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The mobile journalist – from backpack to pocket journalism

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① Introduction and overview

A mojo is a mobile journalist, someone who reports with a mobile phone. This innovative form of newsgathering has spread around the world since late 2007 and offers major opportunities for newspapers. Breaking news drives traffic to newspaper web sites, especially news with video, still images and audio. A reporter armed with a mobile phone and a fast connection can get multi-media breaking news onto a newspaper's web site within minutes of an event being reported.

This report describes the spread of the mojo, details what newspapers can learn from best practices from around the world, and discusses the options available to newspapers. It also considers how some media organisations are attracting valuable content from their many audiences who also carry mobile phones (sometimes referred to as audience generated content), and ways to make money from mobile innovations.

During the past decade digital technology has transformed and accelerated the way journalists work. To do their job well and quickly, busy reporters need the simplest technologies. The history of journalists' adoption of newsgathering technologies contains a key theme: reporters will embrace new tools that accelerate the delivery of news, provided those tools are easy to use. The mojo represents the latest iteration in this evolution. The beauty of the mojo lies in its simplicity and convenience: with minimal training it is very easy to record images and sound with a mobile phone and send content to an editor who can put it on the web within minutes.

History shows that new reporting tools have always changed the way journalists operate, and have accelerated the newsgathering process. News travelled slowly in the eighteenth and nineteenth centuries compared with today. The American Declaration of Independence of 4 July 1776, for example, was not reported in Europe until late August that year. People in England only became aware of Nelson's victory at Trafalgar – on 21 October 1805 – on November 2.

The arrival of the telegraph from the 1840s meant that news could be reported quickly compared with previous forms of delivery: ships, letters and horseback. Journalism historian Richard Schwarzlose maintains that the telegraph transformed American journalism into a "news-hungry industry" between the mid 1840s and the American Civil War of 1861–65: "A craving for the freshest news grew hand-in-hand with the new technologies of steam and electricity."

Emerging technologies such as the mojo are having a similarly significant impact on journalism in the early twenty-first century. They provide new reporting opportunities. The mojo gives newspapers a way to compete with television and radio in terms of multi-media breaking news, particularly as the quality of cameras improves.

② Origins of the mojo

In the spoof spy movies of Mike Meyers, if your mojo is working you have sex appeal. You lead a charmed life. With the spread of digital technologies, mojo tools give reporters increased power over their lives. The origin of the word mojo is unclear but its roots appear to have come from "moco'o" from the Fula language of central Africa, where it means a person who works magic. About two-thirds of a million people in Cameroon speak Fula as their first language and another 4 million employ it as a second language. In nearby Congo, "moyo" means "soul" or "life force." "Mojo" entered the English language during the slavery era in the United States.

In the context of journalism, the word "mojo" appears to have been coined in 2005 by staff at Gannett newspapers in the United States. It was the codename for a project at *The News-Press* at Fort Myers in Florida, where reporters were gathering and distributing news in new ways. Kate Marymont, executive editor and vice president of news for *The News-Press*, said the mojo experiment was designed to create neighbourhood-focused areas within the newspaper's website, www.news-press.com, and to deliver breaking news throughout each day.

Marymont said the message from the paper's corporate leaders was clear: increase the attention the news staff gave to online, to drive traffic to the site. "This experiment sprang from two related beliefs: One, deep ultra-local neighbourhood web sites can be lively gathering places of people online. Two, we must have the help of residents to build these sites, but they won't know how to contribute unless we help them." Some Fort Myers mojos spent much of each day recruiting and training contributors from the audience.

Figure 1: iPhone – © Enrico Podda – Fotolia.com

The major development since those innovations at *The News-Press* in 2005 has been the arrival of software that allows reporters to stream live video and stills straight from their mobile phone to a newspaper's web site. This report focuses on that development, and suggests ways that newspapers can take advantage of these developments. The main software options are discussed later in this report.

On 16 April 2007 a gunman went on a rampage on the campus of Virginia Tech in the United States, shooting dead scores of people. A graduate student, Jamal Albaughouti, filmed the shootings with his mobile phone and gave the footage to CNN. Those images attracted millions of hits to the CNN web site over the next couple of days. Imagine what could have been possible if Jamal Albaughouti or a journalist had been able to stream footage live to the web from their mobile phone? That is the exciting opportunity the mojo option provides newspapers.

Blogger and academic Jeff Jarvis says that with mojo technology "all reporters are online reporters now." Jarvis runs the interactive media section of the graduate journalism programme at the City University of New York. His programme purchased five Nokia N95 phones and pays for the data charges because his school believes it is vital that students experience using the technology for newsgathering. "I have no doubt that in a very short time, when the next big news story breaks with reports coming from the scene and from witnesses, it will be live," Jarvis said. That year would become known as the "year of the mojo" as newspapers discovered the power of breaking live multi-media news via some of the tools discussed in this report.

Various studies have shown that people buy a smart-phone instead of a regular cell phone because they want to access the Internet. In July 2008 analysts Nielsen Mobile reported that almost 40 million Americans (about 16 percent

of mobile users) browsed the Internet while on the move, almost double the number from two years earlier. The United Kingdom and Italy came a close second and third in the Nielsen study of countries with extensive smart-phone adoption. A quarter of 18 to 25-year-olds in the United Kingdom use their mobile to check social networking sites such as Facebook. Two in five United Kingdom mobile owners in that age group surf the Internet on their handsets, mainly via unlimited data plans.

For one in five mobile phone users in Japan, their handset has replaced the personal computer as the way they go online. Upwards of a third of university students access the Internet via their mobile. Nielsen found that four in five iPhone owners accessed the mobile Internet. Not only is the iPhone the most popular phone for browsing the Internet, it is also the preferred phone for uploading pictures.

Flickr, the world's largest gallery of online images, measures the number of pictures uploaded by each type of mobile phone. For the year to September 2008 the iPhone steadily pulled ahead of multi-media-equipped Nokia and Sony Ericsson phones, despite the fact the iPhone represents a mere 2 percent of smart-phones worldwide. Phones powered by the Symbian operating system such as Nokia and Sony Ericsson make up 63 per cent of the worldwide mobile market.

On 25 June 2009 YouTube reported that uploads from mobile phones to YouTube jumped by 1,700 percent in the first half of 2009. And since Friday 19 June 2009, when the iPhone 3GS came out, uploads increased by 400 percent a day.

③ Case studies from around the world

3.1 Case studies from the United Kingdom

Reuters and the **BBC** both pioneered the mojo concept in Europe. Reuters' reporters began experimenting with mobile journalism in 2007 via a project with Nokia's research and development centre in Tampere in Finland. Reuters staff visited the centre during the summer of 2007. Nokia staff then went to London to interview journalists about their requirements for a mobile reporting kit. The result was a mobile client built on a light version of Flash that connects to the WordPress software that runs Reuters' blogs.

Later in 2007 a group of Reuters journalists were given Nokia N95 handsets that included software to let them to edit and publish multi-media packages. As well as the phone, their mojo kit included an almost full-size Bluetooth keyboard, a tripod, a microphone and a PowerMonkey solar power unit. It was used initially to cover New York Fashion Week, the Edinburgh television festival and the Gadgetoff 2007 festival. Mobile journalists send video to be checked by an editor via the system before it goes live.

Reuters was keen to develop a multimedia form of breaking news that could be sent from the scene. The company also explored the potential of geolocation journalism, using the Nokia's built-in global positioning system (GPS) facility. The N95 has a five- megapixel stills and video camera, the latter capable of shooting 30 frames a second. It also has a digital stereo microphone. The built-in software tags stories with the date, time and location using GPS technology. Some of the best raw news stories reported by Reuters journalists around the world during the Mobile Journalism trial – they tend not to use the word mojo – can be found at http://reutersmojo.com/.

Nic Fulton, Reuters Media chief scientist, said a key component was the Bluetooth keyboard because it was much easier to enter text while in the field. "For this we used the Nokia SU-8W. This folds up and has a bracket to hold the phone." Reuters also gave journalists a basic tripod to help keep the phone steady during video interviews and a Sony microphone for directional audio recording. It helped reduce background noise during interviews. Nokia also made and supplied a special adaptor to plug the microphone into the mobile phone. Because electricity was likely to be an issue Reuters also employed Power Monkey solar power units, both basic and Explorer versions. "The Explorer has a solar charging system which was particularly useful in [places like] Senegal," Fulton said. Photographs of the newsgathering kit can be seen online at http://reutersmojo.com/2007/10/22/the-mobile-journalism-toolkit-contents/

Ilicco Elia is product manager of mobile and emerging media at Reuters. He described mojo as the start of a future form of journalism and a new way to tell stories. "Mobile phones allow journalists to change their heavy camera equipment to a smaller device," Elia said. Mark Jones is community editor for Reuters. "My role is to create a bit of identity around editorial talent and be more open to the audience. We also want to be open to the web including the blogosphere and build networks around our journalistic expertise. We see huge potential in the mobile phone for newsgathering."

Darren Waters, technology editor of the **BBC**, has been filing mojo reports from various parts of Europe since early 2008. "From the BBC's perspective, if we do not engage in this [form of reporting] soon, someone else will," he said. In mid February 2008 Waters and colleague Rory Cellan-Jones used mobile phones to blog and report a mobile phone congress in Barcelona, as a trial of the technology. They shot 26 pieces of video. The

Figure 2: The Reuters mobile journalism toolkit (Source: Flickr)

most popular video received more than 60,000 views.

Cellan-Jones said the clips were saved on the phone's micro SD card and transferred to a laptop by Bluetooth or a card-reader. He then used free software to top and tail the clip. The software also compressed the clip from about 80 Mb to just 6 Mb for faster uploading.

Waters proclaimed the project "a triumph." "During the experiment the picture quality was indifferent, the sound quality was ropey, [and] the content was so-so. But it was brilliant." The video quality was adequate for what he wanted for a blog. Sound quality from the Nokia's internal microphone was only acceptable if the reporter got within a metre or two of the subject. Any further away and the sound was a problem. Cellan-Jones noted that the N95 picked up sound from wherever he pointed it. "Unless you are quite close to the interviewee you may get swamped by background noise." As noted earlier, Reuters got around this problem by getting Nokia to build a bespoke microphone.

Waters said during the trial he learned a lot about the technology but also about how using the mobile influenced the workflow for reporting. He said he developed a better understanding of the kinds of video audiences wanted to watch on a blog or website. Using software called ShoZu, Waters was able to "point, shoot, click and send," noting that he had video on the BBC web site within half an hour of sending. BBC reporters experimented with other technologies such as Qik and Flixwagon and commented favourably about them. These technology options are discussed later in this report.

Some mobile phones let reporters top and tail video. Waters noted that he learned to shoot "discreet blocks" of video rather than several minutes of footage. His subject, technology, does not always offer interesting visuals. So he did lots of short interviews. "Some of them were very dull. They were too long, or they rambled, or we were too far away from the subject for good sound quality." But some were interesting because the interviewees were interesting. "The important thing for us is that without the camera we would not have had any video. So the camera gave us an extra layer of material," Waters said.

"The thing that struck me about mobile journalism is that opportunity plus capability is the key. If you have got the phone in your pocket and the systems in place to be able to send video, then you can report at any time. You do not have that luxury when you are relying on a cameraman, or need to set up your own camera. And with exclusive video, audiences do not mind if the camera work is a bit rough around the edges. It is clear to me that mobile video will never replace professional cameramen and professional [news] packages any time soon." With the speed of development of mobile phones, it is highly likely that mobile phones that can record in high definition will become available in the next few years.

In the short term, Waters said, mobile phones might be more relevant to radio journalists rather than TV journalists. When mobile phone companies improve audio quality and internal microphones, radio reporters will be able to report live from anywhere. "Someone with a mobile phone and a microphone could broadcast live from anywhere in the world."

After the initial experiments, Waters resolved always to carry the mojo equipment with him. "I've been very impressed with people's attitudes to [my] pulling out a mobile phone and suggesting we shoot some video. I had expected people to be horrified but in fact most people were extremely receptive and many were impressed by the novelty."

The BBC's mojo gear included a Nokia phone, a Bluetooth keyboard, extra batteries, a monopod, and a microphone. Waters said one of biggest successes from the Barcelona experiment was a consumer application called ShoZu. After loading the software on the phone, it was possible to upload video to the ShoZu server. Thereafter the software sent video to wherever he wanted, in as many different formats the BBC wanted. "I was able to ftp to the BBC server, and YouTube and BlipTV, and keep a copy as backup."

3.2 Case studies from Scandinavia

In Norway, Frank Barth-Nilsen trains mojos for NRK, the national broadcaster. "A lot of other broadcasters and newspapers are interested in our findings," he said. Barth-Nilsen said NRK's various departments planned to use mojo content for mainstream platforms like television. "We're building a toolkit for our journalists, focusing on speed and usability. We're also looking into how the new technology will change today's way of storytelling."

Barth-Nilsen has established a blog for sharing ideas, called Mojo Evolution. The URL can be found in the readings at the end of this report. Barth-Nilsen has modified some equipment to work with his mojo kit. One of his most innovative is a Bluetooth earpiece that works as a microphone. "If you're at a press conference and want to stream live or record [an interview] during the conference, this is a handy utility." Barth-Nilsen purchased a cheap Bluetooth earpiece and glued on a clip. "On Nokia N82 and N95

you can use a Bluetooth earpiece as a wireless microphone when recording video or audio. The quality is not as good as the on-board microphone, but in crowded places you will filter out a lot of noise."

Battery life can be the biggest problem with smart phones if reporters are recording or video streaming for hours. Barth-Nilsen recommends solar chargers. "Most solar chargers come with a built in battery," he wrote on his blog Mojo Evolution. "Some of the more expensive solar chargers deliver quicker charging than from sunlight." He said he would choose the Power Monkey if money were not an option. "If you can afford it, I guess that would be my preferred solution."

Norway's largest daily newspaper, VG, has developed "news portal" technology to help media organisations handle mojo content from the audience and its reporters. This technology is "made by journalists for journalists." The portal manages incoming text messages, multi-media messages (MMS) and e-mail in a single application. With the technology it is possible to view incoming videos directly in the portal. The software deals with all video handling and conversion, and distributes information to relevant editorial departments. It handles RSS, geo-tagging and metadata.

3.3 Case studies from Asia

Reporters at **Inquirer.net**, the online site of the *Philippines Daily Inquirer* in Manila, have been filing stories remotely via their Nokia mobiles since early 2007. Given the limited 3G networks in the country, Inquirer.net offers an example of innovative use of mojo technologies. JV Rufino was editor in chief of the site until February 2009. He said getting stories to the site from reporters in the field was easy with narrowband Internet. "We have been sending text for years. Photos are not a problem. We can get by with 72 dpi [image resolution] on the web."

But video was occasionally a problem because of the much larger files. "We cannot send video in real time; it tends to be a gap of anywhere between half an hour and several hours. Reporters have to go to an Internet café or back home to get a faster connection. Or reporters have to compress the video to a manageable size on their notebooks [small laptop computers] to make it transmittable." Rufino said any "kinks" in delivery of video had largely been addressed. "But at the moment we cannot report an event in real time. The fastest we have had video on the web is about 20 minutes from the time it happened."

Rufino said reporters had to learn how to do post-production work to make the files smaller, to get them down to about 4 Mb. Some reporters recorded an entire event such as a political meeting with their cameras, he said, and then edited the video. "So they only send a few selected clips because that is much faster." He said video clips were meant to accompany an article for the web, and were not merely standalone material. Inquirer.net reporters record video in high definition because Rufino wants the video quality to be as good as possible, and he wants to be able to use the video in a variety of contexts. "Ultimately we want to be able to show video on television."

All 11 of the site's reporters shoot video in the field, though Inquirer.net also has one dedicated multi-media reporter. Reporters supply an average of about five stories a day. "Sometimes it's three or four if they are doing longer stories; more if they are doing shorter stories. We like to do one [major] video story a day, which is seven a week." Breaking news tends to start with text because it comes in first. "The photos follow shortly after and the video takes longer."

Rufino has been testing the Nokia N95 for its multi-media capacity after learning about the Reuters mojo toolkit. But

Figure 3: MojoEvolution.com screen shot

price point was important, he said. "It was still possible to get better quality images for a lower cost with a dedicated video camera compared with a mobile phone. Reporters shoot video with their dedicated video cameras, transfer it to the laptop with a cable, and edit using the laptop's basic software that comes with the operating system from Microsoft, Apple or Linux. If video files are very large reporters upload the file to a media-sharing site on the web and then text message the office, whereupon editors download the files. Reporters also send text messages of the captions for photographs and introductions to accompany the video. "Editors in the office clean up the video, correct the sound and remove [things like] profanities. Then the files are uploaded to the site and to YouTube," Rufino said.

Manila, the capital, has crowded roads and traffic jams at peak hour can clog highways. Many reporters know the frustration of getting good video but not being able to get it on air because of being caught in traffic. The author has experimented with mojo reporting from cafes in Manila and found video files of up to 30 seconds duration were uploaded quickly. Thus mojo work is possible even in cities with low quality 3G networks if you can find a wifi connection in a café or other public place like a restaurant. Free wifi is available at cafes throughout Asia. The reporter stores interviews on the phone's internal hard drive or SD card and transmits the video or audio when she or he locates a wifi network.

In **Singapore** the country's main media group, Singapore Press Holdings, launched Stomp (Straits Times Online Multi-media and Print) in June 2006. By March 2009 the site (stomp.sg.com) was averaging more than 7 million page impressions a month. The island of Singapore has a population of about 4.4 million and mobile phone penetration is one of the highest in the world. Household broadband penetration reached 102.1 percent by January 2009. Partly this was driven by massive take-up of 3.5G services, whether on a phone or via a USB dongle in a laptop. For more details see http://www.ida.gov.sg/Publications/20090304182010.aspx. Network availability measures the degree to which the Internet functions properly in any society. In Singapore network availability ranged between 99.99 and 100 percent reliability, and mobile phone call success rates were perfect, according to data from the Infocomm Development Authority, the body that oversees and regulates telecommunications in Singapore.

Figure 4: Home page of www.stomp.com.sg in Singapore

Within months of launch, audiences were sending Stomp about 100 photographs a day. Almost all are published on the website. Only poor-quality or offensive images are rejected. Newsworthy images are sent to SPH's 11 daily newspapers.

Felix Soh, deputy editor for digital media at the flagship daily, *The Straits Times*, oversees Stomp. He believes it is the only platform in Asia that focuses on social networking. About 80 percent of the site's content comes from the audience. Stomp caters for a different market compared with *The Straits Times*, whose online site, ST Interactive, effectively mirrors the print edition and contains mostly serious journalism. Stomp is alternative journalism. "It is not serious journalism in the form that *The Straits Times* offers," Soh said, "though Stomp does deal with journalism that affects people's lives."

Singapore intends to become Asia's leading media marketplace. In 2003 Singapore's government launched a major innovation called Media 21. It seeks to almost double the media's contribution to gross domestic product from 1.56 percent in 2003 to 3 percent a decade later, along the way creating more than 10,000 media jobs for Singaporeans. The country has pioneered high-definition and mobile television services in the region. Dr. Tan Chin Nam, chairman of Singapore's Media Development Authority, said the media industry in the Asia-Pacific region was expected to grow at a compound rate of 9.2 percent at least until 2010.

Soh believes the Internet and multi-media are a natural fit. "Video is going to be big. It is more engaging than, say, a podcast. Multi-media storytelling means using video to tell the story. But it is not as slick as what is being done

on mainstream television. I want Internet multi-media storytelling to be raw. If it is too slick it looks too contrived." Soh said all journalists employed on Stomp needed to be innovative. "We look for fresh ideas because you have to break rules when it comes to multi-media storytelling. You have to have an edge, an attitude."

3.4 Case studies from Australia

In Australia the national news agency, Australian Associated Press (AAP) has been deploying dozens of mojos since September 2008. Miguel D'Souza, AAP's multi-media editor, said each mojo's kit included the Nokia N95 with a Bluetooth Nokia fold-away keyboard, a digital sound recorder and a Sony HDR-SR12E video camera. AAP developed a training program and roster for its Internet desk journalists, and distributed a training video to bureau reporters around the country.

Late in 2007, journalists at *The Sydney Morning Herald* and the *Australian Financial Review* moved into a new building dubbed the "newsroom of the future" on Sydney's inner harbour. The papers are two of the flagships of Fairfax Media, Australia and New Zealand's largest and most integrated media group. Phil McLean, Fairfax Media's group executive editor at the time of the move, said three quarters of the entire process involved getting people to "think differently" – that is, to alter their mindset so they were willing to work with multi-media. Fairfax Media had moved from being a newspaper company to an integrated media company, McLean said.

As part of preparation for the move, Fairfax organised weekly training courses to introduce journalists to a portable digital assistant (PDA) or smartphone called a JasJam, made by iMate. Reporters and photographers involved with breaking news tend to be the main users of the device, McLean said. "That's somewhere between a dozen and 20 reporters at *The Sydney Morning Herald* and another 15–20 at The Age [in Melbourne, the other major Australian city]." A pool of about 70–80 JasJams would be made available for specific assignments.

Reporters use the JasJam to shoot video and stills, record audio, and write stories on a cut-down version of Word, and then file to editors at Fairfax's various online sites via the country's 3G phone network. Fairfax Media launched online-only daily "newspapers" in March 2007 and June 2008 respectively in Australia's third- and fifth-largest population centres, Brisbane and Perth. All reporters at *Brisbane Times* and *WAToday* were equipped with the JasJam from the start.

The key issue was not the technology, McLean emphasised, but preparing journalists for new ways of providing information to audiences. "It's the JasJam today, but it could well be a different piece of equipment tomorrow," said Mike Van Niekerk, editor in chief of Fairfax Digital, the company's online arm.

3.5 Case studies from the United States

John Culberson, a Republican representative from Texas, broadcasts live images from the **US Congress** via Qik software on his mobile phone. Culberson described himself to *The New York Times* in August 2008 as the "first real-time representative." "New media promises to create the next revolution that will allow we the people to take back control of our government," Culberson said, claiming he uses Qik to "shine sunlight into all the dark corners of Congress".

If Internet access is poor or stops, the video recording is stored on the phone and uploaded when the phone finds a signal again. All video is held on Qik's website for repeated viewing. "People are using Qik almost as a camcorder. When they are going on their travels, they are using it to capture memories," says Bhaskar Roy, Qik's co-founder. Rishi Mallik, who works in business development for the same company, said Qik had partnered with the CBS and Fox networks in the United States.

Culberson combines video streaming with Twitter, the micro-blogging system. He notifies his more than 3,000 Twitter followers when he is about to stream a video with his mobile phone so they can watch. He also uses Twitter to post comments from committee rooms and the floor of the House. Twitter is a micro-blogging tool that lets people broadcast messages of up to 140 characters to people in their network. The messages are known as "tweets." Users can twitter via the text facility of their mobile phone, or using a website.

Robert Scoble, based in California's Silicon Valley, claims to have shot the highest number of Qik videos. He is also a video blogger with *Fast Company* magazine. Qik succeeds because it is "frictionless publishing" he told *The New York Times*. It was as simple as touching two buttons on his camera phone, compared with the dozen he needs to press to make a phone call. When someone downloads Qik software for mojo work they allocate buttons on their mobile phone as the "record" button. "If I'm in the Musée d'Orsay in Paris, for example, I can go round and show my friends back home – live – what it's like," Scoble said. "To me, that is a much more mainstream idea for our culture than streaming 24 hours a day." Scoble said he uses

Qik alongside his professional work with high-definition cameras. Mojo offers the advantage of allowing him to capture spontaneous moments and get instant feedback from users. His high-definition television work, meanwhile, could take three weeks to appear.

"Qik has put a television studio in my pocket," Scoble said. "I can get live video onto the Internet faster than I can make a phone call." Audiences send text messages to his phone while he is filming. Scoble described this process as an exciting form of interactivity. "Advertisers want to put their brands with content that has large and engaged audiences and that's going to be breaking news. If I were running a newspaper, I'd get every reporter a cell phone capable of broadcasting video to the Internet using a service such as Qik, Kyte, Flixwagon, or Mogulus. Then I'd stream compelling live events – crime scenes, postgame locker-room interviews, new-product introductions – and package analysis on top of it."

Scoble was a keynote speaker at the annual conference of the Online News Association (ONA) in Washington on 13 September 2008. Student journalists covered the conference for the ONA, using CoverItLive to do a live blog of Scoble's talk, and also acted as mojos to record his keynote address. Jackie Hai and Stephanie Lim collaborated as mojos to report Scoble, and concluded that mojo work was useful for organisations that wanted to cover a story in its entirety. Teamwork was vital. "It gave us a chance to cover this event more accurately than if it had been done by a single person." A team was important to ensure the coverage was accurate, the students said.

Jeff Jarvis publishes a highly influential blog, BuzzMachine, and teaches interactive journalism at the graduate school of journalism at the City University of New York. In January 2008 Jarvis spent a week as a mobile journalist with a mobile phone at the World Economic Forum at Davos, Switzerland. Like Scoble, Jarvis believes that all journalists – print or broadcast – should be equipped as mojos. Jarvis said the mobile phone would change the job of the journalist "in ways more radical than I could have imagined until I started reporting with one." Jarvis said mobile phones allowed reporters to upload or broadcast while on the move and could also be used to send photos to Flickr and tweets to Twitter. The latter is a short-form version of blogging, like reporting via SMS. A wired journalist without a camera and connectivity was "like a hack without a pencil," Jarvis concluded.

"We already know that camera-phones in the hands of witnesses have been changing news. There is no better illustration of that, so far, than the 7/7 [London transport] bombings [in 2005]. But I now see that this same device may change the job of the journalist in ways more radical than I could have imagined until I started reporting with one. At [the] World Economic Forum meeting in Davos, I begged my way into Reuters' mojo – mobile journalist – project and was one of a score of delegates and reporters to get a mojo phone."

Jarvis saw David Cameron, the Conservative Party leader in the United Kingdom, alone in the halls of Davos. "I walked up and asked him about his own small video work at Webcameron [see readings for more details]. I whipped out my mojo phone and asked whether he'd mind my recording it. I told him I was doing this for Reuters, but I can't imagine he took that seriously, for I was just using a phone. How could that be professional? And there is the first fundamental change brought on by the mojo phone: It's small, unobtrusive, unthreatening. You don't feel as if you're talking to a camera and, in turn, to thousands or millions online. You're talking to a phone; how silly. Other Reuters mojo journalists told me they had the same experience: It makes recording people more casual and perhaps candid, and certainly easier."

NBC news photographer Jim Long was in Africa in February 2008 covering a visit by President George W. Bush. Long used a mobile phone with Qik software to broadcast an interview with Sir Bob Geldof, the musician and humanitarian. The mojo interview did not involve any large broadcast quality cameras or a satellite uplink. Long said the most important component of platforms like Qik was interactivity.

"The coolest part of the Geldof interview was when my Texas Twitter bud Mike Neumann's question popped up on the screen. It was haltingly unscripted as I interrupted Geldof to ask Mike's question. Geldof didn't miss a beat and actually referred to Neumann by name." Long noted that the interview took place only a few metres from the US television pool transmission workspace where "racks of routers, monitors and decks churned out two satellite paths of pool and unilateral materials from all five networks." The comparison between a live video stream interview via a simple mobile phone and the millions of dollars of television equipment was stark.

KCRW in Santa Monica in California, part of the National Public Radio system, has been using mojos since mid 2008. Anil Dewan, KCRW's director of new media, said the station bought three Nokia N95 phones and three plans with AT&T that allowed unlimited access to

3G networks. After joining Kyte, one of the software companies that provides live video streaming, the station sent journalists to the Democratic and Republican conventions. KCRW's website got more than 124,000 views for 67 convention clips. "The content is fed straight from cell phones to the web site. No one has to encode or edit it," Dewan said. "It's a small, nimble technology," he said of the streaming process. "You can record and upload quickly to our website using Kyte."

Daniel Graf, chief executive of Kyte in San Francisco, told *The New York Times* in September 2008 that KCRW was using Kyte's services on a trial basis. In the future, commercial users would pay a flat fee based either on the volume of traffic or through a share of revenue. Individuals are not charged for private use of the service.

3.6 Case studies from Africa

Al-Jazeera bases reporters in "hotspot" areas of the world where it expects news will break and uses the latest mobile technology to get news to its audiences. Mohamed Nanabhay, Al-Jazeera's head of new media until early 2009, said the 24-hour news service had 62 news bureaus around the world. "We have deep knowledge of our region," he said.

The experiences of two Al-Jazeera reporters, Baiba Ould Mhadi and May Ying Welsh, in Mali and Niger illustrate the use of mobile technology to get news from isolated regions. As part of a special series the reporters travelled across the Sahara desert to cover a conflict involving uranium, the environment and the Tuareg, the nomadic animal herders who live in the Sahara. "The Tuareg are among the world's poorest people," said Nanabhay. "Yet their region contains some of the world's biggest uranium deposits."

The reporters carried smartphones as well as full-size video cameras. Authorities confiscated the latter soon after the reporters entered Niger, but the reporters were allowed to keep their phones. They took high-quality images with those phones that were geotagged, using the phone's GPS function. This provided the exact location of where the shot was taken, which allowed Al-Jazeera's new media team in Doha in Qatar to plot the route of the reporters' journey through the Sahara on an interactive map. Examples of the Sahara photographs and the mash-up of the reporters' journey can be found at http://labs.aljazeera.net/.

Audiences could follow the reporters into the heart of the conflict via a Google Maps mash-ups. "The project was initiated by Al-Jazeera Labs to demonstrate some of the innovations coming out of our new media group," Nanabhay said. "Keep in mind, though, that some of these tools are still in development." Nanabhay's team is also looking at the potential of Twitter for newsgathering and the iPhone for distribution of news. Twitter software allows people to blog via their mobile phone.

Ruud Elmendorp, a Dutch mojo, operates out of **Kenya** in Africa. By May 2009 his website (videoreporter.nl) offered 133 news video reports from 22 countries in Africa. Also in Africa, the Bizcommunity.com site in **South Africa** partnered with Nokia to get multi-media content on the website via mojos. Mathia Nalappan, Nokia's general manager for South Africa, said businesses all over the world were realising the value of becoming mobile, and journalism in his country was at the forefront of this revolution. "Journalists now have the tools to file their stories, with accompanying visuals and audio while on the move, saving time and increasing productivity. Enhanced productivity is a key output of this new relationship," he said.

Nokia provided Bizcommunity's editorial team with mobile phones. Louise Marsland, editorial director and editor of Bizcommunity, said her company was proud to be the first online media site in Africa to benefit from such a partnership. "Mobile journalists – 'mojos' – are the journalists of the digital future: journalists who can seamlessly integrate and upload their reporting efforts including images, podcasts and videos to give their readers the full picture, immediately, on daily news services like Bizcommunity."

Journalism students from the University of Witwatersrand, also in South Africa, were using mobile phones to explore how technology could be used to create and distribute news. Their kit includes an N95 8 Gb handset, a portable keyboard and a tripod. Nokia also provided technical support. Indra de Lanerolle, adjunct lecturer on the Witwatersrand journalism program, said students had to think carefully about the nature of the platform they were using and how this would affect the content they produced. "Are there specific kinds of news or information people will want on their cell phone? Do stories need to be of different length?" Students needed to decide when and how to use video, rather than text or still images. "All of this puts them on the bleeding edge of new media. They are working with tools that many professional journalists have not yet even seen."

At Rhodes University in Grahamstown in South Africa, another mojo project started in mid 2008 to cultivate citizen journalists among local high-school

students, supported by the Knight Foundation in the United States. Professor Guy Berger, who wrote the funding application for the project, said the experiment was looking at the potential for mobile phones to become devices for interactive journalism. "The whole initiative will enable young people in Grahamstown to have fun messing around with cell phones in search of formulae to turn the gadgets into a serious platform for journalism. The idea is to intervene in a context where most cell phone use is still for interpersonal business, rather than participation in mass communication."

A separate "cell-phone journalism" project involved getting 45 senior high school students to text news to the local newspaper, the *Grocott's Mail*, which publishes a selection of the best items. Content covered local politics, school news, sports and entertainment. Rhodes University journalism programme owns the newspaper and uses it as a training vehicle.

Noted Professor Berger: "The challenges have been developing skills of accuracy on the part of these young citizen journalists on the one hand and, on the other, the newspaper translating SMS-style abbreviations back into full English for its grown-up readers to comprehend." Content from all the students, plus other material from the newspaper, was sent back to the young people's mobile phones in a separate experiment designed to use the phone as a distribution device.

④ Challenges to mojo work

In the context of journalism and breaking news, the fundamental question that has to be answered is the balance of **speed versus quality**. Sometimes getting the story first or fastest can mean accuracy is sacrificed. To ensure quality content, breaking news reporters must ensure they are both fast **and** accurate. If it becomes a choice between the two, accuracy should always prevail.

It is pointless having brilliant video if a reporter cannot file it. Thus the availability of appropriate **infrastructure**, including wireless broadband access and the reliability of 3G networks, becomes a key issue. Mobile phones are constantly being improved, so from a technology point of view newspapers need to refresh their phones regularly because technology quickly gets out of date. The best option here is to lease rather than buy the phones.

Every time a reporter streams live video via the web someone pays for the data being transmitted. The only exception is when the reporter finds a free wifi network at a café or restaurant or other public place. This applies also when downloading pages from the Internet for research. An average web page consumes about 1 Mb of data and watching a five-minute video clip can gobble up about 3 Mb. So a combination of sending video via the web and surfing for information several times a day will use up hundreds of megabits a day, which represents gigabits of information a month.

Costs easily escalate. The best option is an unlimited data plan. These are available in some countries such as Singapore, Sweden and the United States. But other countries such as Australia are not as advanced, and media organisations face large costs for data. It is appropriate to conduct a cost-benefit analysis to calculate the cost of mojo work.

Technical challenges such as battery life become important for mojos. Reuters noted that it takes six hours for the solar panel in its mojo toolkit to recharge a phone. The BBC's Darren Waters said he used three or four batteries a day when reporting. Both the BBC and Reuters encountered problems with sound quality: bland and monotone stand-ups caused by poor-quality sound. Reuters' use of an external microphone for their mojo toolkit has produced better sound quality.

Figure 5: Photo of people taking photos of Obama on the election trail with their mobile phones (Source: Google images)

Once large numbers of reporters start mojo work, the potential volume and speed of video being sent back to a website will put pressure on back-end systems. It is important to have reliable **systems** in place at the back end. Any media organisation that uses a third-party site will have to trust their scalability and robustness. If the third party cannot handle the traffic from a major news event and their servers collapse, the media organisation and not the third party looks bad. Back-end systems therefore are a genuine issue to consider.

Even though the technology is simple to use, **training** is still important. Reporters need to know how to locate and connect to public wifi networks if they cannot get Internet access. And print reporters need to learn how to frame images in the phone's viewfinder. "We are not cameramen, so we made mistakes," the BBC's Waters said of the Barcelona experiments. One reporter pressed the pause button instead of record for one interview, and had to ask the interviewee to do the interview again the next day. Waters said he watched some *Variety* journalists at the Cannes film festival using Qik for live interviews. One interview with Woody Allen failed because the reporter put the phone too far away from Allen. The sound quality was poor and people kept moving into the image frame, which was distracting for the audience.

Finally, any form of live reporting involves the potential for **legal** problems. Few media organisations are going live from a mobile phone. Most tend to use the technology for obtaining on-the-spot images that are visually attractive, such as the fireworks after the Obama nomination. Darren Waters, the BBC's technology editor, says the BBC has a system of checks and balances: "Anything that goes to air goes through those checks and balances. The ad hoc and spontaneous nature of mojo means that audiences are slightly more willing to accept blemishes. These are mainly technical blemishes rather than editorial." Archiving and copyright issues also need to be addressed.

⑤ The people formerly known as the audience

On 16 September 2008 the *Geelong Advertiser* in Australia published a story about a YouTube video in which four men bashed a teenager near a Geelong church. The video showed the teenage boy being kicked in the back of the head and punched in the face before being pushed into bushes. The video was shot with a mobile phone and posted to YouTube.

While this scenario represents the dark side of what is possible with a mobile phone, it shows a trend emerging around the world. Individuals with mobile phones in situations where news breaks now have the tools to record it. Newspapers need to be prepared to take advantage of this trend. The number of people around the world with a mobile phone reached about 4.2 billion by mid 2009. That is four times the number of people with a personal computer and treble the number of Internet connections.

Another example from the *Geelong Advertiser* illustrates the potential of the mobile phone for breaking news. On Sunday 21 September 2008 police became involved in a siege after a man in a Geelong house threatened officers with a handgun. After a three-hour standoff officers stormed the house when it caught fire, dragging the man from the flames. A woman's body was found in the house. The newspaper maintained a live blog throughout the siege, incorporating text messages, still photographs and video sent from neighbours' mobile phones. Many of the images in the newspaper the next day came from those mobile phones. *Advertiser* editor Peter Judd said text messages provided valuable colour and background material for the stories in Monday's newspaper.

Around the world, traditional media companies are encouraging their audiences to contribute still images and video via their mobile phone. Chris Ahearn, president of the Reuters media group, said his news agency had always purchased newsworthy images from part-time contributors known as stringers. "What if everybody in the world were my stringers?" Ahearn asked rhetorically in an article in *The New York Times*.

News organisations have traditionally published photographs taken by amateurs of major news events like the London Underground bombings in July 2005 and the Asian tsunami the previous year. Yahoo's news division has often used images originally posted on Flickr, the company's photo-sharing site. It created a slide show of images from Thailand after the coup there in September of 2005.

Steve Rosenbaum runs Magnify Media, which helps websites collate and present video contributions from audiences. He created MTV Unfiltered, one of the first viewer-contributed video programs on television. "The average person witnesses something that is considered news once every 10 years," he told *The New York Times*. "When it's time to put something on the Internet, they will put it in the place they have used before. The numbers tell us that is YouTube." As of mid 2009 just over half of all videos posted to the web went onto YouTube (53 percent). The next highest was in single digits, so YouTube is the powerhouse in this arena.

The project manager for Nokia's Research Centre, Timo Koskinen, said mojo toolkits had transformed the concept and the potential of citizen journalism. "Citizen journalism is beginning to embrace a wide range of public engagement with the media, from groups of contributors organised around subject or geographic areas to the casual participation of observers who are lucky – or unlucky – enough to be at the scene of a newsworthy event." The morphing of citizen journalism into something recognised more as "public engagement with the media" might make it more palatable to the people who object to the notion that members of the public could commit "random acts of journalism."

In response to this worldwide trend, mainstream media have provided ways to let people submit video still images and text via their mobile phone. CNN introduced its I-Reports section for audience-submitted material (http://www.cnn.com/exchange/) in August 2007. Some submissions are included in mainstream news broadcasts. CNN's I-Report was forced to expand the site to accommodate the volume of material submitted. I-Report's site offers a range of tools for helping novice reporters, called the Toolkit. Mitch Gelman, executive producer of CNN.com, said observers could offer their perspectives on a story from the inside. "Even the best reporters in most cases are approaching the story from the outside in. We feel as a news organisation we need to provide both to offer full coverage to our audience."

Reuters also established a site for accepting content from audiences, along with Yahoo! News, CBSeyemobile.com and the Fox network in the United States. The last is called UReport. Yahoo! News has a training site for its audience-generated contributions called YouWitness News. Details about all of these can be found in the readings.

Jeff Jarvis of the BuzzMachine blog noted that the point of the mojo concept was not simply equipping journalists, but knowing that witnesses would be equipped with the tools that enabled them to share what they saw. So one future role for journalists was knowing how to tap into this resource, he said.

⑥ Revenue opportunities

Mobile delivery of news is a likely future for newspapers, and probably for broadcast media as well. Newspaper companies should partner with telecoms operators or become mobile carriers themselves. The latter option provides at least three revenue generating or marketing opportunities: A mobile carrier could offer video streaming to their subscribers. This would generate money via service fees and data plans.

Secondly, if newspaper companies provided their content via the mobile phone, they would receive more money for that content compared with partnering with a telecoms company. Finally, newspapers could bundle mobile phone contracts with a yearly subscription to the newspaper.

The technology gives journalists a chance to interact with their many scattered audiences through live two-way chat. Assuming global roaming options, mojo technology allows reporters to produce live videos from anywhere in the world. This reduces costs for satellite feeds and related communication technologies. Newspaper companies could customise video content and also offer the ability to interact through live chat, and viewer-submitted questions and requests.

Newspaper companies have struggled to find ways to make money from online. Audiences have come to expect free content. If a newspaper starts charging for online content, audiences simply look elsewhere for free content. But audiences are accustomed to paying to use their mobile phones. They have got into the habit of paying monthly subscriptions. They are happy to pay for ring tones. They appear content to pay when they vote via SMS for contestants in reality television programmes. They are willing to pay for data charges for transmitting video or photographs to their friends.

In short, they will pay for micropayments (because everything involving mobile phone content is in reality a micropayment). This provides an opportunity for newspapers to make money by selling their content and premium services via mobile phone.

Figure 6: Example of an e-reader (Source: Google images)

Figure 7: Example of plastic paper (Source: Google images)

We should also consider the potential of the e-reader, a form of electronic book, as a device for distributing newspaper content. Printing, paper and distribution cost about 60 euro cents of every euro spent on producing a newspaper. A device like an e-reader cuts production costs significantly, meaning more money can be put into producing content. Early in 2009 the Hearst Corporation in the United States announced it would release an e-reader for newspapers some time in 2010. It would be American letter in size and weigh about 400 grams. In March 2009 the Silicon Valley-based Plastic Logic said it planned to release an un-named e-reader in January 2010. The Plastic Logic product would have a screen, measured diagonally, of about 27 cm and it would weigh about 300 grams. In April 2009 News Corp Chief Executive Rupert Murdoch said his company was investing in a mobile device for reading newspapers on a screen. The project was in its early software development stages, and he provided few details.

These three e-readers are intended for newspaper readers. They are potentially attractive to audiences if newspapers can get the content and business model right. The devices have other selling points. They are perceived as being greener than newsprint, which makes them attractive to people concerned about environmental issues. And readers can store back issues of magazines, newspapers and thousands of books on each device. This saves paper and the strain of carrying heavy paper-based products. Their potential as a replacement for school and university text books is huge.

⑦ The future

Where to from here? Where is the mojo likely to go? Reuters' chief scientist Nic Fulton believes mobile technology is evolving very fast. "We can see a time probably not that many years out – less than five [years], maybe as short as three – when mobile phones could have high definition [television] capacity, [and] extremely powerful VPUs [computer processors] and keyboards," Fulton said in mid 2007. "You might just start saying that's a laptop. I still think that the future will ultimately be a very personal mobile device. So clearly there is potential for it [the mojo] to have quite a transformative effect on journalism."

So expect some exciting news about high definition on the mobile phone by as early as late this year or the middle of next year. Apple's iPhone appears to have stimulated higher levels of innovation in terms of phone interface, so expect some major developments in screen capacity as well.

Kevin Anderson is blogs editor for *The Guardian*. He believes mobile technology lets journalists stay closer to the story, and connected both to the office and to audiences. "The news organisations that experiment now will be best placed to take advantage of the journalistic possibilities that ever-advancing mobile technology allows."

In 1999 Anderson covered Hurricane Floyd for the BBC News website as the winds hit the North Carolina coast. "I filed throughout the night, but after the storm passed, it knocked out electricity and phone lines throughout the eastern third of the state. I wasn't able to file a number of pictures I had taken because I simply had no way to get them back to the back to base." Soon after the storms, Anderson got a data cable for his mobile phone and as mobile technology improved, he found he could do more in the field. "In 2006, on a trip for the BBC World's 'Have Your Say,' I was able to use a 3G data card in the US to set up a mobile wifi hotspot and keep us connected when standard communications channels failed."

Jeff Jarvis of BuzzMachine believes a key skill in the newsroom of the future will not be the ability to get reporters to the scene, but to notice news as it happens as members of the audience shoot video with their mobile phones and post to blogs and the web. Mainstream media does not have enough reporters, editors or producers to do that on your own. "You need to have lots of friends who'll alert you. You need to use every tool that's available – the Technorati of the live video web – to see what's happening in the world." This presents an opportunity for an enterprising newspaper to develop social connection tools for mobile phones.

Mainstream media would have plenty of "witnesses with cameras" who would use these tools to share news as it happens, Jarvis said. The role for big media would be to discover, organise and vet the huge volume of video and content from the audience. "That is a vastly different and vastly expanded vision of how news will come to us. And it brings no end of additional implications about our ability to know what is true and what is not as it happens. Live, distributed newsgathering and sharing will change the news more radically than we can yet imagine." Life becomes a 24-hour news channel, Jarvis said, as "we see news through the eyes of witnesses."

7.1 Changing roles for journalists

The mobile phone makes mojo work possible. But as with all tools, a person makes the choice to use or reject that technology. As well as technology choice, the issues of changing job roles and the difficulties associated with being a "jack-of-all trades" always surface whenever mobile journalism is discussed. Should and can one person do everything? Is it fair to expect one person to work long hours to produce content for many forms of media?

The development of the mojo at newspapers should ideally be left in the hands of people who value the editorial product. Mojos should not be seen as ways to save money by getting one person to do the jobs of several people. Mojos are an innovation that gives newspapers a chance to match television and radio in the realm of breaking news. But people will only watch or read quality. Jerky and poor-quality video is only attractive if it is exclusive. This is a call for editors to manage the development of the mojo, not MBAs. Mojos must not be seen as a way to cut costs, but more as a way to improve newsgathering options.

Kevin Sites is sometimes offered as an example of one person who succeeded as a jack-of-all-trades. In 2007–2008 he travelled to conflict zones in 19 countries, sponsored by Yahoo! Sites shot video, took photos, and wrote stories that were sent via satellite to the United States. A team posted the content daily to hotzone.yahoo.com. Sites' goal was to show the United States parts of the world that were often overlooked. A core audience of about 2 million people looked at the website each week. But the project was expensive: the project's

equipment cost about $ 50,000 plus a similar amount for satellite fees. Travel costs for Sites' team were also high. Such innovations while attractive, are expensive.

The mojo concept is less expensive. Even cheaper is the use of audience-generated content because most of the time the content is provided for free. The future is probably some form of pro-am partnership, where professional editors work with the people formerly known as the audience. Reuters and Yahoo! remain the most popular news websites in the United States, according to comScore's MediaMetrix. Those media companies have embraced the pro-am concept. Audience-generated photos and videos have been available on these sites since December 2006.

It is important here to emphasise the complementary nature of mojo work. It is not going to replace high-end video cameras for broadcast television, or high-end digital stills cameras, or broadcast-quality audio recorders. But it offers a "Swiss army knife" option for producing multi-media content when no other technology is available.

Given the rapid spread of the mobile phone throughout Asia, especially India and China, the arrival of the mojo has huge ramifications for the newspaper business in these countries and around the world over the next decade.

The future remains exciting for newspaper companies willing to embrace change and innovation. As Reuters media and technology correspondent Matt Cowan has noted: "I don't think this is the way we'll all be reporting. But it will be an incredibly important tool that plays into how we report stories. It injects a kind of dynamism."

7.2 Storytelling with the mobile

Matt Cowan was one of Reuters' first mojos. Soon after the mojo software was first loaded on his phone, Cowan said he was aware of the power of the device. "That's an amazing power, almost like science fiction. It has the potential to capture more everyday life. Everyone sees the potential in this [mojo] and I think this is the most advanced execution of this kind of mobile video blogging software."

Cowan covered the 2007 Edinburgh TV Festival and interviewed Internet developer Vint Cerf with the Nokia N95. Said Cowan: "It's easy to use. As someone who is used to working with a big camera, this is a different kind of experience. It fits in your pocket. What's amazing is that you can sidle up to someone and take pictures and video, which people find surprising. It has real potential to capture people's thoughts in places where you would not have a full crew. Its portability is what makes it so exciting." Cowan noted that many other "smart-phones" had similar capabilities, but the N95 was different in that it was "built for journalists". He also said the new technology helped broadcast journalists because it was less intrusive than traditional cameras and microphones.

For a reporter on the ground, Cowan said, a key issue was appreciating when a mobile report would be most suitable. On 11 October 2007 Cowan was sent to interview Doris Lessing when it was announced she had won the Nobel Prize for literature. Cowan's was the first television crew at Lessing's London home. "Everyone in the world wanted that footage, and I don't think the folks in the office would have been too pleased if I'd decided to film it on my mobile. There's a theatre to television that you just have to let play out. But sometimes the picture doesn't matter as much as the immediacy, and what someone has to say." That was the most appropriate time to be a mojo, he said.

Nic Fulton, Reuters Media chief scientist, said handheld devices enabled reporters to create complete stories and file them without leaving the scene. "Rather than bulkier laptops, the mobile journalism application saves time and benefits our audience by ensuring that they receive high-quality up-to-date news."

It is important to emphasise from the outset that mobile journalism will not replace traditional reporting. Reuters and other innovators see the mojo as complementary rather than a replacement. Most mojo content is being used in blogs, and to add to text stories. So think of mojo in terms of its being a supplementary form of reporting. Said Cowan: "I don't think this [mojo] is going to become the way we'll all be reporting. But it will be an incredibly important tool that plays in to how we report stories. It injects a kind of dynamism that we've seen mostly from social networks."

⑧ Lessons learned and conclusions

Think of the mojo as like the Swiss army knife. It is useful if you are alone in the forest and have to fend for yourself. Better to have this tool rather than nothing. The same applies for breaking news: a mojo is perfect for breaking news, for getting multi-media onto a web site from the scene of the action. The best mojo work is done in teams, with appropriate allocation of roles. A team can allocate tasks and each member covers for the others. Each member is confident because they know others in the team are focusing on different parts of the story yet they are all working towards a common goal. Mojos working alone need to have sufficient confidence in their bosses that they can call for help if the story they are covering gets too big for one person to handle.

It is possible for a single mojo to cover a news event, but difficult. Only the most exceptional person can listen, summarise, send video, upload files, respond to incoming messages from online viewers and colleagues, and still be aware of the big picture all at the same time. From experience, the author found it stressful trying to do many things at once. Perhaps it might be easier for someone from the 18–24 demographic, who has grown up multi-tasking and is more comfortable with this style of working. As with most forms of journalism, different people gravitate towards different kinds of reporting. Some people have the kind of personality that thrives on the chance to be a mojo.

Journalists who plan to work as mojos need to consider the most appropriate way to treat a particular story. A live video stream of an important news event demands one person's attention for the duration of the event. Image quality is just as important as the ability to write or interview or summarise the key moments.

Mojo reporting in the field introduces its own range of problems. External noise is a real issue, unless the reporter has a specialised microphone. Beware even distant noises such as helicopters or traffic or construction because these interfere with the phone's ability to record voice conversations. The human ear blocks external noise during an interview or press conference, but the mobile phone's internal microphone captures all external sound.

When bright sunlight reflects on the phone's screen it becomes difficult to frame good images because it is impossible to see the screen. This especially applies in a media scrum where the journalist is forced to hold the camera in outstretched arms above the interview subject. Even a small camera starts to feel heavy after several minutes. The answer here is an extension arm or tripod. With these tools it is vital to be able to ensure the record button is on. The options here are some form of remote control, or being willing to have some blurred and wasted video at the start of the video between hitting the record button and focusing on the subject. The best option here is to have an editor at the office able to remove this set-up video before it is put on your website.

Several spare batteries are vital because mojo work consumes power. A typical one-hour press conference might need at least two or three fully charged batteries, depending on how the reporter covers the event.

Data charges in some countries are high, and managers need to budget for them. The author pays his own data charges, and the local telco charges about 1.5 euros per Mb.

Newspaper companies that embrace the mojo model need to ensure that the software companies they partner with have rugged servers that can ensure reliable and quality service. When news breaks, the technology must make sure the video is delivered. Qik and the other software tools for streaming video involve a time lag. The longer the piece of continuous video, the longer that time lag. A 10-minute piece of video takes another five minutes on top of the initial 10 to be delivered, even on the most modern 3G networks. Rather than streaming 10 minutes of a press conference or other news event, mojos should send discreet packages of video, each of one to three minutes.

Frank Barth-Nilsen of Norway's national broadcaster NRK believes supplying information about the reporter and the location at the start of an interview is important when doing mojo work and feeding the video to public servers. "You'll never know how other people will use your video. Putting this information at the start of an interview is an insurance of fair use, both for you and the people interviewed."

Barth-Nilsen recommends the mojo should video him or herself at the start as a way of establishing the setting for the interview. "This will give the audience a sense of presence and sort of watermarking the material as your own." When interviewing people standing still, mojos should focus on getting high quality images and audio. Indoor interviews on mobile phones often look bad because of poor lighting and surrounding noise. "Try to find natural light from windows or light bulbs. This will increase the picture quality a lot. If it's possible, find a place with little noise. The microphone on phones like the Nokia N95 and N82 are great, but they have a tendency to pick up a lot of background noise."

Appendix A: Mojo tools

At least five companies offer tools for streaming live video from a mobile phone to the web. This section of the report looks at those companies. With all of them, software enables a reporter to stream video directly from a phone to the software company's website. Reporters use their cell phone like a miniature camcorder to capture news and go live. Most of the software is currently only available on Nokia phones and a handful of handsets running Windows Mobile, though the range of suitable phones is increasing. A list is usually available at each company's website. Look for the link to "suitable phones." It is vital to have a data plan because video streaming consumes large amounts of data.

In most of the current examples of mojo work, the video is streamed from the reporter's camera to the software company's site. Then the newspaper copies each piece of video's embed code into the newspaper's website. A faster option, which would involve negotiations between the software companies mentioned below, would be to stream video directly from the camera to the news organisation's website. Newspapers considering this option will need to contact individual software companies.

Qik (http://www.qik.com) is probably the best known of the live video streaming tools because of the publicity it gained with the U.S. Congressman mentioned in the case study section of this report. All software tools work the same way: A reporter downloads software to their mobile phone. After opening the software, whatever the reporter videos with the phone is transferred via wireless networks to a website. The phone buffers and sends footage back almost in real time to the Qik servers, which transcode the video into Flash where it can be watched by anyone who goes to the Qik website. The site describes the video as "live" but usually there is a delay of a few seconds.

Newspapers and individuals around the world embed a Qik "channel" on their website. Audiences can watch events live, leave comments, or watch the video later. The software is available on a wide range of mobile phones, mostly those running the Symbian and Windows Mobile operating systems. A list of compatible phones is available at the end of Qik's home page. Qik advises that users will need a data plan from their service provider, and recommends an unlimited data plan because video streaming "can consume a considerable amount of bandwidth." Qik has users in more than 50 countries. Those users have produced thousands of videos since the company's launch in December

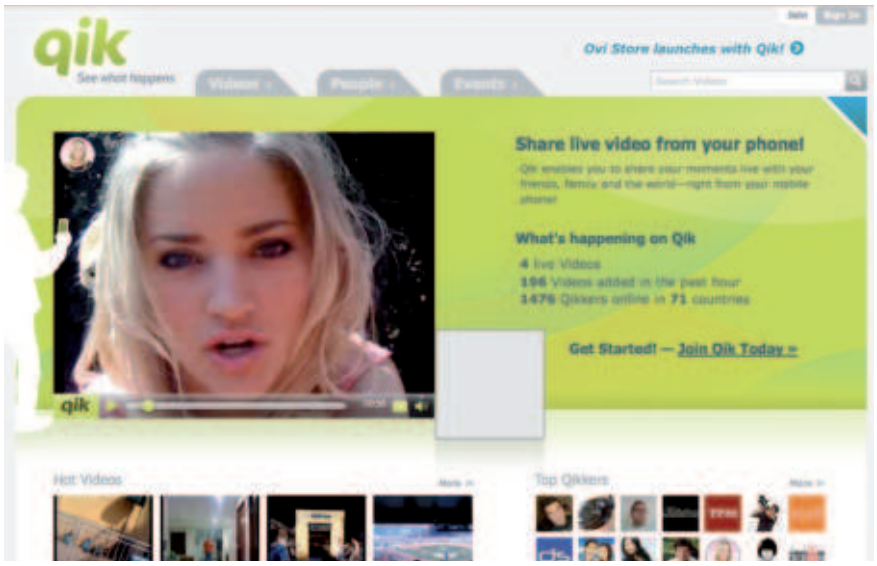

Figure 8: Screen shot of Quik home page

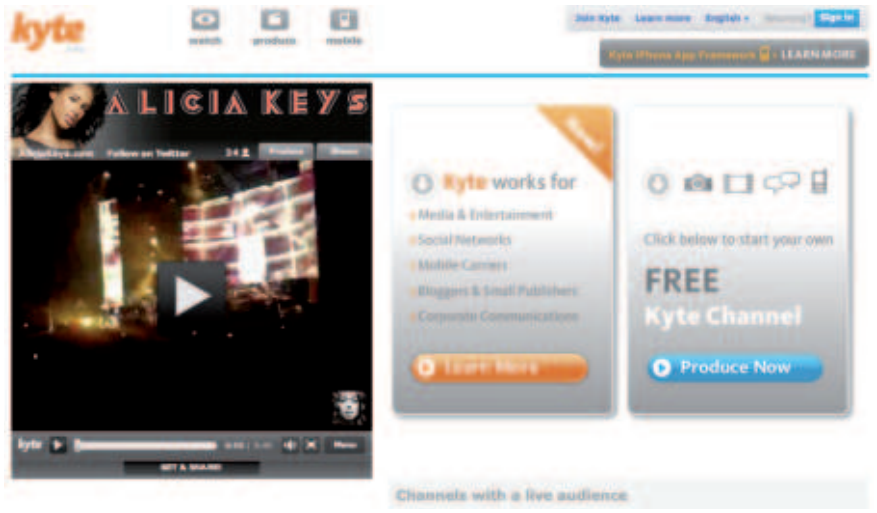

Figure 9: Screen shot of Kyte home page

2007. How can Qik make money, given the software is free? Like many software companies, Qik currently appears to be focusing on building a community and seeking partnerships with media companies and other organisations. More details about Qik can be found at http://www.crunchbase.com/company/qik.

Kyte (http://www.kyte.com) is the second U.S.-based mojo software providers. It aims to help anyone, including journalists, create digital content and distribute it across the web, social networks and mobile phones. It has strategic partnerships with some of the world's leading media and mobile phone companies, including Nokia. At the time of writing Kyte's mojo software was in private beta.

Jemima Kiss of *The Guardian* has noted that Kyte tried to differentiate itself by working with a series of big music names such as 50 Cent. In a video interview on Beet.TV, chief executive Daniel Graf described the company's partnerships with EMI, Warner, Sony BMG and Universal. "For on-the-go content producers, Kyte Mobile Producer provides a mobile production studio that fits in your pocket." Graf said the technology featured the ability to stream live video with high production values with one-click. It is possible to send video directly to Facebook or MySpace with a single click. A video about Kyte can be found at http://www.kyte.com/platform/pg/overview_video. More details about the company are available at http://www.crunchbase.com/company/kyte.

ShoZu (http://www.shozu.com/) describes itself as a mobile media service that enables consumer brands and media companies to interact with their consumers via the web and the mobile phone. CEO Mark Bole said ShoZu's patented technology allowed consumers to transfer photos, videos, music, text and other digital content to and from the handset without the need to open a mobile browser, wait for pages to load, interrupt phone calls, start over in the event of a dropped connection, or sync to a PC. A feature of the technology was "Share-it" one-click uploading of camera phone videos and photographs to online community sites and other destinations.

ShoZu has offices in London, San Francisco, France, Spain and Italy. Most of the software development appears to take place in San Francisco, and it is an American company. ShoZu "Desktop" is a Macintosh and PC compatible software that allows users to drag and drop photos or videos on their computer to more than 30 destinations including Facebook, MySpace, Flickr and YouTube.

ShoZu believes that the "mobile web" is about mobilising existing web applications and services, not about creating new and separate mobile-only services. Said Bole: "Our technology is designed to overcome the challenges of mobilising existing online communities (such as videosharing, photosharing, blogging and social networking sites), and other Internet services (such as RSS feeds, podcasts and videocasts). The BBC used ShoZu in its mojo work in Barcelona (see BBC case study earlier). More details about ShoZu can be found at http://www.crunchbase.com/company/shozu.

Bambuser (http://www.bambuser.com) says the core concept of its technology is to provide people with the chance to broadcast live using a mobile phone anywhere. Students from Turku in Finland and Malmö in Sweden founded Bambuser in 2007. One of them, Måns Adler, said Bambuser provided a world leading service for user-generated live

Figure 10: Screen shot of ShoZu home page

Figure 11: Screen shot of Bambuser home page

video from mobile phones. "What you see on your cell-phone screen is what everyone can watch a second later on the Internet." The company's development office is based in Turku in Finland and the head office is in Stockholm, the Swedish capital.

A key difference between Qik and Bambuser is the fact the latter offers streaming both from a computer and a mobile phone, while Qik only allows streaming from a mobile. Polopoly, an Atex business with headquarters in Stockholm, partnered with Bambuser to provide live mobile broadcasting options to Polopoly's customers. "The integration will provide a ready-made Bambuser element within the web-based Polopoly user interface, containing all the high-end publishing features required by leading online services," a Polopoly press release said in September 2008. Details about Bambuser can be found at http://www.crunchbase.com/company/bambuser.

Flixwagon (http://www.flixwagon.com) is an Israeli company. It has partnered with MTV in the United States to promote citizen journalism. MTV used Flixwagon's mobile-to-web broadcasting platform for its "street team" of youth journalists who covered primaries in 23 states during Super Tuesday in 2008. Those live broadcasts can be seen at http://think.mtv.com/Issues/politics/. The citizen journalists were paid through a $ 700,000 grant from the Knight News Challenge. All used Nokia N95 phones because of the phone's ability to create, edit and upload stories directly to the Internet.

When John McCain, the Republican presidential candidate, announced he had picked Alaska governor Sarah Palin as his running mate, many media companies had no recent video of Palin. But MTV did. In February 2008 MTV street reporter Dani Carlson did a live video interview with Palin using a mobile phone running the Flixwagon application.

This video can be found at http://newsroom.mtv.com/2008/08/29/sarah-palin-republican-vice-presidential-nominee-plugs-romney-paul-but-not-mccain-in-mtv-interview/. In September 2008 Flixwagon partnered with the organisers of the Web 2.0 Expo in New York to cover the conference live from mobile phones. More details about Flixwagon can be found at http://www.crunchbase.com/company/flixwagon.

A.1 Hardware and software recommendations

Of the currently available mobile phones, Nokia offers the best available range of

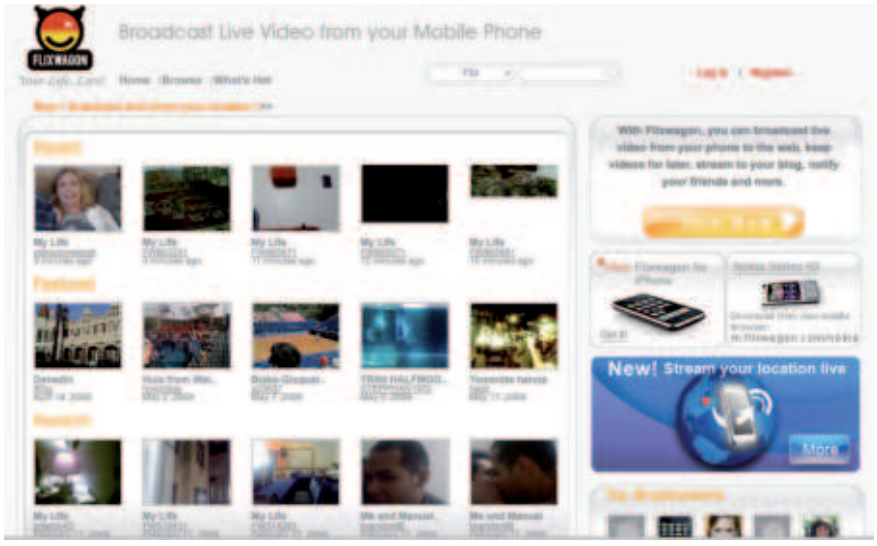

Figure 12: Screen shot of Flixwagon home page

Figure 13: JasJam with Newspapers (Source: Kerry Metcalfe-Smith, Sydney)

hardware tools for mojo work as of mid 2009. Many media companies around the world are using the N95, while several others have adopted the N82. A small number of newspapers employ the iMate JasJam. Nokia released the N97 early in 2009, and this is another option that news organisations could consider. (Disclosure: Nokia gave the author four Nokia N95 8 Gb phones so he and his students could experiment with mojo work.)

For this report the author tested a range of mobile phones for shooting video, including the Palm Treo, the HTC Diamond, a range of Sony Ericsson mobiles, as well as the iMate JasJam. Apple's iPhone ruled itself out because the 3G version, released in 2008, did not have a video camera, though the still camera does produce nice images. In June 2009, just as this report went to press, Apple released an iPhone with a video camera, which will make it a contender in future.

Frank Barth-Nilsen reviewed the Samsung Omnia touch phone on his blog (see the readings for the address). It uses the Windows operating system. Barth-Nilsen rated it a suitable tool for mojo work. In April and May the author phoned Samsung public relations staff in Sydney four times to borrow a phone to review the Omnia. Despite promises the phone never arrived, so it is impossible to comment further.

Media companies need to consider how to pay for data charges because video generates large files, and phone companies charge for data transmitted, not time connected. The best option is to choose an "all-you-can-eat" monthly data package if they are available. One of the reasons that Singaporean citizens have embraced mobile video so avidly this past year is the relatively low cost of high-speed data packages, at $ 60 Singapore a month, or about 30 euros.

Some countries, like Australia, do not offer unlimited data packages. Data charges for individuals in Australia are very high, at 1.66 euros per Mb. This will certainly dissuade many people from becoming citizen journalists. One of the under-appreciated factors in diffusion of innovation theory is cost: Only people with relatively high disposable income can afford to be early adopters! Media companies in countries without unlimited data packages need to establish long-term contracts with telecoms providers.

In Australia, one media company pays about 72 euros a month for each mobile phone plan in its mojo experiment. The project employs several phones for reporting breaking news. The plan includes phone calls and text messages, and a maximum of 1 Gb of data a month. Thereafter data are charged at 13 euro cents per Mb. Newspapers in major cities around the world have large editorial staff, so charges like those above could become excessive if all reporters were given a phone, unless costs are monitored closely. High data charges for video will remain a major restriction on the possibility of mojo work. Exchange rates are based on $ A1 equals 55 euro cents.

Of the above software tools, Qik worked best for reporting breaking news as of mid 2009. The main criteria used in selecting software tools were simplicity of use and quality of image. Qik is by far the easiest to load onto a mobile phone. If the software corrupts, one simply logs in to one's section of Qik and requests a repeat of the software. It appears seconds later and takes less than a minute to download onto a phone. Qik also sends frequent software updates to each registered user's phone.

The quality of the video each software package produces varies, depending on how far the phone is from the server, and the calibre of the local networks. Because Qik's servers are in California (the closest to Australia), the author got pretty quick response. Bambuser and Flixwagon were the next fastest. Bambuser is based in Sweden and Flixwagon in Israel, yet the connections were still pretty fast, which suggests those companies have plenty of server power.

Frank Barth-Nilsen of Norway's NRK says one of the other attractions of Qik is the fact it also records video onto a memory card in full resolution. This gives reporters the option of physically delivering a higher quality video clip to the newsroom, though obviously this would take longer than sending it wirelessly. "I also love all the functions in Qik, allowing you to hook it up with social media services as Twitter, Mogulus, Facebook and others," Barth-Nilsen said.

Any media organisation that seeks to control the quality of images probably needs to establish an "in-house" solution rather than rely on streaming video to one of the software sites and then embedding the html code from that site into the newspaper's website.

Noted Barth-Nilsen: "I believe that you have to choose different strategies if you want a publicly available solution or an in-house solution. The problem with using public solutions is that you can't control the server load. Often you will experience bad quality in your live streams, even if you're on a high capacity WLAN [wireless local area network]. Media companies will want to be able to control the quality of service. It will also give them better solutions for branding and making revenues on their content." This last point is important if newspapers seek to insert advertisements around the video.

"If you are able to control the quality of service on your own server, the picture may look a bit different," Barth-Nilsen said, noting that Flixwagon impressed with its coverage on MTV.

Barth-Nilsen said ShoZu worked well in Norway. Bigger cities in his country tended to offer better 3.5G coverage. "When it's installed ShoZu is very easy to use. The problem with ShoZu is that it's not able to transfer files bigger than 10 MB. If you record video, you will reach the limit pretty fast." But ShoZu's website does offer the option of allowing people to transfer files via FTP. Barth-Nilsen said he found Kyte a good contender for fast publishing of video files. "It's pretty easy to set up your phone to publish videos on YouTube. I haven't yet had a chance to test out their streaming application. But Kyte gives you the possibility to download a script for Internet sharing. With it installed, you have a one-key publishing solution when your recording is done."

The author had problems downloading the Kyte software. The website asked me to insert my mobile phone number and said the software would arrive in 10 minutes. It did not, despite my attempting the process three times. The problem appears to be a glitch in the website. The site inserted an extra zero into my mobile phone number, which meant the automatic process of sending the software never happened because the number was wrong.

Advantages	Disadvantages
■ compact; light; portable ■ able to be used unobtrusively ■ people do not take them seriously and are often more willing to give interviews because they do not appear as a threat ■ able to spread the newsgathering options by giving phones to many people ■ many members of the public already have a mobile capable of shooting video, which increases a newspapers' potential newsgathering resources ■ the Nokia N95 has excellent image quality, even in poor light ■ hand-held videoing offers the journalist lots of freedom ■ external programs such as ShoZu and Qik, which are free, help the journalist file video easily with a couple of clicks of the phone's button ■ these applications will also send photos to places like Flickr and Vox ■ the Nokia has the option of allowing reporters to file via any available wi-fi hotspot so it is not always vital to have Internet access ■ for breaking news, the ability to shoot video and deliver it quickly to the office without a satellite connection is very useful ■ from personal experience, interview subjects seem amused at being interviewed by someone with a tiny mobile phone	■ video quality not as good as television ■ the high cost of a smart-phone: the Nokia 95 costs about $US 750 to buy outright, though over time the price will come down, plus data charges ■ interviewees do not take the journalist seriously because of the small size of the camera ■ it does not look "professional" ■ high-end mobile phones drain batteries quickly, which means users have to carry several spares and ensure they charge during the night ■ the Nokia N95's internal microphone was designed for conversations and not video audio; needs an external microphone and connector ■ reporters with large fingers find the Bluetooth keyboard difficult to type on

Appendix B: Recommended videos about mojo

- Ilicco Elia talks about the tools that make up the Reuters mojo toolkit in this three-minute video: http://www.youtube.com/watch?v=L_OJGeamwbs
- Find other Reuters videos titled "Reuters Mobile Phone Reporting Part 1" at http://www.youtube.com/watch?v=lpUMxZS6muw, "Reuters Mobile Phone Reporting Part 2" at http://www.youtube.com/watch?v=p1kVbvhp4Ik, Reuters Mobile Phone Reporting Part 3" at http://www.youtube.com/watch?v=03SAMopg8Ww
- Steve Garfield, an American mojo, offers a web-based course on how to be a video blogger, sponsored by Project NML and the New Media Exemplar Library (funded by a grant from the John T. and Catherine D. MacArthur Foundation). Find the site at http://www.projectnml.org/exemplars/06vlog/
- Jasmine Teo, a content editor with Stomp, talks about the ideas behind the site at http://www.youtube.com/watch?v=bwGn8atZhVc
- Ruud Elmendorp profiles African mojo Evans Wafula, based in Nigeria, at http://www.youtube.com/watch?v=XxznVB0kGNk
- A Helsingen Sanomat journalist talks about software called "Reporter" that allows journalists to feed content to the web: http://www.youtube.com/watch?v=sSlL4-_OTrA
- DigitalJournal is an excellent example of online-only television provided by an innovative team. Find it at http://www.digitaljournal.tv/
- Videos shot by BuzzMachine's Jeff Jarvis mentioned earlier in this report are available at http://www.buzzmachine.com/mojo
- David Cameron, leader of the Conservative party in the United Kingdom, has pioneered the use of video for reaching audiences. Read his blog and details about his video at http://cchq.conservatives.com/tile.do?def=webcameron.index.page

Appendix C: Recommended readings

- TechCrunch (http://www.techcrunch.com) is a technology blog that consistently appears in the top 10 most popular blogs in the world. The site maintains an excellent database of information about technology companies. To find out more about companies mentioned in this report, go to http://www.crunchbase.com/company/ and insert the name of the company you seek to information about.
- For example, if you would like to know more about Kyte, go to http://www.crunchbase.com/company/kyte, or for Qik, go to http://www.crunchbase.com/company/qik
- Reuters' Mojo: This site is one of the best places to learn about mojo work. Reuters were pioneers in partnering with Nokia to provide reporters with a toolkit for mojo work. Read about the various projects at http://reutersmojo.com/
- IFRA NewsGear: Each year IFRA assembles a collection of the best tools for multi-media reporting. Search the web using the keywords "NewsGear" or read about NewsGear at http://www.iframagazine.com/website/ntwebsite.nsf/listportal?Readform&5&E& (Fig. 14)
- This post on the PBS MediaShift blog has good advice on the future of journalism, delivered via video interview. The videos were shot with a Nokia N95, mojo style. See http://www.pbs.org/mediashift/2008/09/video_report_from_onajournalis_1.html

Figure 14: Interior of the IFRA mobile car (Photo: Stephen Quinn)

- Details of CNN's i-Report Toolkit are at http://www.ireport.com/toolkit.jspa
- More about Yahoo's YouWitness News can be found at http://news.yahoo.com/you-witness-news
- Details about CBS's EyeMobile can be found at http://www.cbseyemobile.com/
- Reuters' YouWitness can be found at http://www.reuters.com/youwitness/
- Read more about the Fox network's UReport at http://ureport.foxnews.com/
- For more on African journalists' use of mobile phones, click on the "Africa mobile reports" link at http://www.africanews.com/
- Frank Barth-Nilsen trains mojos for NRK, Norway's national broadcaster. He set up a blog for sharing ideas called Mojo Evolution (http://mojoevolution.com/). It is highly recommended as a source of information about mojo work.
- The author maintains a blog called GlobalMojo at http://globalmojo.org/. It contains details from my testing of technology plus interviews I have conducted and reports I have written. This blog started in April 2008.

Appendix D: Author biography

Stephen Quinn of Australia worked in all areas of the media for almost two decades before becoming an academic. He was a reporter, editor, columnist, TV and radio producer and radio writer in Australia, Thailand, the United Kingdom and New Zealand from 1975 to 1995. He also had one year as a PR executive in the UK in 1988–89. At various times Dr. Quinn has worked for regional newspapers in Australia; the *Bangkok Post*; the UK Press Association, BBC-TV, Independent Television News and *The Guardian* in London; the Australian Broadcasting Corporation in Sydney; and Television New Zealand. He also worked as a producer for the Middle East Broadcasting Centre in Dubai in 2002-03, while teaching journalism, to become familiar with recent production technologies.

Figure 15: Stephen Quinn working as a mojo in Geelong (Source: Reg Ryan, Geelong Advertiser)

Dr. Quinn has written 12 books since 1997. He has written extensively about new media. He is the author with Dr. Stephen Lamble of *Online Newsgathering: Research and Reporting for Journalism* published in 2007. He is author of *Convergent Journalism: The fundamentals of multi-media reporting* (2005) and *Conversations on Convergence* (2006), and *Convergent Journalism: An Introduction* (2005), co-written with Dr. Vince Filak. In the decade to June 2009 Dr. Quinn has presented 126 papers in 24 countries. More than a third of the papers have been by invitation.

Since becoming an academic, Dr. Quinn has maintained industry links by contributing to newspapers and magazines, working as a newspaper editor and a freelance television script-writer and producer, and delivering training courses. As of mid 2009 he had run more than 100 courses in eight countries. Most covered multi-media journalism, information management, knowledge management, and computer-assisted reporting. He is the only academic on the international advisory counsel for the IFRA Newsplex, an IFRA consultant, and a member of the international committee of the Online News Association.

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