



GLOBAL ISSUES

MEDIA EMERGING



U.S. DEPARTMENT OF STATE / BUREAU OF INTERNATIONAL INFORMATION PROGRAMS
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GLOBAL ISSUES



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Editor, *eJournal USA*
IIP/T/GIC
U.S. Department of State
301 4th Street SW
Washington, DC 20547
United States of America
E-mail: ejglobal@state.gov

About This Issue

Innovation in information technologies has thrust the world into an era of democratic media in which people have access to news and information unbound from traditional barriers of time and geography. Innovation gives rise to new media formats with new models for information distribution, consumption, and use. Traditional lines between the audience and media institutions are crossed as citizens gain access to platforms from which to express their own ideas and opinions, circumventing media corporations and governments, the long-standing gatekeepers of information.

Established media institutions—newspapers and broadcasters—struggle to adapt to a new climate, just as media consumers seize their own territory in the information landscape to create a form of participatory journalism.

Experts and pioneers in these changing technologies share their thoughts on the following

pages, describing the innovations unfolding and offering a vision of what may lie ahead.

Dale Peskin and Andrew Nachison of the American Press Institute's Media Center envision a collaborative information society in a model they call "We Media." Blogging pioneer Dan Gillmor describes how a new form of journalism influences public events. Television veteran Jeff Gralnick looks around the corner to the next new thing. Daniel Larkin explains how the U.S. government's Internet Crime Complaint Center pursues complaints about fraudulent and criminal activity online, which has burgeoned at the same pace as new media and

technological innovation.

These and other experts share their thoughts in *Media Emerging*.

Photo montage: The expansion of Internet technology and other electronic innovations has set off a media revolution, encompassing newspapers, television and radio, the motion picture and music industries, and libraries. (All photographs from AP/Wide World Photos)





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[<http://usinfo.state.gov/journals/irgic/0306/ijge/ijge0306.htm>]



Emerging Media Reshape Global Society

DALE PESKIN AND ANDREW NACHISON

The relationship between traditional media and the public is changing, a trend these information professionals call “We Media.” This emergent journalistic process allows the Web’s social network to produce, analyze, and disseminate news and information to technologically interconnected publics unbounded by geography.

Dale Peskin and Andrew Nachison are co-director and director of The Media Center in Reston, Virginia. The center is a nonprofit media think tank committed to building a better-informed society in an interconnected world. It is a division of the American Press Institute.

Photo montage: Information technologies allow people to connect with each other like never before in trends that span generations and cultures. Participants in the “We Media” revolution use cell phones to record and distribute photographs and video; employ powerful search engines to retrieve information tailored to their particular needs; play sophisticated games with networks of other players; and view satellite channels, such as al-Jazeera, that reach a global audience. From preschool to college, the technologies are tools in basic education, channels to unlimited information, and opportunities to learn the skills of the future. (All photographs from AP/Wide World Photos)

Innovation in information technologies has thrust humankind into an era of democratic media in which almost everyone can have immediate access to news and information, and become creators and contributors in the journalistic enterprise. As a result, news now moves in unconventional ways with unpredictable consequences.

How does a shared experience of digital media affect what we know and how we know it? How do the creators and keepers of stories behave when anyone can be a journalist, a publisher, or an archivist? What are the implications for our global society?

These questions are at the heart of “We Media,” a phrase The Media Center coined four years ago to describe the emerging phenomenon of global access to content from infinite sources, content that empowers participation and civic engagement in the news and information that affect society.

Google is one expression. The Internet search engine, whose mission is no less than to organize the world's information, enables individuals to take control of their worlds. They become empowered to seek and find information that reflects their personal preferences and take action. Individual access to news and information is no longer determined by powerful institutions with the authority or wealth to dominate distribution.

Blogs are another expression. These online journals create and connect individuals and their ideas throughout the world. Sites such as *Global Voices* [<http://www.globalvoicesonline.org>] aggregate stories and perspectives from everyday people: citizen storytellers with authentic voices from unique circumstances and cultures. So compelling is their power that Internet sites such as <http://www.technorati.com> have been created to track more than 25 million blogs—about one-fourth of the e-journals in the blogosphere.

A third expression is the rise of international satellite channels. The democratization of media has opened the airwaves to cultures everywhere. Using low-cost digital technologies and satellite distribution, more than 70 international channels cross borders to reach the edges of the planet with news for every point of view. The government-funded BBC has created a new kind of British empire, with hundreds of channels and Internet sites, reaching 100 million people worldwide, translated into 43 languages. Al-Jazeera defends media freedom and influences Arab thought in a volatile and turbulent region. Al-Jazeera seeks to expand its influence later in 2006 with the launch of an around-the-clock, English-language newscast.

We Media also encompasses the ubiquity of personal media devices, stimulating the most powerful media connection—word of mouth. At the end of 2005, more than 2 billion people—almost one-third of the world's population—had a cell phone. Nearly 800 million new cell phones are sold each year throughout the world. By

2008, an estimated 600 million people will be able to capture events with sophisticated digital cameras, many as a capability of their cell phones. These devices create a “global content generation” that has the unprecedented power to create, produce, share, and participate in life as it happens. Global networks allow people to post news, thoughts, ideas, and images anywhere, anytime.

What emerges is the most powerful expression of We Media—participation. Everyone is part of the story. Everyone exerts influence.

We Media is marked by the changing relationship between traditional institutions. We Media is a bottom-up, emergent process in which little or no editorial

oversight or formal journalistic workflow dictates the decisions of a staff. Instead, it is the result of many simultaneous, distributed conversations that either blossom or quickly atrophy in the Web's social network.

The act of a citizen, or group of citizens, playing a role in the process of collecting, reporting, analyzing, and disseminating news and information rivals edited institutions and the journalists who work for them. But the intent may be the same: providing independent, reliable, accurate, wide-ranging, and relevant information that a democracy requires.

Once at the fringes of traditional journalism, We Media has become a phenomenon that cannot be ignored. Communities, businesses, government agencies, pundits, stand-alone journalists, columnists, journalism schools, and, yes, even news organizations, are getting into the act. Projects have sprouted throughout mainstream media. They derive from the surprising experience of *Oh My News* [<http://english.ohmynews.com/>] in South Korea, which organized tens of thousands of citizen reporters in



Photo montage: While communications giants like Yahoo!, MSN, and Google provide citizens access to information resources, in today's connected society, the diversity of media prevents any one institution from controlling the flow of news and ideas. (All photographs from AP/WideWorld Photos)

a tech-savvy nation where a single issue often dominates the political discourse. Three years after its launch, *Oh My News* is credited with toppling a government and eroding the power of Korea's media barons.

The venerable profession of journalism finds itself at a rare moment in history, when for the first time its hegemony as gatekeeper of the news is threatened by new technology and competitors and by the audience it serves.

The trends have sparked considerable debate about journalism's key values. Clearly, journalism is in the process of redefining itself, adjusting to disruptive forces. At the center of the debate are the critical issues of control, credibility, and profitability.

Can every citizen be a reporter? Many traditional journalists are dismissive of participatory journalists, particularly bloggers, characterizing them as self-interested, unskilled amateurs who don't subscribe to institutional standards of fact checking, fairness, balance, and objectivity. Conversely, many bloggers look upon mainstream media as an arrogant, exclusive club that puts its own version of self-interest and economic survival above the societal responsibility of a free press.

What most traditional journalists fail to understand is that, despite a participant's lack of skill or journalistic training, the Internet itself acts as an editing mechanism. The difference is that editorial judgment is applied at the edges, frequently after the fact, not in advance. In this information ecosystem, citizens rely on each other to report, distribute, and correct a story as it goes. A story is no longer fixed by deadlines or distribution schedules. Rather it is organic, spiraling through multiple forms of media, changing as it goes. The story belongs to no one save the audience.

The fluidity of this approach puts more emphasis on publishing information than filtering. Conversations happen in the community for all to see. In contrast, traditional news organizations are set up to filter information before they publish it. Editors and reporters collaborate, but the debates are not open to public scrutiny or involvement.

The most obvious differences between participatory journalism and traditional journalism are the structures and organizations that produce them. Traditional media are created by hierarchal organizations that are built for commerce. Their business models focus on profits derived from advertising. They value rigorous workflow, profitability, and integrity. Networked communities that value conversation, collaboration, and egalitarianism over profitability create participatory journalism. Participatory journalism does not show evidence of requiring a classically trained journalist to be mediator or facilitator. Many weblogs, forums, and online communities function effectively without one.

Some view digital media's disruption of traditional information consumption and distribution patterns as little more than an economic shakeout reaping short-term havoc on media companies and creating new business opportunities for the next generation of communications giants. Under this scenario, companies like Google, MSN, and Yahoo! displace local newspapers, television, radio, and magazine publishers as the dominant gatekeepers of our media experiences.

But the notion of dominance is obsolete in the connected society. Individuals exert unprecedented power over how and when they access information and with whom they share it. In this sense, digital media is profoundly disruptive to the interests of any institution premised on power and control. What we know, the information we could access, once depended on where we lived. In the connected society of global nomads, our social capital can expand through vast personal networks spanning the globe.

We Media is a force that will soon exceed the influence of institutions that control news and information. It suggests that voice—the authentic, cultural expression of the individual—is resurgent in the craftwork of our media. ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.



Newspapers Recreate Their Medium

BRIAN L. STEFFENS

Newspapers large and small have a long history of adapting to technological and market change. Small-town and community newspapers are flourishing in a new technological age that allows them to provide coverage of local events with detail and delivery speed that they've never had before.

Brian L. Steffens is executive director of the National Newspaper Association (NNA). Founded in 1885, NNA is the oldest and largest newspaper association in America, representing 2,600 community newspapers. Mr. Steffens is also an adjunct associate professor of journalism at the Missouri School of Journalism.

Photo montage: Traditional, printed newspapers still provide readers with a low-cost, portable, and comprehensive source of news. The Internet has made it possible for newspapers—even weekly, community papers—to report up-to-the-minute news 24 hours a day, seven days a week, on their Web sites, frequently with more content and photographs than in the newspaper itself. (All photographs from AP/Wide World Photos)

In the 21st century, newspapers have become chameleons, adapting with the changing environment. That's the way it's always been: from sheet-fed to rotary presses, linotype machines to desktop publishing, black and white to color, and now paper to electrons.

Newspapers continue to offer unique-value propositions that ensure their long-term future even as they change to encompass new forms of presentation and distribution. Newspapers remain the only medium that is primarily news; information that is usually verifiable, accurate, fair and in search of truth.

Radio is primarily a music and talk medium. Television is dominated by entertainment. The Internet is a search medium, offering access to a wide range of information with no assurances about the quality or veracity of content.

Local, community newspapers offer something that readers prize—local news.

Television stations and large-city dailies serve regional audiences spanning large cities, sprawling suburbs, and communities with total populations numbering in the millions. Cable channels and the Internet serve national or international audiences. None have the staff, time, space or pages to cover truly local, neighborhood news in a comprehensive and consistent way. They are limited to covering the bigger stories, the controversies, not day-to-day life that is the hallmark of community newspapers, including local government, schools, local health care and medical resources, neighborhood sports, social events, service clubs, and church activities.

This explains why the number of American dailies, and subscribers to those papers, has declined, while the number of community, nondaily newspapers has grown from about 5,500 to more than 7,000. Readership of the nondailies has almost tripled, to nearly 70 million every week.

New technologies pose challenges to the traditional newspaper business—a new learning curve and untested business models—but these technologies also bring new capabilities and opportunities to local news organizations.

Local Newspapers Meet the Competition

Local weekly papers no longer have to forfeit breaking news or sports to local radio stations.

Pre-Internet, reports on the Thursday night local government or school board meetings or the Friday night high school sports games would not see print until the following week. The Internet gives community weekly newspapers the ability to compete head to head with daily newspapers, radio, and television for breaking news and sports.

But even the Web is becoming old news. My local paper now sends me news alerts and sports updates and scores as they happen, throughout the game, via text messages on my cell phone. When the local coach resigned unexpectedly, I was among the first to know, and my thirst for details pushed me toward my computer to access the paper's Web site (I was traveling in another state and a print edition paper was not available). When I returned home, I eagerly anticipated the next edition of the paper for further developments and interviews. Americans don't carry their newspapers or computers everywhere, but we carry our cell phones everywhere. Now newspapers can reach their audiences virtually anytime, anywhere.

Newspapers no longer have to cede color, video, and photography to television. Community newspapers can now deliver more visual elements to local stories than

regional television stations. The TV station might have a five-second clip of the Friday night game between the two largest high schools, but the community newspaper's Web site can put an unlimited number of color photographs or video clips on its Web site from all the area high schools, junior high schools, and community sports leagues.

Even better, community newspapers have learned that, by posting more pictures to their Web sites, they receive more requests for reprints, thus creating a growing revenue stream. If the paper had previously printed one picture from an event, and Johnny was identified, his parents and relatives might buy a couple of pictures from the paper. But when pictures of Johnny and all his teammates are on the Web site, the opportunity for more family purchases grows exponentially.

Newspapers are delivering a wider reach for advertisers by combining the still-vibrant print distribution of community newspapers with the new and growing audience of those papers' Web sites and text-messaging alerts. Most newspaper Web sites or electronic editions are now considered profitable, while the print products continue to generate profit margins averaging about 20 percent. That's the top line.

Emerging technologies have an impact on the bottom line, too. The nationally-distributed *Christian Science Monitor* print edition costs about twice that of its electronic edition. The common assumption was that the more print editions sold, the more revenue the company would generate and the more profit it would realize. More sales revenue would result in more profit.

WRONG. The print product generated more revenue but the print product cost much, much more to produce and distribute. The profit from each print edition sold was only about half that of producing and distributing a single electronic copy. Without the need for more newsprint, more ink, and expensive distribution channels, the electronic edition could sell for less yet earn more profit.

Newspapers are learning that electronic distribution is a viable alternative to traditional print editions, especially for distribution outside the core market area. Papers sent to vacationing readers, retirees who've moved away, or those who have moved to a new region but want to keep up on news of family and friends back home often arrive weeks late and damaged.

Digital editions are delivered the same day, no rips, no tears. Births and deaths and news of a local sports hero are available to friends, family, vacationers, and retirees near and far ... in time to send a note of congratulations or condolence.

All in all, new technologies help news companies improve customer service and control costs. For decades to come, millions of Americans will value the inexpensive price, availability (no need to buy a computer) and portability (no need for a power cord or batteries) of a printed newspaper. But there will also be those who value urgent alerts and updates (cell phones) and more depth and context (Internet) than a printed newspaper can deliver.

If a reader is jogging, he or she can't read a print paper but can listen to a news podcast (a newscast recorded to an iPod). If riding a train or bus with no power outlet, a reader will value a print edition (or a good battery for the laptop). If a reader is outside a major metropolitan area, he or she may not have wireless access for a laptop or a strong signal for a cell phone. Newspapers have to be where the news consumers are, and delivered on a device they can use wherever they are, whatever they're doing.

For the near term, those devices include paper, computers, cell phones, and iPods. Tomorrow can and most assuredly will introduce even more ways to share information.

Newspapers that capture that vitality and deliver the news when, where, and how the audience is equipped to receive it will enjoy a long and prosperous future.

The Ties That Bind a Community Together

A current theme in the media is an exploration of how to engage citizens in civic activity. Newspapers are experimenting with expanded online letters to the editors, local and personal blogs, online forums, and various forms of citizen-originated content.

Some argue that community newspapers have never lost touch with their communities, that the emphasis on new technologies is misplaced. Readers in small towns have always had access to editors, reporters, and even the publisher. They chat while in line at the supermarket, at service club meetings, at church functions, and in the barbershop or salon. The distance between reader and newspaper is smaller than in large cities or metropolitan areas.

A perhaps unforeseen benefit of the new technology to community newspapers is the expansion of the old-fashioned network of correspondents. Small newspapers have always been challenged with small staffs and too few reporters or photographers to be everywhere at once, especially when the school board, city government, local sporting event, and church social all occur on the same evening.

Community newspapers have long relied on part-time or occasional volunteers to contribute reports from meetings or events that staff could not get to, or to contribute columns on local topics of interest. Wireless laptops and digital cameras have made it easy for virtually the entire community to become reporters and photographers for their local newspaper.

This has strengthened not only the connection between the community and its newspaper, but connections within the community as well.

Many American newspapers are producing issues that are filled with content submitted by local residents. In Columbia, Missouri, *MyMissourian.com* [<http://www.MyMissourian.com>] is a citizen-produced collection of stories, columns, commentary and photos published online under the umbrella of the local newspaper and (traditional) newspaper Web site. It

doesn't replace the newspaper or the newspaper's Web site—it complements it. It is news and information that doesn't necessarily fit the space requirements of the print newspaper nor the hard news orientation of the paper's Web site.

It is full of pictures of newborns and college graduates posted by proud parents and grandparents, community social events, and even the largest vegetables grown locally and favorite pets. There are personal stories, remembrances, reports from meetings and events that reporters could not attend, notes on church and school



Photo: *MyMissourian.com* publishes online articles and photographs by residents of the Columbia, Missouri, area who want to share stories about life in their communities. The best submissions are printed in the weekly edition of the *Columbia Missourian* newspaper. (Courtesy *MyMissourian.com*)

committees that often do not get covered in a newspaper, local recipes, and columns, commentary, and letters to the editor.

The best of these are assembled in the weekly print publication—news of, about, and by your neighbor.

Technology is a neat thing, and early adopters drive key portions of economic growth. But sometimes it's just

another tool to help people and communities do what they've always done: connect with each other. ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.

HOW COMMUNITY NEWSPAPERS ADAPT TO NEW TECHNOLOGY

News

- Weeklies can function as dailies for little added cost.
- The newspaper is no longer limited by 12, 24, or 48 pages.
- Photographs and color are no longer limited by press position or space.
- Web site links give readers more depth and context.
- The newspaper and its archives are searchable. Once community papers have digitized their back issues, staff and the public can easily keyword search through the history of a community with much more ease and speed than previous methods. Many such systems are set up on a fee basis, providing another revenue stream for the newspaper. Smaller community newspapers are still exploring this business model.
- Newspapers can provide everywhere, anytime delivery via cell phone text messaging, competing with radio for breaking news.

Advertising

- Newspapers can expand their reach to include Web and text message readers.
- Newspaper offerings can include video and audio advertising messages.
- Advertisers can promote a sale immediately via the paper's Web site or text messaging service, allowing greater ability to address unexpected inventory rather than waiting for next week's print edition. If a new product arrives or overstock needs handling, advertisers don't have to wait until next week's print edition but can tout a sale immediately via the paper's Web site or text messaging service.
- Newspaper Web sites can be programmed to display a different message from the same advertiser each time the same viewer clicks back on the paper's Web site.
- Readers can click on a link in an online ad that provides more detailed product information, product reviews, related services.
- Many coupons from newspaper Web sites can now be printed out on a home computer. Depending on the data collected from readers, such coupons can be individually targeted to address key demographics.
- Text message coupons can be captured on a cell phone and shown to retailers and advertisers. These, too, can be individually targeted.
- Unlike with radio, television, or the print edition, users can click through and purchase items through newspaper Web sites.

Production and Delivery

- Newspapers can publish as often as they like via the Web or electronic editions, with limited added costs. There are no added press lines and no increase in ink or paper supplies.
- Expanded distribution does not require more paper or ink.
- Electronic editions can be delivered outside the core market, even around the world, same day, without delay. No papers are lost or damaged; there are no added postage costs; and no extra delivery trucks or staff are needed.

—Brian L. Steffens



Broadcasters Getting Online, Staying On Air

MICHAEL MURRIE

Zooming technological advancement has forced broadcasters to adjust to wave after wave of change. The industry has transformed nearly every aspect of their operations—how broadcasters deliver programming and how they produce it, and what the audience wants and when they want it.

Michael Murrie is a professor of telecommunications at Pepperdine University in Malibu, California. He also writes about electronic media for professional and academic publications.

Photo montage: Reinvention is the name of the game in broadcasting, as the industry adjusts to keep pace with technology and hold on to its audience. Cable channels abound from New York to New Delhi, while satellite radio and television operations bounce programming around the globe. Audiences enjoy the freedom to customize their news and entertainment choices with such products as TiVo, iPods, and DVDs. (All photographs from AP/Wide World Photos)

American broadcasting glories in its tales of survival and success. Radio survived the challenge of television a half century ago by becoming a portable medium and shifting from an emphasis on drama to music for the commuter. AM radio survived the rise of FM radio by developing news and provocative discussion programming.

Television became the national pastime each evening for a half century. Americans gathered to watch favorite characters, sports, and news coverage of historic events. Television remains Americans' primary source of news and the advertising medium that best catches their attention.

Nowadays, however, changes in technology, audience behavior, and business models shake traditional broadcasting again and again.

The Old Competitors

Despite high-quality music CDs, radio became more profitable than ever in the 1990s after changes in U.S. government regulations allowed consolidation and simultaneous broadcasting of the same programming by multiple stations in a metropolitan area, as well as across many areas. The result, however, was often bland programming that lacked local content.

The Federal Communications Commission licensed 13,450 radio stations in 2003, twice the number that was licensed in 1970. The United States is one of the few countries in the world where commercial radio, with 10,000 stations, dominates over government radio.

Television met its first match when community antenna or cable systems began to import signals from other stations and later added specialized channels such as CNN and MTV. The small, individual franchises began to consolidate into groups as cable moved into metropolitan areas in the 1980s. Television stations tried to hold their audiences by insisting that federal regulations require the cable systems to carry local stations.

More competition came in the 1990s from direct broadcast satellite, the first service with digital signals. Cable, too, launched digital services, multiplying the number of channels from a few dozen to hundreds.

Over time, especially as ownership rules relaxed, broadcasters coped with the competition by acquiring interests in the competition and programming outlets. Now, of the top five U.S. media conglomerates, all own cable television channels and produce at least some kinds of television programs, four own cable distribution systems, four own broadcast television networks and stations, three produce motion pictures, and two own hundreds of radio stations. The interrelationships among these and other top media conglomerates are complex and difficult to follow.

Meanwhile, both radio and television faced audiences that could bypass the broadcast schedule to record programs on audio or videocassettes and replay them at other times. For decades the process was too clumsy and complicated to be an important factor, until the introduction of TiVo (a digital video recording set-top device for personal television) and similar devices that incorporated program schedules, simplified recording, and eliminated commercials. It was the beginning of a decline in the importance of programming schedules and the beginning of a trend toward viewer control.

Then, in the 1990s, households using television declined, perhaps because people had become too busy to watch television. Movies on DVDs, the Internet, video games, and other new media also competed. The ratio of time spent watching television compared to Internet use was 8-to-1 in 2000 but only 4-to-1 in 2005, according to media investment bank Veronis Shuler.

The Internet presented competitive challenges but also offered opportunities to broadcasters. Research suggested some people used the Internet and watched television at the same time. Television could promote its programs with online news and programming information. A local radio station could present its programs almost anywhere in the world with an Internet connection. Broadcasters could direct audiences to companion Web sites for more detailed news coverage, but they found it more difficult to drive Web audiences to news programs.

Although overall news viewing increased, news producers faced fickle, more fractured audiences. CNN and others provided news, weather, and sports whenever viewers wanted them. A number of regional all-news channels followed. Local and network news expanded program offerings, especially in the mornings.

Deadlines disappeared. News was constantly available and updated. Reporters complained that they had no time to seek out stories because they constantly had to deliver new live reports. The rapid diffusion of 24-hour news and instant Internet messages left newsmakers such as politicians and public relations professionals with little time to react or reflect, especially as the all-news channels fueled the crisis of the moment with new live satellite interviews. Many viewers constantly switched among news, weather, sports, and entertainment programs. Some news programs even promoted the times of upcoming stories to lure channel surfers back if they switched to other channels.

The centerpiece of U.S. network news, evening newscasts, steadily lost viewers for years, despite efforts to make them unique by providing more context and explanation. In 2005, three networks lost to retirement or death the anchormen of their flagship newscasts—personalities who had been powerful presences for decades.

Nevertheless, broadcasters found innovative technology to improve news reporting. News programs featured new realistic graphics, especially weather animations that projected the paths of approaching storms. Live reports via satellite came from anywhere

—even an aircraft carrier or military convoy rolling through a desert. For the first time, ordinary citizens saw war overseas as it unfolded. Reporters embedded with troops in the latest Iraq war also offered personal accounts via Internet blogs in addition to their regular broadcast reports. News remained attractive to viewers and profitable.

Overall, revenues for radio (\$19.3 billion) and television (\$44.8 billion) peaked in 2000 and dipped the following year. Television recovered but radio stayed flat. Cable continued to increase steadily.

Radio's problems were deeper, with a 13-percent audience decline between 1995 and 2005. Declining ad revenue—and thus station values—led some group owners to huge losses of, for example, \$17 billion in 2002 and \$4.9 billion in 2005 by Clear Channel, the largest radio group. In 2004, Clear Channel reduced time allotted for promotions and commercials by 20 percent to help keep listeners who seemed dissatisfied by too many commercials. The strategy raised prices and encouraged shorter commercials. This year, there is some evidence the strategy may be working, but radio still faces other problems, including a new payola (paying cash or gifts in exchange for airplay) investigation. Satellite radio continues to grow as an alternative to commercial radio, and further competition comes from the iPod and similar digital devices that make music portable and convenient.

The iPod and its cousins can store radio content and replay it. The process, called podcasting, is like TiVo for radio. Content ranges from national network broadcasts to blog-style, home-grown productions.

Listeners have long been able to record radio and play it back with portable devices, but never have audiences had so much content, variety, quality, and control, and the ability to easily manage and manipulate content.

The television industry for years has anticipated its next step in improved quality—high-definition television (HDTV). Now it is finally arriving, years late.

Digital broadcast radio was also under development for years, with the promise of offering CD-quality and dramatically improved reception, but the industry lacked enthusiasm for making the huge investment necessary for such a broad upgrade. The technology enables a radio station to continue to send its regular analog signal and multiple digital signals.

The New Competitors

Perhaps television and cable broadcasters would have strolled into the 21st century with HDTV, new channels, and not much else had it not been for two technological breakthroughs in the 1990s—affordable broadband Internet service and video compression.

The broadband services were DSL (digital subscriber loop), developed by telephone companies, and cable modems, developed by the cable TV industry. These services provided high-speed, affordable Internet service to homes and small businesses.

Digital video compression numerically describes every bit of information in a frame of video, finds redundant information or information humans don't perceive, summarizes it, and discards what's not necessary. The resulting streamlined signal fits on computer hard drives and even travels on the Internet.

Dozens of these compressed signals fit in electronic pipes and pathways that once handled only one video signal. With greater storage, processing power, and throughput, desktop computers can easily play and even edit video, dramatically lowering the entry barriers for small, independent video producers.



Photo montage: Satellite radio, interactive television, and digital video are just a few of the recent innovations in broadcasting technology. (All photographs from AP/Wide World Photos)

Digital video compression made possible new digital television standards, approved by the federal government, that require television stations to convert from analog to digital broadcast channels and signals by 2009. After years of reluctance to make the investments to convert, most stations are finally broadcasting in one or more of the new digital standards, often including HDTV. Digital television sets have become more affordable, and consumers are finally buying them. HDTV's big screens might even attract the family back together in the living room to watch again, except that the television screen is also growing smaller and more mobile for the individual viewer, as well as larger.

With commercial radio's challenges from the iPod in mind, networks jumped at the chance to make prime-time programs available at \$1.99 each when Apple created a new iPod that could show video. Early evidence indicates the move may help ratings.

Nevertheless, the new media threaten the future of the lucrative traditional television advertising model. Two alternate funding methods are fees per item and

subscription. Anyone can put videos on Google for free distribution or for purchase. Pay-per-view network programs are also available on cable and direct broadcast satellite television, much like pay-per-view movies. Now production companies, writers, actors, networks, and others are disputing how these revenues should be distributed.

Broadcasters can expect more challengers, both small and large, as the Internet delivers more video. Telecommunications and information technology companies are already rolling out IPTV (Internet protocol television). Who knows what new Internet video will come from new companies and young independent producers? Be assured, however, that most traditional broadcasters will be in the fray with their considerable resources, experience, and a heritage of survival and success. ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.



Public Libraries in the Internet Age

MAURICE J. (MITCH) FREEDMAN

Public libraries and the professionals who staff them still play key roles in assisting the public in navigating the oceans of information now available to them through the Internet.

Maurice J. (Mitch) Freedman is a past president of the American Library Association and the retired director of the Westchester County, New York, library system.

Futurists, editorial writers, and countless others have been ready to play a funeral march for the public library for years, arguing that the Internet will eliminate the need for libraries, even books. But visit a public library in the United States and you'll find they are being used more heavily each year. The Internet has led to dramatic increases in the circulation of all library information services and materials in ways that extend the use of those services well beyond the walls of the brick and mortar building.

Public libraries have absorbed, employed, or promoted the use of new technologies and media as they appeared over the past 150 years. The Internet and the access it provides to the world of information bring a technology and medium to the public library that is qualitatively different from the technologies and media that preceded it. The quantity of information accessible via the Internet is so vast that it brings about a qualitative change in the information offerings made by public libraries.

Photo montage: With the Internet providing 24-hour-a-day access, public libraries are busier than ever before. Patrons can reserve books and videotapes they wish to borrow or even download audio books from public collections, using their home computers. As libraries install more computers for public use, many people prefer going there to do research, surf the Web, and send e-mail. (All photographs from AP/Wide World Photos)

First, the Internet enables the public library to provide information services and access to materials online 24 hours per day, 7 days per week (24/7). People with Internet browsing capability—at home or anywhere else—can examine the online catalog of library holdings, place reserves on items that they would like to borrow, and renew items that are due or overdue—all as functions of the integrated library systems that are available to the public via the Internet 24/7.

The ability to reserve books online is especially appealing to online patrons. Most libraries have seen the numbers of reserves made online double and triple, in contrast to earlier manual systems involving a paper form. The Westchester County, New York, cooperative public library system, serving a suburban area around New York City,¹ saw an increase from 4,000 paper-filled reserves per month in 1999 to more than 93,000 reserves filled monthly in 2005. This was possible because the online catalog system is accessible anytime to residents of the county's computer-equipped homes.

Today's online catalog has vastly enhanced search and retrieval functionality, further enabling public access to the collections. Despite predictions of the demise of books and other printed materials, Westchester found that 30 percent of the book reserves filled were requests for books that had been published prior to 1990.² Librarians reported that books that hadn't circulated in years, sometimes in decades, were now moving from the shelves as browsers scoured the online catalog and found literary gems of the past that they might otherwise have overlooked. This is how the new technology offers a dramatic assist to traditional public library services, increasing their relevance in an era of new technology.

Numerous applications of the new technologies and media have helped improve traditional services and introduced others unique to the electronic medium.

The first service is access to the Internet. More than 90 percent of U.S. libraries provide Internet access to the public. Despite widespread Internet access in homes and businesses, people choose for a variety of reasons to come into the public library to access the Web, send or answer e-mail, and, where allowed, chat with others.

This immediately led to a service vital to the public library's continued support by taxpayers. Because of concerns, especially about Internet safety for children, public libraries offer courses in "safe" use of the Internet for parents, children, and others. Also, many public libraries use their Web sites to direct parents and children to other sites especially appropriate to children. Proactively educating parents and children has been the public libraries' preferred approach to dealing with safety concerns, rather than promoting filters, other forms of restriction, or censorship.

Exploiting the technology and the Internet's 24/7 accessibility, many public libraries offer reference services via e-mail and chat. Many users prefer to make an inquiry via e-mail, rather than a telephone call that may result in a lengthy wait.

Public libraries offer "Webliographies," an especially wonderful and high-impact service. Libraries also provide valuable annotated lists of linked sites organized by topic for people of all interests and all ages. Professional librarians validate and compile these lists, ensuring their appropriateness, accuracy, and timeliness, none of which can be assured about the results delivered by commercial search engines.



Photo montage: Libraries have been at the forefront of integrating computer technology into academic research. They took the lead in digitizing historic documents for online dissemination, and libraries equipped with state-of-the-art computer facilities bring together experts to consult on mutual interests. (All photographs from AP/Wide World Photos)

The New York Public Library (NYPL), which serves the Bronx, Manhattan, and Staten Island, has been a pioneer for well over a century in children's work. NYPL provides access on its children's home page, On-Lion for Kids [<http://kids.nypl.org/>], to *Picture Books Everyone Should Know* (newly revised) and *100 Favorite Children's Books*. These online lists reach many more people than the library's printed lists do.

Information-resource professionals offer further guidance for parents and children seeking appropriate materials on the Web site. Drop-down menus at the top of the kids' page include resources on science and technology, arts and games, events in the branch libraries, reading and books, people and places, sports, holidays and celebrations, and more.

Public library users also have access to commercial full-text databases. With these tools, NYPL, for example, brings the home user thousands of periodicals and millions of articles [<http://www.nypl.org/databases/>]. In large libraries and small, databases allow access to periodicals and other publications that libraries would otherwise need to purchase for their users.

Many states have bought licenses to databases that make them available to all citizens of their respective sites. This means that a leased 3,000-title database of periodicals can be made freely accessible to a tiny community whose library can afford only 50 hard-copy subscriptions. Now all public libraries in New York and many other states promote access to electronic versions of thousands of periodicals, exponentially increasing the amount of information all public libraries make freely accessible to their users 24/7.

All of the aforementioned services highlight how the Internet has dramatically increased the relevance of public libraries to their users and the use of public library services.

Public libraries flourish and meet their users' information needs precisely because of the existence of the Internet.

Access: People flock to the public library and overwhelm the libraries' available Internet computers, contrary to the belief that virtually everyone has a computer at home and access to the Internet. There never seem to be enough machines available at peak and other periods.

Seniors: Seniors are one category of high-volume library Internet users. Perceptions that the elderly cannot adapt to change and are afraid of computers is not borne out by the hosts of seniors who use the Internet to exchange e-mail with children, grandchildren, relatives,

and friends; research information about health and welfare programs; and explore whatever else interests them, all at their local public library.

Homework: Numerous public libraries, public library consortia, and even states have contracted with *Tutor.com* [<http://www.tutor.com/>] to provide students with online homework help and assistance with school projects. Part of what makes the service so valuable is that the online tutors are actual school teachers.

Laptops: The Bronx Library Center is one of many libraries that loans laptops to users for in-library use. All the laptops have in-library wireless network connections that enable people to use the Web for any of a variety of applications; they also have microcomputer programs.

Browsing: Libraries' online catalogs give users a chance to review dust jackets, tables of contents, first or sample chapters, and reviews for thousands of book titles. Now users can find out a great deal of information about items they might borrow without having to be at the library or physically handle such books.

Online Reviews: Some libraries have launched specialized reviews of books online. For example, the Ossining, New York, Public Library recently added to its Web site the *Ossining Review of Books* [<http://www.ossininglibrary.org/bob/default.aspx>], a new online guide to contemporary writing with involvement of prominent local writers and reviewers. The site features recommendations of books by writers with ties to Ossining. It also will give Ossining residents the opportunity to post their own comments and book reviews.

Today, public libraries are more relevant than ever to people fortunate enough to have new technologies and media in their homes. And for those who don't, computers and a wealth of other services await them at the library. Using media of a new century, the public library retains its traditional status as a community center, a gathering place, and simply a nice place to enjoy and share knowledge and information.

¹ The population of Westchester County is 923,000 with 38 independent public libraries in its system. Westchester is similar to a number of affluent suburban counties that border major U.S. cities.

² Westchester's filled reserves included all media, e.g. books on tape, DVDs, CDs, and other materials available at libraries. ■

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The United States and Brazil Web site from the Library of Congress's Global Gateway Project is a forerunner of the World Digital Library. (Courtesy Library of Congress)

CONNECTING CULTURES ON THE INTERNET

Art, literature go online in global library

The U.S. Library of Congress recently launched an initiative to create a World Digital Library of historic, artistic, and literary works from around the globe. The project's goal is to bring together online rare and unique items held in U.S. and Western repositories with those of other great cultures, such as East and South Asia, and the Islamic nations stretching from Indonesia through Central and West Asia to Africa. "A World Digital Library would make these collections available free of charge to anyone accessing the Internet," said James H. Billington, head of the Library of Congress, "and it could well have the salutary effect of bringing people together by celebrating the depth and uniqueness of different cultures in a single global undertaking."

Billington proposed the concept of a World Digital Library in a June 2005 speech to a meeting of the United Nations Educational, Scientific and Cultural Organization. He announced the project's launch in November with a \$3-million grant from the Web search company Google. The Library of Congress will use the money to develop technical and organizational details and to reach out to nations and institutions around the globe to participate in this international endeavor. More private-sector partners will be sought to provide funding and expertise.

The World Digital Library builds on major digital documentary projects at the Library of Congress. Over the past decade, the library has digitized more than 10 million items for the American Memory Project, a collection of U.S. manuscripts, maps, audiovisual recordings, photographs, music, and other materials. A second project begun in 2000, the Global Gateway, is a cooperative effort with the national libraries of Brazil, France, the Netherlands, Russia, and Spain. The bilingual multimedia presentations concentrate on historical connections between the United States and the contributing nations. By contrast, the World Digital Library will focus on participating nations' own cultures and histories. The virtual library will include only materials that are in the public domain or made available with special permission.

"I believe that we have both an opportunity and an obligation as a nation to form a public-private partnership to use the new technology of the Internet to help celebrate the creative cultural variety of the world," said Billington. "The dream is that this could make a contribution, particularly among young people brought up in the multimedia age."

For more information on the World Digital Library, go to <http://www.loc.gov>.



Readers Make a Newspaper Their Own

AN INTERVIEW WITH LEX ALEXANDER

U.S. newspapers are redefining themselves in a changing media environment. Papers at the forefront of this trend are breaking down traditional barriers that have existed between their newsrooms and their readers, and bringing the audience into the process of shaping the journalistic product issued daily in print or online.

Lex Alexander is the citizen journalism coordinator for the News & Record of Greensboro, North Carolina.

The growth of burgeoning new media has come at the expense of the old. Just a half-century ago, newspapers were giants in the media universe. Fifty years of expansion in broadcast news and around-the-clock cable television news have tumbled newspapers from their once dominant position. To hang on to a place in the news business, to maintain product viability in a more competitive game, and to profitably remain in business, newspapers are moving their products online.

The *News & Record*, with more than a century of publishing history in Greensboro, North Carolina, adopted a new model for its online product in 2005—the Town Square, offering readers more interactivity, community journalism, and involvement. Lex Alexander, now citizen journalism coordinator at the paper, proposed the new concept and spoke with *Global Issues* managing editor Charlene Porter about the new product and the public response.

Photo montage: The News & Record of Greensboro, North Carolina, reaches out to engage readers with interactive features on its Web site. The Town Square section includes staff-written blogs, which contain additional information to stories that appear in the paper, and Hometown Hubs, where readers can contribute content. (Courtesy News & Record)

Alexander: Most of the feedback we've gotten has been very positive. Some of it has been in the form of constructive criticism and some of it has been in the form of comments: "We like what you're doing, keep it up, and here is something else you might think about doing."

Q: Describe the different fora that the *News & Record* has created to generate more public involvement in this product.

Alexander: Almost the first thing we did was greatly expand the number of blogs we were producing. We began blogging, as a staff, in the middle of 2004. After we announced what we were going to be doing in early 2005, we began creating a bunch of new blogs because staff members had expressed an interest and because it really did seem a natural extension of covering a particular reporting beat.

We also began looking at ways to increase our overall transparency. That is, to begin talking more with readers about stories we were working on and angles that we ought to pursue, talking more with readers about why we covered certain stories and not others. Historically, news organizations have not talked a lot about the way they do their jobs. It was considered bad form, and even bad ethics, to make your news organization part of the story. There has been a realization in the last few years that in some cases the news organization is going to be part of the story and that we need to accept that and be willing to talk honestly about how and why we do the things we do.

Q: Blogs by your staff are written products by the same journalists who have been your primary contributors for decades. Do their blogs somehow give readers more of the story?

Alexander: That's correct, and we also have the capability of including various kinds of files with blog posts. We can include scans of documents. We can include small snippets of audio or video. We can include pictures or graphics. We can put a link from the blog saying, "If you want to read the entire 48-page indictment of John Doe, here's the link." In cases where documents are an important basis for news stories, our editor and I have been encouraging reporters to put those documents online so readers can judge whether we are reporting on them factually and contextually.

Q: What do citizens, with their involvement, bring to your newspaper, your Web product, that reporters and editors weren't providing in the old journalism?

Alexander: A lot of people know more than we do about a lot of things. The blogs keep readers informed

about what we're working on and give readers a basis for thinking, "Here is another angle that you guys haven't thought of, or, what you're looking at isn't really the main issue; the main issue is over here." I think it enables readers to have more confidence in the quality of our reporting.

Beyond that, readers are contributing news of their own through our Your News section, where people can submit stories to be posted on our Web site. We have two special sections of the Web site called Hometown Hubs that serve specific geographic areas outside Greensboro where readers can contribute content. We have a photo blog to which readers can contribute photos they've shot, and we're looking at other ways to involve readers. We want to make newsgathering less of a one-way conveyance of information and more of a discussion, a dialogue, a conversation.

Q: What do your audience surveys show about how people are responding to the blogs?

Alexander: As of October 2005, the most recent figure I have handy, we're looking at roughly 450,000 page views for that month just on our blogs. That's out of a total of between 5 million and 6 million page views on all of our sites, which include *News & Record.com* [<http://www.news-record.com>], *GoTriad.com* [<http://www.gotriad.com>], our arts and entertainment site, and a couple of other sites that we maintain that are primarily revenue producing.

Q: What do you conclude from the popularity of the new products?

Alexander: I think as more people have gotten online and discovered the joys of interacting with other people via computer, there has been more interest, particularly among younger people, in using the Web as a means of getting information and sharing information. I think the fact that we've developed an audience for the blogs is just one example. There obviously is an appetite out there for online discussion, so I think we're meeting a need.

Q: How do the blogs and the discussion sites give readers an opportunity to feel part of this media product, and part of their community?

Alexander: It's important that we try to find ways of building and reinforcing community wherever we can. America is becoming an increasingly atomized society, and I don't think the long-term results of that are going to be good for our politics, our culture, or our economy. Anything we as a newspaper can do to build a sense of

community, expand community, and make people feel like they're part of something greater than themselves is going to be helpful in the long term.

Q: What contribution has this *News & Record* online community discussion made to the community at large?

Alexander: A lot of the discussion on our kindergarten through 12th grade education blog, The Chalkboard, focused on the school board's recent decision to abandon a lottery-based school attendance system and go back to neighborhood attendance zones. I can't prove the connection, but the blog became an online gathering point for people who wanted the board to make that change. There was a huge amount of discussion on that issue over an extended period of time.

Q: You and some readers held quite a debate on your blog early this year about what's important in news coverage. On the one hand, traditional media have long been criticized for failing to cover stories that are important to a community. But technology allows you to see that stories of the weird, the wacky, or the salacious attract the most readers, rather than those important community stories. How do you come to terms with that?

Alexander: We know what our mission is here at the *News & Record*, and that is to try to give people the news and information they need to run their lives and to govern themselves as effectively and efficiently as they would like to. We believe there is both intrinsic value in that and economic value. We think it is a winning business strategy as well as good journalism.

Newspapers have always been interested in getting the occasional story in about weird stuff that people talk about around the water cooler. I don't think we're going to be going out and looking for that kind of thing any more than we normally do. I think the larger question is, are we providing content that people need and want and will use? We wrestle with that in print just as we do online.

I think the solution long-term is that we devote our scarce—and growing increasingly scarcer—resources to carrying out the mission we've chosen for ourselves, simply because, if we don't, nobody else is going to. Some stories can only be tackled with the firepower of a full-time newspaper staff.

But that doesn't mean we're going to be able to cover everything we want and need to cover. What I hope will happen is that networks of people will evolve in the community to fill in the gaps in our coverage and provide more of the local news that people say they want.

Q: Are you suggesting that you envision clutches of citizen journalists who provide coverage of the need for a new sewer system in their neighborhood, for example?

Alexander: Among other things, yes. In fact, to a certain extent, we've already done that with our Hometown Hubs. We have people in Summerfield, a town just northwest of Greensboro, contributing news and photos of interest to their neighbors, and it appears online. We also take some of the best submissions and print them in the Sunday edition of the paper.

We envision having Hometown Hubs not only for geographic areas—geographic communities—but also for

communities of interest. For example, youth soccer is a huge deal in Greensboro. Thousands of families are involved. I could envision us starting a youth soccer Hometown Hub or a youth soccer blog, or both. I imagine that it would get a very intense following among the families whose kids participate, and that intense following in turn would be of interest to certain kinds of advertisers.

One thing that has come up in recent discussions about citizen journalism is that very few people actually want to be citizen journalists in the sense of going out and



Photo montage: The *News & Record* invites readers to submit pictures to a photo blog; images include a wedding, a youth soccer game, and a local college football game. (Courtesy *News & Record*)

reporting and writing stories or producing video, but they do want a role of some kind in the news as discussion, as dialogue. We need to figure out a variety of ways that people can contribute to the community's total news product.

Q: Are you going to pay citizen journalists if they are providing content for your newspaper?

Alexander: The criticism we frequently get is, you're getting citizens to cover events or issues for free so you can cover other things. My response is, no, they're covering things that otherwise wouldn't be covered at all.

If there is a way for this partnership to generate significant revenue—and I think there is, we just haven't found it yet—I hope that we would find a way to share that revenue appropriately and proportionately with the people who help contribute to the content that brings in the revenue.

Q: With the success the *News & Record* has experienced over the last year in creating the Town Square, have you regained readership that statistics showed was being lost to other electronic media?

Alexander: I don't know that I could make a blanket statement either way. Our last circulation audit showed that we did lose a little circulation, but our loss was only about half of the industry average. So I don't know whether to score that as a win or a loss.

We do know that our online audience and our online advertising revenue both grew dramatically in 2005.

I am confident that the online audience is going to continue to grow rapidly for the next several years. Advertising revenue is going to follow that audience, and we need to be in a position to give the audience content it wants and needs and capture some of that available ad revenue.

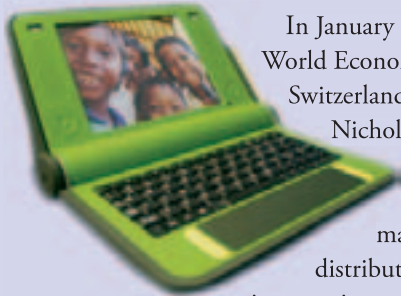
But there is a real tension between the kinds of stories that would be useful to people, depending on what segments of the population they're in, and the kinds of stories that would be of interest only to certain segments the advertisers are interested in reaching. You run the risk of a kind of journalistic redlining and I worry about that from a community-building standpoint, I worry about it from a moral standpoint.

At the same time, we're not a charity. We're a for-profit business and we are struggling to find a way to ensure our long-term survival. At this point, it is hard to know how that tug of war is going to work itself out. We're still wrestling with that issue. It is not resolved and I don't foresee it being resolved any time soon. ■

The opinions expressed in this interview do not necessarily reflect the views or policies of the U.S. government.

THE \$100 LAPTOP

A broad-based consortium works to deliver computers to every child



In January 2005, at the World Economic Forum in Switzerland, a man named Nicholas Negroponte announced a plan to design, manufacture, and distribute laptop computers inexpensive enough to give every child in the world better access to knowledge and modern forms of education.

Access to computers and the Internet is a major barrier to closing the global digital divide, and the One Laptop Per Child (OLPC) nonprofit organization [<http://www.laptop.org>], which Negroponte and others founded to develop the affordable laptop, seeks to bridge that gap. The goal is to price the laptop at about \$100 initially, and to steadily lower the cost as the technology continues to evolve.

Founding chairman of the Media Laboratory at the Massachusetts Institute of Technology in the United States, Negroponte and U.N. Secretary-General Kofi Annan unveiled a prototype of the laptop at the World Summit on the Information Society in Tunisia in November 2005.

The sturdy laptop—called the Green Machine—will be made of bright green plastic or rubberized material. It's an inexpensive, robust computer with open-source software, very low power consumption, and the capacity to be powered by hand cranking.

The laptops will have wireless broadband that, among other things, allows them to work as a mesh network—each laptop will be able to talk to its nearest neighbors, creating a temporary local area network. The laptops will use innovative power (including wind-up) and will be able to do most everything except store huge amounts of data.

OLPC is funding research at the MIT Media Lab to develop the \$100 laptop. An international company called Design Continuum is collaborating on the design. Founding corporate members of the OLPC board of directors include Google, Rupert Murdoch's media conglomerate News Corporation in the United

Kingdom, communications giant Nortel, and Advanced Micro Devices, a global supplier of integrated circuits. Quanta Computer of Taiwan, chosen after the board reviewed bids from several possible manufacturing companies, will be the original manufacturer for the \$100 laptop.

The laptops will be sold to governments, and schools will issue them to children. OLPC has held initial discussions about distribution of the machines with China, India, Brazil, Argentina, Egypt, Nigeria, and Thailand. OLPC will also consider creating a commercial version of the machine.

The preliminary plan is to have laptops ready for shipment by the end of 2006 or early 2007. Manufacturing will begin when 5 million to 10 million machines have been ordered and paid for in advance.

"The biggest hurdle will be manufacturing 100 million of anything," Negroponte said in a statement on the OLPC Web site. "This is not just a supply-chain problem but also a design problem. The scale is daunting, but I find myself amazed at what some companies are proposing to us. It feels as though at least half the problems are being solved by mere resolve."

To make sure the laptops reach their intended users, the OLPC is a partner in the Connect the World initiative of the International Telecommunications Union (ITU). During a January ITU roundtable, political, business, and development leaders pledged their commitment to expand the benefit of information and communications technologies to people worldwide by 2015.

Also in January, at the 2006 World Economic Forum in Switzerland, United Nations Development Programme (UNDP) Administrator Kemal Dervis and Negroponte signed an agreement to work together with local and international partners to deliver the new technology to targeted schools in the least-developed countries.

Children in developing nations need laptops, Negroponte says, because laptops are a window into the world, a tool for thinking, and a vehicle for independent interaction and exploration.

Photo: The prototype of the \$100 laptop computer. (Photograph from AP/Wide World Photos)



Bloggers Breaking Ground in Communication

DAN GILLMOR

Software technology that allows writers to easily post their own essays on the World Wide Web has challenged the traditional role of media organizations as gatekeepers to a mass audience. At a steadily increasing pace over the last several years, ordinary citizens have made themselves into reporters and commentators on the social scene. They have made a remarkably rapid ascent onto their own platform in the realm of social and political debate.

Dan Gillmor is director of the Center for Citizen Media [<http://www.citmedia.org/blog>] and author of We the Media: Grassroots Journalism by the People, for the People.

In late 2002, one of the most powerful members of the United States Congress got a lesson in the power of new media. At a birthday party for a colleague, Senator Trent Lott, a Republican from the state of Mississippi, sounded nostalgic for an ugly part of America's past, when racial segregation was official policy in much of the land. The statement drew little notice from the mass media.

Photo montage: Bloggers and their blogs are as diverse as the people who write them. They may be college students interested in politics, soldiers on active duty, self-styled journalists who write their own Internet journals covering events relevant to their interests, or students swapping experiences about their lives and education. (All photos from AP/Wide World Photos)

But some writers of the then-nascent Internet journals called weblogs, or blogs for short, were not so willing to let it go. From the political left and right, the bloggers, as these writers have come to be known, expressed outrage. Some of their ire was directed at the media for its inattention, and after a few days of the bloggers' attacks, major media organizations decided to cover the story. A few days after that, Lott's support among his colleagues dwindled and he ultimately stepped down from his Senate Republican leadership post.

The incident was an early warning of sorts, for politicians, public figures of all kinds, and people in the media. It signaled the accelerating evolution of communications. Blogs were coming into their own, and they have become more and more of a force.

What are blogs, exactly? There's no single definition, but most have at least three things in common. They are typically composed of short essays, also called postings. The postings are shown in reverse chronological order—that is, most recent items at the top. And they have hyperlinks pointing to other Web pages.

Blogs are a conversational medium. Many of the best blogs let readers post comments, and bloggers are fond of pointing at each others' work to highlight and discuss it.

They are also conversational because the best blogs are written with a distinctly human voice. We can contrast this with the typical newspaper article, which feels as though it was written according to a formula and by a committee, not a person. The blog's very humanity is a vital boost to the form.

Blogs should also be understood in their wider context, as a proxy for the many different ways that average Internet users are now able to publish (in a variety of formats, including audio and video) their own works online. This is part of the democratization of media, both in creation and distribution. The tools we use to create digital content are increasingly powerful but decreasingly expensive. And we can show our work to a potentially global audience. There is no analog in human history for this development.

According to the Pew Internet Project, a nonprofit organization researching the Internet's impact on various aspects of American life, blog reading has risen along with blog creation. More than a quarter of the U.S. population has read a blog and, while the numbers flattened somewhat during 2005, mass-media coverage has given blogs higher visibility than ever.

Bloggers have won the most attention for their writing about highly topical issues in politics, technology,

and other such fields. But we must recognize that most blogs—the vast majority of the millions now online—are not aimed at large audiences yet have high value. For some bloggers, their online journals have essentially replaced the traditional letter home to family and close friends. The value the reader gains from those highly personal blogs must surely be higher per reader than the equivalent value of the most popular sites.

Blogging took off first in the United States. This was predictable, given that the early online tools came from U.S. software developers. But it is becoming a global phenomenon. China, for example, has some 5 million bloggers, a rough estimate and a relatively low percentage of the population. More and more Chinese people are launching their own blogs despite censorship by government (with the assistance of technology companies). Africa has the lowest blogger numbers of any continent; Ethan Zuckerman, co-founder of the Global Voices Online project at Harvard University's Berkman Center for Internet & Society, says the best estimates suggest there are about 10,000 bloggers in sub-Saharan Africa. Numbers are growing in the Middle East and North Africa, he says, with some 50,000 mostly young people posting to their blogs.

Among the most ardent blogging nations outside the United States is France, with more than 2 million bloggers, according to software executive Loic Le Meur. They're having an impact. He says three government ministers have invited bloggers to interview them; Le Meur was himself part of one of those sessions. He notes that blogs are becoming one of the most important means of expression in that nation and are causing some worry in the ranks of mainstream journalism.

The relationship between bloggers and journalists has been noteworthy. Some professionals jumped into blogging enthusiastically. Others have dismissed the entire genre.

I started what is believed to have been the first blog by an American mass-media journalist in 1999, when blogging software was only just beginning to appear. I was writing about technology, and the blog, which appeared in addition to my newspaper column at the *San Jose Mercury News* in California's Silicon Valley, became an essential part of my job. Why? Because it enabled me to have more of a conversation with my readers. I'd learned quickly, writing about technology in Silicon Valley, the heart of the high-tech industry, that my readers collectively knew much more than I did, and the blog was another way of learning.

Since then, blogging has slowly intersected with the news business. The Pew Internet Project found that American journalists are much more likely to read blogs than the general public. This is unsurprising, because blogs are serving a role somewhat like the trade journals, which are valuable source material for reporters in any number of disciplines.

Even now, however, most professional journalists do not publish blogs. The format, which tends to encourage a personal voice, has felt somewhat unnatural to professionals who are trained to keep their own feelings and beliefs out of what they write and broadcast. Opinion columnists are the obvious exception to this general rule, and several business columnists have been among the best in the genre, offering deeper insights into the issues they cover in the print editions. This approach is also working well for journalists who cover other kinds of topics, notably entertainment.

Blogs can also bring a quality to news coverage that is still somewhat rare: transparency. News people demand transparency from others but have typically been less willing to shine lights on their own business. This is changing for the better, and blogs are a useful tool in that process. CBS News's PublicEye blog, for example, offers insights into the broadcaster's own operations.

Blogs have turned out to be particularly well suited to breaking news, such as natural disasters, about which readers are hungry for every scrap of new information. In one especially notable case, the blog replaced the front page for a time. The New Orleans *Times-Picayune*, forced out of its own building along with other residents of the city that was nearly destroyed by Hurricane Katrina, helped keep its readers informed via a blog when the print edition couldn't be published.

Blogs by journalists make up a tiny percentage of all blogs, of course. Some bloggers do superb journalism

on their own, competing for attention from readers and respect from sources. Bill Gates, the co-founder and chairman of Microsoft Corporation, has given interviews to bloggers who write only online. Other corporate executives are learning that key bloggers can be an excellent conduit to the general public.

Inevitably, media companies have considered capturing the best blogging talent for themselves. One company, Weblogs Inc., a producer of niche blogs on topics like technology and automobiles, was purchased by Time Warner's AOL division for a reported \$15 million. More such deals are likely.

But even if major media organizations try to co-opt the blogging movement, they can't succeed. The financial barrier to entry in this marketplace is close to zero already. Anyone with talent and time can create a blog—or podcast or other media site—without spending a fortune.

It is also inevitable that the rise of blogging has led to questions and criticisms about bloggers' frequent willingness to shoot verbally before aiming. Nor are fairness and thoroughness thought to be among bloggers' best qualities. But in a marketplace of ideas,

inaccuracies tend to be found and pointed out, and reputations rise and fall on quality to a serious degree. Meanwhile, the readers of blogs are learning to apply appropriate skepticism to what they read online.

Blogs and related citizen media are not going away. They have become a liberating venue for people's voices. A longstanding maxim of American media has held that freedom of the press belongs to those who own a press. In the new era of digital media, we all own a press—and the more voices, the better. ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.

Photo montage: The number of bloggers around the world increases daily. Blogs in Chinese, Arabic, Portuguese, and Japanese are among the millions of blogs on the Internet. (All photographs from AP/Wide World Photos)





Online Albums

Photographers have translated the language of their art into new Web-based media opportunities. Many photoblogs are visual online journals that chronicle family, friends, or the life and activities of a community. Others are like galleries, giving photographers a place to present their work to an audience without the intervention of a publisher or patron.

Using technology that makes it easy to upload, disseminate, and display images, some photoblogs began simply as a way to share moments of celebration and family life with relatives and friends spread across the country. Soon, other visitors found their way to personal photoblogs through Internet searches, and broader

audiences began to share family albums.

The photoblog is a unique new Web-born medium, attracting ever-greater audiences through the universal appeal of images.

The U.S. Department of State assumes no responsibility for the content and availability of the photoblogs.

Twenty-three-year-old photographer Justin Ouellette shares his work and insights into his life in Portland, Oregon, at chromogenic.net. He also describes his photographic techniques and experiments, such as developing film in coffee and Vitamin C. "I'm not a chemist so I have no idea how it works, but it's true." (Justin Ouellette, <http://chromogenic.net>)



Top: Rannie Turingan's photoblog features pictures of his friends and his community in Toronto, Canada. "Despite being in an age where digital cameras are ruling the marketplace, my heart still yearns for film," and he's created his site to share the images taken with cameras based on an older technology. (Copyright © Rannie Turingan, <http://photojunkie.my-expressions.com>)

Bottom left: Derek Powazek takes photos in San Francisco and posts them online at ephemera.org everyday. He's a professional photographer who recognizes the fleeting nature of his art.

Derek writes, "Ephemera means temporary. Short-lived. Ephemeral things don't last very long. Like a May Fly or the split second a shutter is open. Or web pages. Or us." (Courtesy Derek Powazek, <http://www.ephemera.org>)

Bottom right: Everyday life, like this photo taken in her kitchen, is the focus of Raine Paré-Coull. Raine describes herself as a Halloween enthusiast, and her photoblog documents the spooky fun of her family celebration. (Copyright © Raine Paré-Coull, <http://yard-sale.phototage.com>)

My Unblinking Eye . . .



"Star of India"

The Star on India in San Diego goes to sea only one weekend a year. You can not buy a ticket to get on the ship. You must be invited to go. I was lucky enough this year to be one of the invited. It really is an amazing experience to be sailing on the oldest sea worthy steel hull ship in the world.

Snapped by Marc Balanky / on 05.11.18 11:06 / [Permalink](#) / [Comment](#)



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Top: Marc Balanky's photoblog displays the range of his experience as a professional photographer, from coverage of a sailing trip to rock concerts and food spreads. Marc also uses his camera to showcase his hometown of San Diego, California, what he calls "America's Finest City from its striking deserts to its beautiful beaches." (Marc Balanky, PhotoSanDiego.com [<http://www.photosandiego.com>])

Bottom: A hot air balloon festival in Albuquerque, New Mexico, is one of many images of the western United States on Tonya Poole's photoblog at <http://vivo.my-expressions.com>. "I experience life, and I come back and tell stories about it in words and images. You're welcome to come along on any of my journeys, be they inside, outside or upside down." (Tonya Poole, adventurejournalist.com)



Top: George Illes is an environmental engineer living in Orange County, California, who currently pursues photography as a hobby. He's posted a photo a day to his blog, trying to learn how to see the extraordinary in the ordinary. "Doing so is a reminder that I don't need to scale Mount Everest or write the Great American Novel or 'become somebody' to see that every moment is unique. That, in fact, there are no ordinary moments. Only extraordinary ones." His work can be seen at www.jargonhunter.com. (Courtesy George Illes)

Bottom: The winners of the Ultimate Frisbee National Championships celebrate in this photo from Paul Bausch's weblog, <http://www.onfocus.com>. Paul is a Web application developer and technical writer in Corvallis, Oregon. He has published several books on emerging technology, which he discusses at his Web site, where he also features his own photos. "I like to take pictures." (Copyright © Paul Bausch)



Top left: A self-portrait of Becky Ramotowski with equipment she uses to capture the heavens—stars, moons, and planets—in pictures. She's an astronomer and started the blog because of the Moon, she writes. "We are pretty lucky to have a Moon. Mercury and Venus are moonless. Jupiter has the most with sixty-three. Without a Moon, we would not have eclipses, nor would we have anything to blame our weird behavior on." (Becky Ramotowski, <http://www.infinity.my-expressions.com>)

Bottom: On her photoblog, Brenda Fike captures moments from her life and captions this image, "In a hurry . . . It's only a 30 day free trial!" Haircuts, bowling, and moments at the mall are other ordinary moments that take unusual shape in her galleries. (Copyright © Brenda Fike, <http://bkf.my-expressions.com>)

Top right: This photograph of a young boy diving into a swimming pool is typical of the everyday life experiences shared at <http://photo.bfpmedia.com>. This is one shot from the photographer's chronicle of her life in the island state of Hawaii. (Christine Fron)



Top: A boy running through farm fields was photographed by Kathleen Connally for her photoblog, *A Walk Through Durham Township, Pennsylvania*. Connally began her blog in 2003, primarily to practice her photography and to document the people and places near her home. Kathleen writes to visitors, "Some images work, some don't—you're witnessing a daily work in progress!" (Copyright © Kathleen Connally, www.durhamtownship.com)

Bottom: A young man riding the subway is one of the scenes of New York City that fills the photoblog, *joe's nyc*. In 2006, Joe becomes adjunct faculty at New York University's school of continuing and professional studies, teaching digital photography. (Copyright © Joseph O. Holmes, <http://joesnyc.streetnine.com>)



Making Connections a World Away

Advances in information technologies have become so accessible and economical that average people are able to reach far beyond their own communities to connect with new people, sharing interests or pursuits with people who may have vastly different backgrounds and experiences. The outcomes of these connections unfold in unpredictable ways with each passing day of the Information Age now defining our times.

In the articles that follow, we highlight several online communities in which participants have found each other and created critical mass to bring vigor to interests that may never have found a chance to thrive otherwise.

Photo montage: People with similar interests, separated by geographical distance, are able to share information, ideas, and goals through such Web sites as Native Youth Magazine.com, Youth Radio, and Wikipedia. (Courtesy Native Youth Magazine.com, Youth Radio, and Wikipedia)

Speaking in Many Tongues



The English language has long dominated the Internet, accounting for about 83 percent of total content, according to The Internet Society. But when you visit the pages of *Wikipedia* [<http://www.wikipedia.org>]*—*the free, collaboratively-edited, Internet-based encyclopedia*—*you'll find a dazzling diversity of languages. Articles in the encyclopedia and the other communications projects that constitute *Wikimedia* [<http://www.wikimedia.org>] *are available in languages from Esperanto to Hawaiian to Navajo, gaining considerable ground on English, German, French, Polish, and Japanese, which remain the most prevalent languages on Wikipedia.*

"It started in an organic, ad hoc way," says Samuel

Klein, one of hundreds of administrators who monitors multilingual content for *Wiki* sites. “New people who are multilingual see the community exists, they find the existing pages, and they join in,” Klein adds.

Since its start in 2001, *Wikipedia* has grown to a worldwide cadre of volunteer contributors. These contributors, now some 30,000, can create, edit, translate, expand, and proofread articles—their own or those of other users. Remarkably, despite its growing size and complexity, *Wikipedia* projects are still developed in a loosely organized, nonhierarchical method that has attracted widespread involvement from contributors in non-English-speaking countries.

Boston-based Klein was attracted, too, by the international nature of *Wikipedia*. “I began a mailing list early last year to encourage users to sign up to a translators list and identify themselves if they were interested and had some skill in translations,” he explains. “It’s now possible to quickly list people who speak Spanish at a certain level, for example. People have also started adding information boxes to their pages identifying their skills in various languages.”

Translations occur through personal interests, referrals, and sometimes by accident. “For example, if I write an article on pineapples and another person writes an article on pineapples in Spanish, we may not know that the other article exists,” Klein explains. “Some third party can come along, see that there’s an article on pineapples in English and another related article in Spanish, probably talking about the same thing, and make a link between them.” Articles can link to the other languages for which there is related content. About 4,000 new articles are produced each day in languages other than English; about 2,000 are produced each day in English.

Other *Wiki* products have proliferated, all using collaborative methods and most in many language versions. These include Wiktionary, a multilingual dictionary; Wikiquotes, featuring quotes from individuals as well as from books, poetry, and films; Wikibooks, with educational and practical texts and manuals; Wikisource,

Why “Wiki”? Wiki is a piece of server software that allows users to freely create and edit Web page content using any Web browser. Wiki supports hyperlinks and has a simple text syntax for creating new pages and crosslinks between internal pages.

—From the WikiWay Website

a multilingual library of source texts; and the daily WikiNews.

Users can announce new or interesting information available for translation to other users. *Wikimedia* users can locate others with foreign language skills and suggest translation projects.

The *Wikimedia* translators also have a Translation of the Week Initiative, in which an unusual project or article is chosen by a vote every week. A style guide describes how to do translations and instructs on how to link the translations with other languages.

One of the latest projects does not rely primarily on language at all. Wikimedia Commons, another subpage on the vast *Wikimedia* site, is a repository that emphasizes the audio-visual—photos and other graphic images, spoken text, video clips, and music. These media can be shared by the other *Wikimedia* projects, enriching and expanding the access and reach of the Internet to global users each day.



Native American Youth Share Dreams Online

Native American young people have a place on the Internet where they can communicate with their peers, share information about their communities and culture, and inspire each other to pursue their dreams. The Web site *Native Youth Magazine.com* (NYM) [<http://www.nativeyouthmagazine.com>] was launched July 1, 2005, and six months later was logging about 2 million hits per month.

The brainchild of television news reporter Mary Kim Titla, NYM clearly is fulfilling the need she saw for an online magazine that showcases the talents, ideas, and lifestyles of Native American youth. The Web site invites young people between age 12 and 25 to submit articles, poetry, photographs, and artwork. The magazine is a vehicle for sharing information, but also for developing the talents of its readers.

Native youth from across the United States and Canada have responded, and their stories appear in the magazine’s Profiles section. A 23-year-old Choctaw Indian from Mississippi writes, “I am proud that we still have our Choctaw language and heritage. My tribe is doing its very

best to keep it alive!" A 14-year-old Navajo from Arizona describes his land: "The Navajo Nation extends into the states of Utah, Arizona, and New Mexico, covering over 27,000 square miles [about 70,000 square kilometers] of unparalleled beauty." An 18-year-old from Wisconsin says, "I'm a member of the Red Cliff Band of Lake Superior Chippewa Tribe. ... My goal for the future is to play college basketball."

Under Native Youth News, readers find a variety of topics, including a Native American youth art exhibit, a college course in Native American culture, a university program that offers free tuition to students from low-income families, and a story about the naming of a new director for the White House Initiative on Tribal Colleges and Universities. NYM also devotes pages to sports, photographs, a calendar, and a message board.

Mary Kim Titla, a member of the San Carlos Apache Tribe, spent 18 years as a television news reporter in Arizona. Interest in her people and in the concerns of Native American youth in particular led Titla to develop *Native Youth Magazine.com*. To find out what young readers wanted to see on a Web site, she conducted online surveys and consulted with her three sons (ages 10, 15, and 19), as well as with nieces, nephews, and other young Native people, who continue to advise her. "Native American youth from all over serve as consultants," she said, "because this Web site is for them."

In December 2005, Titla resigned from television news to devote her efforts to NYM full time. "I've enjoyed being a TV news journalist," she said, "but I believe my calling is now about molding young Native storytellers, and through the magazine I can help showcase their talents and lifestyles."

Young Voices on the Radio



Twenty-four hours a day, seven days a week, audiences can tune in to the sounds and stories of young people on *Web Radio* at <http://www.youthradio.org/webradio>. Dedicated to keeping young people up to date on what's going on in the world, the online radio station features news, commentary, and the latest in popular music.

Web Radio is a natural extension of the activities of Youth Radio, a youth development and media

organization that has been producing radio programming since 1992. Founded by broadcast journalist Ellin O'Leary, Youth Radio's mission is "to promote young people's intellectual, creative, and professional growth through training and access to media, and to produce the highest-quality original media for local and national outlets." Young people write, record, and produce their own programs, with the guidance of adult professionals.

Topics covered on Youth Radio are as varied as the interests of today's youth—from everyday concerns like getting along with schoolmates to the war on terrorism. Recent international reports have included a story about a 26-year-old female candidate for Parliament in Afghanistan; a black student's adjustment to university life in Cape Town, South Africa; and the perspective of a young American living in London during the 2005 subway bombings.

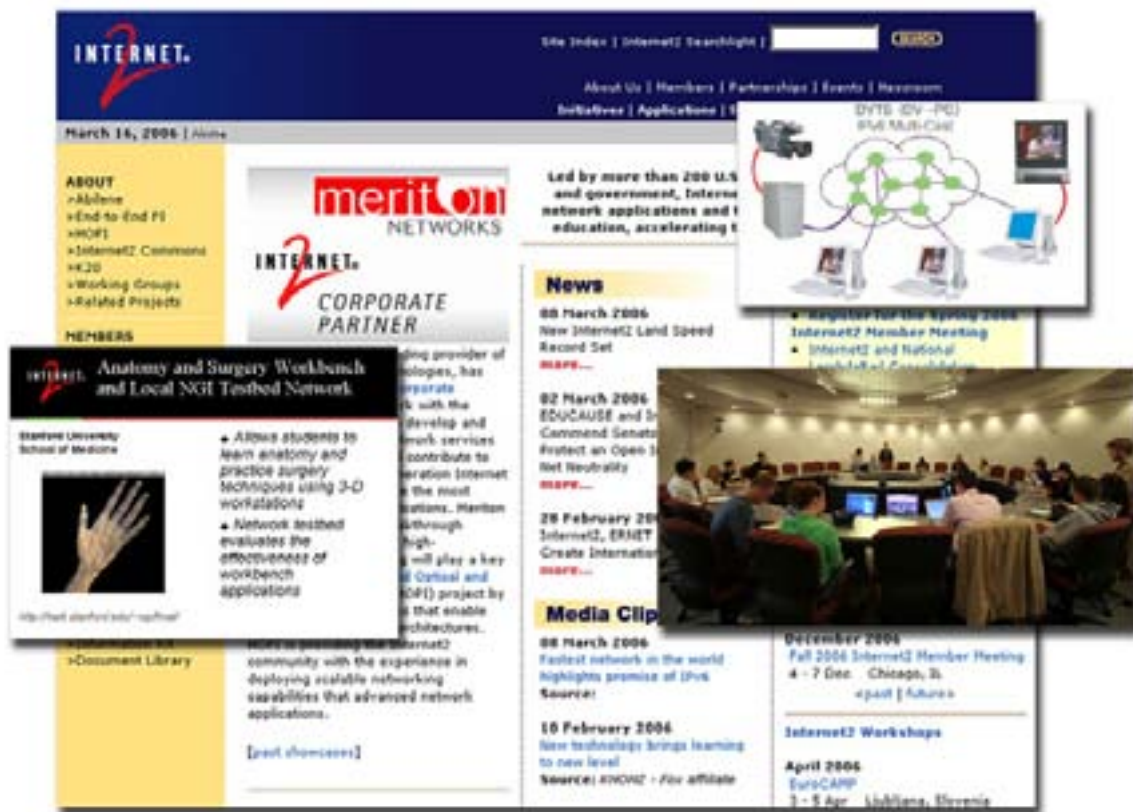
Youth Radio can be heard across the United States on the National Public Radio network and on local commercial and noncommercial stations, including several Spanish-language outlets. Besides tuning in to *Web Radio*, international listeners can find Youth Radio programming on the BBC (British Broadcasting Corporation) and the CBC (Canadian Broadcasting Corporation). Based in Berkeley, California, Youth Radio has bureaus in Washington, D.C.; Atlanta, Georgia; and Los Angeles, California. Correspondents report from all over the world.

With support from foundations, corporate sponsors, and government agencies, Youth Radio conducts free training courses in all aspects of radio production, as well as Web, video, and music production. Berkeley-area youngsters age 14 to 17 may apply to attend the 12-week courses, which are taught by professional journalists, audio engineers, and music producers and programmers.

Course participants are 80 percent low income and 80 percent youth of color.

"But technical training is only part of the picture," according to Youth Radio's mission statement. "Through journalism education, Youth Radio students also strengthen their foundation in basic life-skills: verbal expression, writing, computer technology, critical thinking, conflict resolution, and more. ... Graduates emerge with a new confidence and hope for creating a positive professional future for themselves, and with the concrete skills and contacts to get them there." ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.



Internet2—Creating Tomorrow's Internet

HEATHER BOYLES

A broad consortium of organizations works internationally to develop the Internet of tomorrow, allowing research and collaborative relationships that can foster greater innovation, stronger collaboration, and better education.

Heather Boyles is director of international relations for Internet2.

Internet2 is a not-for-profit U.S.-based consortium led by 208 U.S. research universities working in partnership with 70 corporations; nearly 50 government agencies, laboratories, and associations; and more than 45 international partners to develop, deploy, and use advanced network technologies to accelerate the creation of tomorrow's Internet. To enable researchers, scientists, and students to participate in this cutting-edge technology research, Internet2 has deployed a high-performance network across the United States called Abilene. The network connects 240 of Internet2's member institutions and 34 state education networks, and interconnects with similar leading-edge research networks in other countries. Abilene is engineered with the most cutting-edge network capabilities to give users speeds thousands of times faster than typical home broadband connections.

Photo montage: An international consortium is working to develop the next generation of the Internet. Their efforts already have made it possible to conduct educational demonstrations in real time by streaming high-quality digital video; to produce and share three-dimensional, digital images of precious artifacts; and to connect expensive scientific equipment, such as electron microscopes, for multiple users at different locations. (Clockwise from top left: Courtesy <http://www.internet2.edu> (2); Bradley University; Stanford University)

Internet2 and its partners are working to fundamentally change the way we live, learn, work, and play. Our community believes the network of the future will support a whole new set of applications—immersive collaboration environments, real-time computation-intensive simulations, high-definition television-quality video on demand, and others that probably can't even be imagined today. Already, students around the world can experience live real-time demonstrations of underwater exploration with famed oceanographer Dr. Bob Ballard, using DVD-quality videoconferencing technology, or dissect an anatomy specimen thousands of miles away with remote surgical instruments. Meteorologists at the National Oceanic and Atmospheric Administration use Abilene to make faster and more accurate severe weather predictions; astronomers control telescopes located in the remote regions of Hawaii and Chile without leaving their home institutions.

As these examples illustrate, research and education have become increasingly collaborative and dependent on simultaneous access to facilities, data, and people located around the world. It is no longer sufficient for U.S. researchers to have access to a high-performance, dedicated U.S.-centric network infrastructure. The same kind of dedicated, high-performance network infrastructure is needed internationally. To support and promote this worldwide cooperation, Internet2 created an international relations program to partner with similar organizations around the world to interconnect Internet2's U.S. network with its global counterparts. Together with the international research community, Internet2 believes that global collaboration will foster innovation in areas ranging from science and medicine to the arts, and will enhance economic growth in developing nations.



Today, many countries have established dedicated, high-performance National Research and Education Networks (NRENs) to support the needs of their own research and education communities. NRENs can be found in almost all the countries of western, central, and eastern Europe; most of Asia-Pacific; an increasing number of countries in southeastern and southern Asia; and in several countries in northern Africa and Latin America.

The value of each NREN is multiplied as individual networks connect to form a global research and education network infrastructure. Today, a typical NREN has to connect into only one or two other NRENs to reach the entire international research community. This high-performance network infrastructure is used to support, for example, thousands of researchers from dozens of countries involved in the Large Hadron Collider experiments at CERN (European Organization for Nuclear Research) in Geneva, Switzerland. The commercial Internet is simply not capable of transferring the massive data sets required for this type of experimentation between participating research institutes.

NRENs also support domestic and international collaboration in the arts and humanities and health sciences. For example,

Stanford University's HAVNet project (Haptic Audio Visual Network for Education and Training) illustrates how medical students are gaining hands-on surgical training from remote experts thanks to advanced connectivity. Whether dissecting virtual hands, performing surgical procedures on simulators, or witnessing a surgery remotely, students are able to participate in the learning process from multiple locations simultaneously. Likewise,

Photo montage: The Internet2 consortium includes 208 U.S. research universities; 70 corporations; nearly 50 government agencies, laboratories, and associations; and more than 45 international partners. (Courtesy <http://www.internet2.edu>)

specialists from around the world are able to connect virtually to work with students on unique procedures—even physically guiding a student’s hands from a remote location as they attempt a surgical simulation. This type of intensive instruction produces more informed, more prepared medical students who are better equipped to head into the operating room.

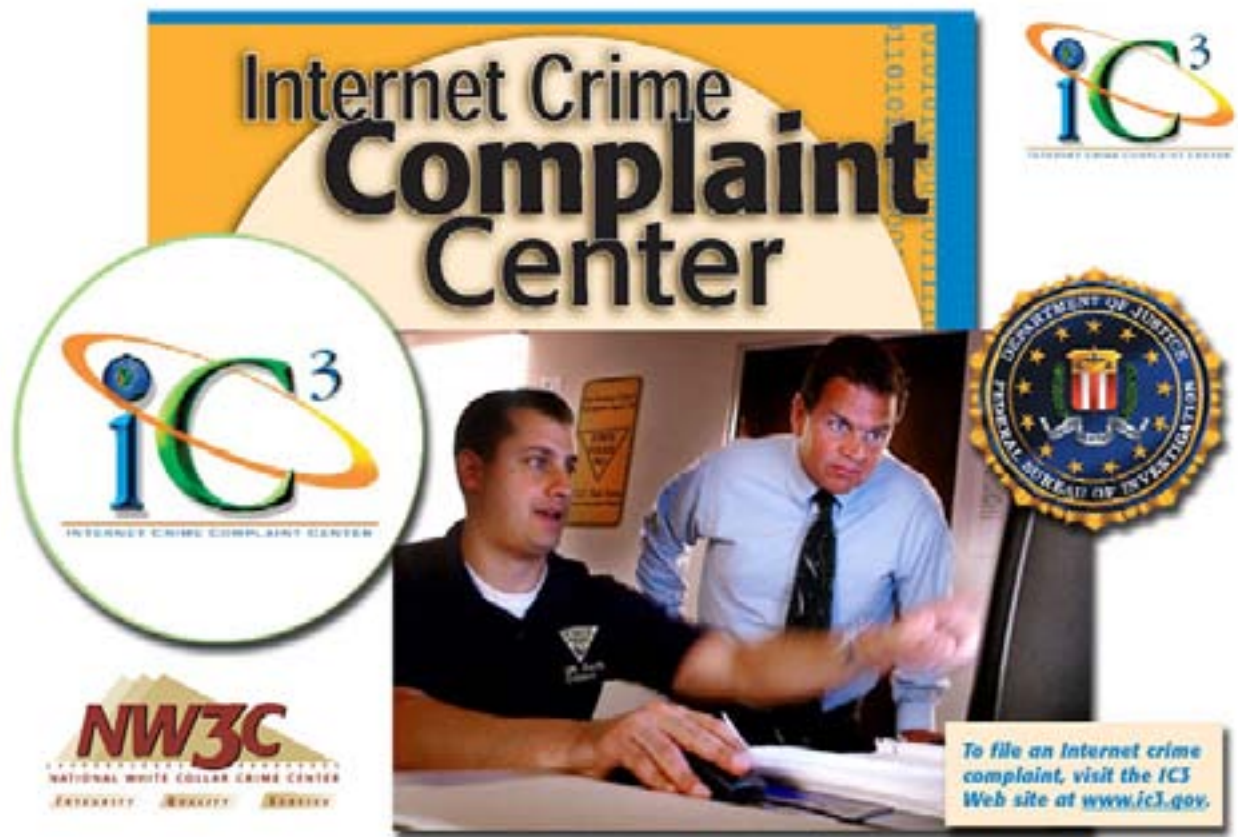
A recent U.S. National Science Foundation-sponsored workshop on the subject of a digital library of the Middle East illustrated that the humanities can also benefit from international NREN connectivity. Precious artifacts of the Middle East are now being digitized, many using magnetic resonance imaging (MRI) technology, to produce three-dimensional virtual objects. Through high-performance research and education networks, researchers around the world can examine and manipulate these rare objects from afar, with access granted to many more scholars than previously would have been allowed to physically handle the artifacts.

Pooling resources to interconnect universities in a country and then to other university networks is as critical for the higher education and research communities of a developing country as for a developed one. Developing countries are increasingly looking to NRENs as an important way to expand their own research and higher-education enterprises. For example, scanning electron microscopes—instruments that use atomic particles called electrons rather than light to form an image—are typically too expensive for every university to afford. By connecting these microscopes to an advanced network, it is possible for users to remotely control the microscope to examine their specimen via a high-quality digital image.

In developed and developing countries, obtaining better access to the underlying telecommunications infrastructure has proven crucial to the success of NREN efforts. In many countries, the NREN has played a key role in fostering the development of new communications infrastructures. For example, in Poland, the NREN was successful in partnering with the railroad company to lay new fiber-optic cable across the country. Now, PIONIER, the university and research network of Poland, has access to dark fiber (fiber-optic cable that is in place but not yet in use)—the raw element of building a high-performance network—and is no longer beholden to a traditional telecommunications provider’s services. Poland, the Czech Republic, Slovakia, and other countries of Eastern Europe have all followed this model, at times leapfrogging the NRENs of Western European countries in their ability to access high-speed fiber infrastructure.

Internet2 and its international partners will continue building the dedicated, high-performance network infrastructure in support of the research, teaching, and learning needs of the global community. Based on Internet2’s experience so far, the innovation and experiences of this community and its interest in building advanced network infrastructure will lead to a smarter, faster, more reliable, and more secure Internet. In doing so, we will enable new ways to conduct science, to engage in business, to educate anytime and anywhere, and to bring communities and families together in rich new ways. The research and education community is optimistic that such an Internet will be realized through the combined efforts of organizations like Internet2 all over the world. ■

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.



Fighting Online Crime

DANIEL LARKIN

Commerce online has brought crime online. Law enforcement agencies have developed new methods and new relationships to catch the bad guys in cyberspace.

Daniel Larkin is unit chief of the Internet Crime Complaint Center (IC3) at the U.S. Federal Bureau of Investigation (FBI).

The Internet Crime Complaint Center (IC3) is a reporting and referral system for Internet crime complaints from people in the United States and around the world. Through an online complaint form and a team of agents and analysts, IC3 serves the public and U.S. and international law enforcement agencies investigating Internet crime.

Internet crime, also called cyber crime, is any illegal activity arising from one or more Internet components, such as Web sites, chat rooms, or e-mail. Cyber crime can include everything from nondelivery of goods or services and computer intrusions (hacking) to intellectual property rights abuses, economic espionage (theft of trade secrets), online extortion, international money laundering, identity theft, and a growing list of other Internet-facilitated offenses.

Photo montage: The FBI's Internet Crime Complaint Center (IC3) is a clearinghouse for individuals' reports of illegal online activities. IC3 connects information from, perhaps, hundreds of victims of the same scam and builds a substantial case for law enforcement agencies to pursue. (Photograph from AP/Wide World Photos; Logos courtesy Internet Crime Complaint Center)

Crime Moves Online

The IC3 began as a concept in 1998 with an appropriate recognition that crime was moving to the Internet because business was moving to the Internet, and the FBI wanted to be able to track that activity and develop investigative techniques specific to Internet crimes.

At that time there was no single place where people could report Internet-related crimes, and the Federal Bureau of Investigation (FBI) wanted to distinguish online crime from other criminal acts that are normally reported to local police, the FBI and other federal law enforcement agencies, the Federal Trade Commission, the U.S. Postal Inspection Service (USPIS—the law enforcement arm of the U.S. Postal Service), and others.

The first office, set up in 1999 in Morgantown, West Virginia, was called the Internet Fraud Complaint Center. It was a partnership between the FBI and the National White Collar Crime Center, a nonprofit contractor to the U.S. Department of Justice whose primary mission is to improve the ability of state and local law enforcement officers to identify and respond to economic and cyber crime.

In 2002, to clarify the scope of cyber crime being analyzed, from simple fraud to the range of criminal activities that were appearing online, the center was renamed the Internet Crime Complaint Center and the FBI invited other federal agencies—USPIS, the Federal Trade Commission, the Secret Service, and others—to help staff the center and contribute to the work on cyber crime.

Today at the IC3 in Fairmont, West Virginia, six federal agents and approximately 40 analysts from industry and academia receive Internet-related criminal complaints from the public, then research, develop, and refer the complaints to federal, state, local, and international law enforcement or regulatory agencies and multiagency task forces for investigation.

Through an IC3 Web site [<http://www.ic3.gov>], people from all over the world can file complaints about Internet crime. The Web site asks for a person's name, mailing address, and telephone number; the name, address, telephone number, and Web address, if available, of the individual or organization suspected of criminal activity; details about how, why, and when a person believes a crime was committed; and any other information that supports the complaint.

Building a Case

The main operational goal of the IC3 is to take an individual citizen's complaint that might represent a crime involving damages of, for example, \$100, and combine it with information from 100 or 1,000 other victims around the world who have lost money in the same scenario, and build that into a substantial case as quickly as possible.

The reality is that most law enforcement agencies are not allowed to work cases that represent relatively small amounts of money—\$100 is probably below the investigative threshold. But most bad guys are online to expand the scope of their victimization and moneymaking opportunities; a cyber crime almost never involves just one victim. So if IC3 investigators can link related complaints and turn them into a \$10,000 or \$100,000 case with 100 or 1,000 victims, then the crime becomes a more significant matter and law enforcement agencies will be able to investigate it.

IC3 sometimes helps law enforcement agencies by researching and building the initial case. In the first two and a half years of the project, despite an effort to build cases and refer them quickly to law enforcement agencies, IC3 investigators found that not all cyber crime task forces are equipped to quickly follow or investigate Internet-related crimes. Some task forces may not have the ability to do an undercover operation or the equipment to follow the digital trail of evidence the IC3 passes on to them, so it's increasingly important for IC3 to develop and follow the trail and build the initial case.

For example, the IC3 might identify 100 victims and determine that the criminal activity seems to be coming from a server in Canada, but actually that server is just a compromised machine. The bad guys are using it as a "bounce point" to mask their real location. So it is useful for IC3 analysts to learn more about the bounce point. It might be that a group in Texas, West Africa, or Romania is using the server in Canada to collect victim information.

Industry Alliances

Because IC3 analysts have found that it is better in some complex technical cases to follow the early investigative trail, the center created a spin-off for that purpose in Pittsburgh, Pennsylvania, called the Cyber Initiative and Resource Fusion Unit (CIRFU). CIRFU analysts eliminate false leads and refine a case before it is referred to a local or international law enforcement agency or task force.

CIRFU is supported by some of the biggest targets of cyber criminals—online organizations and merchants like Microsoft, eBay/PayPal, and America Online, and industry trade associations like the Business Software Alliance, the Direct Marketing Association, the Merchant Risk Council, the Financial Services Industry, and others. Investigators and analysts from these organizations, many of whom are already working on cyber crime issues, have joined CIRFU to identify Internet crime trends and technologies, develop significant cases, and help law enforcement agencies worldwide identify and combat Internet crimes.

At the CIRFU, federal agents and analysts from industry and academia work together to find out where the crime originates, who is behind it, and how to fight it. When the CIRFU hears from an industry group about a specific trend or problem, the unit forms an initiative to target some of the top offenders and make arrests, and not only prosecute them but learn more about how they operate. Then IC3 informs the public about the trends and scams through a public service advisory or alert that is posted on the IC3 Web site or disseminated in other ways.

Based on consumer complaints and industry data, the investigators monitor trends and problems and form six- to 12-month initiatives with industry partners to target specific criminal activities, including the following:

- **Reshipping:** An operation in which conspirators or unwitting accomplices in the United States are hired to receive packages of electronic or other merchandise bought with fraudulent or stolen credit cards, then repackage the merchandise for shipment, usually abroad. By the time the merchant finds out that the credit card was fraudulent, the merchandise is already in another country.

- **Criminal spam:** Unsolicited bulk e-mail that is used to commit financial institution fraud, credit card fraud, identity theft, and other crimes. Spam can also act as a vehicle for accessing computers and servers without authorization and transmitting viruses and invasive software to other computers.

- **Phishing:** Attempts to steal passwords and financial information by posing as a trustworthy person or business in a seemingly official (spoofed) electronic communication, such as an e-mail or a Web site.

- **Identity theft:** The result of an offender using someone's stolen personal information to commit fraud or other crimes. One bit of personal information is all someone needs to steal an identity.

International Outreach

The IC3 also works with international organizations, such as the Economic and Financial Crimes Commission (EFCC) in Nigeria, where a high level of economic and financial crimes like money laundering and the advance-fee fraud, or 419, have had severe negative consequences for the country.

Named for the violation of Section 419 of the Nigerian

Criminal Code, the 419 scam combines the threat of impersonation fraud with a variation of an advance-fee scheme. A potential victim receives a letter, e-mail, or fax from people posing as Nigerian or foreign government officials, asking for help in placing large sums of money in overseas bank accounts, and offering a share of the money in return. The scheme relies on convincing a willing victim to send money to the letter's author in several installments for a variety of reasons.

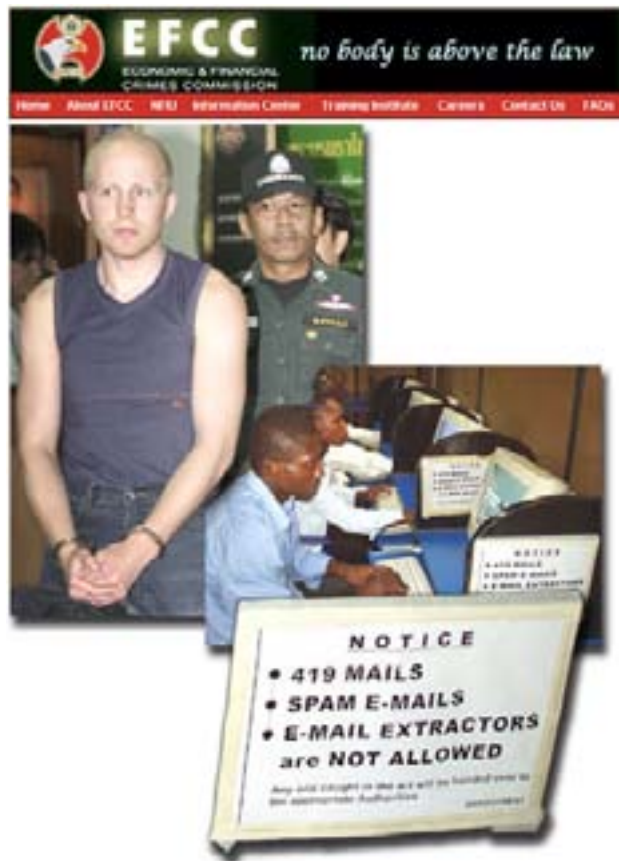


Photo montage: The Internet Crime Complaint Center and other U.S. agencies work with international organizations like the Economic and Financial Crimes Commission (EFCC) of Nigeria and with law enforcement officials in other countries to combat Internet fraud. (Photographs from AP/Wide World Photos; Web banner courtesy EFCC)

In Nigeria, the menace of such crimes led to the establishment of the EFCC. Over the past year and a half, IC3 has made many new merchandise seizures and arrests in West Africa as a result of this and other alliances.

IC3 also works closely with the Canadian organization, Reporting Economic Crime On Line (RECOL). RECOL is administered by the National White Collar Crime Center of Canada and supported by the Royal Canadian Mounted Police and other agencies. RECOL involves an integrated partnership between international, federal, and provincial law enforcement agencies, and regulators and private commercial organizations that have a legitimate investigative interest in receiving economic crime complaints.

A growing group of international agencies are involved in fighting cyber crime. The IC3 works with

law enforcement officials in many countries, including Australia and the United Kingdom. IC3 representatives also attend periodic meetings of the G8 (Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States) Subgroup on High-Tech Crime, part of which works to combat cyber crime and enhance cyber investigations.

The IC3 and the CIRFU projects are a constantly evolving work in progress. Along the way, IC3 agents and analysts revisit what is working and what is not working, and constantly seek out experts and sources of intelligence to get smarter about cyber crime and learn how to more effectively fight it. That is the constant charge at IC3. ■

WHAT EVERY E-CONSUMER SHOULD KNOW

A prominent U.S. consumer advocacy group offers guidelines for Internet activity

The Consumer Reports Webwatch

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We believe Web sites will promote Web credibility if they adopt these basic policies:

Identity:

- Web sites should clearly disclose the physical location where they are produced, including an address, a telephone number, or an e-mail address.
- Sites should clearly disclose their ownership, private or public, naming their parent company.
- Sites should clearly disclose their purpose and mission.

Advertising and Sponsorships:

- Sites should clearly distinguish advertising from news and information, using labels or other visual means. This includes “in-house” advertising or cross-corporate ad sponsorships. Search engines, shopping tools, and portals should clearly disclose paid result-placement advertising, so consumers may distinguish between objective search results and paid ads.
- Sites should clearly disclose relevant business relationships, including sponsored links to other sites. For example, a site that directs a reader to another site to buy a book should clearly disclose any financial relationship between the two sites.
- Sites should identify sponsors. The site’s sponsorship policies should be clearly noted in accompanying text or on an “About Us” or “Site Center” page.

Customer Service:

- Sites engaged in consumer transactions should clearly disclose relevant financial relationships with other sites, particularly when these relationships affect the cost to a consumer.
- Sites should clearly disclose all fees charged, including service, transaction and handling fees, and shipping

costs. This information should be disclosed before the ordering process begins.

- Sites should clearly state and enforce policies for returning unwanted items or canceling transactions or reservations.

Corrections:

- Sites should diligently seek to correct false, misleading, or incorrect information.
- Sites should prominently display a page or section of the site where incorrect information is corrected or clarified.
- Sites should strive to mark content with its published date when failing to do so could mislead consumers.
- Sites should clearly state their policy on a consumer’s rights if a purchase is made based on incorrect information on the site.

Privacy:

- Site privacy policies should be easy to find and clearly, simply stated.
- Sites should clearly disclose how personal data from site visitors and customers will be used. Personal data includes name, address, phone number, and credit card number.
- Sites should disclose whether they use browser-tracking mechanisms such as “cookies” and other technologies such as Web beacons, bugs, and robots.
- Sites should explain how data collected from them will be used.
- Sites should notify customers of changes to privacy policies and provide an easy opt-out alternative.



The Next New Thing Is Here

JEFF GRALNICK

The last decade's accelerated development of new media and technologies is not over. The next wave of change is centered in the palm of your hand. Delivery of video via cell phones is the newest leap in information technologies, and it has the potential to shake up society in unpredictable ways.

Jeff Gralnick is a broadcast and online news veteran, currently serving as a special consultant on the Internet and new media technologies to NBC News. He is also an adjunct professor of new media at the Columbia University Graduate School of Journalism.

Photo montage: The ubiquitous cell phone already has had a significant impact on daily life, and third-generation phones (3Gs) are taking off in new directions. (All photographs from AP/Wide World Photos)

As an industry, the Internet has been driven by the search for and discovery of “the next new thing,” and once again a technological leap has produced it. The explosion of mobile bandwidth combined with new telephone technologies has given us cell phones that take and transmit pictures and that are going to be both “game” and world-changers.

Do you want to know what cell phone video is going to mean? Try these statistics on for size:

- By 2010, global shipment of new cell phones will reach just over 1 billion; 87 percent of those will be video capable.¹
- By 2010, 228 billion images (still and moving pictures) will be transmitted by cell phone. That's more than will be taken by all other devices combined.²
- By 2009, China alone will have 116 million video-capable cell phones.³
- By 2008, 125 million people will be watching live television on cell phone handsets.⁴

- Consumption of video on laptops and PCs has grown from 900,000 streams and downloads in 2000 to 14.2 billion in 2004. Expectations are those numbers will double and redouble in the next two years.⁵

This is just the beginning. Third-generation cell phones, the so-called 3Gs, are just beginning to explode across the global communications landscape, flowing from east to west out of Japan and Korea. In these countries, 3G networks were built out first and fastest because mobile access to bandwidth was recognized as the business model key to the communications future. It is no accident that the watchword of SK Telecom, Korea's leading mobile communications company, is "broadband in your hand."

In Korea, the answer to the question—Will people throw away their relatively new and pricey second generation (2G) phones to upgrade to 3G?—clearly appears to be "yes," with migration from 2G to 3G there running at 74 percent in the first quarter of 2005.

While in Asia and Europe 3G is a "new thing" that has arrived, it's just arriving in North America. There, the build out of high-speed wireless networks has lagged and is at the barest of beginning points.

Anecdotal evidence, which is all that is available because actual numbers are being suppressed for what are called "competitive reasons," suggests that cell phone video consumption is "high," although the number of video-capable handsets in use in the United States has just passed the 1 million mark. Compare that with the number above for China or the 76 million said to be in use in India, and it is clear how far the United States still has to go in this area.

This adds up to an ongoing global explosion of access to news, information, and entertainment content in an unwired world unseen in my view since a little company in Japan called Tokyo Tsushin Kogyo Ltd. introduced the transistor radio in 1954. Who, you ask? Today it's called Sony.

The transistorized radio essentially put the world into everybody's shirt pocket or purse. Where you were, so was the news and all forms of entertainment. You could now be in touch with your world all the time. So-called portable radio was the spur for what we know today as "all news radio," and it made "top 40" music part of everyday culture.

What the transistor radio did for audio, the cell phone is doing for video as both a "third screen" for viewing and also the mechanism for sending video material out to other third screens. And that will change forever—yes, forever—the way global societies can and will communicate.

Look at just some of what has happened or is being planned:

- News video is already being provided by cell phones. Two years ago, ITN in London trumpeted the fact that it beat its competition with coverage of a London fire provided by a cell phone user. Similarly, in Chicago in 2005, WBBM scored a news beat with cell phone video of another fire. And those are just "messenger" events in new news coverage by cell-ographers.
- Cable news networks such as CNBC and MSNBC and Fox are already being distributed live on cell phones in the United States. Live reporting by cell phone will follow.
- And what about non-news? At a Media Center new media/wireless conference in Los Angeles in May 2005, Lucy Hood, Newscorps' senior vice president for mobile, sketched out near-term plans for five channels of television for cell phone consumption that would include news, sports, and entertainment.



Photo montage: Not so long ago, the camera phone was an exciting innovation. Today, cell phones are able to receive streaming video and run computers from afar, while devices for viewing movies and video games fit in the palm of your hand. (All photographs from AP/WideWorld Photos)

- Similarly, in February 2006, Richard Branson's Virgin Mobile announced at the 3G conference in Barcelona plans to start selling handsets equipped to receive BT Group digital television content with a single click.

Put all of this together and it adds up to the kind of omen a very smart man I once worked with would warn about when he perceived a coming trend or event that demanded attention: "There's a cloud," he would say, "out there on the horizon that's no bigger than a man's hand right now." Small now, he was suggesting, but watch out when it gets here. That is exactly what cell phone video represents—a coming cloud ready to burst over the communications landscape. What will the world be like when it does? Listen to several experts:

At the Barcelona conference where Virgin made its announcement, T-Mobile Chief Executive Rene Obermann predicted that "mobile will progressively become the primary personal access to the Internet."

Sree Sreenivasan, who directs the New Media Department at Columbia University's Graduate School of Journalism and is a regular and respected commentator on the Internet, sees a world that will be made both "exciting and scary," where there is access to "video of things we haven't seen properly [or ever] before." He cites the horrific Paris Concorde crash in 2000 as an example. "Instead of just a couple of grainy photos, we'll get high-resolution video from ... hundreds or millions ... ready to whip out their [cell phone] cameras and point them at every perceived event." It's a world of instant reporting by a universe of citizen journalists who are empowered by and armed with nothing more than cell phones.

That's the exciting part, but Sreenivasan also sees a significant downside. He points to a Web site like <http://www.hollabacknyc.blogspot.com>, "where alleged street harassers are photographed and put online. "Imagine," he says, "what every aggrieved man or woman can do with every perceived insult, harassment, and threat with these [cell phone] cameras."

It's Worth Thinking About

Adam Clayton Powell III, director of the University of Southern California's Integrated Media Systems Center, projects a world in which cell phones begin providing the opportunity for truly merged communicating.

"It is clear," he told me, "that people want video wherever they are. And in a few years, video IM [instant messaging] no doubt will coexist on cell phones with [programs like] the NBC Nightly News and people will

be toggling back and forth between the broadcast and video IM to chat with friends about the news and the newscast." In this merged world, he wonders "whether those users will still be called 'viewers' and the programs they watch will still be called 'television.'"

How fast is this happening and how do we know it is happening?

Reuben Abraham, a sixth-year Ph.D. candidate at Columbia University in New York City who has done work for the Columbia Institute for Tele-Information, is convinced that while doing research in India he found the answer. "I watched fishermen come in from a day on the sea," he told me, "and they were watching videos and news on their cell phones. So when it is already happening in parts of the economic spectrum where you would least expect it, you know it is exploding."

What I think Abraham also saw may be the most important byproduct of this new technology—the creation of the true and instant global village. When contracts are being let for high-speed 3G networks all over Africa, including a closed society like Libya's, and when impoverished and undereducated fishermen on the Indian Ocean are dialing into and seeing the world, something remarkable is happening.

Fostering global communication and understanding may not have been the intention of the techies who created 3G cell technology, but, as an unintended consequence, it is what makes this "next new thing" not a bad thing at all. ■

¹ InfoTrends, January 2006

² InfoTrends, January 2006

³ W2Fpri, Research, April 6, 2005

⁴ MediaCenter Conference, May, 2005

⁵ AccuStream imedia Research, 2005

The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.



VIDEOBLOGS ONLINE

In "Family," Michael McIntee remembers his father's life and stories in a discovery of the importance of family history. It is from the videoblog site *Minnesota Stories* [<http://mnstories.com>], where viewers are invited to share their lives with an online audience, creating "an evolving showcase for local citizen media." Used by permission.

[<http://usinfo.state.gov/journals/itgic/0306/ijge/ijge0306.htm>]

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Online resources for new and emerging media information

American Library Association
<http://www.ala.org>

American Press Institute
<http://www.americanpressinstitute.org/>

American Society of Newspaper Editors
<http://www.asne.org/>

Berkman Center for Internet & Society at Harvard Law School
<http://cyber.law.harvard.edu/home/>

Electronic Frontier Foundation
<http://www.eff.org/>

FedNet
<http://www.fednet.net>

Google Books Library Project
<http://books.google.com/googlebooks/library.html>

International Federation of Library Associations and Institutions (IFLA)
<http://www.ifla.org/>

Internet Crime Complaint Center
<http://www.ic3.gov/>

Internet2
<http://www.internet2.edu/>

Library of Congress Launches Effort to Create World Digital Library
<http://www.loc.gov/today/pr/2005/05-250.html>

Library of Congress Veterans History Project
<http://www.loc.gov/vets/>

MSNBC TV Citizen Journalists Report
<http://www.msnbc.msn.com/id/6639760/>

National Association of Broadcasters
<http://www.nab.org/>

National Institute for Computer-Assisted Reporting
<http://www.nicar.org/>

National Native News
<http://www.nativenews.net/>

National Newspaper Association
<http://www.nna.org/>

New American Media
<http://news.newamericamedia.org/news/>

NewsLab
<http://www.newslab.org/index.htm>

NPR Podcast Directory
http://www.npr.org/rss/podcast/podcast_directory.php

One Laptop Per Child
<http://laptop.org/>

Online News Association
<http://www.journalists.org>

Open Content Alliance
<http://www.opencontentalliance.org/>

Open Directory Project: Weblogs
http://dmoz.org/Computers/Internet/On_the_Web/Weblogs/

PLA (Public Library Association) Blog
<http://www.plablog.org/>

Poynter Online
11 Layers of Citizen Journalism
http://www.poynter.org/content/content_view.asp?id=83126

Radio-Television News Directors Association
<http://www.rtnda.org>

Technorati
<http://www.technorati.com/>

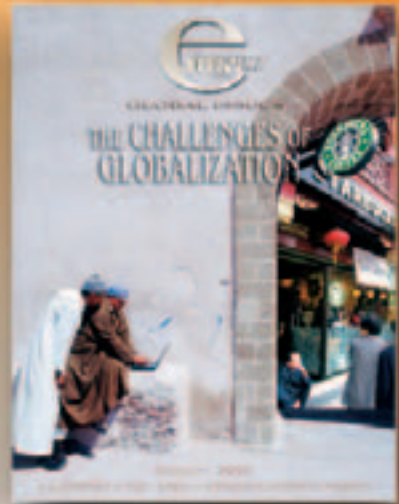
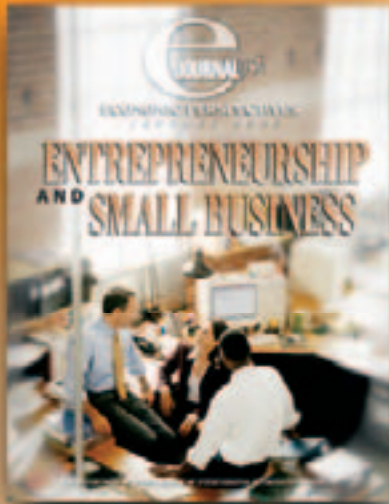
Unity: Journalists of Color, Inc.
<http://www.unityjournalists.org/index.html>

Wikipedia
http://en.wikipedia.org/wiki/Main_Page

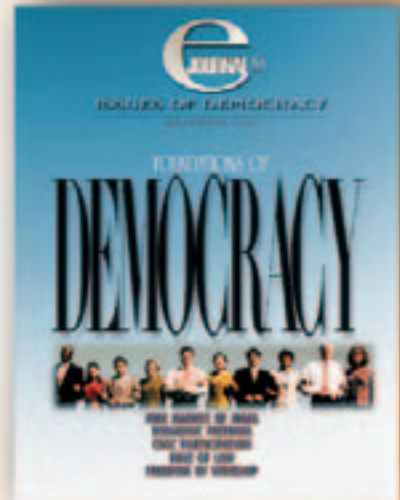
Youth Radio
<http://www.youthradio.org/index.shtml>

Youth Radio en Espanol
<http://www.youthradio.org/spanish/index.shtml>

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