News on the Go:

How Mobile Devices Are Changing the World's Information Ecosystem

A Report to the Center for International Media Assistance

By Dale Peskin

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CIMA Center for International Media Assistance

NED National Endowment for Democracy
Supporting freedom around the world

The Center for International Media Assistance (CIMA), a project of the National Endowment for Democracy, aims to strengthen the support, raise the visibility, and improve the effectiveness of media assistance programs by providing information, building networks, conducting research, and highlighting the indispensable role independent media play in the creation and development of sustainable democracies around the world. An important aspect of CIMA's work is to research ways to attract additional U.S. private sector interest in and support for international media development. The center was one of the of the main nongovernmental organizers of World Press Freedom Day 2011 in Washington, DC.

CIMA convenes working groups, discussions, and panels on a variety of topics in the field of media development and assistance. The center also issues reports and recommendations based on working group discussions and other investigations. These reports aim to provide policymakers, as well as donors and practitioners, with ideas for bolstering the effectiveness of media assistance.

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About the Author

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Peskin previously served as executive director of the news industry think tank, New Directions for News, and as managing director of the Media Center at the American Press Institute. A former newspaper editor and reporter, he was assistant managing editor of the *Detroit News* in 1989-1996, and the *Dallas Morning News* in 1997-2002. In Dallas, he became vice president of the publishing division of the Morning News's parent company, Belo, and founded its online subsidiary, Belo Interactive. In 1997, Peskin was the editor who broke the first investigative story on the Internet prior to its publication in the newspaper–called a "landmark event" and "the biggest change in newspapers in 25 years" by the British newspaper the *Guardian*.

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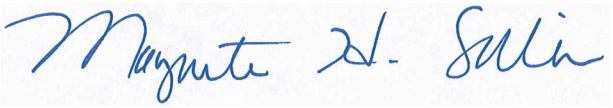
Preface

The Center for International Media Assistance (CIMA) at the National Endowment for Democracy commissioned this study of mobile technology as a platform for news and information. The report examines the rapid spread of mobile communications technology and its effect on the global news media landscape.

CIMA is grateful to Dale Peskin, a veteran journalist and digital media analyst, for his research and insights on this topic.

We hope that this report will become an important reference for international media development efforts.



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Executive Summary

The connected society reached a milestone at the end of 2010: More than 4 billion people paid for mobile phone service.[1] That's six of every 10 people on the planet.

During a period of unprecedented technological innovation, the spread of a decades-old technology may seem like an obvious achievement. That is until you consider that the hand-held device has become the hub for thousands of innovations that are changing the way the world communicates.

Mobile devices now reach the farthest corners of the world. By the end of this year, about 5 billion mobile phones will be in service in a world with 7 billion people. Many will be phones with limited capabilities, but technologies are becoming so cheap that by the end of this decade virtually every phone sold will be what we now call a smart phone: a mobile communications device that goes beyond voice calls and has the capacity to run computer applications, send and receive e-mail, pinpoint locations via global positioning systems (GPS), and more.

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The makers of these ubiquitous devices aim to put one in every person's hands, everywhere. For telecommunications companies, even markets in poor, remote, or undeveloped parts of the world are worth fighting for.

The growth of both cellular and digital technology now moves to parts of the world where the lack of effective communications infrastructure has traditionally been one of the biggest obstacles to economic growth. With 100,000 phone masts erected each year, the number of places with no signal is dwindling quickly. More than 90 percent of the global population now has access. Even remote spots in Bhutan and Tibet are increasingly in reach. Busy scaling Everest's summit? Now there's no excuse for failing to answer your mobile at 29,000 feet. In 2007, China Telecom installed a mast near the Everest base camp as a communications tower for the Beijing Olympics torch run and as a symbol of China's global influence.

Networks are also proliferating throughout the developing world. Developing countries now account for about two-thirds of the mobile phones in use, according to a United Nations report.[2] Africa is the continent with the fastest growth. Penetration has soared from just one in 50 people at the beginning of this decade to about one in three today. A $50 billion investment of cellular infrastructure in the sub-Sahara region will bring access throughout the world's second-largest and second-most populous continent.

So what happens when most of the citizens of our world[3] carry a device that gives them instant access to the world's information? The implications–for politics, for education, for economies, for civil society, and for news and information–are profound.

This report was commissioned to examine questions about how a global information society might look with mobile media devices at its hub. One question was prescient: How might the mobile revolution enable citizens to demand greater openness and accountability from their governments? Within weeks, the theoretical not only became real, it became news. First in Tunisia, then in Egypt, the mobile revolution evolved into political upheaval as it swept across Northern Africa and the Arab world. Using "liberation technology"[4]–mobile phones, the Internet, and social media–young, connected citizens mobilized in protest against oppressive regimes, instigated upheaval, then documented subsequent violence and acts of repression.

A second theoretical question–how authoritarian governments might seek to control or suppress a free flow of information through mobile communications–also became reality. In Egypt, the government of Hosni Mubarak shut down or manipulated the country's communications infrastructure during the uprising, a classic illustration of the "dictator's dilemma," the notion that an increasingly information-dependent economy can not thrive when information is prevented from flowing freely.

Technologies can give voice to democratic activists living under authoritarian rule, but oppressors can also harness them. Following Iran's Green Revolution, Iranian police reportedly tracked dissidents by the electronic trails they left during their uprising. In a world with 5 billion mobile phones, we face the prospect of 5 billion surveillance devices.

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Indeed, Belarus-born American scholar Evgeny Morozov contends in *The Net Delusion: The Dark Side of Internet Freedom*[5] that the conventional wisdom that the Internet and social media promote democracy over suppression is mistaken. Morozov cites case after case of repressive regimes undermining human rights or manipulating public discourse through the Internet. He contends that police in some countries such as China, Russia, and Iran have become adept at compiling dossiers on antigovernment activists without the street surveillance and phone taps of the pre-Internet world. Facebook can be more than a social network for friends; it can serve as a database for government agents.

The next information markets will arise from Africa and the so-called BRICI countries: Brazil, Russia, India, China, and Indonesia.[6] For most citizens in these nations, their mobile phone is also their Internet, their access to the Web and social media.

The mobile Internet has arrived and so have the titans of the global economy. They see a lucrative, mass consumer market in the next 3 billion people who will sign on by the end of the decade. The stakes are high:

- For global players such as Google, Microsoft, Apple, Sony Ericsson, Vodaphone, and Nokia, an estimated $600 billion in mobile business is in play, and billions more in related businesses.

- For developing countries, a 10 percent increase in mobile phone penetration results in nearly one percentage-point of annual economic growth–a significant boon to a nation's economy.[7]

- For disadvantaged and underrepresented citizens, personal economics and life decisions can improve exponentially.

- And for autocracies, political consequences and instability arise as mobile connectivity threatens power and control over information.

Money, Power, and Bandwidth

With the world's most connected crowd in the house, there were dozens of Wi-Fi networks at the 2011 Mobile World Congress[8] in Barcelona. Sixty thousand digerati brought the latest "smart" devices to the global expo for mobile technology. They planned to connect to and with each other at the sprawling conference through numerous 3G, Wi-Fi, and Bluetooth networks. Many carried multiple devices: a Blackberry and an Android phone, or an iPhone and an iPad.

It fell to then-Google CEO Eric Schmidt to break the news. "Everyone is on the network," Schmidt announced at his keynote address.

Everyone knew what that meant: Too much data from too many people using too many devices had clogged the systems. Attendees either couldn't get a connection or struggled with one that was painfully slow. Speakers had to go offline with their presentations. Marketers at booths for many of the world's most sophisticated technology companies were unable to demo their latest gizmos.

The situation was what business leaders describe as an elegant problem: an urgent demand for products and services that outpaces the capabilities to provide them. That's a problem smart executives can quickly turn into an elegant solution. And it was why the CEOs of so many of the world's leading technology, communications, and media companies went to Barcelona: to meet the insatiable demand for mobile communications throughout society.

One by one, a who's-who of high-tech CEOs took to the main auditorium to describe how they would connect the next 2 billion people to the Internet with mobile phones: Steve Ballmer of Microsoft, Stephen Elop of Finland's Nokia, Paul Otellini of Intel, Wang Jianzhou of China Mobile, Hans Vestberg of Sweden's Ericsson, Masayoshi Son of Japan's SoftBank Capital, Peter Chou of Taiwan's HTC, Cesar Alierta of Spain's Telefonica, and Vittorio Colao of the United Kingdom's Vodaphone.

Money was on their minds. The mobile industry is currently valued at about $480 billion a year. Mobilizing the undeveloped world will raise the valuation to about $600 billion a year. By 2013 the money spent on access fees, online commerce, paid services, and advertising will amount to more than a half trillion dollars per year, according to former Morgan Stanley analyst Mary Meeker.[9] As users keep downloading services and apps, every device sold generates its own, ongoing revenue stream.

Google's Schmidt laid out a future in which mobile phones in the hands of everyone would help solve the world's most pressing problems. "If you look at problems like global warming, terrorism and [the need for] financial transparency, they can all be helped by computing power," he said. "Those are fundamentally information problems, and that's what computer science is all about."

"I can't imagine anything since the invention of the spinning jenny that will so profoundly change the lives of people in the deepest rural parts of the emerging market," Sanjay Jha, the CEO of Motorola Mobility, said. "This is the knowledge revolution coming to them, finally."

Just weeks after the world's CEOs and mobile developers met in Barcelona, a second group of international superstars gathered in Washington to pursue a crucial social-political agenda for international media.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) marks World Press Freedom Day each year by bringing together media professionals and press freedom organizations to foster media freedom worldwide. With the Arab Spring as timely context, the United States hosted the conference for the first time in May 2011. The U.S. State Department put in a bid to host the conference in Washington as a forum for U.S. policy in support of press and Internet freedom in the digital age. (CIMA was a leading organizer of the event, along with the State Department, IREX, and the UN Foundation.)

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CEO, Motorola Mobility

A few hours after the conference opened at Washington's Newseum, a stunning announcement came from the White House: Osama bin Laden, hunted as the mastermind behind the worst-ever terrorist attack on U.S. soil, was killed by U.S. forces in Pakistan.

According to news reports, two cellphones were among bin Laden's sparse possessions. The lack of landline telephone connections and Internet service at his Abbottabad compound had raised suspicions about what was going on behind the compound's unusually tall walls. In the end, wireless communication technology not only helped the United States find the world's most notorious terrorist but initially informed us that he had been killed.

Seven hours before President Barack Obama disclosed bin Laden's killing, information technology consultant Sohaib Athar[10] heard and tweeted about the "rare" sound of helicopters at 1 a.m. He then tweeted about hearing gunfire at the compound. Word of the killing leaked throughout the night on Twitter, culminating in confirmation by government sources hours before the president's announcement.

At the World Press Freedom Day conference the next day, delegates from countries around the world–particularly those in Africa, Asia, and Eurasia–talked about how they were using mobile technologies to create new channels to reach a newly connected citizenry. With Arab Spring stories as subtext, the conference became a live exercise for public policy and media development in the strange, new world connected by always-on mobile communications.

In the weeks that followed, the extent of the U.S. State Department's efforts to support the revolutions reshaping the Mideast began to emerge. Published reports disclosed that the U.S. government was coordinating a number of initiatives to create "shadow" Internet and cellphone networks in authoritarian countries, supporting dissidents' ability to undermine oppressive and controlling regimes.

In June, the *New York Times* reported[11] on several efforts to ensure that authoritarian regimes could not stifle electronic protest or organization. The State Department reportedly granted $2 million to develop an "Internet in a suitcase" solution that could be smuggled into countries and deployed with minimal technical know-how in the hands of citizens. Each suitcase is a wireless access point that links to others, forming a mesh network that relays data even if authorities shut down access to the mobile Internet.

The "Internet in a suitcase" project utilizes technology developed by the Open Technology Initiative, a project of New America Foundation, a Washington-based public policy institute led by former foreign correspondent and *Washington Post* managing editor Steve Coll. Schmidt, the former Google CEO, chairs the organization.

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The U.S. efforts are designed to work around attempts to mute dissent, as well as to provide a back channel that protesters can use without being monitored by authorities. Authorities have disrupted data and voice networks in efforts to quell unrest. Egypt, Libya, and Syria have all manipulated communications networks, in some cases knocking the entire country off the Internet. Such technologies could also fuel unrest in countries where the United States has strong ties, such as Saudi Arabia.

The UN recently declared that disconnecting people from the Internet is a violation of basic human rights. In February, Secretary Clinton pledged to invest $25 million for developers to build tools that will let online dissidents get around "thugs, hackers, and censors." The investment advances the so-called "Internet Freedom Agenda"[12] that she unveiled last year. Since the start of FY2010, more than $50 million has gone into the State Department's Internet freedom program, according to a State Department official knowledgeable about the program.

Clinton has also pledged to take a "venture capital approach" to funding tools that allow online activists, dissidents, and ordinary citizens to circumvent Internet censorship in repressive countries. She said the United States will work with technical and policy experts to develop a "portfolio of technology, tools, and training" for getting around firewalls. As repressive governments adapt their techniques for blocking connectivity, so too will U.S. measures to help "digital activists … adapt to the challenges they face."

The Obama administration has announced it would release by year's end an "international strategy for cyberspace," outlining in greater detail the rules of the online road that the administration wants to see in place.

The U.S. government is already involved in broad online circumvention. A panel assembled by the Broadcasting Board of Governors, which oversees U.S. broadcasters such as the Voice of America, Radio Free Europe, and Radio Free Asia to foreign countries, uses popular social media tools to allow foreign dissidents to evade censorship. The group has set up proxy websites in China and Iran to get blocked broadcasts past firewalls, and until recently it also set up multi-user Skype chats–which China didn't censor–to plug people into the messages of Radio Free Asia.

The line between influencing political agendas and developing media capacity in turbulent and frequently suppressed parts of the world can be thin.

There are also reportedly efforts to create independent cellular networks inside countries ruled by repressive regimes, including Iran and Syria. In Afghanistan, where the Taliban can reportedly disable the national cell network at will (and routinely does at night, to prevent reporting of their movements), the United States has spent at least $50 million on a separate network with base stations located in military compounds.

The line between influencing political agendas and developing media capacity in turbulent and frequently suppressed parts of the world can be thin. Both are based on democratic ideals about freedom of expression and the free flow of information in a connected world where news comes less and less from "the press."

Troy Etulain straddles that line. A former Bloomberg News correspondent and Peace Corps volunteer, Etulain serves as senior advisor for media development in the Office of Democracy and Governance at the United States Agency for International Development (USAID). His job: design and evaluate U.S. government assistance programs that support democratic development worldwide.

At the forefront of USAID efforts to explore the use of emerging technologies to support human rights and foster freedom of expression in closed societies,[13] Etulain sees the mobile phone and social networking as tools of empowerment and as cornerstones of community.

One USAID-supported initiative in Afghanistan could be a perfect example of synergy between old and new media: Mobile Khabar which means "mobile news" in both Dari and Pashtu, was originally conceived to collect news and information and make it available to Afghans via their mobile phones.

If it is launched, Mobile Khabar could provide radio news and information programs, audio portions of television programs, newspaper articles read aloud and recorded into broadcast-

ready formats, and mobile blogs. As envisioned, the service would connect users to live radio streams, including popular foreign news services that broadcast in any of the languages spoken in Afghanistan. It is also intended to challenge regional and local media to improve the quality and relevance of their content. An early model for media development through the mobile phone, Mobile Khabar could test the appetite for news and information in Afghanistan from established media, independent media producers, and citizens.

Many NGOs and activist organizations are embracing the basic news-and-information model on mobile phones. Internews, an international media development organization whose mission is to empower local media, has launched a broad strategy in the developing world to support existing media, new media, and citizens with Web-based content optimized for mobile applications. In February 2011, Internews launched a four-year program in Armenia to support existing media by using mobile news delivery. Internews's project in Armenia is supported by USAID.

Tools for Mobile Media

The International Center for Journalists (ICFJ) focuses on resources for journalists that help them better understand mobile media in addition to providing them with tools for effective mobile reporting. The Mobile Media Toolkit,[14] developed by MobileActive, a mobile advocacy and research group, helps journalists create content on their phones, share it, deliver it to mobile devices, and engage with mobile audiences. Featured on ICFJ's IJNet website, the toolkit keeps reporters up to date with a blog on latest applications, trends, and developments. It also links to case studies in mobile media from around the world, including:

- Avaaj Otalo, a "voice-based community forum" that connects farmers in rural India, to relevant and timely agricultural information over the phone.
- CGnet Swara, a citizen journalism channel in Chhattisgarh, India, that allows citizen journalists and interested parties to call a phone number to record or listen to news content.
- Young Africa Live, a South African mobile portal where users can access information about HIV/AIDS while also reading entertainment-orientated blog posts.
- Freedom Fone in Zimbabwe, which leverages audio as a mobile function using interactive voice response, allows a user to call in, enter or say specific numbers, and then listen to or contribute audio content.
- Bubble Motion, based in Singapore, which enables mobile messaging and audio blogging.
- Gaon Ki Awaaz is a twice-daily news alert that is delivered via voice call directly to subscribers' phones in rural Uttar Pradesh, India.
- Radio Azadi in Afghanistan, which provides an interactive SMS service that allows listeners to access content and participate in the program via mobile phone.
- Rede Jovem, a Wikimap project that uses citizen reporters to map favelas, or shanty towns, in Rio de Janeiro.
- Jasmine News, which sends SMS news headlines to subscribers in Sri Lanka.
- Voices of Africa Media Project, which teaches young journalists in Africa how to create news videos on their mobile phones.

These projects are modest in scope, the beginnings of farther-reaching experiments in mobile media development that will emerge with increasingly more sophisticated applications on the mobile phones that most of the world's population will carry.

The BBC World Service Trust is taking a mission-based approach to media development, utilizing the proliferation of mobile phones as an essential part of its campaign to alleviate poverty. Its education initiative, BBC Janala (which means "window"), puts the mobile phone at the center of a multi-media project in Bangladesh to increase the number of people able to speak English so that they can contribute to the country's economic growth. Two years in the making, BBC Janala offered a new way of learning English on mobile phones, the Internet, and television.

With more than 50 million mobile phone users in Bangladesh, citizens can access hundreds of English language audio lessons and quizzes. Content is updated weekly and caters to all levels of economic status. To make the lessons affordable, BBC Janala partnered with all six of Bangladesh's mobile operators, who agreed to cut the cost of calls to the service to about the cost of a cup of tea from a Dhaka street stall.

All of those programs rely on some source of outside funding for a fixed period of time, either from government agencies, foundations, or philanthropists. Few of the projects produced by NGOs or media organizations are scalable, able to achieve the large and paying audiences that make mobile connectivity so attractive. Interest from donors worldwide has been tepid, despite the current trajectory of the mobile Internet.

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Rather, the expansion of mobile devices has been dominated by the same commercial interests that were so prominently represented at the World Mobile Congress in February–the makers and operators of technology.

The potential impact–social, political, and economic–is far greater. The BBC World Service Trust addressed the problem in a report, *Left in the Dark: The Unmet Need for Information in Humanitarian Response*:

> One of the most profound shifts in this [mobile] sector is coming not from aid agencies or the development world but from the rapid commercial development of communications on a global level. The speed with which populations in the developing world are adopting mobile phone and internet technology and finding innovative uses for new communications is far outstripping the levels of understanding of these new trends in the aid world–and the sector is still growing fast.
>
> The ability of local populations to source, share, and transmit information is being completely transformed.[15]

What lies ahead? A few developments that are emerging with velocity:

- An always-on life of ubiquitous and seamless connections.
- A workplace of global nomads with flexible hours connected by mobile devices.
- A "cloud" for distributed computing where a universe of remote data can be accessed from an individual's smart phone.
- A sentient environment where location-aware devices make everything personal.
- Big data: huge datasets where discrete knowledge can be extracted and visualized on handheld, mobile devices.

Where Change Leads

Mobile knowledge works best when placed in the hands of everyday citizens. The Ushahidi platform,[16] for example, was created with the help of Kenyan political activist Ory Okolloh to track outbreaks of ethnic violence in Kenya. Ushahidi, which means "witness" in Swahili, initially mapped incidents of violence in Kenya based on reports that citizens filed from their mobile phones. It has since evolved into a sophisticated, non-profit tech company for "democratizing information." In countries across the world it provides an advanced set of tools, including through the use of cellphones, for citizens to collect, visualize, and map stories of human rights or social and political significance.

Ushahidi is just one example of the thousands of grass-roots activist efforts to use mobile technology to achieve social justice. The MobileActive[17] movement was organized as just such a network using mobile technology for social impact. The organization works with NGOs around the world to use mobile phones to deliver locally relevant content and services to citizens in developing countries.

One of MobileActive's most valuable resources is its interactive Mobile Map at www.mobileactive.org/mobiledata, which provides real-time data about mobile use, communications costs, mobile penetration, and operators country by country. The site also provides a directory to 42 case studies on mobile solutions for social development and change in countries such as Guatemala, Afghanistan, Pakistan, South Africa, Uganda, Tanzania, Mali, India, and others.

The latest versions of mobile phones are serving as a financial system, a personal pocket bank for providing virtual accounts for Africans excluded from the financial mainstream.

InterMedia's AudienceScapes[18] project also provides mobile resources for social and economic development in Africa, including tools for health education, AIDS prevention, dealing with climate change, and family planning. Its mobile platform provides a means for micro banking, citizen journalism, election monitoring, and mobile commerce in places such as Zambia, Sierra Leone, Zimbabwe, and Gambia.

From Congo to Kathmandu, mobile devices are changing the way money moves. The cellphone has already revolutionized communications in Africa for millions of people who had never before made a telephone call. The latest versions of mobile phones are serving as a financial system, a personal pocket bank for providing virtual accounts for Africans excluded from the financial mainstream.

In South Africa, mobile banking has taken hold in poor townships and villages where citizens were excluded from the financial hubs located in wealthy white suburbs. Account holders use text

messages, or SMS, to pay for goods and transfer money to friends and family. Bosses can pay salaries directly into cellular accounts, and customers can deposit cash at post offices and some bank branches.

In Bangladesh, the Village Phone project enabled rural poor to own a mobile phone and turn it into a profit-making enterprise. It brought cellphone ownership to 360,000 rural poor in more than 50,000 villages. The phones were acquired from Grameen Bank, which provided micro loans. Subscribers spread service to others, earning enough to repay their loan and earn a profit. As a result, many underprivileged women in Bangladesh were able to change their lives.

"Technology is making more changes in our way of life than ever in human history," Muhammad Yunus, one of the founders of the program, told *Fortune*. "The way the Internet and the mobile phone are spreading, you cannot compare with any technology of the past." Yunus is known for his visionary leadership in microfinance and helping the poor. He and the Grameen Bank he founded won the Nobel Peace Prize in 2006.

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— Muhammad Yunus,
Founder, Grameen Bank

In Afghanistan, Telecom Development Company Afghanistan[19] has invested $445 million in a mobile network to bridge a nation battered by violence and turmoil. The network includes programs for the nation's reconstruction, including creating new businesses, training future leaders, and developing an entrepreneurial spirit. To reach all citizens, Telecom Afghanistan has built 1,000 cell towers across vulnerable parts of the country. Because of its ability to generate local jobs–the company says it will create 30,000–the community protects the towers from guerillas who would topple them to cut the country's connectivity.

Many stories like these are emerging around the people and ideas using mobile technology to make the world better for all its citizens. And citizens using their mobile phones are increasingly contributing to keeping publics better informed. A pivotal moment occurred on July 7, 2005, when four bombs exploded in London's Underground and a public bus. London news outlets that were not on the scene quickly picked up photos and video footage shot by commuters on their mobiles from inside the tubes. An image shot by commuter Alexander Chadwick showed passengers evacuating an underground train amid the chaos. Chadwick e-mailed the image from his mobile to the BBC, which received about 1,000 photos and 20 video clips immediately after the bombings. Minutes later, the BBC started receiving written accounts to supplement their still pictures. The BBC published Chadwick's eyewitness photo on its websites, and news outlets around the world picked up the photo taken on a mobile phone. It became an iconic image.

News organizations in Japan were the first to recognize the power of mobile images, likely because Japan was the first nation to experience sweeping mobile usage. Japanese TV began

broadcasting amateur video in the early 2000s. In the aftermath of the Asian tsunami of December 2004, mobile footage of the moments the waves came crashing in was beamed all over the world.

That coverage now seems quaint compared with what happened during the earthquake and tsunami in Japan in 2011. Videos taken on the sophisticated, multi-purpose phones that most Japanese carry provided immediate, on-the-scene images of devastation from the 8.9 magnitude earthquake and tsunami that struck on March 11. Nearly 20,000 videos were posted on YouTube within 48 hours of the disaster.

Mobile phones remain Japan's lifeline. With key parts of their infrastructure destroyed, Japan's citizens turned to their smart phones for information vital for survival and recovery.

Response to the devastation in Japan recalls how people around the world used mobile phones and social media to come to the aid of people in Haiti following the earthquake there on January 12, 2010. In Haiti, Mobile Accord's mGive service and the U. S. State Department launched an unprecedented, mobile response only three hours after the earthquake hit. Using their mobile phones, people could text "Haiti" to the number 90999 to donate money for the relief effort. The text message automatically added a $10 pledge to a caller's phone bill. The American Red Cross received more than $22 million in text-message donations.

It is now well known that mobile phones are key factors in political protest, as demonstrated during uprisings in North Africa, the Middle East, Central Asia, and post-Communist Europe.

And of course it is by now well known that mobile phones are key factors in political protest, as demonstrated during uprisings in North Africa, the Middle East, Central Asia, and post-Communist Europe. Protestors used them to organize, mobilize, and report on the insurgencies against oppressive regimes.

Finding the Mojo

On February 17, 2004, the *New York Times* published on page one a photograph taken with a mobile phone. It was an image snapped at the formal signing of the merger between two mobile phone giants, Cingular and AT&T Wireless in New York the previous day. The photograph was rather ordinary, but it marked a milestone in the use of the mobile phone for newsgathering. Today, the mobile phone is being used as a newsgathering tool throughout the world.

The "tipping point" came more than a year later with the publication of citizen photos following the London bombings. London's *Guardian* newspaper called the moment the "democratization of the news process" and described the use of camera phones during the attacks as "the true birth of the 'citizen reporter.'"[20]

So impressed by the power of citizen reporting, the BBC quickly integrated citizens into its news gathering process. It also launched an internal program to equip and train its own reporters with mobile reporting equipment, principally the mobile phone.

Citizens, as well as a new breed of citizen reporters, are also equipping for always-on news reporting.

Here's how Rory Cellan-Jones, a veteran business reporter at the BBC, described his transition to "mojo," or mobile journalist:

"Along with two phones and a laptop, my kitbag also contains a small, very simple video camera, good enough to capture pictures if there's no professional camera crew with me, but not really fit (in my hands at least) for proper broadcasting. I also have a digital audio recorder for radio work, and my most exciting new gadget, a digital pen, which records conversations and matches the recordings to my scribblings in a notebook."[21]

Cellan-Jones and other BBC mojos were also trained how to use Qik, software that enables live broadcasts from a mobile phone, and Audioboo, for recording and uploading audio efficiently.

Last year, the BBC launched one of the first news apps for smart phones. It also introduced a popular Web-base service for smart phones and now plans to introduce its iPlayer for Google Android smart phones, as well as apps for the iPhone.

Major news outlets around the world are also introducing smart phone apps, iPad apps, or news-branded smart phone players.

They are also equipping mojos around the world. Reuters and Nokia teamed up in 2007 to create a mojo toolkit. Reuters journalists were given a lightweight kit that included a Nokia N95 mobile phone, a tripod, a folding Bluetooth keyboard, and a Sony microphone. The toolkit also included

text editing and multimedia capabilities. Nokia's phone contained "metadata facilities" that documented everything the phone knew about the story, such as GPS location, time, date, and other information. Powermonkey Explorer technology was used in Senegal to charge equipment using solar power.

Reuters also created an alliance in 2006 with the citizen journalism network Global Voices to tap into its community of on-the-ground bloggers and citizen journalists around the world.

With the rise of mobile phones in the Middle East, the Arab-language news network al-Jazeera launched a program in 2008 to provide its reporters, as well as citizens in several Arab nations, with mobile phones. The network's editors said the phones were a critical component of its coverage of events leading up to the uprisings in Tunisia and Egypt. Smart phones with dedicated service also provided one of the few information channels for reporting and broadcasting when the Mubarak regime shut down communications coming out of Egypt.

Citizens, as well as a new breed of citizen reporters, are also equipping for always-on news reporting. One example is David Widgington, an independent mojo who covers South Sudan.

"A MoJo by definition must be autonomous and self-sustained, able to gather information, edit it and forward it for publication or broadcast; from anywhere, to anywhere," he wrote on his website, BurningBillboard.org. "To do this, the MoJo needs equipment, media contacts and the ability to communicate with them. The MoJo also needs the capacity to edit and communicate the audio, video, photographic or text-based information. Mobility suggests that the equipment should be compact and easy to transport during newsgathering projects. It also suggests that movement is perpetual."[22]

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— David Widgington,
Founder, BurningBillboard.org

Widgington carries two mobile phones and assorted travel gadgets as he reports from South Sudan, where cell towers are being installed to replace landlines destroyed during 22 years of conflict. He is just one of thousands of independent journalists reporting from parts of the world that have either been ignored or under covered by mainstream media.

A Changed World

What emerges now is a changed world as more sophisticated devices spread, and remote parts of the world such as South Sudan come on the grid.

Rapid improvements in the power of mobile phones and their built-in processors mean that even top-of-the-line smart phones such as Apple's iPhone and Google's Android-driven phones will become common and inexpensive in a few years' time.

Apple introduced its revolutionary iPhone in 2007 with a radical design that eliminated the keypad and replaced it with a touch-swipe screen that provided access to tens of thousands of applications through its iTunes marketplace. It forced consumers to overcome their impressions of a cellphone. The iPhone was actually a hand-held computer with a camera and music player that was connected to the Internet, which provided access to an online store. But Apple was reluctant to change the metaphor for mobile communications by calling it the iComputer or iConnector. The device cost $400 plus a couple of dollars for every app downloaded. Apple's research determined that consumers would pay and pay for a sleek phone loaded with convenient mobile services and applications. And pay they did. In early 2011, Apple announced it had sold 100 million devices. Revenue from the iPhone and the resulting boon to its iTunes marketplace catapulted Apple past Microsoft as the largest technology company in the world with a market cap of nearly $350 billion.

Citizens in even the poorest of countries are willing to pay for a mobile phone, even if the cost represents 10 percent or more of their annual income.

Now, iPhone features are standard fare on smart phones produced by many manufacturers. Still one of the world's most popular devices, the original iPhone now costs only $49.

Citizens in even the poorest of countries are willing to pay for a mobile phone, even if the cost represents 10 percent or more of their annual income. Mobile phones are the communications technology of choice, particularly in poor countries. In fact, the world's poor are driving the growth in the mobile Internet, according to the International Telecommunication Union, a United Nations affiliate that ranks countries based on their advanced use of information and communications technology (ICT).[23]

"People might not have shoes, but they have a cellphone," said Brian Richardson, chief executive of Wizzit, a small start-up that pioneered cellphone banking in South Africa.

Mobile devices, particularly smart phones, are universally celebrated for their utility and convenience. They also promote independence and provide users with a sense of security. Attempts to interfere with, regulate, or even register the personal devices of citizens are met with

resistance. For example, in an attempt to combat a virulent crime wave, the Mexican government required all citizens to register their cellphones. The idea was to end the anonymity that enabled crimes both virtual and real.

Petty thieves in Mexico were stealing thousands of mobile devices. Left unattended by unsuspecting tourists or momentarily misplaced by careless citizens, the phones provided a ready list of vulnerable victims. Thieves became extortionists by phoning victims to claim– falsely– that a spouse or a child had been kidnapped. Accompanied by the muffled sound of someone whimpering in fear or pleading for help, they demanded instant payment by access to a bank account. "Virtual kidnappings"–as many as 6,000 a day–extorted a few hundred dollars from many families fearing harm to loved ones.

Additionally, Mexico's powerful drug cartels relied on the cellphone to conduct their trade. Transactions between drug traffickers are largely untraceable on the device that dealers use–the personal cellphone. It channels information about market price, terms, and transactions. Sites for deals are secured or exposed by using global positioning systems that locate contacts and map them on the screens of smart phones.

As a response, Mexico established the National Mobile Phone Registry to identify criminals by tracking their cellphone usage through a national database meant to bolster security. Owners of every cellphone were ordered to register their names, numbers, and addresses.[24]

From etiquette, to access to news, to social networking, the life stream that moves through a smart phone is at the same time personal and shared.

Most Mexicans balked.[25] The government threatened to suspend cell service to those refusing to comply. Citizens responded by submitting fake data: More than 5,000 phones were registered to President Felipe Calderón; thousands of others were registered under the names of infamous narcotics traffickers and government officials. The government acknowledged more than a million fake names in the phone registry. Meantime, protesters mocked the government and alleged complicity with the drug lords.

There is ample evidence to suggest that Mexicans don't trust their government. They assume, with good reason, that any information they give the state will flow into the hands of criminals, thus exacerbating the threat to citizen security.

While many aspects of human behavior involving mobile technology are universal, each region of the world tends to create its own vocabulary for the activities associated with their devices. From etiquette, to access to news, to social networking, the life stream that moves through a smart phone is at the same time personal and shared.

The Culture Factor

In just a few years the mobile culture has become a global force. Germans call their cellphones *handy*, in France it is *le portable* or *le G,* and in Arabic, *el mobile, telephone makhmul*, or *telephone gowal*. In China it's *sho ji*.

In any language, it's not just about the device; it's about the cultural experience. In Japan, where mobile mania first took hold, mobile phones were initially called *keitai denwa,* which literally means "portable telephone." The pervasiveness of the devices, as well as the particularities of how Japan's young used them, created a cultural revolution that is now known as simply *keitai*.

If it were not for massive cultural adoption as well as relentless, rapid improvement, mobile phones might be known as "bricks." That's what first-generation cellphones were called when Motorola introduced the DynaTAC in 1983. Marketed as a glamour device for the rich and powerful, the brick made a memorable appearance in the movie *Wall Street* when the ruthless Gordon Gekko, played by Michael Douglas, self-importantly conducts business on the beach with a huge portable phone at his ear.

In the end, the mobile Internet is more a social phenomenon than a technological one.

The brick made up in symbolic importance what it lacked in style. Weighing in at 1.75 pounds and costing $3,995, only the most powerful and wealthiest people owned them. Calls cost about $200 a minute. The only people besides the elite and medical professionals who used mobile technologies, such as pagers, were presumed to be using them for nefarious reasons. Who else but a roving drug dealer or prostitute would need to be accessible at all times?

In the end, the mobile Internet is more a social phenomenon than a technological one. The size and and diversity of personal relationship networks will grow because of the ever-growing popularity of social collaboration applications on mobile phones. These networks will include acquaintances ranging far beyond traditional groups of family, friends, and work colleagues to include friends of friends, online acquaintances, and members of interest groups.

New disciplines of research are emerging to study the new relationships that are being created between and among people, their networks and their activities. Researcher Mimi Ito, for example, is a cultural anthropologist who studies the use of portable technologies by young people in Japan and the United States. Former television producer Florie Brizel has founded a new field of research and consulting called "mobiology" that examines the effects of mobile phone use on behavior, community, culture, entertainment, and economics. Major universities around the world are remaking social science departments with cultural anthropologists examining every aspect of the digital experience.

Conclusion

At its core, the development of the mobile Internet into a global information and communications hub is both a social movement by the people and an entrepreneurial quest by technologists. Both ought to be supported by public policy, investment and enthusiastic encouragement. The instinct is to direct, to steer, or to control, but that is a terrible mistake, even if it could be accomplished. How do you manage a revolution?

When a disruptive technology arrives, it overtakes declining, weak, or obsolete systems. The resulting changes create a period of chaos. The arrival of a new way to communicate changes our connections to our institutions and to each other. Organizations that rely on allegiance to their values or exercise controls over access–newspapers and commercial television news broadcasts–won't disappear. But they will become less vital. Their influence and authority will decline as citizens choose their own way. Upheaval is inevitable.

Those who promote democracy and indepdendent media should take up the agenda of citizens who are experimenting with new possibilities and different outcomes.

Let it happen. Participatory democracy demands participation. Those who promote democracy and independent media should take up the agenda of citizens who are experimenting with new possibilities and different outcomes. This might mean a shift, or at least a new emphasis, on media assistance to independent and entrepreneurial journalists, as well as to technologists. However, the shift should not abandon traditional or mainstream media outlets that are suppressed or repressed.

Another approach would be to facilitate strategies between the new, technologically savvy media makers and the old guard. This kind of negotiated transition could infuse the best of the old with the potential of the new. Toolkits such as those developed by MobileActive for independent journalists are strong ideas. So are media literacy tools that could be developed for citizens who are just now adapting to mobile technologies. The CGnet Swara journalism channel in India and Freedom Fone in Zimbabwe, both of which allow citizen journalists and the public to call in or receive news content over their mobile phones, are just two examples of the global transition to news on the go.

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