It is in Mountainside, N.J., not Philadelphia.

Document nytf000020010828dv3u00ho9

The New York Times

Section C

CO-CHAIRMEN SPLIT DUTIES AT CITIGROUP

Bloomberg **Business** News

46 words

30 July 1999

New York Times Abstracts

NYTA

Pg. 2, Col. 4

English

(c) 1999 New York Times Company

Citigroup co-chairmen, Sanford Weill and John Reed, will split responsibility for managing company; Weill will oversee operating businesses and financial functions; Reed will maintain responsibility for **Internet, technology**, human resources and legal issues

(S)

Document nyta000020010828dv7u013uu

The New York Times

Circuits; Section G

Beyond Geography: Mapping Unknowns Of Cyberspace

By PAMELA LICALZI O'CONNELL

1,697 words

30 September 1999

The New York Times

NYTF

Page 1, Column 2

English

(c) 1999 New York Times Company

THE mapping of that vast territory known as cyberspace has begun in earnest.

Cyberspace maps are being produced by geographers, cartographers, artists and computer scientists. They range from glorious depictions of globe-spanning communications networks to maps of Web information.

Many have no geographic references, instead turning to nature, the cosmos or neuroscience for spatial models. They stretch the definition of a map in their effort to capture, sometimes fancifully, what is sometimes referred to as the "common mental geography" that lies beyond computer screens.

The maps hold the potential to change, subtly or perhaps more directly, the relationship of the average person to cyberspace, the world of electronic **communication** that includes but is not limited to the Internet. How people envision the on-line landscape influences their behavior there, experts say.

"We need maps not just to navigate but to define and control new territory," said Martin Dodge, a researcher in the Center for Advanced Spatial Analysis at University College London. "Simply having a map allows a new perspective, a new way to orient yourself. Relationships otherwise obscure may be revealed."

The largest collection of maps can be found at Mr. Dodge's Web site, An Atlas of Cyberspaces (cybergeography.com). The dozens of examples there include many that arise from science and instrumentation, while others are more products of imagination.

"We are in the very early stage of map making -- these maps are far from perfect at the moment," Mr. Dodge said. "Most have been produced outside traditional cartography by people such as data visualization researchers who may not even call their results a map."

Maps of cyberspace fall into two categories: those depicting the physical structure and information traffic patterns of global networks, and those addressing the content and social spaces of the electronic world.

Structural maps, although seemingly straightforward, have proved quite thorny to create. Since the National Science Foundation relinquished its stewardship of the Internet in 1995, there has been no central source of information about the Net's backbone networks and traffic. Instead, there is a jumble of networks owned by phone companies and Internet service providers, some of which do not share information, for competitive reasons.

The Cooperative Association for Internet Data Analysis, or Caida, at the University of California at San Diego develops tools to collect and analyze data about the Net, like the specific paths a test packet of information may follow.

"We are not at a point yet where we are drawing maps with any compelling utility for any particular community," said K. C. Claffy, a researcher with the association, via E-mail. "Though at the same time I contend we are doing 'state of the art' stuff at the frontier of this field. I just think the field's pretty young right now."

Useful or not, the Internet analysis group's maps can be quite beautiful. Some look like pointillist paintings. Others have brightly colored grids and globe-spanning arches, suggesting a world that is deeply, even inescapably, interconnected.

Connectivity, not necessarily geography or distance, is the primary parameter of a cyberspace map, said Gregory C. Staple, president of Telegeography, a company in Washington that provides statistics and maps of the

telecommunications industry. His company has produced maps of "telecontinents," redrawing countries and coastlines to show how the flow of communications has created a new economic geography. At a glance, these maps reveal areas that are the telecommunications haves and have-nots, which Mr. Staple calls "the deep-water ports and teledeserts" of the information age (there are many more deserts than ports). Telegeography also offers maps of the Internet through its Peacock Maps subsidiary (peacockmaps.com).

Geography is completely shunned by some mappers, like William Cheswick, a researcher at Lucent Technologies' Bell Laboratories. "I want to take the Net on its own terms -- it's its own space," Mr. Cheswick argued. "Geographical maps I've seen have not worked very well. They're very blobby."

His maps, like those from the Cooperative Association for Internet Data Analysis, are based on information probes sent to tens of thousands of destinations on the Net. Maps resulting from such probes are featured on his Web site (www.cs.bell-labs.com/who/ches/map/index.html). They look something like promiscuously propagating sea ferns, with countless feathery vines.

Are they useful? Although his maps may inspire awe because of their complexity, Mr. Cheswick explains that until such maps are interactive, allowing access to the database that created them, they are more powerful as symbols, perhaps, than as maps.

Most so-called content maps are interactive and are focused on the portion of cyberspace now most populated: the Web. They are, Mr. Staple said, "the equivalent of land-use maps in the traditional cartographic world."

A new site called Newsmaps.com (newsmaps.com) creates "visual information landscapes" -- grid-based topographical maps -- of Web-based news articles and on-line discussion groups on topics like fears of year 2000 computer problems. Peaks appear on the map where there is a high concentration of documents or messages about the same topic. The distance between peaks shows how topics are related.

In a different approach, the artificial intelligence laboratory in the management information systems department at the University of Arizona at Tucson (ai.bpa.arizona.edu/start.html) drew a map of more than 100,000 entertainment Web sites pulled from Yahoo's database using an automatic-indexing system. The map looks something like a jigsaw puzzle with colored pieces. Users can select categories like movies or comics, or terms like "love" or "beer," and the map will adjust, "shifting down a layer" until a customized map listing specific sites is reached, explained Dr. Hsinchun Chen, head of the laboratory.

Lee Boot doesn't deal in math-based systems. Mr. Boot, a self-described "telemedia" artist who teaches film, video and computer art to high school students in Baltimore County, Md., recently created what he calls a Web Map About Teen-Agers' Happiness (www.bcpl.net/lboot/webmap2). "Mapping and diagramming is basic to the kind of art that I do," Mr. Boot said. "My map is crafted rather than automatic."

The map itself suggests doodles from a brainstorming session. Words of different sizes and colors are arranged within seemingly penciled circles, and lines indicate relationships between terms. A click on a word (say, "drugs") takes you to a site Mr. Boot has chosen on his theme of teen-age happiness. It is, he writes on his site, an attempt both to create "a visual presence" for an issue and to suggest his feelings about it.

Mr. Boot's map was included in an on-line exhibition titled Omnizone: Mapping Perspectives of Digital Culture (www.plexus.org/omnizone), in which artists were asked to contribute "artworks that function (however obtusely) as maps of digital space and culture," a guideline to which most contributors religiously adhered. Another on-line exhibition, an ongoing effort by the Guggenheim Museum called Cyberatlas, set its sites a little broader by not limiting the maps included to those dealing with cultural content (cyberatlas.guggenheim.org/home/index.html). Almost all the maps in both exhibitions are interactive.

"We need to find representations of cyberspace that encourage us to see advantages we can exploit -- ways we can bend and stretch the metaphor of space into new possibilities," said Jon Ippolito, the assistant curator of **media** arts for the Guggenheim and organizer of the Cyberatlas project. "We don't want to be stuck in older geometries."

Is a map of cyberspace, particularly the Web, needed at all? Lev Manovich, an artist and assistant professor in the visual arts department at the University of California at San Diego, argues that the hyperlinked Web "is in a way its own map -- its own reality."

"It's not like a painting, which is a representation of reality," he said.

Still, some people see it as something close to a moral imperative to develop cyberspace maps.

Bruce Sterling, a science fiction author and self-described pop-science journalist, says that such maps could alter our experience of the on-line world. "The best maps won't be true to our experience -- they will serve to refigure and change our experience," he said. "What makes the invisible visible? New metaphors, sometimes, but I'd be betting on better instrumentation. A picture of the Earth from space did more for environmental awareness than any number of ecological urban legends."

The era of personal maps that can provide that sort of perspective is approaching. A company called Invisible Worlds (invisible.net), founded by two men who have helped developed many **Internet technology** standards, Carl Malamud and Marshall Rose, is readying the underlying **technology** that will allow such maps to be created and shared. Although the demonstration on the Web site is not visually compelling, the company hopes that independent developers will create various appealing interfaces as the **technology** catches on.

"Having maps will be like turning on the lights on the information," Mr. Malamud said. "Regular people can experience the structure of the Net as a tool they can use. We can create a conception of space that is good and usable."

The essence of Invisible Worlds' idea is to provide an Up button for people traveling in cyberspace to go along with the current, and restrictively linear, Forward and Back controls. By providing a vista from above, Mr. Malamud said, the user's "viewpoint becomes one of the parameters of the map, or even the key parameter."

Photos: DATA ARCS -- A map by researchers at Lucent Technologies' Bell Labs that represents Internet traffic flow. (Lucent Technologies)(pg. G7); Cyberspace maps can take many forms, including a multilayered map of the space represented by 100,000 entertainment-related Web addresses, above; a real-time representation of Web traffic, far left, and the featherlike tracings of data routes, left. (University of Arizona; Lucent Technologies and Telegeography, 1999; (University of Illinois)(pg. 1) Map: UNDERGROUND INSPIRATION -- A Web site map patterned after maps of London's subway system. (British Telecommunications P.L.C.)(pg. G7)

Document nyt000020010828dv9u01hfr

The New York Times

Business/Financial Desk; Section C

Venture Offers Outsourcing For All Computer Services

By LAWRENCE M. FISHER

511 words

9 August 1999

The New York Times

NYTF

Page 6, Column 5

English

(c) 1999 New York Times Company

SAN FRANCISCO, Aug. 8 -- For every small **business** owner who has struggled with personal computers that crash, printers that won't print and networks that don't network, Sheldon Laube says he has the answer. His new company, Centerbeam Inc., will offer complete outsourcing of information **technology**, all for a single monthly per-user fee.

Mr. Laube, the co-founder of U.S. Web Inc. and former chief **technology** officer for Novell Inc. and Price Waterhouse, said Centerbeam would offer the first truly "free" PC, as in free of hassles.

"The whole idea is you don't buy computers any more," said Mr. Laube, who intends to announce Centerbeam's plans on Monday. "You buy a service from us and we buy all the pieces and worry about making them work."

For the monthly per-user fee of \$165, customers get PC's loaded with the Microsoft Corporation's forthcoming Windows 2000 operating system, the Microsoft Office suite of applications, a wireless network using equipment from Lucent Technologies Inc., and a fast link to Centerbeam and the Internet using a type of high-speed telephone connection known as digital subscriber line, or D.S.L. Centerbeam will provide remote management and service, including backing up all data every day, and automatic software upgrades. The personal computers will be upgraded at least every two years.

Analysts say the venture gains credibility from the track record of Mr. Laube, who directed the first major installation of Lotus Notes for Price Waterhouse, and who helped U.S. Web -- now known as U S Web/ CKS -- create its **business** of providing **Internet technology** and marketing services on a contract basis. But they said it might be a tough sell to companies that already had substantial investments in information **technology** unless Centerbeam can show clear evidence of cost savings.

"In the large-account market, we've seen a clear trend toward **technology** being treated almost as a utility, and this brings that cost-per-seat model to small accounts," said Charles Smulders, an analyst with Dataquest. "I think there will be a period of concept testing, and it will be very important for Centerbeam to use companies as evidence of the worth of their offering."

Based in Santa Clara, Calif., Centerbeam raised \$20 million in its first round of venture capital. Investors included Crosspoint Venture Partners, Accell Partners, New Enterprise Associates, Microsoft and U S Web/CKS. Mr. Laube said he was in negotiations with a major personal computer manufacturer to be the exclusive supplier of hardware, and that the service would commence as soon as Microsoft makes Windows 2000 available, which is expected this fall.

Mr. Laube said Centerbeam would not have been possible without Windows 2000, which promises to be much more stable than previous Microsoft operating systems, or without inexpensive PC's, wireless networking and digital subscriber lines. "The key is the pieces have all come into place," he said. "That's why this is the moment."

Document nytf000020010828dv89016eu

The New York Times

Business/Financial Desk; Section C
Microsoft Calls Its Own Character Witness

By STEVE LOHR
691 words
17 June 1999
The New York Times
NYTF
Page 6, Column 4
English
(c) 1999 New York Times Company

WASHINGTON, June 16 -- At its antitrust trial, the Microsoft Corporation today presented its leading character witness, a folksy, plain-spoken industry veteran who delivered a message that pleased Microsoft's lawyers but will surely make its marketing executives cringe.

In testimony that traced his 25 years in the **business**, Gordon E. Eubanks Jr. portrayed the software **business** as an entrepreneurial hotbed, fast changing and fluid, where today's dominant company can quickly become tomorrow's also-ran.

And Microsoft is under threat today, Mr. Eubanks said, because the center of gravity in computing is shifting rapidly beyond what he called the "PC centric world" ruled by Microsoft and its Windows operating system.

The key, Mr. Eubanks told the court, is that software programmers are writing more and more programs to run on **Internet technology**, notably on browsing software, instead of on Windows.

"The momentum of development for writing programs has gone to the browser," testified Mr. Eubanks, president of Oblix, a Silicon Valley start-up.

The browser comment -- though meant to suggest that Microsoft is no entrenched monopolist -- supports the Government's case, according to David Boies, the Justice Department's lead trial lawyer. The Government charges that Microsoft illegally moved to thwart competition in the browser market because the browser can serve as an alternative **technology** to the operating system.

"He made our point -- the importance of the browser -- and Microsoft's use of its monopoly power to protect its operating system monopoly and to extend its monopoly into Internet software," Mr. Boies said after Mr. Eubanks left the stand.

During his afternoon cross-examination, Mr. Boies attacked the credibility of Mr. Eubanks as a witness, portraying him as a Microsoft ally and dependent. To try to undercut his testimony, the Government introduced documents and E-mail showing that at his current company and at Symantec Corporation, where Mr. Eubanks was chief executive until earlier this year, peaceful accommodation with Microsoft was a priority.

The Government introduced a 1997 agreement stating that Symantec, best known for its Norton Utilities and anti-virus software, would get "early access" to Windows **technology** in return for agreeing to make Microsoft's Internet Explorer browser its favored, or default, browser and using Microsoft's version of Java, an Internet programming language created by Sun Microsystems Inc.

Presented with a copy, Mr. Eubanks said he was "not aware" of that stipulation in the contract. And a Microsoft lawyer said last night that those provisions of the contract were never invoked.

Under cross-examination, Mr. Eubanks said that he agreed to testify on Microsoft's behalf after he was asked to by William H. Gates, the Microsoft chairman. He also said that Microsoft had asked him to write opinion pieces favorable to Microsoft for the Op-Ed pages of newspapers, and that he had.

The Government also introduced an E-mail from the chairman of his current employer, Oblix, saying the company depended on its relationship with Microsoft, adding, "We need to be totally in bed with them."

The Government even introduced internal Microsoft E-mail suggesting rankings of "friend, enemy or neutral," for software companies. The document came from another antitrust suit against Microsoft, and according to a Microsoft lawyer dealt with a suggested list of companies that might receive royalty waivers from Microsoft. The recommendations were never carried out, he added.

Mr. Eubanks described the software industry as one that lends itself to "natural monopolies" for periods of five to 10 years, but that these dominant companies over the years have all been unseated by the next wave of **technology**.

Mr. Eubanks was called by Microsoft to explain the industry context for the court. He has no firsthand knowledge of the **business** practices and disputed episodes that are at the center of the Government's suit.

"The Government would have you believe that somehow this industry is not working properly," said William H. Neukom, Microsoft's general counsel. "This is a witness for the proposition that this industry is working just fine -- that it is highly competitive, innovative and entrepreneurial."

Document nytf000020010828dv6h00xc1

The New York Times

Section C

SIEMENS-CLARENT DEAL

43 words

4 October 1999

New York Times Abstracts

NYTA

Pg. 16, Col. 5

English

(c) 1999 New York Times Company

Clarent Corp, maker of equipment that transmits telephone calls using **Internet technology**, will announce that Siemens of Germany, one of world's biggest makers of telecommunications gear, has agreed to incorporate Clarent's **technology** into its products

(S)

Document nyta000020010828dva401fwt

The New York Times

Business/Financial Desk; Section C
Web Concession From Microsoft

By SAUL HANSELL

262 words

2 July 1999

The New York Times

NYTF

Page 16, Column 3

English

(c) 1999 New York Times Company

In a symbolic concession that it cannot control all facets of **Internet technology**, the Microsoft Corporation has agreed to license the latest audio and video player from Real Networks rather than favor its own less popular competing product.

Real Networks developed the Real Audio and Real Video formats that Internet services use to put sound and video clips on their Web sites. Microsoft's competing **technology** is the Windows **Media** Player.

WebTV, which Microsoft bought for \$425 million in 1997, offers a service that allows people to surf the Internet through their television sets. It has 800,000 subscribers.

Before Microsoft bought the company, WebTV included a Real Audio player in its service. But under Microsoft, it did not upgrade to the three most recent versions.

At the same time, Microsoft's relations with Real Network were souring. Robert Glaser, Real's founder and chief executive, is a former Microsoft executive, and Microsoft had owned 10 percent of his company. But last year, Mr. Glaser accused Microsoft of trying to "break" his software, as it moved to favor the Windows **Media** Player. Microsoft last fall sold its Real Networks stock.

In recent months, however, WebTV's surveys of users found an increasing number of complaints about the lack of the latest Real Audio player. Real Networks says that 85 percent of the audio and video programming on the Internet uses its formats.

"We needed to do this to make our customers happy," said Phil Goldman, a general manager at WebTV.

Document nytf000020010828dv720109s

The New York Times

COMPANY NEWS

Business/Financial Desk; Section C

TERAYON COMMUNICATION TO BUY 2 ISRAELI COMPANIES

Bloomberg News

144 words

13 October 1999

The New York Times

NYTF

Page 4, Column 1

English

(c) 1999 New York Times Company

Terayon **Communication** Systems Inc., a cable modem maker, agreed yesterday to buy two closely held Israeli companies for about \$150 million in stock to broaden its line of telecommunications products. Terayon, based in Santa Clara, Calif., said it would buy Telegate Ltd. for about \$100 million to gain equipment for providing telephone services over cable television wires. It will also pay about \$50 million for Radwiz Ltd., which makes gear for small businesses that routes voice and data traffic using high-speed **Internet technology**. Terayon also said its third-quarter loss from operations narrowed to \$1.7 million from \$6.5 million a year earlier. Terayon shares fell \$3.1875 each, to \$41.9375. The company disclosed the acquisitions and results after the close of United States markets.

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The New York Times

Business/Financial Desk; Section A
AT&T Conjures Up Its Vision For Cable, but Can It Deliver?

By SETH SCHIESEL

1,581 words

7 May 1999

The New York Times

NYTF

Page 1, Column 3

English

(c) 1999 New York Times Company

In a series of deals over the last year that culminated in its agreement this week to acquire Mediaone Group Inc., the AT&T Corporation has committed itself to spending more than \$90 billion on a technological vision that is largely untested and that may not exist anywhere but on AT&T's drawing boards.

The promise is great: a system that could allow AT&T to provide competition against Baby Bells in local phone markets through cable connections -- even while delivering interactive television, which could allow viewers to select their own camera angles or replays, and lightning-quick Internet access to households more accustomed to molasses-like speeds.

But the technical and organizational challenges standing between that vision and AT&T's present are so great that one AT&T executive likened AT&T's ambitions to launching a space station. It is one of the most grand technical voyages in communications since the old Ma Bell starting stringing telephone wires across the nation.

"We need to figure out how to build it, how to deploy it, how to support it, how to maintain it," C. Michael Armstrong, AT&T's chairman, said yesterday in an interview. Referring to new customers, he added: "The issue is not doing this for a few hundred people a month. It's for tens of thousands of people a month."

Yesterday, AT&T enlisted the Microsoft Corporation, the leviathan of software, to help in that effort. As expected, it agreed to invest \$5 billion in AT&T while AT&T agreed to use Microsoft's software in some of the advanced television set-top boxes AT&T plans to use to deploy its vision into living rooms. [Page C1.]

But the \$90 billion that AT&T has already committed to its vision is just to acquire Tele-Communications Inc., in a deal that was announced last summer, and Mediaone, in an agreement formalized yesterday. Now billions more must be spent turning relatively raw assets into systems that can deliver the dream.

It will probably take years for most people, even those in AT&T's cable markets, to see tangible results of the company's ambitions. And it is not clear if customers will end up footing the bill for AT&T's plans, though AT&T is well aware that its pricing will have to undercut local telephone incumbents if it is to have much chance of success.

Put simply, the main technical challenge for AT&T and for the customers it wants to serve is that AT&T is trying to get cable television networks to do things that they were never meant to.

Traditional cable networks are well suited for their original job: transmitting television images. Cable networks have high capacities for information; a cable subscriber's home is generally receiving every channel at once while the set-top box serves only as a filter to display one at a time.

But traditional cable networks are built to transmit information in only one direction: from the company toward the user, and not the reverse.

That poses a problem for telephones, which inherently provide a two-way service. Traditional telephone networks are in some way the obverse of cable systems: they easily transmit communications in two directions, but they do not have to carry much information at the same time. Broken down into the ones and zeros of digital communications, a phone call is a subcompact beside the tractor-trailer of a single television channel.

"Think of the copper telephone wire as a very thin but very intelligent pipe," said Sender Cohen, a data communications analyst at Lehman Brothers, "and the cable wire as very fat but very dumb."

So AT&T's first challenge is to make the cable systems it has agreed to acquire in some ways more like two-way telephone systems. That project, which requires the deployment of new equipment into cable hubs across the country, has already cost the cable industry billions of dollars, and in Mediaone, AT&T is set to acquire a cable operator with one of the most advanced networks in the industry, but one that still requires upgrades. AT&T has also struck partnerships with the Comcast Corporation and Time Warner Inc., two big cable operators, to offer telephone service using those companies' systems.

But even once a cable system has been adapted to send and receive information, it is still not ready for the digital future. To offer high-speed Internet service, big investments must be made in high-speed Internet switches that can route millions, even billions of bits of digital information from one point to another every second. Even more daunting is the prospect of offering telephone service.

Every house that intends to switch from conventional to cable-based phone service must be visited by a technician to install a box on the side of the house to connect the home's internal telephone wiring to the external cable wire. Big telephone switches the size of a truck must be purchased and configured, almost by hand, to link with the cable network.

Then there are a myriad of seemingly mundane concerns that nonetheless could be vital to consumers. For instance, allowing people to keep the same phone number when they switch to cable-based phone service can be quite complicated. Instead of a certain number routing to a Bell Atlantic phone switch, for instance, a call to that same number from across the country must now route seamlessly to an AT&T switch using a Mediaone cable network.

Another challenge is that traditional cable systems generally use public power. When there is an electrical blackout, the cable television also fails. But the phone almost always works, even during a blackout. That is because telephone companies often generate their own power and because phone wires carry power as well as communications. To match the reliability of standard phone service using cable systems requires big investments of money and ingenuity in complicated power generation systems.

All of these technical challenges are just to offer phone service using conventional telephone **technology**, known as circuit switching, albeit over cable wires. To offer phone service over cable lines using **Internet technology** is even more complicated. In fact, the **technology** to do so reliably does not even exist yet. Mr. Armstrong said that he does not anticipate using Internet phone systems until 2001.

The upshot for AT&T is that all of the billions of dollars and millions of hours it will spend on the technical challenges may pale beside the time, effort and money it will spend revamping its organization and deploying the anonymous "back office" computer systems that are the backbone of any modern **business**.

Moreover, internal billing and customer information systems for AT&T will have to be added and revamped to support a broad range of services for millions of customers who expect to be billed promptly and accurately.

"These companies will win or lose on the billing battle field," said Howard Anderson, managing director of the Yankee Group, a **technology** consulting firm in Boston.

Referring to AT&T's main **business** of selling long-distance service, a relatively simple product, he added: "It's one thing to send you a bill for long-distance minutes. It's just the time of day, the price and whatever stupid plan you bought. But when you start talking about different television packages and different speeds of data, you're talking about many more variables. And soon those bills will have to be delivered electronically."

AT&T is well aware of the incredible complexity of its ambitions. It has enlisted Lockheed Martin, the big military contractor with experience in managing complex projects, to help keep track of all of the undertaking's moving parts.

"The biggest issue where management attention has to be applied is to integrate all these things and cause them to come together in a way that's coherent," said John C. Petrillo, AT&T's executive vice president for strategy.

The stakes are especially high for AT&T because its reputation with consumers, built over decades, will be on the line. When a telephone cuts off for no apparent reason, when an Internet connection drops in the middle of a big download, when the television shuts off during the big game, customers rarely forget.

Photo: C. Michael Armstrong, the chairman of AT&T. (Ozier Muhammad/The New York Times)(pg. A1) Chart: "Reaching Out" The agreements that AT&T has forged in the cable industry will let it create a network capable of delivering local phone service to more than 56 million homes and, through its acquisitions, high-speed Internet

access and digital television programming to more than 28 million homes. TIME WARNER CABLE Market: 20.6 million homes Services: Local and long-distance phone connections TELE-COMMUNICATIONS INC. 19.7 million Services: Local and long-distance phone connections, digital television and high-speed Internet access MEDIAONE 8.5 million Services: Local and long-distance phone connections, digital television and high-speed Internet access COMCAST 7.4 million Services: Local and long-distance phone connections (Source: Paul Kagan Associates)(pg. C5)

Document nytf000020010828dv5700p84

The New York Times

Business/Financial Desk; Section C
Compaq to Sell Small Stake In Alta Vista Search Site

By SAUL HANSELL

691 words

27 January 1999

The New York Times

NYTF

Page 2, Column 5

English

(c) 1999 New York Times Company

The Compaq Computer Corporation said yesterday that it would sell a minority stake in its Alta Vista service to the public as part of an effort to build a leading player in advertising and shopping on the Internet.

The announcement comes just days after extended negotiations between Compaq and Time Warner Inc. collapsed, according to executives familiar with the talks. Time Warner was going to exchange its extensive Internet operations, including sites linked to its magazines, CNN and Warner Brothers entertainment properties, in return for a big stake in Alta Vista, the people said. The talks ended, among other reasons, because Time Warner was not willing to cede Compaq any control over its news and entertainment content, the executives said.

Eckhard Pfeiffer, Compaq's chief executive, said in an interview yesterday that Compaq now wants to control its own Internet strategy.

"As we dug into the capabilities of Alta Vista, we concluded that rather than give away the tremendous opportunity we had, we would make the leap into the Internet space in a much broader way than we have until now," he said. "We intend to be among the top three leaders in the industry."

Until now, Alta Vista had mainly been known for its vast index that allowed people to search millions of pages on the Internet to find a specific word or phrase. It was started mainly to be a demonstration of **Internet technology** by the Digital Equipment Corporation, which Compaq bought last year.

As the stock market valuations of Internet companies have surged in recent months, Compaq has realized that Alta Vista may well have been one of the Digital's unappreciated crown jewels.

Compaq will establish Alta Vista as an independent company based in Palo Alto, Calif. It will be run by Rod Schrock, the executive who introduced Compaq's Presario line of consumer personal computers, which are now the sales leaders in their class.

The company hopes the stock offering will be in the second half of this year or early next year, Mr. Pfeiffer said.

Analysts said that in today's market, an offering could value Alta Vista between \$1 billion and \$2 billion.

Compaq said it wanted Alta Vista to expand from merely a search service to resemble what have come to be known as portal sites because they are doorways to everything from news to chat rooms to shopping.

To flesh out Alta Vista's offering, Compaq had been upgrading the site with more features and had also engaged in a flurry of deal making.

Two weeks ago, Compaq agreed to buy Shopping.com, an Internet retailer that had been plagued by accounting irregularities and management changes. While its sales have been small, Shopping.com has links to suppliers to offer a very wide range of products from doghouses to disk drives.

Yesterday, Compaq said it would offer electronic mail on the site using software based on Microsoft's Hotmail service. It will also use Microsoft's chat software when it is released this spring. In exchange, Compaq will allow Microsoft to use Alta Vista **technology** to provide Internet searches on its MSN Web site. (Now Microsoft has been paying another search company, Inktomi, to operate its search service.)

And Compaq is looking to replace the abandoned Time Warner deal with another arrangement with a **media** company, which could provide information content, perhaps in return for a partial stake in Alta Vista, Mr. Pfeiffer said.

Alta Vista faces stiff competition in the portal **business**. The leaders are Yahoo and America Online, which has recently bolstered its presence on the World Wide Web with an agreement to buy the Netscape Communications Corporation. Other aspirants include Microsoft's MSN network, the Walt Disney Company's Go Network, and Excite, which recently agreed to be bought by At Home.

And analysts said they do not yet see how Alta Vista will rise above the pack.

"The hard part is to give people something better than they already have," said Paul W. Noglows, an analyst with Hambrecht & Quist.

Document nytf000020010828dv1r005gd

The New York Times

Business/Financial Desk; Section C
BUSINESS DIGEST

635 words

2 July 1999

The New York Times

NYTF

Page 1, Column 1

English

(c) 1999 New York Times Company

House Approves Measure To Drop Financial Barriers

The House of Representatives approved legislation that would deregulate the nation's financial system by removing the last remnants of Depression-era laws that have largely kept banks, securities firms and insurance companies from entering one another's businesses.

The legislation was adopted by a 343-to-86 vote after several contentious issues were pushed aside. Despite new opposition that developed by some Democrats, the measure was largely endorsed by the Clinton Administration. It will now be forwarded to a conference committee, where the lawmakers will try later this summer to reconcile it with a different version that the Senate adopted. [Page A1.]

Summers Wins Senate Approval

Lawrence Summers, left, won Senate approval to become Treasury Secretary, promising to follow the economic course set by Robert E. Rubin at the helm of the world's top economy. The Senate voted 97-to-2 in favor of Mr. Summers, President Clinton's choice to replace Mr. Rubin, who could step down as early as today. As Treasury chief, Mr. Summers faces wrangling over Mr. Clinton's tax and trade policies and his role in International Monetary Fund bailouts. [C3.]

GTE Sues Insurers Over Year 2000

GTE has sued five insurance companies seeking \$400 million to cover its spending on Year 2000 computer repairs in a case that tests what expenses insurers must cover. [C2.]

Nasdaq and S. & P. Reach New Highs

Stock prices climbed, despite a rise in interest rates. The Dow Jones industrial average advanced 95.62 points, to 11,066.42. Records were set by the Nasdaq composite index, which was up 20.06 points, to 2,706.18, and the Standard & Poor's 500-stock index, up 8.25 points, to 1,380.96. The yield on the 30-year Treasury bond rose to 6 percent from 5.96 percent. [C5.]

Coke Recalls Some Drinks in Poland

Following the discovery of mold inside one batch of glass bottles earlier this week, Coca-Cola is recalling all of its soft drinks in the same-sized bottles in Poland. [C4.]

Microsoft to Use Rival's **Technology**

In a symbolic concession that it cannot control all facets of **Internet technology**, Microsoft has agreed to license the latest audio and video player from Real Networks rather than favoring its own less popular competing product, Windows **Media** Player. Microsoft will use the Real Networks software in its WebTV service, which allows people to surf the Internet through their television sets. [C16.]

Chrysler Sales Fell 5% in June

Surprising analysts, DaimlerChrysler reported that sales of its Chrysler-brand vehicles declined 5 percent in June, which had been expected to be one of the auto industry's best sales months ever. [C16.]

Despite congested streets and aging bridges, the New York area has become one of the nation's hottest markets for sport utility vehicles. Sales have doubled since 1994 and they show no signs of slowing. [A1.]

Woolworth Accused of Age Bias

In its last few years of existence, the F. W. Woolworth Company illegally dismissed hundreds of older employees, often replacing them with younger ones, a Federal lawsuit charges. The company, renamed Venator, denies the charges. [A15.]

U S West to Begin Talks With Qwest

U S West's board agreed to allow management to enter into preliminary merger talks with Qwest Communications International. [C18.]

Chart: "YESTERDAY" Dow Industrials -- 11,066.42 up 95.62 30-yr. Treasury yield -- 6.00% up 0.04 The Dollar -- 120.78 yen down 0.15 Graphs: "TODAY" show percent change in unemployment from Dec.1998 through May 1999 and percent change in factory orders from Nov. 1998 through April 1999. Expected figures due today: Unemployment for June: 4.2% Factory Orders for May: +0.9%

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The New York Times

Business/Financial Desk; Section C
Microsoft Executive Denies Key Allegation in U.S. Case

By STEVE LOHR
600 words
18 February 1999
The New York Times
NYTF
Page 2, Column 5
English
(c) 1999 New York Times Company

A Microsoft Corporation executive yesterday denied a key allegation in the Government's antitrust case -- that the company had both threatened its main rival in the Internet software **business** and made it an illegal offer to divide the market.

In his 90-page direct testimony, Daniel Rosen, a Microsoft general manager, called those portrayals of a June 1995 meeting between executives of Microsoft and the Netscape Communications Corporation as "either fabrications or the products of a fundamental misunderstanding."

Mr. Rosen offered his own detailed account of the disputed meeting and the events surrounding it.

The meeting is a pivotal episode in the Government's suit. After Netscape declined Microsoft's offer to divide the Internet browser market, the Government contends, Microsoft embarked on a pattern of anticompetitive behavior intended to thwart the challenge posed by Netscape.

In his written testimony, Mr. Rosen, who led the Microsoft team at the June 1995 meeting, angrily dismisses those allegations as "misleading," "outrageous" and "rubbish" -- directly contradicting the testimony of the Government's leadoff witness, James Barksdale, the president of Netscape.

Judge Thomas Penfield Jackson, who will decide the outcome of this nonjury trial, must determine which witness is more credible.

Mr. Rosen said that in late 1994 Netscape tried to license its browser to Microsoft and said it would not compete head-on with Microsoft -- only to change its strategy and its story later. Mr. Rosen cites an E-mail he received on Dec. 29, 1994, in which James Clark, the chairman of Netscape, stated, "We have never planned to compete with you."

Mr. Clark went on to describe Netscape's browser as "client" software, a way to distribute its **technology**, but that its main **business** would be selling Web server software to corporations.

Mr. Barksdale testified that Mr. Clark sent this E-mail in a "moment of weakness," and had not told others at Netscape of his overture. Indeed, Mr. Clark's E-mail ends, "No one in my organization knows about this message."

But Mr. Rosen notes that Mr. Clark's "moment of weakness" lasted at least several days, since he had tried to send it, using an incorrect E-mail address, to another Microsoft executive earlier in the month. Besides, Mr. Rosen said, the Clark E-mail was consistent with conversations he had had during that time with other Netscape executives.

At the four-hour meeting in 1995 at Netscape's offices, Mr. Rosen insists, it was Netscape executives who brought up the issue of the "line" dividing the **Internet technology** Microsoft planned to put into Windows and Netscape's Internet software that would run on top of Windows.

Microsoft replied that its priority was to "establish Microsoft ownership of the Internet client platform for Windows 95," as Mr. Rosen wrote in an E-mail to William H. Gates, Microsoft's chairman, and other senior Microsoft executives a day after the meeting.

Later in the message, Mr. Rosen wrote, "we discussed sucking most of the functionality of the current Netscape browser" into Windows, confining Netscape's future development mainly to add-ons. Yet, Mr. Rosen reported, "They seemed O.K. with this concept."

In addition, Mr. Rosen said, the Microsoft team suggested that licensing Netscape's browser **technology** for "the non-Windows platforms might be a reasonable part of a larger strategic relationship."

The Government and Netscape regard these as the ingredients of an illegal market-division offer, while Mr. Rosen says the discussions were "entirely consistent with lawful, and commonplace, **business** practices."

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The New York Times

IN PERSON

New Jersey Weekly Desk; Section 14NJ

From Private Anguish, a Public Figure Emerges

By LAURA MANSNERUS

1,833 words

21 March 1999

The New York Times

NYTF

Page 4, Column 1

English

(c) 1999 New York Times Company

An article last Sunday about the Assembly campaign of Edward G. Werner misstated the status of the case against the man accused of murdering his son. Samuel Manzie pleaded guilty to the crime on March 19 and is to be sentenced on April 14. He will not go to trial as scheduled on April 12.

CORRECTED BY THE NEW YORK TIMES WEDNESDAY MARCH 28, 1999

JACKSON TOWNSHIP -- After his son was killed, Edward G. Werner's first public appearances -- occasions of grief -- were difficult ones. Then Mr. Werner warmed to addressing local audiences about victims' rights and child protection. He will be even more practiced soon because he will be campaigning for a seat in the New Jersey Assembly.

It has been 18 months since his son Eddie, 11, was raped and strangled, his body left in a wooded lot across the street from the home of the 15-year-old who was charged with the crime. Reporters and television cameras crowded the distraught family at Eddie's funeral, and for months strangers offered comfort to Mr. Werner and his wife, Valerie, at the grocery store, the hardware store, the line at McDonald's.

"We've gotten to be public people whether we wanted to or not," Mr. Werner said. And with his announcement that he will seek the Democratic nomination to represent the 30th Assembly District, he has joined a small fellowship of people drawn into public life after violent crimes devastated their families.

Perhaps the best known is Representative Carolyn McCarthy of Long Island. Her 1996 campaign for Congress grew out of her lobbying for gun control after her husband was killed and her son wounded in a gunman's 1993 attack in a Long Island Rail Road car.

Sarah Brady also lobbies for gun control as head of an advocacy group in Washington that she joined after her husband, James S. Brady, was wounded in the 1981 assassination attempt on President Ronald Reagan. John Walsh, whose 6-year-old son was abducted and slain in Florida, left his career in hotel management to become a spokesman for missing and exploited children.

Representative McCarthy said her lobbying efforts in support of an assault-weapons bill in New York goaded her into politics. "So many people shut the door in your face, and that probably made my final decision to run," she said in a telephone interview from her office in Washington. "It might have been the frustration meeting these politicians who give the impression that they don't care."

A lifelong Republican running as a Democrat, she unseated the incumbent with 57 percent of the vote.

Mr. Werner, 38, a securities lawyer, has never run for office, either, not even in high school. He has no experience in party politics; in fact, he was a Republican until five months ago. He acknowledges his inexperience and his disadvantage in a solidly Republican district.

As he explained this, Mr. Werner and his wife were sitting in the den of the two-story house they bought when they gave up on New York City eight years ago. The backyard is filled with playground equipment for Kellie, 10, Thomas, 7, and Laura, 4. Above the mantel are formal pictures of the three children and their brother, who was the oldest.

"Those are all a few years old now," Mrs. Werner said, "but I'm having trouble taking them down."

Eddie was killed while selling candy door-to-door for his school's P.T.A. Within days the police arrested a 15-year-old neighbor, Samuel Manzie, who had a history of psychiatric problems and who had been lured, on the Internet, into an affair with a paroled pedophile.

In their mourning, the Werners were visited by Maureen and Richard Kanka of Hamilton Township, whose 7-year-old daughter had been murdered by a convicted sex offender. Mrs. Kanka was especially active in advocating the legislation that became known as "Megan's law," requiring that communities be notified when a paroled sex offender moves into their area.

At an interfaith service on the Thanksgiving after Eddie's death, Mr. Werner gave a speech thanking the people of Jackson for their comfort and help. He said that appearance was probably the first time someone said, "You ought to run for office."

Not long after, he spoke at a State House news conference with legislators who supported a ban on door-to-door sales by children in public schools. The bill has died, and Mr. Werner would like to revive it, and to push for mandatory life sentences for child molesters.

But recently he has taken up another issue, the **regulation** of group homes for the developmentally disabled. When he learned that the state planned to open one in Jackson, he joined the neighbors who opposed it and with them drew up proposals for legislation that would bar people with histories of violence or sexual misconduct from group homes and require round-the-clock professional supervision. Mr. Werner then spoke before township councils around the state, urging them to send resolutions to Trenton in support of the regulations.

Mr. Werner complains that Assemblymen Melvin Cottrell and Joseph R. Malone 3d, both Republicans, have been unresponsive to neighbors' complaints about the home in Jackson.

"They're exactly the type of people the government should be there to help," Mr. Werner said. "I don't think that would have happened if they'd been rich or if they'd had lobbyists and interest groups looking out for them."

Mr. Malone said he and Mr. Cottrell had introduced an Assembly resolution to set up a task force to examine eligibility for group homes and criteria for choosing sites. Mr. Malone also said he had never heard directly from Mr. Werner. "If he wants to call up and ask me a question, I will give an answer," the Assemblyman said.

The issue became Mr. Werner's first political fight. One meeting brought a heated discussion with State Senator Robert W. Singer, a Republican from Lakewood.

Ethan Ellis, the executive director of the New Jersey Developmental Disabilities Council, a state agency, has criticized Mr. Werner's efforts to restrict the group home program. "It represents the know-nothingness that pervades people's reactions when people with disabilities come to their community," Mr. Ellis said. "His brand of bigotry was going unchallenged because of the unfortunate circumstances of his son's death."

In announcing his candidacy, Mr. Werner touched on some other concerns, including high property taxes and auto insurance rates. Still, he knows that in his campaign he will be identified primarily as Eddie Werner's father, the aggrieved parent who took up the cry for victims' rights.

Representative McCarthy said that image is hard to dispel. "That will probably always be my tag," she said, referring to the countless newspaper and magazine articles that introduce her as "Carolyn McCarthy, who lost her husband on the Long Island Rail Road."

"That hurts," she said. "It's a reminder. It's hard because my life has drastically changed. Everybody who's a victim finds that their lives drastically change."

In her first campaign, "the other side would try to paint me as a one-issue candidate," Representative McCarthy said. "I'd say I'd never met a woman in my life who had only one issue. My main focus now, to be honest, is education."

Mr. Werner's campaign manager, Cecilia A. Richel, who describes him as "a very good debater, very quick on his feet," said, "He always touches people when he speaks."

"The fact of the matter is that because of the horrible thing that happened to his family, he's been put in a position to be listened to," Mrs. Richel said. "When he talks about strengthening Megan's law, he's speaking from his soul."

For now, Mr. Werner and his fellow Democratic candidate, Edward Choquette, face no challengers in the June 8 primary. Mr. Werner expects to drop all campaigning during Samuel Manzie's trial, scheduled to begin April 12.

Mr. Werner has not established a campaign headquarters, and aside from Mrs. Richel has no campaign help lined up. He envisions the simplest of campaigns.

"I'll meet with as many groups as I can," he said, "and on a Saturday afternoon I'll walk up to people in different neighborhoods, asking them what they think should be done."

Mr. Werner does have some training for that: his first job out of college was selling photocopiers door to door in Manhattan. He also lives the life of the middle-class families that he wants to appeal to. He worked his way through law school at night and maintains a solo practice. Mrs. Werner sells accessories at the local Wal-Mart. Their children attend public schools.

In his recent reading -- and Mr. Werner churns through books -- he was especially taken with "One Nation, After All" by the sociologist Alan Wolfe, who contends that Americans have rejected ideologues, especially those of the religious right, and embraced a tolerant if traditional morality.

"Most people who identify themselves as middle class have the same values," he said, lifting the book from a long shelf. "We have more in common than we think we do."

He pointed out other favorites, which lean to political biography. Among presidents, he most admires Lincoln and Truman; on the bookshelf, Washington ("underrated"), Jefferson and Nixon are represented, too.

Also on the shelf are the New Jersey Legislative Manual, a chess guide, and Mr. Werner's favorite book of any genre, "Les Miserables," which he opened to passages that he read aloud with admiration.

Asked what he thought of William Bennett's "Book of Virtues," Mr. Werner picked it up and said, "I loved it." He bought it several years ago, he said, thinking that Eddie would like it.

Photo: Edward G. Werner, at his home in Jackson Township, became active in public affairs after his son Eddie was killed in 1997 while selling candy door to door. A neighbor, then 15 years old, is awaiting trial. Mr. Werner, who plans to seek a seat in the 30th Assembly district, is leading an effort to bar people with histories of violence or sexual misconduct from group homes and to require supervision at all hours. (Laura Pedrick for The New York Times) Chart: "Edward G. Werner" BORN: Feb. 4, 1961, Staten Island HOMETOWN: Jackson Township EDUCATION: 1983, State University of New York at Fredonia, B.A., political science; 1989, New York Law School. CAREER: 1984, Lanier Products; 1984-1985, account manager, RCA ; 1985-1989, Prudential Securities, legal assistant; 1990-1994, PaineWebber Inc., attorney; 1994-1996, Kalmus & Martuscello, attorney; 1996-present, sole practice, Jackson. FAMILY: Married to Valerie Werner; children, Kellie, 10; Thomas, 7; Laura, 4. INTERESTS: Reading, playing basketball, "and I'm something of a political junkie."

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The New York Times

Business/Financial Desk; Section C
Siemens Expects a Rise in Unit's Sales

Bloomberg News
261 words
10 February 1999
The New York Times
NYTF
Page 22, Column 5
English
(c) 1999 New York Times Company

BERLIN, Feb. 9 -- Siemens A.G., Germany's biggest electrical engineering company, expects fiscal year 1999 sales in its information and **communication technology** unit to rise 8.5 percent as it introduces new products and services. The company also said it was seeking partnerships and acquisitions.

The unit's sales are expected to climb to 51 billion marks (\$30 billion) in the period ending Sept. 30 from 47 billion marks in the period a year earlier, the company said today. Siemens is also seeking partnerships and acquisitions in businesses ranging from mobile telephones to computers to **Internet technology**.

Siemens combined its telecommunications and computer businesses into a single unit in October to tap growing demand for products that use technologies from both industries. Partnerships will be key to the company's efforts to wrest market share from industry leaders like Nokia, the No. 1 cellular telephone company, analysts said.

"They've got ambitious goals, but they are too small to go it alone," said Hans Huff, an analyst at Bankgesellschaft Berlin A.G., who rates the shares a "buy."

Siemens said today that it would expand its alliance with a \$100 million joint venture with the 3Com Corporation to develop products to link telephones with office computer networks. Siemens also said it would broaden its product development venture with the Newbridge Networks Corporation of Canada, which makes computer network products.

The company's shares slipped 1.40 euros, to 60.50 euros, in a falling market.

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The New York Times

INTERNATIONAL BUSINESS

Business/Financial Desk; Section C

Siemens Plans U.S. Venture In Data Market

By SETH SCHIESEL

1,007 words

4 March 1999

The New York Times

NYTF

Page 1, Column 5

English

(c) 1999 New York Times Company

Siemens A.G. of Germany is about to expand into the fast-growing data networking **business** by forming a new American subsidiary, acquiring two private companies in the United States, investing in a third and hiring a senior executive from I.B.M., executives close to the company's planning said yesterday.

Siemens, one of Europe's biggest manufacturing companies, is also in preliminary discussions with the 3Com Corporation about paying \$1.2 billion for the 3Com unit that sells networking equipment to telephone companies, the executives said.

Siemens plans to announce on Monday that it has agreed to acquire Castle Networks Inc., a private data networking company based in Westford, Mass., for about \$300 million in cash and Argon Networks Inc., a private data networking company based in Littleton, Mass., for about \$240 million in cash, the executives said. Siemens will also announce an agreement to acquire a \$30 million stake in Accelerated Networks Inc., a private company based in Moorpark, Calif.

The acquisitions will be folded into a new Siemens venture to be based in Boston, the executives said. While the internal code name of the project has been Siemens.com, the new unit may be the first Siemens venture not to include the Siemens name.

Siemens is close to a deal to hire Martin C. Clague, general manager for global network computing solutions at the International **Business** Machines Corporation, to become chief executive of the new venture, the executives said.

Siemens, Castle, Argon, Accelerated and Mr. Clague declined to comment.

Executives close to Siemens said the board of the new company would include Mr. Clague; Fred Fromm, chief executive of Siemens's American operations; Thomas Rambold, president of Siemens's current data networking group; Dan Smith, chief executive of Sycamore Networks Inc. and former chief executive of Cascade Communications, and George H. Conrades, former chairman of the BBN Corporation.

Siemens is a big maker of traditional telephone equipment, though its communications **business** is not as prominent in the United States as in some other parts of the world.

With its string of deals, Siemens is set to become the second European maker of traditional telephone equipment this month to make a big push into the data communications market, which is booming as the Internet expands around the world. The volume of data traffic may soon outstrip the volume of voice telephone conversations on the world's communications networks. On Tuesday, Alcatel of France said it would buy the Xylan Corporation, which makes equipment for linking computers in corporate and institutional networks, for almost \$2 billion.

The exploding popularity of the Internet and corporations' voracious appetite for data have forced the big, old makers of telephone equipment to expand their expertise and product lines. Many of the big communications carriers that spend billions each year to upgrade their systems want to stop operating separate voice and data networks. Instead, they would like to run single networks based in advanced data technologies, layering traditional voice phone calls on top as just another function, like Web browsing or the automated verification of credit card information.

That has set off a frenzy among the telecommunications equipment vendors to fulfill the desire. In January, Lucent Technologies Inc., North America's biggest maker of phone equipment, agreed to spend \$20 billion to buy Ascend Communications Inc., a big data networking player. And last year, Northern Telecom of Canada agreed to acquire Bay Networks Inc. for \$9.1 billion.

According to executives close to Siemens's plan, the company has set aside about 3 billion marks, or \$1.7 billion, to invest in its new venture. The company is considering folding its existing operations in the United States into the venture and selling stock in the subsidiary later this year, the executives said, adding that a final decision on those two possibilities had not been made. A public stock offering could serve Siemens's interests by giving it a currency, in the form of an American stock, to make more acquisitions.

Any deal with 3Com, however, would probably be for cash. 3Com has struggled recently as it tries to manage different businesses: a unit that sells advanced equipment to phone companies, a unit that sells network cards for personal computers to computer makers, a unit that sells modems to consumers and a **business** selling the popular Palm Pilot hand-held computer.

According to executives close to the talks, 3Com recently asked Newbridge Networks of Canada, another company that makes data networking equipment, if it would be interested in acquiring the 3Com unit that sells equipment to big phone companies. But Newbridge declined.

Newbridge has its own alliance with Siemens, but executives close to Siemens said that the relationship was in tatters and that the deals Siemens was about to announce would make that decline clear.

Castle manufactures equipment that makes it easier for traditional telephone systems to communicate with newer products based on **Internet technology**. Accelerated makes products that help allow local phone companies to deploy new, advanced services to their customers. And Argon makes equipment that switches digital information among different points at high speeds. The deal for Argon was first reported last month by The Boston Globe.

The challenge to Siemens and to Mr. Clague will be to integrate the different technologies into a coherent product line and the different companies into a coherent organization. Among the other executives approached by Siemens for the new post were William T. O'Shea and Gerald Butters, two senior Lucent executives, according to executives close to Siemens.

All of the wonders of digital **technology**, however, cannot add more hours to the day. Siemens focused on East Coast companies, executives close to Siemens said, because it wanted to minimize the time difference between Germany and the new American operation. The executives said that Siemens agreed to make a minority investment in Accelerated rather than acquire the entire company partly because Accelerated is based in California.

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The New York Times

Business/Financial Desk; Section C
BUSINESS DIGEST

562 words
3 May 1999
The New York Times
NYTF
Page 1, Column 1
English
(c) 1999 New York Times Company
Shares to Be Offered In Internet-Phone **Business**

In what would apparently be the first initial public offering of stock in a company that focuses exclusively on transmitting phone calls using **Internet technology**, RSL Communications plans to announce today that it intends to sell stock in its Delta 3 subsidiary.

Delta 3 is a leader in the still-developing field known as Internet telephony -- a technique for carrying phone calls using Internet systems that is more cost effective than traditional telephone networks. [Page C2.]

Book Sales Drop 3%, Study Shows

Book sales declined almost 3 percent last year, to 1.04 billion books, the first drop in seven years, indicating that the widely publicized arrival of on-line booksellers has failed so far to expand the market for popular fiction and nonfiction, according to the Book Industry Study Group, a trade group that tracks consumer reading habits. That conclusion may defy the conventional wisdom of some of the top publishers who were gathered in Southern California at the Los Angeles Convention Center for Book Expo America, the annual and sometimes uneasy **business** reunion of independent booksellers and their suppliers. [C13.]

Ban Proposed on Cybersquatting

Speculating in the registration and resale of potentially valuable Internet addresses, known as cybersquatting, would effectively be outlawed under new rules proposed by the United Nations' intellectual property body. The proposal would also give companies and people with claims to famous words or trademarks first rights to certain addresses. [C2.]

Turning the Web Into a Ballot Box

Though no states allow voting over the Internet -- few are even in the earliest stages of contemplating it -- a handful of companies are building systems to enable voters to cast ballots on line. The companies plan initially to sell to nongovernmental users like universities, unions and professional associations. [C4.]

Limits Likely for Weight-Loss Drug

People who are looking forward to slimming down with the help of Xenical, the newly approved weight-loss drug, may have to pay for it themselves. Several managed care companies are pigeonholing Xenical as a life style product that they will cover only in exceptional cases -- for overweight people at risk for cardiovascular problems, or those with diabetes, breathing problems or brittle bones. [C6.]

Shooting Transfixes TV Networks

When the first frightening images flashed onto TV screens from Littleton, Colo., it was clearly an important event, one the cable news networks would cover around the clock. But soon the three main broadcast networks were covering it almost the same way, devoting far more time to this massacre, on their evening and morning news programs and prime-time news magazines, than they had ever allocated to any similar shooting. **Media**. [C13.]

Photos Charts: "LAST WEEK" Dow Industrials -- 10,789.04, up 99.37 30-yr. Treasury yield -- 5.66%, up 0.06 The Dollar -- 119.40 yen, down 0.01 ABC, NBC and CBS spent more time covering the shooting in Littleton, Colo., in the days after it happened than they did covering other recent school shootings. Cumulative time devoted to each

story on nightly news broadcasts MINUTES DAYS Littleton, high school shooting: 15 dead 144 5 1998
Jonesboro, Ark., middle school shooting: five dead 65 4 1997 Paducah, Ky., high school shooting: three dead 40
5 1998 Springfield, Ore., high school shooting: four dead 25 2 (Source: Tyndall Report)
Document nytf000020010828dv5300ohv

The New York Times

Business/Financial Desk; Section C
U.S. Attacks Microsoft Official on Netscape Meeting

By STEVE LOHR
918 words
23 February 1999
The New York Times
NYTF
Page 2, Column 1
English
(c) 1999 New York Times Company

WASHINGTON, Feb. 22 -- The Microsoft executive responsible for dealing with the Netscape Communications Corporation testified today that he did not regard Netscape as a competitor in June 1995. But the Government presented E-mail written at the time in which the witness himself and other Microsoft executives portrayed Netscape as a potentially dangerous rival.

The point is crucial because that meeting between Microsoft and Netscape is a key episode in the Government's antitrust case.

With document after document supplementing his acerbic cross-examination, David Boies, the Justice Department's lead trial lawyer in the case against the Microsoft Corporation, proceeded today with perhaps the most sweeping attack on the credibility of a witness since the trial began last October. Again and again, he tried to point to contradictions between what Daniel Rosen, the witness, was saying today and what he and other Microsoft executives had written and said in the past.

Mr. Boies certainly felt he succeeded. He abruptly cut off his cross-examination in the afternoon as Mr. Rosen repeatedly seemed evasive on the stand, interrupting Mr. Rosen in midsentence and telling the judge, "I have no further questions."

Afterward, Mr. Boies explained his tactic on the courthouse steps. "I thought the points about the witness's credibility had been made," he said.

Microsoft replies that Mr. Rosen was simply trying to be precise about highly detailed discussions of software **technology** and strategy. And Mr. Rosen testified that his belief that Netscape did not intend to compete with Microsoft was based on what Netscape executives told him then.

Mr. Rosen led a team from Microsoft that met with Netscape executives on June 21, 1995, when the Government contends that Microsoft threatened Netscape and made an illegal offer to divide the Internet browser market between them.

After Netscape declined the deal, the Government says, Microsoft embarked on a campaign to crush Netscape, the early leader in the browser market, and stifle competition. Microsoft replies that those allegations are based on a fundamental misunderstanding of what occurred at the meeting.

Mr. Rosen testified that at the time he saw Netscape as a potential partner rather than a bitter rival. Microsoft, he added, was trying to persuade Netscape to adopt the underlying **Internet technology** it was building into its Windows 95 operating system, and then to build software products on top of Microsoft's **technology**. Yet on May 15, 1995, more than a month before the disputed June meeting, Mr. Rosen wrote an E-mail titled "Internet Direction" in which he described the threat that Internet software posed to Microsoft's control of the basic **technology** of personal computer software.

"Microsoft currently controls the base and evolution of the desktop platform," Mr. Rosen wrote. "The threat of another company (Netscape has been mentioned by many) to use their Internet World Wide Web browser as an evolution base could threaten a considerable portion of Microsoft's future revenue."

In court, Mr. Boies asked, "Did you believe that at the time you wrote it?"

Mr. Rosen replied, "No sir."

The Microsoft executive added that his memo was a draft document, which he said he had never sent, and that it represented mostly a summary of thinking within Microsoft.

Then Mr. Boies pointed out that the E-mail bore the heading, "Sent: Monday, May 15, 1995, 12:48 A.M." Mr. Rosen replied that the time in the heading represented when he saved the E-mail on his personal computer and did not necessarily indicate that it had been sent.

But in the afternoon, Mr. Boies presented a Microsoft document list showing that the Government obtained Mr. Rosen's E-mail from Ben Slivka, a Microsoft executive who was listed among the intended recipients of the Rosen message.

"Does that refresh your memory?" Mr. Boies asked.

"Yes," Mr. Rosen replied, "at the least, I sent it to Mr. Slivka." But he added that he still did not believe that he sent the unfinished draft to senior Microsoft executives listed as recipients.

Later in the same memo, Mr. Rosen wrote that Microsoft should try to "strike a close relationship with Netscape" and that Microsoft's goal should be to "wrest leadership of the client evolution from them."

Asked about this passage, Mr. Rosen said that "by wrest, I mean take." But he said again that this referred to underlying Internet software and did not imply trying to push Netscape out of parts of the browser market.

Holding to his testimony that he did not regard Netscape as a rival in June 1995, Mr. Rosen said that a strategy document written by William H. Gates, the Microsoft chairman, in May 1995 was simply wrong. In the document, "The Internet Tidal Wave," which was widely circulated within Microsoft, Mr. Gates called Netscape a "new competitor 'born' on the Internet" and said Netscape's strategy was to "commoditize the underlying operating system" -- a direct threat to Microsoft's lucrative **business**.

Asked about the Gates document, Mr. Rosen said, "I recall when reading this I thought that Bill was probably wrong."

A Microsoft spokesman, Mark Murray, said that the Government's efforts today did not show contradictions in Mr. Rosen's testimony or that Microsoft was engaged in revisionist history to suit its defense. Instead, he said, the testimony and documents merely demonstrated that in 1995 there was "some disagreement within Microsoft about whether Netscape would be a competitor or not."

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The New York Times

Editorial Desk; Section A
Is There Too Much Venture Capital?

By Charles Ferguson

689 words

11 December 1999

The New York Times

NYTF

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English

(c) 1999 New York Times Company

I subscribe to VentureWire, an e-mail newsletter that summarizes new venture capital investments in Internet companies. An average issue lists about 20 deals, usually adding up to between \$100 million and \$200 million. What's striking is that VentureWire comes daily -- and yet doesn't catch everything. Driven largely by optimism about the Internet, investment in American **technology** start-ups will probably reach approximately \$50 billion for this year -- about 10 times more than in 1994.

This eagerness to invest in the latest start-up is, of course, another aspect of the same rush of capital that we are seeing when high-**technology** companies go public. On Thursday, the stock of VA Linux Systems had the biggest first-day gain for any initial public offering in history. This company, which sells computers that run the Linux operating system, faces serious competitors like I.B.M. and Dell, is losing money and will not turn a profit for the foreseeable future. Yet it was valued at almost \$10 billion by the end of the day -- a gain of 733 percent.

But high-**technology** start-ups are not just stocks; They are also businesses, and they have to operate. The giddiness about stock prices is obscuring the real needs of companies.

It didn't used to be this way -- in fact, we used to have the opposite problem. Until very recently, the venture capital industry was a small club, verging on a cartel, and the **technology** sector was for geeks in California, period. Money was tight, particularly during the **technology** sector recession in the early 1990's.

In 1994, I spent five brutal months raising \$4 million for my first company, an early Internet software start-up. At the time, there were maybe a thousand Web sites in the world.

But since the onset of the commercial **Internet revolution** in 1995, money has flooded into the Internet, with the size of the venture capital industry roughly doubling every year. A very real revolution -- the growth of the Internet -- is being accompanied, and sometimes damaged, by an epidemic of speculation.

Fund-raising has become a buyer's market. Venture capitalists now must compete for deals, despite their vastly increased funds and the large number of Internet companies being started.

In many ways, this is good. It is now much easier for entrepreneurs to raise money. I recently founded my second Internet start-up. This time, I raised over \$3 million in the first month.

The Internet has also made business life a lot fairer. You don't have to stay in a big, bureaucratic company anymore; you can join a start-up. You can bypass middlemen and sell directly to the global market. And without a doubt, the Internet wouldn't have come so far so fast if venture funding still behaved as it did a decade ago.

But the fact that virtually any idea -- no matter how dubious -- can obtain money, and that so much money is available, is also causing problems. Competition among Internet companies is increasingly a financial arms race. They must raise huge war chests, give away their products, advertise on television, and pay insanely high salaries -- simply because their competitors do.

The glut of money also has companies -- and the industry as a whole -- growing insanely fast, leading to labor shortages everywhere -- of not only engineers and managers, but graphic designers, accountants, headhunters, telephone system installers.

Fortune seekers, many of them unqualified, flood to the Internet -- both to start companies and to work in them. This leads to sloppy work and some fairly sleazy behavior.

In some respects, the rush and confusion are natural costs of moving forward as a major new **technology** becomes widely available. Relative to the benefits that the Internet brings, these problems are comparatively minor. But the inherent dangers of a speculative environment will eventually hurt many naive investors -- and perhaps, more importantly, they also make life more difficult for serious entrepreneurs.

Charles Ferguson is the author of "High Stakes, No Prisoners: A Winner's Tale of the Internet Wars."

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The New York Times

Market Place

Business/Financial Desk; Section C

Feasting On a Banquet Of Internet Offerings

By EDWARD WYATT

2,001 words

12 April 1999

The New York Times

NYTF

Page 1, Column 5

English

(c) 1999 New York Times Company

Semiconductors in the 1970's. Software in the 1980's. Biotechnology in 1991. The Internet in 1999.

Roughly once a decade, as some emerging **technology** reaches critical mass, start-up companies rush to cash in on the ensuing enthusiasm by selling their stock to the public.

On Wall Street, where nothing succeeds like excess, investment bankers take a Darwinian view of these frenzies, pushing as many companies as possible through the financing process while the public's appetite is whetted but before it is sated.

This year, it is a feast. The eager Internet start-ups are so numerous that investment banks tell of having to turn away potential clients while some companies have resorted to trying creative methods to whisk their documents through regulatory approvals. A company might list itself in the transportation industry, for example, if it plans to sell airline tickets over the Internet.

Barring a midsummer market collapse, more than 100 newly public companies might be competing for the attention of investors before the usual August break of investment bankers, finance professionals say.

"We've certainly seen other booms, but we've never seen anything like this," said Kenneth R. Fitzsimmons, director of capital markets at BancBoston Robertson Stephens, the San Francisco firm that has been one of the biggest underwriters of Internet stock offerings in the last six months. "The market is far more frenetic, and companies are getting higher absolute valuations than ever before."

The bankers typically scrutinize a company's financial condition and **business** plan, and they promise to provide coverage of the stock once trading starts.

Compared with past frenzies, this one is extreme in several ways. Internet-related businesses already account for a bigger portion of the total number of new issues than biotechnology companies ever did, and these new stocks are rising higher and faster than anything in recent memory.

While individual investors and day traders are contributing to the activity, institutional investors like mutual and pension funds are also eagerly chasing companies that many of them would have previously dismissed as speculative. And those big investors, ever mindful of investors' high expectations, are holding onto their shares longer, dampening supply and reinforcing the upward rise of many Internet stocks.

All this interest is putting some strains on the initial-offering system, which usually steers the public's money only to the most promising companies. Jesus Cabrera, who oversees the State Street Emerging Growth fund, says so many Internet companies are jockeying to go public that he cannot make it to all the "road shows," the presentations at which company managers and their bankers use to describe the company's prospects.

His solution: Watch some of the road shows over the Internet, on a service called Netroadshow.com.

"I place value in meeting companies in person so I can see the whites of their eyes," Mr. Cabrera said. "But if I tried to go to them all, I wouldn't have a life," or much time to manage a \$100 million mutual fund.

Portfolio managers might take comfort in knowing that it has been hard to lose money investing in an Internet public offering in the last year. The point was driven home again on Friday, when shares of USInternetworking,

iTurf and Extreme Networks each jumped more than 100 percent from their offering prices in their first day of trading.

Such leaps are typical of the more than two dozen Internet-related companies that have completed initial offerings so far in 1999, and an improvement over the performance of similar offerings last year. Mr. Fitzsimmons said his research shows that Internet offerings jumped nearly 70 percent, on average, in their first day of trading last year.

It is not surprising, then, that Internet-related deals seem to be pushing other offerings aside. According to Thomson Financial Securities Data, almost a quarter of the initial public offerings so far this year have been for Internet-related companies, up from less than 10 percent last year. In 1991, when biotechnology companies were all the rage, those concerns represented about 20 percent of new issues.

The \$9.4 billion raised in all types of new public offerings in the first quarter of this year was a record, leading many on Wall Street to believe that 1999 could follow the path set in 1991, when a hot market for biotechnology offerings led to a record year for underwriters.

Investors, meanwhile, have shrugged at high-profile deals that in past years would have dominated headlines. Consider the two biggest companies to complete recent initial public offerings -- Pepsi Bottling Group and Delphi Automotive Systems.

On March 30, Pepsi Bottling, the largest bottler and seller of Pepsi products, completed the largest initial public offering this year by selling \$2.3 billion of its shares at \$23 apiece. The shares sank more than a point their first day of trading and have since fallen further, closing at \$21.4375 on Friday.

Delphi Automotive, which makes auto components and systems, sold \$1.7 billion of shares at \$17 apiece in early February. Though the shares have spent most of their time at \$18 or more, they have recently slipped to less than the offering price, closing at \$17.4375 on Friday.

"The current I.P.O. market is significantly more concentrated in one sector than I've ever seen it," said Scott Sipprelle, a co-founder of the Midtown Research Group, which tracks initial offerings, and the former head of the equity capital markets division of Morgan Stanley Dean Witter.

That might be diverting money away from promising companies in other industries. Global Markets Access, an insurer based in Hamilton, Bermuda, had planned to raise \$244 million in an initial offering to be underwritten by Merrill Lynch & Company and Prudential Securities but withdrew its offering on March 31, citing market conditions.

It certainly is straining the lives of bankers, lawyers, accountants, printers and others who keep the I.P.O. machine running.

"We've never been this busy, and we're turning things down," said Mr. Fitzsimmons of BancBoston Robertson Stephens. While the firm's committee that reviews underwritings has always rejected some deals because of poor quality, "we're having to pick and choose the deals we do much more now," he said, citing the high volume.

Perhaps of greatest concern to investors, however, is the relative shortage of analysts who understand and can follow the Internet companies once they begin trading. There is an almost endless supply of potential Internet companies -- which are often little more than a **business** plan and some financial projections. But few analysts can make sense of both **Internet technology** and the economic models that will lead to success on the new medium.

David Readerman, a software and Internet analyst at Thomas Weisel Partners, a San Francisco investment bank, notes that while nearly every investment bank has at least two or three bankers working on Internet-related offerings, they have one securities analyst, at most, to follow the companies once the stock is trading.

Analysts will play a far more important role in following Internet companies, Mr. Readerman said, than they did in, say, the biotechnology boom. In the Food and Drug Administration, biotechnology companies had, an outsider to rule on their products' ultimate success or failure. But determining the prospects of an Internet company is more prophesy and conjecture.

People involved in bringing Internet companies to market also complain of a bottleneck at the Securities and Exchange Commission, which must review a company's disclosure documents before granting approval to sell shares.

Investment bankers say the initial review, which is supposed to be completed within 30 days, is taking closer to six weeks. Chris Ullman, an S.E.C. spokesman, denied that backlog; he said that while the average time for review of a filing for initial public offerings had recently been 31 to 33 days, it has now returned to 30 days.

In Silicon Valley there is talk that the fastest way to get an Internet **business** to market is to pretend it's not an Internet company. When companies register with the S.E.C., the documents are initially routed within the agency to industry experts based on the company's Standard Industrial Classification code, a four-digit number indicating the industry in which the company does **business**.

Investment bankers and other Wall Street professionals say that companies have recently been tweaking their industry codes to avoid the queues numbered in the 7370's, which denotes computer systems and software.

That queue has been used by a wide variety of companies, including Priceline.com, which sells discounted airline tickets over the Internet. But two other companies in a similar **business** -- Lowestfare.com and Cheap Tickets Inc. -- used the codes for transportation services and general **business** services, respectively.

Mr. Ullman said that whatever code a company initially files under, the S.E.C. will determine the correct industry and route the filing accordingly. In other words, he advised companies, don't try it.

Companies still cannot get their offerings to the market quickly enough, in part because they fear missing the opportunity before the financing window closes.

Investment managers, on the other hand, cannot seem to buy quickly enough, showing little regard for the outsized valuations at which Internet companies are going public.

"I had lunch with a mutual fund manager the other day and asked if he'd played in these Internet I.P.O.'s," said L. Keith Mullins, who tracks small companies at Salomon Smith Barney. "He said he had, so I asked if he could give me a fundamental reason to own any of these stocks at these prices. He said no. But he added, 'That's what's working right now.' "

Indeed, George S. Shirk 3d, managing editor of the New Issues newsletter, said his publication has recommended that investors "flip," or sell on the first day of trading, nearly every Internet I.P.O. that has come to market this year -- provided that an investor can get shares at the initial offering price, as institutions can but individuals usually cannot.

"We're not seeing a lot that we would recommend for a long-term investor," he said, particularly after trading begins and the stock has already more than doubled.

Though individual investors may be left out of the earliest part of the game, institutions are jumping into deals that, in the not-so-distant past, would have drawn little enthusiasm.

"Demand by institutional investors has gotten much higher because those managers want to show these stocks in their portfolios at the end of each quarter," said Linda Killian, who herself manages a mutual fund that invests in new offerings, the IPO Plus Aftermarket fund.

Whether the quality of the companies coming public has deteriorated is a matter of opinion. A decade ago, only rarely could a company go public without a record of sales growth from three to five years and at least some profits.

In 1997, though, about a third of the companies completing initial offerings were losing money, Ms. Killian said. Today, a similar portion have virtually no sales.

"So if you are simplistic about it and look at traditional measures, you'd have to say that the quality has plunged," she said. "But if you look at it in a different way, maybe not. Hindsight will be a great teacher."

Graph: The Biggest Boom Yet? The actual number of Internet companies issuing stock has not yet reached the levels of biotechnology companies in the early and mid-1990's. But Internet stock offerings account for a larger percentage of all public offerings than biotechnology stocks ever did. Graph tracks number of biotechnology issues and of Internet issues, since 1991. It also tracks share of all stock issues in biotechnology stocks and in Internet stocks, over the same period. (Source: Thomson Financial Securities Data)(pg. C9)

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The New York Times

Magazine Desk; Section 6
What Was War?

By Robert Wright
1,042 words
5 December 1999
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English
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I know what you'll think when I suggest putting a peace symbol in the Times Capsule: that this is an act of mockery, a way to document the ditzzy idealism of the 1960's for a presumably incredulous posterity. You probably expect me to throw in a picture of John and Yoko staging their "bed-in for peace" or of Yippies trying to levitate the Pentagon. But in fact I make this nomination in a post-ironic spirit. I think what will amaze people in 3000 A.D. about peace symbols is not their idealism but the fact that they were ever considered idealistic. The end of war between nations is a nearly certain achievement of the next millennium, if not the next century.

The last time this sort of optimism was fashionable was during the giddy aftermath of the cold war, a decade ago. Since then, of course, we've been sobered up, grimly reminded that bonds of ethnicity and nationality are lethal. Conflicts in the Balkans, the Caucasus, Africa and so on are now taken as proof that a global village doesn't bring peace, that one-worldishness is just as nave in 1999 as it was in 1969 or 1989. But in truth these examples illustrate the opposite.

To see what I mean, you have to first see that the link between the global village and world peace is not the one that John and Yoko might have envisioned: that **global communication** automatically brings mutual understanding, hence peace. If things were that simple, we wouldn't have many wars to begin with. Fighting is typically preceded by talking, after all.

No, another ingredient besides **communication** is necessary. The people doing the communicating have to have a strong interest in peace and understanding to begin with. The key thing about the information **technology** now enveloping the world is the way it strengthens that interest. All those optical fibers are helping create a fine-grained economic interdependence among states. This interdependence makes war less and less a zero-sum game, with a winner and a loser, and more and more a non-zero-sum game -- specifically, a lose-lose, or negative-sum, game: a game you win by not playing.

Fortunately for world peace, rising interdependence is a basic property of history. Civilizations rise and fall, "dark" ages come and go, but in the long run, technological evolution moves in only one direction. From cuneiform to computer, from camel to Concorde, the division of economic labor gets more elaborate and more far-flung; people, and peoples, need one another more.

Today, in the highly globalized capitalist states on the edge of this trend, interdependence is felt more broadly than ever, by armies of businesspeople who communicate with their counterparts in other cultures. In some cases, hard economic interest even leads to a softer, John-and-Yokoish antiwar force: friendship.

In this light, trouble spots in the Caucasus and Africa and the Balkans are understandable. After all, these places are underglobalized. Sure, they have Nikes and Coca-Cola, but they haven't been intricately, organically penetrated by modern capitalism. Even the more economically advanced of these areas, in the former Yugoslavia, missed much of the Industrial Revolution and then spent much of this century under a mild but still retarding form of Communism.

And, anyway, note how much of the recent conflict is traceable to the end of the cold war, which for half a century kept artificial state borders intact around the world. Some transitional reordering is not surprising, and there's probably more to come. But the cold war can end only once. When the dust settles, borders will be more rational, and the logic behind peace will keep growing.

The economic rationale for war's extinction has been around for centuries. Unfortunately, every time it gets trotted out, it seems to get discredited. Immanuel Kant wrote in the late 18th century that "the effects which an upheaval in any state produces upon all the others in our continent, where all are so closely linked by trade, are so perceptible that these other states are forced by their own insecurity to offer themselves as arbiters." Then came Napoleon. So much for Kant.

But Kant was just ahead of his time. Today, war among Germany, France and England, which only decades ago seemed a natural state of affairs, is inconceivable. So the fact that Kosovo and Serbia now seem like eternal enemies isn't cause for despair. Just put U.N. troops along the border, keep tariffs low and check back in half a century.

That the rising tide of economic progress is finally carrying the world through some threshold of dovishness is reflected in a subtle but momentous shift of mind-set: increasingly, we think of wars as things that poor states do and rich states try to stop. This is not the way the world used to work.

Go ahead, try to imagine a fairly affluent, high-tech, capitalist nation, like South Korea, going to war with a similarly advanced nation, like Taiwan. Doesn't work, right? Your war scenario needs a poorer, less-wired nation to serve as aggressor -- a North Korea.

Kant believed that the growing logic behind peace among European states suggested "a great political body of the future, without precedent in the past." Here, too, he was on target. Witness the European Union. True, the E.U. is afflicted by petty nationalism. Brits boycott French apples. Still, if 60 years ago you had predicted that France and Germany would someday have the same currency, the reply would have been: "Oh? Which nation conquered which?"

If you ask me, the European Union is a harbinger of the whole world's future, of a day when peacekeeping has been so routinized, and so many functions of governance have migrated to the transnational level, that the nation-state starts to fade, and keeps fading. But that's another story. For now, all I am saying is give peace a chance.

Robert Wright is the author of "The Moral Animal" and "Nonzero: The Logic of Human Destiny," which will be published next month.

Photo: (Ken Regan/Camera 5)

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The New York Times

TECHNOLOGY: Digital Commerce

Business/Financial Desk; Section C

To win and keep customers in a wired world, companies must provide value. Most haven't figured that out, though.

By Denise Caruso

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IN the early days of the Internet's commercial ascendancy, back in 1996, Jeffrey P. Bezos, founder and chairman of the Internet's retail whale, Amazon.com, made a simple observation that should have signaled problems ahead for **technology** companies that assumed that the information age would be business as usual.

"I hear a lot of people talking about business models, but I don't hear much about customer value," Mr. Bezos said.

If value was indeed going to be the key, a lot of business models were going to have to change -- most notably the telecommunications industry's, on which the Internet was being built. But instead of clanging like a gong in the heads of telecommunications executives, the cautionary logic of those words apparently continues to fall on deaf ears.

Few industries have gorged themselves on digital commerce with greater appetite than the telecommunications companies. But the result has been a wired world that to many customers seems like a cross between the best-known works of Edvard Munch and Jean-Paul Sartre: we scream, but there is no exit.

Telephone services provide a sharp and unfortunate contrast to on-line retailers like Mr. Bezos, who realized early on that keeping customers is a lot easier than losing them to substandard service and continually enticing new ones into the fold.

It is a rare consumer today who has only one horror story to tell. Some engage in regular battle with cellular telephone duopolies and their arcane and incomprehensible pricing structures, which sometimes even charge for calls that their own networks are incapable of delivering.

Others are continually confronted with pager services with sporadic delivery that charge by the alpha-numeric character and employ operators who apparently have no schooling in even the basics of abbreviation.

Still others are engaged in conflicts -- which now involve the Federal Communications Commission -- over so-called casual customer rates for long-distance calls, socking consumers with the functional equivalent of \$28 for a \$1 gallon of gasoline.

What is more, the telephone is the most common bridge to cyberspace, and as Internet and other on-line service providers reach a broader and less sophisticated market, the **Internet revolution** is in danger of becoming a latter-day Boston Tea Party as customer complaints mount about responsiveness and overcharging.

Customer satisfaction rates for companies that were once blue chips in the telephone industry are sinking, said Nick Donatiello, president of the consumer research firm Odyssey L.P.

"AT&T's image, for example, has rebounded somewhat, but it had been declining steadily for the past few years," Mr. Donatiello said. The phone giant was rated "very good" by 63 percent of United States households in 1994 but dropped sharply, to 37 percent, in 1997 in Odyssey's surveys before rebounding to 55 percent last year. "Still, it's not nearly what it was," he added.

Why are these companies, so central to the continued growth of the digital universe, so apparently intractable about providing value to customers?

"The problem," Mr. Donatiello said, is that "virtually everyone in the telecom industry has had the luxury of treating their customers like garbage for a very long time, first because they had a monopoly -- and some still do -- while others have geographic oligopolies."

As a result, he says, they are in a position not to care very much whether customers are satisfied with the quality or value of the services they sign up for.

One of the most profound differences between on-line retail and the business of providing telecommunications, for example, is that customers find it a simple task to compare the prices of a book from several vendors.

In contrast, telecommunications providers -- cellular and long-distance, especially -- seem to take pride in making it almost impossible to do so, with complex rates that vary by day of week, time of day and sometimes, it seems, the phases of the moon.

The ability to comparison shop is one reason consumers are moving to support the trend toward flat-rate services, Mr. Donatiello said.

"Americans don't like to have the meter running on anything that has to do with entertainment, information or **communication**," he said. "That's why we saw such a huge uptick in the adoption curve of on-line services when America Online went to its flat-rate model," now \$21.95 a month.

The single-price model may also account for the popularity of AT&T's Digital One plan, which offers customers in certain cities a flat rate of \$90 a month for 600 minutes of cellular calls to or from anywhere in the United States. The popularity of that plan, in turn, is setting off a frenzy among other wireless providers to offer their own flat-rate plans.

But consumer attitudes suggest that may not be enough. Increasingly, people want to simplify the enormous complexity of their wired lives by buying all their telecommunications-- local phone service, long distance, cellular, cable television and Internet connections -- from a single provider.

And though AT&T again says it is leading the charge with its purchase of the cable television giant Tele-Communications Inc., Mr. Donatiello says consumers apparently do not hold out much hope that even moves this bold will make their lives easier to understand or manage.

"The bottom line is that consumers don't think any kind of company would do a good job" providing a full range of services, he said. "Their No. 1 choice was a long-distance company, and only 37 percent of U.S. households said they would do a good job."

Local phone companies got a 36 percent confidence rating as potential one-stop providers, while cable television companies scored only 21 percent, and Internet service providers a paltry 17 percent.

So in the end, consumer attitudes signal trouble ahead for acquisitive telecommunications companies like AT&T, despite the benefits it promises from its TCI merger and deals with high-speed Internet services like At Home.

"It's worse than the blind leading the deaf," Mr. Donatiello said. "The bad has married the ugly, and somehow they expect the children to be the good. Lip service alone won't get you there -- the first thing they still have to prove is that they're worthy of their customers' business."

Drawing (Tom Bloom)

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