A world of witnesses

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Illustration by Bell Mellor

When everybody becomes a nomadic monitor

UNTIL a couple of years ago election monitoring was a fiddly, exhausting and often thankless business. Non-governmental organisations (NGOs) such as America's National Democratic Institute (NDI) would send idealistic student volunteers to complicated places such as Nigeria to observe the balloting, write down data on pieces of paper and then carry or fax the forms somewhere for manual input into a computer system. The process was slow and unreliable. Fraud or violence, if it broke out, spread far faster than credible information.

Then, in 2006, a penny dropped. NDI, working with an organisation in Montenegro, realised that practically everybody in that country already had the perfect tool to monitor, in all but real time, its election that May. That tool was the mobile phone and its ability to send text messages directly to a computer. The new approach worked so well that it instantly became the standard for monitoring other precarious elections. A vote in Sierra Leone last August briefly threatened to disintegrate amid rumours of violence—also spread through text messages—but quickly returned to order when some 500 observers at the various polling stations sent text messages to the central system saying that the rumours were false.

The sheer ubiquity of mobile phones amounts to "the biggest leap in history, bigger than the printing press, which, after all, stayed in the hands of very few people," says Katrin Verclas, who runs MobileActive.org, a website and community of about 3,000 activists and NGOs all over the world. Even quite basic features such as text messaging, she says, have already allowed countless people everywhere to get more involved in areas traditionally reserved for "activists". The snazzy new features and internet access now coming to mobile phones will expand the possibilities yet again.

An early and classic example of this new opportunity for citizens to participate in society occurred in 2001 when Filipinos, the world's most avid texters at the time, overthrew their president, Joseph Estrada, by mobilising enormous crowds at short notice, using text messages to spread the word. Howard Rheingold, the author of "Smart Mobs", saw in such events a sign of much more to come, as people discover ever more ingenious ways of organising groups of people on the fly and of collaborating towards any sort of collective goal.

Those goals range from the uplifting, as in the Philippines, to the repellent. The terrorists who bombed three suburban trains in Madrid in 2004, killing 191 people and injuring nearly 2,000, used their mobile phones to detonate the explosives. But a mobile phone then became the clue that uncovered the plot.

Mobile phones also became the tool for organising the huge spontaneous demonstrations in the following days. Thus, like every other technology human beings have ever invented, says Ms Verclas, the tools of nomadism arm both sides in the eternal tug-of-war between good and evil. But there is room for optimism, she thinks, because the side with good intentions is more numerous and—so far, at least—has proved more imaginative.

Three big categories in particular lend themselves to mobile activism. First, nomadic technology can expose human-rights abuses as honest citizens use technology to monitor and expose crimes and co-ordinate the response. The best weapon against abuses has always been to confront the public with video evidence. This became clear in 1991 when four policemen in Los Angeles pulled over a black man, Rodney King, for speeding and then beat him brutally, with other policemen watching. A bystander, George Holliday, recorded this abuse on his camcorder and soon the images were playing all over America's mainstream media, sparking race riots in Los Angeles.

That event inspired an initial wave of attempts to support grassroots video testimonies by amateurs. In 1992 Peter Gabriel, a British rock musician, started WITNESS, a not-for-profit group, to try to train and equip activists all over the world to use video to document abuses. But little of consequence followed. It was a pure coincidence that Mr Holliday happened to have a camcorder with him when he saw Mr King being beaten, and most of the world's population was not about to start walking around lugging cameras. Even if they had, there was no easy and automatic outlet in the media for such clips.

All this has changed in the past couple of years. Websites such as YouTube that allow any amateur to upload video have become all the rage, and Mr Gabriel's WITNESS has just launched a site called "the Hub" that is dedicated entirely to human-rights clips. Simultaneously, mobile phones have become still cameras and are increasingly turning into video cameras as well. This means that all the tools of testimony are now both mobile and ubiquitous. People no longer need to plan to document wrongdoing, but are able to capture it when and as they experience it. At the mundane end of the spectrum, they record cars speeding on roads near schools or snap photos of derelict public parks, then upload them to their community website. At the extreme end, as in Albania and Egypt recently, they film police brutality, or government outrages such as the crackdown by Myanmar's junta on its Buddhist monks.

The second area where mobile technology is beginning to have a big impact is health care, especially in poor countries. In South Africa people can text their location to a number and get an instant reply with the nearest clinic testing for HIV. HealthyToys.org, founded by a parental advocacy group and two American organisations, lets concerned parents text in the name of a toy they are considering buying in a shop and instantly reports back with information about lead or other toxins that may have been found in it. Soon mobile technology could play a large role in detecting, mapping and responding to epidemics. A lot of information about a recent polio outbreak in Kenya became available because health workers were using hand-held devices to collect data that used to be recorded on paper forms.

The software on those devices, called EpiSurveyor and made by a not-for-profit organisation called DataDyne, is also used by health workers in Sierra Leone and Zambia. The World Health Organisation has now declared it to be the technological standard, and DataDyne is in the process of loading it onto ordinary mobile phones for use in poor countries everywhere, says Joel Selanikio, a doctor who co-founded the organisation. For most people in poor countries, he thinks, mobile phones are fast becoming the main communications tool, schoolbook, vaccination record, family album and many other things.

The third category is environmental monitoring. The humble text message has already changed consumer behaviour in many places. Shoppers in South Africa can text the name of a fish to a service called FishMS and receive an instantaneous recommendation "to tuck in", to "think twice" or to "avoid completely", based on how the fish was caught and whether the species is endangered. Londoners can text a service called AirTEXT to get information on air quality, and subscribers receive alerts when pollution is forecast to spike.

Scents and sensability

The real fun begins when phones start observing and reporting problems automatically. This is now on the horizon. In January researchers at America's Purdue University reported that they are building a system for the state of Indiana designed to use a network of mobile phones to detect and track radiation. In the event of a nuclear leak or a "dirty bomb", the sensors of large numbers of phones, all identifying their location through the global-positioning system (GPS), would point authorities to the source of the radiation.

Such tracking systems rely on the collective information from large numbers of phones, whose owners may not even be aware of the part they are playing in this. If, say, a car is carrying a dirty bomb and driving down a street, it passes others cars. The mobile phones inside those passing cars would send information to a database. The signal would grow weaker as the distance from the source increases, whereas the signal from phones in approaching cars would grow stronger. The software would then use the sum of this information to pinpoint the bomb.

The idea that phones should have sensors is far from outlandish. Phones already incorporate primitive versions, including the sensor that picks up the cellular signal, light sensors that dim the keyboard and acceleration sensors that notice when the user lifts the phone to his ear. "Today, everybody can look at his phone and say how many signal bars he has," says Eric Paulos, a researcher at Intel, the world's largest chipmaker. "In a few years, everybody will look at his phone and see what the pollen count is."

Mr Paulos runs a project on "participatory urbanism" for Intel, which explores exactly how sensors inside mobile phones might improve society. He recently conducted a study in Ghana, where he attached tiny pollution sensors to the phones of 15 taxi drivers. Using the data—the amount of pollution at specific times of day in places where the taxis went—Mr Paulos's team drew up a pollution map of the city which revealed surprising patterns in particular roads. Some of the taxi drivers changed their routes as a result.

Carbon monoxide, ozone, pollen, sun intensity and temperature are among the things that Mr Paulos considers particularly easy to measure by tweaking mobile phones in ways that consumers would not even notice. Any such data would need to be collected in a discreet way to assure the privacy of consumers. But eventually, thinks Mr Paulos, this new twist to the everyday mobility of ordinary people could lead to "grassroots citizen science".

Does this trend give any cause for concern? To some people it suggests a coming surveillance state, as all sorts of titbits about people's personal lives that used to be private become input for new services such as traffic maps, health warnings or security alerts. Those worries, evoking an earlier era of top-down control by a Big Brother, are mostly misplaced, claims Mr Verclas. A neighbourhood-watch community with global reach is a better metaphor. Instead of surveillance, watching from above, society will rely on a new and opposite concept, sousveillance, watching from below. Such arguments may make more sense in California than in China.