newstatesman

Special Supplement

our mobile future

LIFE LINES

with Sadie Plant, James Harkin, Wendy Holden, Stephen Timms, Ann Widdecombe and James Crabtree

newstatesman

More and more mobile

I've never been one for the latest technology. I do own a mobile phone, but it's nothing special – I got it free with some package or other. Most of the time it's switched off, and quite often the battery's dead. I use it mainly to ring home when I need picking up or when I'm late for work. I have only 19 numbers listed on it (I know some people who have hundreds). My mobile really doesn't feature that much in my life. And yet, I know there are times when having it has helped me out of a terrible mess, possibly even danger: for example, on the numerous occasions I have been turfed off a broken-down train somewhere quite different to my intended destination and about three hours later than expected.

The point is, even for those of us who are not constantly downloading new ringtones and changing covers to suit our outfits, the mobile can play an important, if not vital, role in our lives. And this role will only grow as mobile technology continues to become about much more than just a wireless phone.

The possibilities and problems that arise as mobiles take an increasingly central position in societies around the world are the main theme of this supplement. If, in the pages that follow, you come across technology that sounds like something from another planet, hopefully the glossary on page xxx will shed some light – but don't worry, you'll almost certainly be using it very soon.

Emily Mann, supplement editor

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Life lines

Referred to by Finns as *kanny*, meaning "extension of the hand", mobiles are our new best friends. By **JAMES HARKIN**

Life without a mobile is scarcely imaginable. For many British people, a recent survey found, losing their mobile would be akin to a bereavement. And the reach of a mobile extends even beyond the grave: when a character in *EastEnders* met a sticky end at the beginning of this year, his girlfriend found solace by attempting to text him in heaven.

As an object of material culture, the mobile phone tells us a great deal about the people who use it. In China and much of the developing world, mobiles are regarded as aspirational objects, their use firmly connected to the fast-moving pace of modernisation. Just a decade ago in the UK, the mobile phone was something similar – a prohibitively expensive accessory of the conspicuously well-heeled. Back then, Nokia UK presented the mobile user as a "Cityman", a smiling businessman striding through an urban landscape. The strategy worked because the mobile had become a symbol of aggressive individualism (Michael Douglas as Gordon Gekko waved one around in the 1987 film *Wall Street*) and had been taken up by certain kinds of professionals: city workers, drug-dealers and upmarket call-girls.

While Nokia continues to use the "Cityman" theme for the Chinese market, the mobile has long since moved on in the UK and other advanced industrial countries, where it is marketed as a softer, more feminised and more intimate object of reassurance. Again, this marketing strategy speaks to an important truth. Mobile phones have become so much a part of ourselves that they represent an extension of the human body or an umbilical cord, without which their owners feel lost, disarmed or disempowered. In Finland in the early 1990s, for example, when mobile telephony seemed to be a preserve of the professional classes, the mobile phone was known as a "yuppie bear". As mobile phones spread from the professional classes to youth culture, Finnish teenagers began to refer to the device as *kanny*, a Nokia trademark that means "an extension of the hand".

The highly personal relationship that has developed between mobile users and their devices is most visible among teenagers. That mobiles are usually under personal ownership (in contrast to land-line phones, which are considered a family or public utility) appeals to the young who are often anxious to escape their parents' supervision, and reinforces the links between the device and personal identity.

The intimate relationship that has evolved between mobile users and the devices themselves is well documented. ▶

▶ Perhaps as a result, in the media and in the popular imagination, mobile phones are presented as individualistic objects. Some thinkers even argue that the popularity of mobiles derives largely from their arrival at a time of unprecedented individualism within western societies. But mobiles function just as well in societies that are less individualistic than our own. More importantly, if any social change has given rise to the revolution in mobile communications, it is not increasing individualism but increasing connectedness: deeper social integration combined with the quickening pace of modern life.

Mobile communications are being folded into the fabric of local communities in myriad ways, and individual mobile users are far ahead of political institutions in the creative embrace of this new technology. However, while mobiles are helping us to connect more, they are used principally to strengthen existing highly personal networks of friends and family. Indeed, if anything, a reliance on mobile communications has assisted a retreat and alienation from wider society. Mobiles can function as antidotes to the hostile terrain of modern life. Many users say that their mobile makes them feel safer – a safeguard against external risk and a panic button in an emergency. Thus our intimacy with our mobiles can be a cipher for a lack of trust in the community at large.

Partly because of our intense, intimate relationship with mobiles, many people think they have a bad effect on our lives. Frowned on in public spaces, mobiles have been blamed for everything from frying our brains, to sparking a crime wave, to causing teenage illiteracy. The devices have become a convenient repository for existing anxieties, many of which have little to do with the technology itself. In a backlash against mobiles, many pubs, restaurants and leisure centres are banning them from their premises. Mobiles are already forbidden in hospitals – a ban that is proving almost impossible to enforce and which some doctors are campaigning to have lifted. And although the British government often seems in thrall to new media technologies, mobiles are also banned inside the Palace of Westminster.

Beyond anxieties about the possible effects of mobile technology, there is snobbery about the value of mobile communications. Even though Britons now send more text messages than e-mails or personal letters, and mobile technology has considerably more reach than the desktop internet, mobiles have received little intellectual attention, in sharp contrast to the warehouses full of books about the internet. When we are not scapegoating the mobile, it is easily patronised and consigned to the playroom – derided as no more than a toy.

The much-discussed idea of a "knowledge economy", which focuses on people beavering away at complex applications on desktop computers, or sending complicated spreadsheets over the internet, blinds us to the real benefits of mobile technology. In particular, it ignores the reality that, for many workers, mobility is important and a desktop computer is less so. Much more than a simple communication tool, mobiles are a spur to action and more efficient co-ordination. Indeed, mobile technology is already revolutionising life and the world of work far beyond the terrain covered by any "knowledge economy". There is plenty of anecdotal evidence to suggest that the widespread use of mobiles has already had just as significant an impact on economic and social activities as the internet has had.

To benefit from the full potential of the new generation of mobile devices, we urgently need to move beyond our sterile love-hate relationship with mobiles and drag them further into the public domain. As developments in the technology make the transfer of data as viable as voice conversations, and make the devices more and more able to read and communicate their location, the economic, political and social potential of mobiles will vastly increase.

ILLUSTRATION: DAN MURRELL

Businesses will certainly profit. At present, the only companies using wireless data communications to improve significantly their industrial processes are delivery services such as FedEx and UPS, together with their shippers and distributors. But as new technology makes the use of wireless networks cheaper and more reliable, we can expect more companies, including smaller ones, to take advantage of the cost-savings that result from setting up a wireless logistical system.

In addition to helping companies locate their wares, new mobile technology will help countries wage wars. The most recent invasion of Iraq, for example, can claim to be the first wireless-enabled war. For the first time, the US army deployed "mobile units" to scan information about combat and supply vehicles, and to send the data via a secure satellite link to the army's central asset-tracking system.

But perhaps the most important effect of mobile location-based technologies will be to introduce greater flexibility, efficiency and mobility to people's working lives. To take just one example, many taxi drivers now have two communications systems installed in their cabs: first, the traditional radio they use to keep in contact with the call-centre; and second, the mobile they use to communicate with other drivers. Recent research suggests that information received via the mobile is more timely and accurate than anything that comes over the radio. Furthermore, Londoners in search of a taxi can phone Zingo, which works out the customer's location via their mobile and reports it to the nearest cabbie.

It would benefit other professions to catch up with London's cabbies. For example, if field workers can receive and send data-rich and visual information on the move, they are likely to save themselves time and paperwork.

The long-term effects of mobile technology will surely be positive. But to release its full potential will require creative thinking, political leadership and a change of culture.

Since 1993, it has been possible to use a mobile throughout the entire underground system and train stations in Hong Kong. Why not in Britain? Back in 1999, a spokesperson for one UK network cited differences in mobile etiquette between Europeans and Asians, adding that, in particular, some people found it annoying to hear one side of conversations. Perhaps. But it is even more annoying to be unable to receive messages or transport information while stuck on a stationary train.

If Britain is to become a centre of mobile excellence and experimentation, able to compete with the more advanced mobile cultures of Scandinavia and Asia, we need to change dramatically our opinions of what mobiles can and should do. Without the political will and an ability to see beyond our schizophrenic hostility to mobiles, our wireless future will remain tantalisingly out of reach.

James Harkin is the author of Mobilisation: the growing public interest in mobile technologies, *published by Demos*

On the mobile

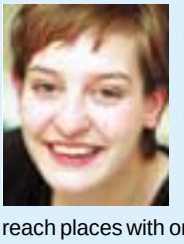
Ann Widdecombe I would like a dictating machine that would plug hands-free into my car and then transcribe my words so that I could drive and write my books at the same time. I would also like a hands-free device that linked to my cooker so I could send instructions: "start roast now", "steam cabbage", and so on. Then I would get home to a ready-cooked meal. Some of my colleagues have a very old-fashioned version of this device: a wife.

Geordie Greig I want to press one button to pick up messages from my home phone. I want to have a mobile phone that never runs out, as I am always on low battery on the call that I really need to make rather than the one chatting with my children. I also want a fax machine that folds into a matchbox-size unit and can plug in anywhere. I want my mobile to take dazzlingly brilliant photographs that can then be printed on fabulous quality paper or e-mailed with ease. Most of all, I want a device that is idiot-proof and guaranteed to sort me out when all my mobile technology is not working.

Bryan Appleyard I want what the industry is trying and failing to provide: permanent high-speed internet access wherever I go. A phone should be separate, so 3G is dead for me already. The internet device should be laptop-like but lighter – not projected on to my glasses, powered by my shoes or telepathically inserted into my mind. And it needs a proper keyboard, as I have no time for texting. Ideally, it should be available to me only, or, failing that, legally refused to the Labour Party, City boys, lawyers, estate agents and anybody who lives in Notting Hill. This is an aesthetic matter.

Edwina Currie We're getting close to it. I'd like a simple watch from which I could conjure up a decent-sized hologram of Hubby or Mum (she's 91) to talk to. Or, in the park, eating a sandwich, Justin Timberlake or Johnny Depp would do nicely.

Marcelle d'Argy Smith What I need on the move is a man who understands everything about computers and mobile phones (I understand hardly anything). This is probably why some women get married.



Zoe Williams I like to smoke all the time, which is a bugger for steering both a car and a bicycle. So what would work for me is a navigational system that could get you where you wanted without any lefts or rights at all. This can be done, I feel sure. I once directed a German around Soho having forgotten the word for "left" – it is possible to reach places with only one turning option, though I guess it took her quite a long time.

A phone with a history

Mobiles are older than you think. But for years only the rich and powerful, such as the Duke of Edinburgh, were allowed to have them. **JON AGAR** explains

Mobile phones are still a novelty. Very few people celebrated the end of East German communism in November 1989 by ringing friends and family to say "I'm on the Wall". If the cold war had lingered until 2003, the proof of historic change would not be small chips of concrete but picture messages. It was only in the 1990s that the mobile phone went from being an expensive curiosity to an essential accessory. In the 1980s, mobiles were the playthings of yuppies. Now there are a billion mobile users in the world. But the mobile phone could have been commonplace decades ago.

The revolutionary idea was written down in 1947 by D H Ring, an American engineer working for Bell Laboratories, the home of many innovations that shaped the second half of the 20th century, not least the transistor. Imagine that the mobile phone was just a radio transmitter and receiver, and you and your best friend have the first two as they roll off the production line. After tuning your phone into a shared frequency, you chat away and, for a while, it works fine. But soon you notice that you can overhear other people's conversations, and eventually you cannot hear your friend across the babbling airwaves. Changing to another frequency offers only a short respite. The problem is that there is not enough room on the radio spectrum for everyone to have such a simple mobile phone.

Ring suggested a very different model: divide up physical space into lots of small cells, and in each cell have a base station with which mobile phones can keep in touch. If the base station is nearby, then very low powers can be used – everyone can keep quiet enough not to interfere with each other's conversations, and radio frequencies are freed up. This "cellular" phone could have been built in the 1950s. It could have been our parents or grandparents who first said: "Hello, I'm on the tram."

Technologies are more than good ideas in material form. Technologies depend on what people want, what people are allowed to have, and what sort of world they can have them in. That is to say, technological change and its reach are inextricably linked to politics. Consider, for example, who had mobile radio telephones before cellularisation. At sea, ship-to-shore telephones were on board by the time Ring was writing down his idea, partly for safety reasons, but also to safeguard maritime commerce. And as early as 1921, the police cars of Detroit carried radio sets that operated rather like pagers: the policeman would receive a message but would have to stop the car to ring through to headquarters. By the end of the decade, the same city had equipped police cars with fully fledged mobile radio phones. With space on the radio spectrum limited, American mobile radio was the preserve of commercial elites and the forces of law and order.

Britain BC (before cellularisation) followed a similar pattern. My favourite illustration of how mobile radio was controlled by hierarchy concerns royalty. In 1954, the Marquis of Donegal heard that the Duke of Edinburgh possessed a mobile radio set with which he phoned through to Buckingham Palace – and anyone else on the public phone network – while driving in London. The Marquis was more than a little jealous, and inquired of the Postmaster General whether he, too, could have such a telephone. The polite but firm reply was "no". In the mid-1950s, if you were the husband of the Queen, then you could have a mobile telephone. But if you were a mere Marquis, you could go whistle.

Communications technologies in the 1950s were dominated by large corporations (such as AT&T, the home of Bell Labs), government regulators (such as the US Federal

GETTY IMAGES

Communications Commission) and state-owned monopolies (such as the General Post Office in the UK). The business of technology – the fixed-wire telephone network, in this case – followed the pattern of politics: national, hierarchical, centralised, bureaucratic. It would be incorrect to say that the implementation of Ring's idea was blocked by such factors, since AT&T was content to let the plan lie buried among a thousand other technological proposals. A better way of putting it is that Ring's proposal did not fit the political landscape of the late 1940s and 1950s. It did not make social sense.

The US Federal Communications Commission invited proposals for a cellular experiment in 1968. Only Bell Labs replied before the deadline in 1971, although by then another company – the manufacturer of the military Walkie Talkie, Motorola – was also active. By the mid-1970s, the test rig was in operation around Newark, New Jersey, near Bell Labs, proving the concept to the satisfaction of the commission. A cellular phone system open to the public went live in Chicago in December 1978. The phones were so heavy that they were installed only in cars – not a great limitation, given the prominence of automobiles in American life.

By the time cellular telephony was ready to be rolled out across the US, the election of Ronald Reagan as president had shifted the political climate. The auction of cellular licences, one for each city and burg, was supposedly in the interests of stimulating small private enterprise (AT&T, the leader in the technology, was not welcome to apply until 1984, when it was punished for monopolistic behaviour by being broken up into the Baby Bells). The effect of the licence auction, however, was to create a crazy-paving of disconnected, largely incompatible, cellular services.

Europe provides quite a contrast. Led by Scandinavian ideals of rational discussion between experts, faith in development by consensus and a marked technophilia, the first international cellular standard was developed by the Nordic countries of Scandinavia plus Finland (whose unique importance in mobile history would take a whole article to explain). This Nordic Mobile Telephone (NMT) system, launched in 1982, attracted the attention of the European Commission, on the lookout for projects with which a European infrastructure – and, more importantly, a European consciousness – could be built. GSM (Global System for Mobile Communications), the remarkable digital cellphone standard that swept the world in the 1990s, can only be understood as a European political project – overriding the nationalistic impulses of British, French, German, Spanish and Italian telephone companies.

GSM was launched on 1 July 1991, when the governor of the Bank of Finland rang the mayor of Helsinki (they discussed the price of Baltic herring). By the end of the decade, GSM phones, which had been designed for Eurocrats to keep in touch, connected text-messaging youths in Ayia Napa, Cyprus, to their mates at home in England. Against the planners' expectations, the users had found what the mobile was good for.

Cellular phone systems have grown because they fit in with new social patterns of work and leisure – horizontal networks of friends have become the model rather than the centralised hierarchy of the General Post Office. On the back of this shift, immense commercial powers have developed, most surprisingly in Britain. In the 1980s, the country became a free-for-some laboratory for experiment in cellular business, borrowing from both American and European approaches. Vodafone, a firm that began in 1982 as a sideline of the defence electronics firm Racal, briefly became Britain's biggest listed company, before the dotcom crash tempered its rise.

Such size means that the future of cellular phones becomes ever more entwined with political fortunes. This was made plain by the sale of licences for third-generation (3G) mobiles, which in 2000 generated more than £22bn for the UK's Chancellor, Gordon Brown. It is still too early to judge whether the licences will pay. Phone companies are hoping that the users will save them again, like they did with text-messaging, and find something to do with the new technology.

Jon Agar is the author of Constant Touch: a global history of the mobile phone *(Icon Books) and a fellow in the Department of Science and Technology Studies, University College London*

It's a seller's market

Nearly everybody in Iceland has a mobile, but less than half the US population. Why? **NEIL McCARTNEY** reports

The number of mobile telephone subscribers around the world now exceeds 1.25 billion – equivalent to a global penetration rate of more than 20 per cent, or more than one person in every five on the planet.

Last year, the world's mobile operators added a combined total of more than 201 million subscribers, representing growth of 21 per cent. And yet the rate of expansion has actually slackened in recent years, due to economic slowdown and the approach of market saturation in many developed economies, some of which now have penetration rates of more than 100 per cent (the vast majority of people have one, and some have two or more). In 2001, the world market grew by 214 million, a rise of 29 per cent; and in 2000 it rose by 252 million, an increase of 52 per cent. Such growth rates look unlikely to return. The US consultancy In-Stat/MDR recently predicted an average growth figure of 186 million a year over the five years from the end of 2002, taking the world's number of subscribers to two billion by the end of 2007.

The Asia-Pacific region remains the largest market for mobiles in absolute terms. It had almost 434 million subscribers at the end of 2002, according to the UK-based newsletter *Global Mobile*, after growing by 32 per cent over the year. This represented an average penetration rate of 13 per cent. The region is dominated by China, the largest national market. Last year, China added 62 million subscribers – more than five times as many as any other country – which took its domestic total to 207 million, an expansion of 43 per cent. This reflects the strong growth of the Chinese economy and, above all, the sheer size of the Chinese population. Given that the Chinese penetration rate remains below the world average, at just over 16 per cent, strong growth is expected to continue.

But in relative terms, the fastest-growing markets are in Africa, the Middle East and parts of eastern Europe. *Global Mobile* reports that the Nigerian market last year grew by 369 per cent, while Armenia grew by 280 per cent, Niger by 245 per cent, Belarus by 242 per cent and Yemen by 238 per cent.

At the other end of the scale is western Europe, the world's second-largest mobile market and by far the most mature. It had 303 million subscribers at the end of last year, according to *Mobile Communications*, equivalent to an average penetration rate of 78 per cent. But over the year it added only 21 million subscribers, an overall growth rate of little more than 7 per cent. This is partly because many markets are near saturation point. Luxembourg, for instance, had a penetration rate of more than 110 per cent at the end of 2002, while Iceland had 93 per cent, Italy 92 per cent and Portugal 91 per cent. The UK was also high on the list with 83 per cent.

> The Nigerian market grew by 369 per cent last year, Armenia by 280 per cent

However, market saturation is not the reason for slowdown in all cases. In France, despite a relatively low penetration rate of 62 per cent at the end of last year, the market grew by less than 3 per cent. Both figures reflect the fact that the country has been one of Europe's less competitive markets. Another factor in the European slowdown has been a switch in strategy on the part of the mobile operators, which have largely abandoned the competition to add new subscribers and are instead focusing on getting as much money as they can out of existing customers.

The slow growth in western Europe is expected to continue. Meanwhile, the North American market (third largest in the world) is growing only slightly quicker. Last year, *Global Mobile* reported, it added 13 million subscribers, taking its total to 151 million and representing a growth rate of just over 9 per cent. The average penetration rate is 48 per cent. The region is dominated by the US, the second-largest national market, which last year added 12 million subscribers to reach 139 million and a penetration rate of just under 50 per cent. This relatively low figure is largely due to historical factors. One is the US charging system, under which users have to pay for incoming calls. This discourages mobile telephone take-up and traffic. Many Americans prefer callers to alert them by pager and then call back if necessary, often by land-line.

Another factor is the fragmentation of the US market. The decision by the US authorities in the 1980s to award licences on a regional basis succeeded in avoiding monopolies but also meant that, until fairly recently, there were no national services. This problem was compounded by the split between operators over the choice of digital standards, with the result that three incompatible technologies are in operation at once. Thus a phone that works in one part of the country might not work in another. There is a similar situation in Latin America. In western Europe, by contrast, the industry united behind the GSM standard, with the result that all modern phones work across the continent – and in many other places as well.

With the gradual consolidation of the US market, six national operators have emerged, but most experts believe this is still too many and predict a further shake-out. Perhaps then, the US market will really take off.

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A world of difference

To westerners, the mobile may be just a toy. But to the dispossessed – migrant workers, the poor of the developing world – it is a lifeline, writes **SADIE PLANT**

In the past few years, the mobile phone has become one of the most commonplace pieces of technology in the world. What began as a cumbersome and costly tool for the high-flying western executive has grown into a cheap and accessible device with an almost universal appeal. This is, in fact, the first digital device to fall into so many hands so fast. Unlike all its predecessors and, no doubt, many of its successors, too, the mobile phone has found its way to the young and the old, the rich and the poor, men and women all around the world.

As an unusually undemanding piece of technology, at least in its most basic form, the mobile also carries few injunctions about how it should be used. I know teenagers in Tokyo who use their mobiles to orchestrate just about every aspect of their social lives, from navigating the city space to fine-tuning arrangements to meet strangers with whom they have come into contact also by mobile phone. I have met old *dhow* captains in the Middle East whose mobiles allow them to co-ordinate their shipments and their routes; kids who have used text messages to cheat in their exams; mountaineers in Switzerland who have made vital calls on their mobile phones (and some who refuse to take them on a climb at all); and even a couple who courted across thousands of miles by text-messaging for six months before they first met and then married.

The purposes to which the mobile phone is put, the meanings it assumes, the ways in which it is used and the attitudes it provokes seem to be as varied as its users. Some people see the mobile as a terrible invasion of both their private lives and their public space; others love to feel in touch with anyone at any time. For some, the mobile phone is a key to a new kind of independence, the means to a life unbound from the office desk or the family; others see it instituting a new kind of dependency, entrapping them in a world of connectivity without escape. Many people argue that the mobile is establishing new kinds of networks on unprecedented scales; for others, it is merely reducing people's circles to the local list contained on their own Sim card.

> The purposes to which the mobile is put, the meanings it assumes, seem to be as varied as its users

Such differences of opinion are by no means special to regions of the world, or even nationalities: the attitudes of a group of young people in Birmingham are likely to be ▶

ILLUSTRATION: MIKE TURNER

Wireless and fancy free

by **Sadie Plant**

Wherever mobile phones are commonplace, men and women tend to use them in more or less equal numbers, and in more or less the same ways. Not that this last point was true in the early days – for much of the 1990s, one could see mobiles being deployed as symbols of sexual prowess by men, miniature versions of the open-topped sports car, laid out on the desk or at the bar like a challenge to the world. One can still observe this kind of behaviour in places where mobile phones remain a novelty: only a couple of years ago, I watched a young man in Chicago talking on his mobile with one eye on his impressionable audience, a couple of teenage girls. When the mobile he was talking into suddenly rang, it became apparent that he'd faked the whole scenario.

Even when the mobile phone is everywhere, the latest models, ringtones or accessories can still be used to impress. But as phones become widely used, significant differences in the ways men and women handle them are surprisingly hard to find. Different lifestyles do encourage varying uses of the mobile phone: many women are more inclined than men to use their mobiles to co-ordinate family affairs; others talk of using mobile phones to give them a sense of additional security, or simply to keep unwelcome attentions at bay when they are out alone.

Girls and women are still said to be more chatty than their male counterparts, sending text messages about the smallest snippets of gossip, rumour and personal news, but men and boys now admit to being fond of such chat and contact, too. Women are less obsessed with the technology than men, but both genders like to personalise the ringtones, functions and appearance of their phones. Girls love to share and compare the messages they send and receive, while boys tend to be a little more protective of the information on their mobile phones. But both love the secret codes and private languages of text-messaging, which is certainly a boon for tongue-tied teenage boys, who can now choose their words with care before they decide to press "send". There is even some evidence that boys have become more willing to talk, both on and off the mobile phone, now that, in the words of one young lad, the mobile "makes it cool to communicate".

▶ as wide-ranging as those of a group of people from all corners of the world. But a few broad observations about mobile phone use on a global scale can be made without the risk of too much oversimplification. For a start, it is easy for westerners to treat the mobile as an unnecessary toy. In lands of telecommunications aplenty, this may indeed be true. But for people across the developing world, access to a phone is something to be cherished, and often something new. The mobile phone has made an enormous difference to, for example, sub-Saharan Africa, a region to which, in the course of just five years, wireless technologies have brought far more telephones than the old wired system brought in the whole of the 20th century. People who, not long ago, had to make a day's journey to use a telephone are generally rather less dismissive of mobile phones than those to whom the devices provide one more of many means of communication.

Second, it seems that the mobile is received very differently in what might be described as collective, sociable cultures than in those with a rather more individualistic style. In Thailand, for example, or even in Italy, where people have always tended to live interconnected, even communal lives, the use of mobile phones is high, and few objections are raised to the volumes at which people speak, the contexts in which they make or take their calls, or the nature of the conversations they might overhear. Calls received in cinemas in a city such as Bangkok, or even in monasteries in the Thai countryside, meet with little of the disapproval that frequently awaits them in the west. In the US, where complaints and misgivings about mobile phones run high, levels of mobile phone use are so low that, for the first time in a hundred years, America finds itself trailing behind the technological state of play in so much of the rest of the world. There are several technological and economic reasons for America's reluctance to engage with the mobile phone. But the importance placed by many Americans on privacy, autonomy and personal space are hardly incidental when it comes to explaining this unprecedented lag.

Finally, opinions and uses of the mobile phone tend also to depend on the most obvious of all its attributes – its mobility. The mobile thrives wherever there is movement: with the vast populations drifting to the cities of China; illegal migrant workers establishing themselves within the European Union; Kenyan taxi drivers looking for new fares; people crammed together on commuter trains; and demonstrators on the streets of Manila, Caracas or the many other cities that have seen the mobile used as the effective tool for movements of the political kind.

That "Where are you?" has become the leading question of the mobile world testifies to the senses of dislocation and displacement that can accompany such uses of the mobile phone, and also to the nature of our shifting and uncertain times. If the land-line telephone "arrived at the exact period when it was needed for the organisation of great cities and the unification of nations", as Herbert Casson wrote in *The History of the Telephone*, it seems that the mobile phone has come to suit a new era of mobility. Even people who go nowhere face new instabilities as circulations of commodities, money and information gain a new sense of momentum, and traditional structures of employment, family, community and cultural life are disturbed. The mobile encourages such movements, and can also help to repair the connections they may break.

Love on the line

Remember the public phone box? All dirty and smelly. A mobile is much more romantic. By **WENDY HOLDEN**

Chocolate. Champagne. Oysters. All allegedly powerful aphrodisiacs, guaranteed to send love's mercury shooting into the stratosphere. Any would-be swain, we accept, would be foolish to press his suit without the help of one, if not all, of such aids. But are we forgetting something? Is romance's real indispensable something else altogether. Something neither bivalve nor cocoa bean nor Bollinger? Does it owe nothing to heavily scented, expensive handties from some fashionable London florist? Perhaps. But it owes much more to something small, slim and prone to playing tinny versions of Vivaldi at full blast in crowded commuter carriages.

"Romance is unimaginably easier with a mobile," one Lothario of my acquaintance declares. "It used to be so ghastly, driving for hours trying to find a phone box that actually worked. Took all the spontaneity out of it." And much more besides. Dear reader, you hardly need reminding of what you have gladly forgotten: the unromantic detritus that lurks within the average public telephone box. None of which exactly fans that refined and delicate flame that fires the crucible of Love.

The, er, smells. The rubbish. The Spank Me Hard cards. The slot too crammed with coins for the phone to work. The box with someone in it working his way through his entire address book as you wait outside in the rain. Or, conversely, the box with a long and testy queue outside, all yawning, foot-tapping or glaring, as you struggle with a complex piece of romantic negotiation. How much easier, how much more private, immediate and satisfactory in all ways is the mobile. It delivers instant access to the beloved if they're switched on and charged up. It delivers, out of the blue, text messages from the adored on the greyest, most miserable of days.

Some of these messages, it has to be said, are more romantic than others. Teenagers in particular love to dump each other by text, just as firms, as we have recently seen, love to dump their workers by the same method.

Making calls, similarly, can be fraught with hazard; a couple, new to mobiles and conducting a romance across the Atlantic, were horrified to discover that they were both paying the bills for every call. Every illicit and sordid fling ever reported seems to involve the wronged spouse finding the bills. And it's hard, when you're stuck in a slow-moving train being driven mad by a moron telling his mother he's going under a bridge, to think of the instrument he is holding as an ambassador of love. The case against the romance of the mobile would seem to be further strengthened by its rather unglamorous directness and immediacy. Love, after all, thrives on distance, misunderstanding and misinterpretation. Can one imagine mobiles in Shakespeare?

Absolutely. Bumptious teens Romeo and Juliet would not only have texted their heads off, but lived to tell a very different and happier tale. Shakespeare, anyway, would have been swift to spot the dramatic romantic possibilities: the misdirected messages for a start.

One of my favourite stories about love and mobiles concerns a singleton female friend whose competitive female boss was fond of trumpeting the joys of married life with her dishy husband Phil. Out shopping one Saturday, my friend's mobile beeped. "Oh My God", read the (obviously misdirected) message. "I'm Pregnant. Phil Knows It Isn't His. And Also About The Flings And Simon In Paris." Not romance as we know it, perhaps, but certainly one of the most delicious messages my friend had ever received.

Wendy Holden's Azur Like It, *a comic romance set in the south of France, is published by Headline (£12.99)*

ILLUSTRATION: MIKE TURNER

It's time to get flash

Strangers agree to gather in a designated place, perform a vaguely artistic stunt, and promptly leave. It may seem utter nonsense, but it has serious implications for the future of politics. By **JAMES CRABTREE**

I am sitting in a sofa shop in Soho, central London. It is precisely 6.33pm on a hot Wednesday in August. A crowd of 350 people, almost none of whom I know, are crammed in the shop. And none of them seems remotely interested in home furnishings. In exactly one minute's time, we have been instructed to chant "That is a nice sofa" and then leave the shop in an orderly manner. Outside the window, looking in, are a battery of television cameras and many deeply confused pedestrians.

Welcome to the random, pointless world of flash mobs. A group of strangers use e-mail and mobile phones to gather in a place, perform a vaguely artistic stunt, and promptly leave. It's certainly strange. But according to some, the event in this sofa shop offers a glimpse of the future of civic association and the enduring political significance of Britain's love affair with mobile phones.

> One Tory ex-minister is said to have mused: "If the miners had had mobile phones, we would have lost"

To explain what all the excitement's about, it is necessary to look at the background to the flash mobs phenomenon. The concept originated with the US cyber-guru Howard Rheingold. During trips to Tokyo and Finland, he observed how Japanese and Finnish teens were using their cellphones to send text messages. Flushed with amazement (remember that Americans generally don't do text messaging), Rheingold returned home and wrote a book about "a tribe of people who live in the future" using new technology to associate and organise in new ways.

Rheingold's big idea, which became the title of his book, was "smart mobs". The term describes groups that organise using new technology, in particular mobile phones – for example, virtual Japanese motorcycle gangs (who never meet and communicate only by text) and anti-globalisation protesters. Rheingold imagined serious movements. But as William Davies of the Work Foundation argues: "Smart mobs suggested Chinese students using mobile phones to outwit policemen in Tiananmen Square. It did not envisage hipsters using mobile phones to act like dimwits in sofa shops."

However, Rheingold insists that the flash mob movement backs up his ideas. And in some senses it does. Before e-mail and mobile phones, speedily organising 350 strangers to meet at one time and in one place would have been much more difficult. Flash mobs are an example of a new type of association that doesn't involve membership, friendship or kinship.

According to the American academic Paul Resnick, an expert on such matters, "it would be foolish to write this phenomenon off as purely whimsical". For him, the true significance of the mob is the way in which technology is enabling the development of meaningful communities among people who don't actually know each other: "people are developing trust and co-ordinating activity . . . without becoming friends or even acquaintances".

The political implications are clear. Mobile technology is changing the way groups in civil society operate, and new developments such as third- and fourth-generation phones, location-based technologies, mesh networks and other, equally futuristic-sounding technologies will provide more possibilities and give users more power.

Think of the story about a former Conservative minister who, musing on industrial unrest in the mid-1980s, said: "If the miners had had mobile phones, we would have lost." The story, while possibly apocryphal, illustrates a wider truth. From Thomas Hobbes to Tony Blair, political authorities have often been able to organise and outwit those they governed. This is becoming less true. Modern governments are finding it more and more difficult to control the worlds in which they operate, and to keep up with the varying demands of highly mobile groups. The fuel protests, the WTO protests, the countryside marches and the GM campaigns exploded, created political havoc, and then faded. Across the western world, such movements, enabled by technology, increasingly confound the establishment.

In order to thrive, democratic institutions must face up to "flash politics" and learn how to respond. In an era in which ideas of a "mass society" and a "mass media" make little sense, we must also rethink notions of mass politics. Politicians must

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learn how to listen to and engage with new types of groups, and must do so using the new mobile technology.

Attempts to date have been risible. For instance, if you go to Peter Mandelson's website, it invites you to text-message your concerns. (I did so about six months ago and he still hasn't got back to me.) But the idea that the future politician should spend his or her life responding to 160-character messages from constituents – "I'm ir8. u r not representing me enuf!" – is ludicrous. And voting by text message, although handy for the hurried, is an equally unimaginative response to the possibilities offered by the technology.

Elsewhere in the world, however, progress is being made. In the recent Korean general election, a relatively unknown progressive politician called Roo Moo-Hyun benefited greatly from the use of new media. On election day, with Moo-Hyun behind in the polls, his supporters launched a huge campaign using web-bulletin boards and text messages to mobilise voters. It worked. Moo-Hyun won, and the last-ditch digital effort is credited with ensuring his victory. Importantly, he has taken such techniques into government with him, as part of the arsenal of his progressive politics.

How to make such a breakthrough in Britain? Perhaps we need to move from sofa shop to talking shop, and organise a flash mob in the House of Commons. Whichever way it happens, representative institutions need to wake up to the political power of new technologies before it's too late.

James Crabtree is research director of the Work Foundation's iSociety project and co-author of MobileUK: mobile phones in everyday life

Behind the bike shed

Texting may replace smoking as the sign of rebellion in a new battle between parent and child. By **DEA BIRKETT**

Mobile phones have become the latest battlefield between the generations. Children want them; adults don't want them to have them, or at least not as much. Horrified by the whims, tastes and needs of those younger than themselves, most grown-ups seek to limit a child's use of a mobile. Teachers ask teenagers to check in their handsets at the school gate. Parents control their sons' and daughters' text-messaging through pay-as-you-go. No one boasts about the ten-year-olds' handsets apart from the ten-year-olds themselves.

But the adults are fighting a losing battle. Last month, a survey showed that 11 per cent of children aged five to nine (more than 400,000) now own a handset – twice as many as two years ago. Ownership among older children is even higher. Almost three million ten- to 14-year-olds (one in every three), have their own mobile phone.

The number of children recharging their batteries will only increase. The denials of mobile phone companies that they are targeting pre-teens ring hollow; the adult market is near saturation point and new markets must be found.

As one pressure group put it, the mobile phone companies are using "very similar marketing tactics to the tobacco industry". Downloads are aimed directly at young people. Britney Spears and Westlife ringtones, along with Harry Potter and Barbie covers, are clearly not for the middle-aged consumer. Schoolchildren are regarded as by far the fastest-growing market for mobile phones. If adults want to control this, they have to understand why mobiles have become so attractive to children.

The almost overwhelming reason a child wants a new model is as a must-have accessory. If you don't have a Nokia, Motorola, Sony Ericsson, Panasonic or Samsung, you are cut off from a great many playground conversations, in the same way that you are if you don't watch *EastEnders*. In that sense, a mobile does make it easier to talk.

Around half of the ten-year-olds in my daughter's class have their own phones tucked next to the latest Jacqueline Wilson book in their school bag. So important is the possession of a flash handset to feeling included that, in a survey at Feltham Young Offenders' Institution in west London, inmates said that one of the worst elements of imprisonment was the loss of their mobiles.

> Schoolchildren are regarded as the fastest-growing market for mobiles

Adults, however, generally dismiss this fashion as folly. When an adult gives a child a handset, it is rarely as an accessory (although the same adults might have far fewer misgivings about requests for another pair of Nikes). For them, the main reason a child should carry a mobile is to keep them safe.

Exaggerated concerns about child abductions have led many mothers and fathers to give even their very young children mobiles for emergency use. Mobiles are being used to counter overconcern about so-called "stranger danger". This is parenting that is over-protective and hands-off at the same time. Rather than parents responsibly monitoring where their child is, and with whom, a handset does the job instead, in what has become known as "mobile parenting".

Such use of a mobile may actually put a young person at greater risk. If a child is faced with imminent danger, sound advice would be not to rummage for a mobile and dial home, but to turn to a nearby stranger for immediate help. Instructing a child to rely on a handset instead of an adult could be very dangerous indeed.

Furthermore, there is no evidence that children themselves feel safer through harbouring a handset in the pouch of their Adidas sweatshirt. And they'd be right. Using a phone in the street doesn't increase safety, but threatens it.

Police forces around Britain are running campaigns urging users to keep their handsets out of sight. Phone thefts account for almost one-third of street muggings, and children are five times more likely than adults to be the victims. Almost half the robberies involving children are for phones. And mobile phone thefts create not only young victims, but also young criminals. The muggers themselves are most likely to be teenage boys.

Mobile phones, as is often the case with new technology, focus generational differences. In such a climate, mobile phone use by children really does threaten to be the new smoking – something that, however harmful, becomes attractive precisely because it is an assertion of youth. Text-messaging behind the bike shed could replace the hurried cigarette as a symbol of rebellion.

If adults really want to curtail children's use of mobiles, then they need a better understanding of why they are so important to children, and when and why they should be used. In this latest technological battle between the generations, the kids are the clear winners. A mobile phone is a far better fashion accessory than it will ever be a safety item.

The joy of text

With their small screens and mini keypads, mobiles have forced the evolution of a highly idiosyncratic form of language. **DAVID CRYSTAL** translates

A new medium for language doesn't turn up very often, which is why the linguistic effects of electronic communications technology have attracted so much attention. And with mobile phones, where the small-screen technology is so constraining, the effects have generated one of the most idiosyncratic varieties in the history of language. I call it Textspeak.

Its chief characteristic is rebus abbreviation – forms made out of a combination of letters, letters representing syllables, and logograms (such as & and numerals), as seen in NE1, 2day, B4 and l8r ("later"). Such forms are by no means restricted to Textspeak; they turn up in other electronic domains, such as e-mails and chatrooms. Indeed, rebuses have a much longer linguistic history. The Victorians played games with them, and children's Christmas annuals have long contained puzzles using them. But in Textspeak something more radical has taken place.

The nature of telephony, as well as the on-screen limitation to 160 characters, has motivated a much more wide-ranging and innovative set of conventions. Textspeak has its own range of direct-address items, such as F2T ("Free to talk?"), PCM ("Please call me"), MMYT ("Mail me your thoughts") and RUOK ("Are you OK?"). Multi-word sentences and responses can be reduced to a sequence of initial letters. Typical examples are SWDYT? ("So what do you think?"), BCBC ("Beggars can't be choosers"), BTDT ("Been there, done that"), YYSSW ("Yeah, yeah, sure, sure, whatever") and HHOJ ("Ha, ha, only joking"). Even more ingenious coded abbreviations have been devised, especially among those for whom argot is a desirable safeguard against unwelcome surveillance.

> If a love message gets the reply LOL, it could mean "lots of love" or "laughing our loud"

Users seem to be aware of the high information value of consonants as opposed to vowels, judging by such vowel-free items as XLNT ("excellent"). And there is ergonomic value in abbreviation, too, given that the number of keystrokes saved bears a direct relationship to time and energy – and, depending on your service provider, maybe even the size of your telephone bill. In a creation such as ru2cnmel8r ("Are you two seeing me later?"), the full form uses more than twice as many keystrokes.

In 2002, I compiled a text-messaging dictionary and, ignoring the difference between upper-case and lower-case usage, collected about 500 Textspeak abbreviations. However, only a small number of these are actually in regular use. The vast majority are there just to be "clever", illustrating the possibilities of language play.

ROTFL ("rolling on the floor laughing") may have had some use at the outset, but its later developments – such as ROTFLMAO ("rolling on the floor laughing my ass off") and "ROTFLMAOWTIME" ("rolling on the floor laughing my ass off with tears in my eyes") – illustrate idiosyncratic communicative one-upmanship rather than

ILLUSTRATION: DAN MURRELL

genuine community usage. And I doubt whether many texters really use such creations as LSHMBB ("laughing so hard my belly is bouncing").

The method isn't without its difficulties. Leaving out letters always runs the risk of ambiguity. From the receiver's point of view, a single sequence can have more than one meaning: BN ("been" or "being"); CID ("consider it done" or "crying in disgrace"); CYA ("see you" or "cover your ass"); N ("and" or "no"); Y ("why" or "yes"). If a love message gets the reply LOL, it is up to you to decide whether the response was "lots of love" or "laughing out loud". And you have to know the sender before you decode GBH, which can be either a "great big hug" or "grievous bodily harm". There are similar ambiguities in the Textspeak of other languages.

From the sender's point of view, there are also choices to be made. "Good to see you" can be GTCY, GTSY, G2CY or G2SY; "I love you" can be ILU, ILUVY or ILY; "thanks" can be THNX, THX, TX or TNX. I found a remarkable eight variants for "talk to you later": TTUL, TTUL8R, TTYL, TTYL8R, T2UL, T2UL8R, T2YL and T2YL8R, and there are probably others. Even more exist for "What's up?": WASSUP?, SUP?, WU?, WSU?, WSUU?, WSUUU?, and so on. Doubtless text-messaging dialects are already evolving.

What is not clear is just how limiting this technology is as a messaging system. There must be a limit to the amount of information that can be conveyed using abbreviation, and a real risk of ambiguity as soon as people try to use more than a stock set of social phrases. The set of easily understood messages is really very small, and only a few abbreviations – such as C ("see"), B ("be"), 2 ("to, too, two"), 4 ("for, four, -fore") and U ("you") – can be used in lots of sentences.

The constraints will become increasingly apparent as people use the technology for grander designs, such as internet access. While it is possible in principle to download internet pages on to our mobile screen, what do we lose, in terms of information, when a graphically elaborate text is reduced to such a scale? What kind of linguistic "translation" needs to take place in order to ensure that the sentence structures used on the small screen are manageable and intelligible? It seems inevitable that sentences will tend to be short, and that sentence structures will be kept simple.

> In Textspeak, we are seeing, in a small way, language in evolution

Will Textspeak have an effect on language in general? This is unlikely. The whole point of the style is to suit a particular technology where space is at a premium; and when that constraint is dropped, abbreviated language no longer has any purpose. Its "cool" associations among young (or at least young-minded) people mean that some of it will find use elsewhere, and there are occasional reports of Textspeak creeping into other forms of writing, such as school essays. But these are minor trends, part of the novelty of the medium. They can be controlled as part of the task of developing in children a sense of linguistic appropriateness – one of the basic principles behind the UK's national curriculum in English.

Some people object to Textspeak. Some are bemused by it. I am fascinated by it, because it is the latest manifestation of the human ability to be linguistically creative and to adapt language to suit the demands of diverse settings. In Textspeak, we are seeing, in a small way, language in evolution.

David Crystal is the author of Language and the Internet *(Cambridge University Press)*

Can we have some privacy?

Debate over the control of personal mobile information is set to intensify, writes **JAMES HARKIN**

Last year, a Japanese commuter was caught in the act of what was then a novel transgression – using his mobile device to look up the skirt of a young woman and take pictures. Collared by his indignant prey, he was handed over to the authorities and subsequently convicted of being a public nuisance. It was an isolated case, but bad news about mobiles travels fast. Soon afterwards, a group of hotels and fitness centres in Singapore greeted the arrival of camera phones by banning them from the premises. At the same time, the new devices were banned altogether in Saudi Arabia, where the ministry for promoting virtue and preventing vice began to suspect that they were being "misused by wicked people".

Closer to home, trendy London nightclubs have banned camera phones from their premises in an effort to placate their celebrity clientele. A Home Office task force is currently examining the threat to children's safety posed by paedophiles armed with camera phones. In January 2003, a coalition of child protection groups and local government associations called for camera phones to be banned in all public or private places where adults or children could be photographed. "This technology is the next big thing for paedophiles," one sex offences expert told a national newspaper, "and it's only a matter of time before it's abused on a massive scale."

As reserves of trust in contemporary societies continue to erode and privacy becomes ever more jealously protected, mobile devices can easily become scapegoats for our anxieties about other people. The development of location-based technologies, together with the advent of picture-messaging, video-messaging and audio-recording, brings a new urgency to existing debates about privacy and the control of information. It may well strain the trust that users currently have in mobile communications, the relationship between users and mobile operators, and our trust in both marketers and government. As the powerful new mobile technologies arrive, we may begin to feel harried by the demands made on us by our mobiles and imagine ourselves to be under constant surveillance – we may feel that the humble mobile has become a spy in our pocket and a tracking device.

As the issues become clearer to the general public, debates about the ownership and control of personal mobile information are certain to become more intense. Since the terrorist attacks of 11 September 2001, few western governments have been very willing to impose limits on their own meddling. Last year, the British government proposed an amendment to the Regulation of Investigatory Powers Act 2000 that would allow access to communications and location data – currently limited to law enforcement agencies, the Inland Revenue, and Customs and Excise – to a whole range of government bodies, including the Department of Health and even local authorities and fire services. Only after vigorous protests from civil liberties campaigners did the Home Secretary, David Blunkett, back down.

> We may begin to feel that the humble mobile has become a spy in our pocket

But even without the amendment, the police need only internal authorisation to sequester communications data that includes information about our location gleaned from mobile devices. Thanks to the increased location-sensitivity of mobiles, authorities will have ready access to a map of our daily movements plotted with pinpoint accuracy.

It is much too easy to collapse a wide variety of disparate issues into a debate about privacy: the intrusions of marketers, the intrusions of government and the intrusions of other people. A resolution of the debate about location-based marketing may well turn on whether users perceive the possibilities of advanced mobile technology – more personalised service delivery on our mobiles, greater access to services and targeted information – as benefits worth the intrusion. Individuals may be happy to trade their right to privacy in specific circumstances – for example, through using location-based technology to hire a taxi in an unfamiliar part of town. Just like the e-mail spammers, mobile marketers who try to take advantage of location-based technology will soon find out that unless their communications are welcome, their attempts will backfire hopelessly.

The Home Office should know that unless there are clear limits on how government can employ the information it gleans from our mobile communications, there may well be a quasi-luddite backlash that will impede the development of the technology itself. Any attempts to add mobile technology to the machinery of surveillance are likely to prove self-defeating. The unemployed, for example, are unlikely to welcome the gift of a mobile device that enables them to respond to job offers on the move if they suspect that it may become a tracking device in the hands of the social services.

A clear statement is needed about when departments and authorities can use the data to which they have access – to solve a serious crime, for example – and when they cannot. If resolved inadequately, the debate about privacy and mobiles could result in the most distinctive feature of the new technology – the increased potential for "context awareness" – being turned off by disgruntled users.

The rules of the game

In regulation, there must be fewer bust-ups and more partnership. By **PAUL SKIDMORE** and **PAUL MILLER**

Mobile operators are a pretty angry bunch these days. First they paid the UK Treasury over the odds for their shiny new 3G licences at the height of the technology boom, and now they find their expected profits being eaten away by a competing technology in the shape of the unanticipated, and therefore largely unregulated, wireless LAN, or Wi-Fi.

To make matters worse, the operators have found themselves on the wrong side of the regulator, Ofcom, over the cost of calls to mobiles using other networks, which are to be forced down over the next few years. The stage is set for a similar confrontation over charges for using mobiles abroad.

The regulator's interventions have infuriated operators, which argue that they are both unnecessary, because the mobile market is basically competitive, and unjust, because operators must be allowed to make a return on their risky investments. The real basket-case, they argue, is the fixed-line market, where network access remains a serious regulatory headache and where BT continues to enjoy unfair advantages.

The essence of the regulatory game has changed little in recent years. The operators may not always have liked its outcome, but at least they understood the rules. There has generally been agreement on what the problems are, even if there have been marked disagreements over how those problems should be addressed and over the balance between competition and regulation in doing so.

But looking to the future, the game is changing, and no one seems to agree on what the new rules are. As the pace and disruptive potential of technological change increases, regulators will need a much greater capacity to adapt than they have shown in the past if they are to avoid getting stuck fighting yesterday's battles.

In principle, the chairman of Ofcom, Lord Currie, favours withdrawal from economic regulation so as not to impair future investment and innovation. But paradoxically, while technological innovation makes the withdrawal of *economic* regulation more necessary, it also creates new and potentially much more complex regulatory problems and risks.

First, the growing content-richness of mobile services promises to bring with it many of the virtual vices familiar from the internet. These include widespread adult content and pornography, and the difficulty of protecting children from online "stranger danger". The ethical issues surrounding easy access to gambling services are a particular concern in the mobile sector.

> Operators argue that the regulator's interventions are unnecessary

Second, the potential for consumers to access a widening array of goods and services through their mobile devices creates a number of challenges for consumer protection, particularly where the products are themselves highly regulated (for example, in the area of financial services). This convergence will make co-ordination between different regulatory regimes much more important than it has been up to now.

Third, the potentially exclusionary effects of not being able to access goods and services (including public services of various kinds) through mobile devices may need to be remedied through regulation. As mobiles become more embedded in our everyday lives and routines, increasingly demanding obligations for universal service could be imposed on mobile operators.

Fourth, in the information society, privacy and the use of personal data are increasingly crucial political issues, and as mobile technologies become more location-based (and hence even more personal) the challenges and choices that this poses become more stark. One simple illustration of this is in the placing of black boxes in cars. While this would open up exciting possibilities both commercially and for public policy – for example, pay-as-you-drive car insurance – the potential use of this information by the state or other agencies could lead to serious concerns about surveillance and invasion of privacy.

What is striking about each of these issues is that they cannot easily be fitted into the adversarial, zero-sum game that regulation has resembled up to now. These problems do not have easy answers. Above all, the kinds of choices and trade-offs they imply seem ill-suited to a model of technical decision-making by an independent agency.

With the industry in flux and facing an increasingly complex array of problems, taking and defending entrenched positions looks like an increasingly unsustainable strategy. If the industry is to adapt effectively, regulation needs to be seen less as what the regulator does to firms, and more as a partnership between all those with an interest in the sector's long-term success. Ultimately that requires a less confrontational, more open process of negotiation between actors with different but equally valid perspectives and goals for regulation.

When it comes to regulation, the future's not black and white, it's greyscale.

Paul Skidmore and Paul Miller are researchers at Demos. Their report on the future of regulation will be published in November

ns interview stephen timms

Unlike previous e-commerce ministers, he is a bit of a geek. He has a 3G phone – and knows how to use it, too

by JAMES CRABTREE

I am watching the ITN lunchtime news on 29 August. The newsreader intones, with great solemnity, that "It is the most significant day in the Hutton inquiry, with Tony Blair under pressure and facing questioning . . ." But I'm not watching TV. I'm watching the mobile phone belonging to Stephen Timms, the government minister responsible for (among other things) e-commerce and communications and information industries.

To begin my interview with him, I had planned a gotcha. My first question, scrawled on a scrap of paper in front of me, was a cellular googly: "Minister, do you actually own and use a 3G phone?" When he said no, I would be at liberty to question the government's overall commitment to new technology. Cunning, eh?

But before this weasel wheeze is allowed out of my mouth, the minister exclaims "Look at this!", hops across his office, and plonks a shiny new 3G handset in front of me. He had, he explains, downloaded the news on the train back from an earlier meeting. Timms's press officer beams. Gotcha, he thinks.

Stephen Timms, you see, is a geek. Not a card-carrying, computer-coding, Linux-loving specimen of the species, but rather like myself: a sort of geek-cum-tourist, an enthusiast for digital technology.

> "Look at this!" Timms exclaims, and plonks a shiny new handset in front of me. His press officer beams

His predecessors as e-commerce minister never quite cut e-mustard in an industry that respects technical knowledge above all. Patricia Hewitt was an enthusiast, but not a "techie". Douglas Alexander gave the impression of being more a son of the manse than of the internet café. Timms, on the other hand, recently bought himself a memory card for his new phone. As a birthday present.

In as much as you can describe a man towering a whisker under 6ft 7ins as a boy, what we have here is a boy with a new toy. His enthusiasm and knowledge have won Timms, a former employee of an IT company, the respect of the industry in which he used to work. This is the job he was trained for.

But what exactly is the government's technology agenda? The internet bubble caused a small policy bubble, in which the Blair administration spent a lot of time and money on geeking up Britain. Peter Mandelson, egged on by technology experts such as Charles Leadbeater, led an exciting charge towards the "knowledge economy". This programme – e-commerce, internet access, broadband, e-government and solving the digital divide – has been chugging through government for the past five years.

In this time, the bubble of the "new economy" burst, and the public enjoyed lengthy moments of *schadenfreude* as the dotcom kids went B2C – back to consulting – and realised that life carried on pretty much as normal without a laptop plugged into the base of one's spine.

Subsequently politicians have been slightly sniffy. One prominent minister in a different department, I'm told, reminded his officials that he was "not going to become the minister for risky, screwed-up IT projects". Stephen Byers backed off the technology hype early, noting that the Labour Party wasn't actually very bothered. And these days Patricia Hewitt rarely says or does more than she has to on the subject.

My contention is that the government's technology story, and how it fits into progressive governance more generally, has totally run out of steam. Timms is not put off. He dismisses my claim that the left in general isn't comfortable with the white heat of the network society, saying that his constituents in east London are pretty up on the whole thing.

But his top three priorities are all fairly humdrum. He wants to ensure that the public sector helps to drive up demand for broadband. He wants to ensure 3G is successful. And he's pretty keen to see more small businesses on the internet. All good sensible stuff, but hardly racy.

The geek community, in as much as such a thing exists, isn't all that fussed about Timms's 3G phone. In America, and by extension over here too, the real experts are much more taken by Wi-Fi (broadband access without wires).

I ask about this. Timms admits that Americans see 3G as "a socialist-style European highly regulated device" as opposed to Wi-Fi, which "is consistent with the American dream". But his view is that 3G and Wi-Fi can coexist happily, and that

Britain is well placed to lead with this technology, having lots of mobile businesses and "more Wi-Fi hot spots than any other European country".

And then he surprises me. I ask if there is a case for publicly funded Wi-Fi – for instance, by putting free access in schools and hospitals. Timms perks up: "I think we should put Wi-Fi in every public library. We have put internet access in every library, with over 90 per cent on broadband. I want to put Wi-Fi in all of them." Although he admits this is not happening quite yet, he seems confident that it will, and that more will follow.

What about public services? Should we really be investing taxpayers' money to give City boys NHS Direct on their 3G handset when hospital beds are full? He demurs,

> He admits that mobile public services are not the top priority for taxpayers' money

admitting that perhaps mobile public services aren't the top priority for the public purse. But Timms reminds me that public service content over broadband – particularly in education and health – has been popular. Some of the £6bn that new Labour is pumping into e-government at the moment, he thinks, should go towards public services delivered via mobile devices.

In particular, this is because mobile phones have proved so popular. And Timms shows good new Labour stripes by repeatedly extolling the virtues of competition for achieving progressive aims. "When asylum-seekers come to see me in my surgeries they all have mobile phones," he says. Then, perhaps predicting indignant splutterings in the *Daily Mail*, he quickly adds: "I remember people saying we would have to subsidise mobile phones to ensure poorer and more rural communities could have access. But we haven't spent a penny on that; good competition has done it for us." It is competition, he suggests, that should twin with innovation at the heart of the technology section in the next Labour manifesto.

I'm not entirely convinced. As the minister for e-commerce, Timms has a responsibility not just to the industry, but also to develop a stronger narrative about the ways in which new technologies change society.

However, I leave feeling that what Timms lacks in political vision for technology and the left, he makes up for in commitment and enthusiasm. And that, in combination with Wi-Fi in every library, will do the job nicely.

ILLUSTRATION: MICHAEL McGUINNESS

Mobilise our public services

From paying for a parking ticket to catching a train to controlling asthma, many things we have to do on the move could be made easier and quicker. By **JAMES HARKIN**

In April this year, the government of Norway announced that its inland revenue would be the first in the world to allow citizens to complete their tax returns by text message. Despite the excited publicity that greeted the news, the scheme is likely to prove an expensive flop. Doing your tax return is a highly sedentary business that requires patience, concentration and privacy. It is totally unsuited to being conducted by mobile phone.

The Norwegian experiment is a good example of the cloudy thinking that so often stymies government when it wants to be seen to be do something worthy on the matter of mobile technology. When they are not ignoring mobiles, politicians tend to assume that services will migrate to our phones as soon as it is technically possible for them to do so. But a strategy for introducing mobiles into the work of government needs to be more than an exercise in box-ticking gimmickry. It must begin with an appreciation of the distinctive attributes of mobile devices, particularly their immediacy as a means of communication. Above all, it needs to be alert to a very simple principle: mobiles are mainly useful for things that need doing on the move.

Using the mobiles in our pockets to ease the delivery of public services isn't rocket science. Maltese citizens already receive text messages when a book they have reserved becomes available. In California, citizens can opt to receive warnings about imminent energy shortages. Many British mobile users – who are generally very sceptical about how mobiles might be used by central government – like the idea of receiving a text message from their doctor to remind them they have an appointment the next day.

> In California, citizens can opt to receive warnings about imminent energy shortages

While the British government has not yet disentangled its strategy for mobiles from its plans for the world wide web, some public authorities are taking matters into their own hands. Wandsworth council in south London, for example, is implementing a scheme that will enable its peripatetic staff to receive and reply to text messages. Police officers in north Wales have been issued with PDAs that are permanently connected to the force's IT system, enabling them to cut down on the time they spend pushing pens.

But perhaps the most successful example of how to use mobiles has come from Transport for London. When it introduced its congestion-charging scheme in February 2003, TfL realised that car drivers might want to pay for a spontaneous trip into London while they were in their cars. Paying by text message, one of six possible methods, accounted for 15 per cent of all payments during the first four weeks of the charge.

If TfL's scheme has given citizens an appetite for paying ▶

ILLUSTRATION: DAN MURRELL

▶ by mobile, there is plenty more that could be done. Motorists in Vienna, for example, can now buy parking tickets by text message. Drivers register their mobile phone and licence plate, as well as their credit card details, when they sign up for a virtual parking ticket account. Adding to the scheme's popularity is an option to receive a reminder text message ten minutes before a parking ticket is due to expire.

As the new generation of mobile devices matures, more creative interventions in the management of traffic flow will become possible. The new location-based technologies will soon offer mobile users real-time traffic information, guiding them along alternative routes after calculating the quickest path through congested areas. At a recent trade fair in Sweden, a new wireless navigation product was launched which offers step-by-step location-based services to drivers. As soon as the user enters a destination, a route is automatically downloaded to the mobile device and presented to the user by voice, pictures and maps as he or she drives.

In a sign of things to come, a primitive text-messaging service has been launched in south Wales to warn drivers about possible traffic problems on the M4. Users are asked to set up a profile of their journey on the scheme's website. They then receive automatic notifications of any accidents, delays and speed restrictions that are likely to affect their journey.

Mobiles could also be used to improve the accessibility and efficiency of public transport. Placing base stations throughout underground networks and on trains would make it possible for operators to send maps, up-to-date schedule and pricing information directly to mobile devices. At the Tokyo Motor Show in November 2002, a prototype of a mobile-enabled bus was unveiled. The system, principally aimed at foreign visitors and the hearing-impaired, uses mobile devices to enable passengers to pay their fares electronically and to receive an alert when the bus is approaching their destination.

Integrating mobiles into health services does not have to be complicated. In Wales, doctors are already using their mobiles to send X-rays via picture message. They claim that it has already reduced waiting times for orthopaedic patients. With the arrival of mobile devices that offer a permanent connection to the internet, applications will become more sophisticated and ambitious.

A report published in February claimed that a potential £1.5bn-a-year market exists in the UK for mobile services that can help doctors monitor patients remotely. Several companies are gearing up to enter this market. For example, Roke Manor Research is developing mobile technology that monitors patients who are undergoing chemotherapy and are at risk of septic episodes. An instrument attached to the patient, linked to a mobile device with an "always on" connection, monitors skin temperatures and pulse rate; the mobile sends either a text message or a pager alert to the patient's clinician.

In a similar experiment, the Department of Engineering Science at Oxford University is piloting a mobile device aimed at improving asthma management among sufferers. The gadget uses a mobile handset combined with an "always on" connection to monitor the condition more effectively and detect early signs of an attack. Whereas current asthma treatments rely on the retrospective discussion of symptoms with a doctor, the mobile apparatus, by providing accurate information on a patient's health as it changes, allows treatment to become more proactive, thus saving the time and resources of GPs.

The increased location-sensitivity of new mobile devices could also help with the care and monitoring of mental health patients. In a research project partly funded by the UK Engineering and Physical Sciences Research Council, a group of academics are currently investigating the application of wireless location-based services to the running of a community-care facility in the north of England. Preliminary research among the staff of the facility found great enthusiasm for the monitoring system. It could, for example, warn staff when patients fall or suffer an injury, and would ensure prompt assistance if residents became violent or uncontrollable.

> There is a potential £1.5bn-a-year market for mobile services helping doctors monitor patients remotely

It is right to be sceptical about the use of information technologies within the educational system. Too often, e-learning has been used as an excuse for an inferior educational experience – one that is delivered at arm's length and provided on the cheap. Nevertheless, some forms of education do not require a classroom and are better suited to being undertaken "on the job".

In Sweden, for example, the continuous education of nursing staff in intensive care units is a legal requirement as well as a professional necessity. As part of a recent project, a group of Swedish researchers attempted to design a mobile video device to make that task easier. The result enabled hospital personnel to select relevant activities and record themselves working – for later viewing by other nurses. It also gave rise to a much more collaborative educational process. Using mobile technology in such an environment, concluded the research team, "has given birth to an area of real-time documentation that has never been produced before. Nurses learn their job by doing it and, for practical reasons, do not bother with the grey area of unspecified action."

The new generation of mobiles could help make governments more responsive to the shifting preferences of their citizens. And with a little creative thinking, putting a mobile device in the hands of front-line public workers – firefighters, nurses, social workers and street-cleaners – might even throw up entirely new ways of working.

Resistance among the locals

Our councils are failing to capitalise on mobile technology. **ALEXANDER STEVENSON** explains why

It is easy to become resentful when you work in the local authority sector. Despite being the engine room of public services, it often feels a bit like Cinderella looking on as the ugly sisters of central government grab all the glamour and status. Mobile technology appears to be a case in point. The potential for applying the technology in local authorities is huge and presents the private sector with a significant opportunity. But as yet there has been no co-ordinated effort to realise it.

The reason for the potential lies in one extraordinary fact: 80 per cent of transactions between members of the public and government are carried out via the local authority. And a significant number of these transactions occur face to face, whether it be through a social worker paying a visit, a builder repairing a roof or a planner inspecting a building. In all such instances, council officers can use mobile devices, there and then, to provide information, to update that information and to enable the citizen to book appointments, buy permits and so on. Not only are officers enabled to provide a far better service, but they can save time by not having to report back to base after every visit to collect or dump paper files.

But what makes local authorities real candidates for mobile technology is that there are so many interactions for so many different things. In any given week, some customers come into contact with different council officers in a number of ways. Imagine if, instead, the social worker who visits an elderly lady is able to check on her council tax payments, complain about her meals on wheels order and book a repair for her leaky roof, all via one mobile device in one visit.

This is not going to happen overnight. For a start, central government has been slow to recognise the role that mobile technology could play in delivering services. Although there is now talk of investing centrally in mobile technology for local authorities, many other projects have taken priority in areas such as digital TV, smart cards and even bereavement services. The lack of investment by central government does not encourage the private sector to get involved.

Less obvious, but arguably more significant, is the impact of a target set by the prime minister. By 2005,all local authorities must have e-enabled 100 per cent of their significant public-facing services. This does not encourage local authorities to invest in the back-office systems that would allow officers to work efficiently with mobile technology in the field. Instead, the mobile service most likely to receive attention is text-messaging direct to customers. No bad thing in itself, but really just the cherry on top of the cake minus the icing and sponge.

> While certain fears are understandable, they should not prevent service improvements

The other constraint is the local authorities themselves. For good reasons and bad, there is a resistance to change when it comes to technology – and mobile is no exception. One good reason for this resistance is that technological change can happen too quickly and have a disruptive impact on the way that services are delivered. A classic symptom of this is the introduction of new systems without adequately training staff to use them. This would be particularly significant if officers who previously dealt with just one service area were suddenly expected to deal with multiple queries using mobile technology. There are also significant data protection issues that need to be considered – you can't give a council tax officer access to social services information without putting some fairly stringent controls in place.

The bad reasons stem from fear: fear of losing status; fear of having a more boring job; fear of acquiring new skills, and not having the ability to acquire them; fear of increasing demands; fear of losing jobs. All these fears are completely understandable but are not legitimate reasons for preventing the improvement of public services.

Despite all this, many local authorities are already experimenting with some form of mobile technology and appear to be making good progress. Trading Standards officers in Walsall are using hand-held devices that enable them to call up the history of a trader and the latest legislation at the touch of a button, as well as file their reports on the move. In Glasgow, building services managers can log necessary repairs into the scheduling system while still on site. And in Lewisham, in south London, social workers are using tablet PCs to go out and conduct assessment interviews.

None of this obscures the central fact that mobile technology is not as high as it should be on anybody's agenda: central government, private sector suppliers and even the local authorities themselves. Unless the fairy godmother turns up pretty soon, it is extremely unlikely that Cinderella will make it on time to the mobile technology ball.

Alexander Stevenson is a partner at RSe Consulting, which advises local authorities on e-government strategy and implementation

Frying our brains?

The signals from phones and masts seem unlikely to have adverse effects on our health. But only more research can make us certain, writes **LAWRIE CHALLIS**

Love them or loathe them, it is difficult to imagine that mobile phones are not here to stay. With around 50 million mobiles currently in circulation in the UK – an average of almost one for every man, woman and child – they appear to have become an indispensable part of modern living. Future developments in mobile technology could produce even more dramatic changes in the way we work and organise our daily lives. But is there a downside to these developments?

A significant proportion of the radio frequency emission from a mobile phone is absorbed into the head, so the question as to whether this absorption could produce adverse health effects is a very reasonable one to ask. When this became a public issue during the 1990s, many national governments responded by commissioning reviews of the scientific evidence. In the UK, the Independent Expert Group on Mobile Phones was set up with a remit to consider concerns, assess existing evidence and recommend further research. The committee held five open meetings, took evidence from dozens of witnesses and reviewed hundreds of scientific papers. Its report *Mobile Phones and Health* – otherwise known as the Stewart report, after the committee's chairman, Sir William Stewart – was published in May 2000 (available at www.iegmp.org.uk).

The most widely cited of the various national reports, the Stewart report concluded that, according to the available evidence, the radio frequency signals from phones and masts would not adversely affect health, provided they were weaker than the recommended guideline levels. However, the report noted there was some scientific evidence to suggest that biological effects could be elicited at lower exposures. While biological effects do not necessarily lead to disease or injury, this new evidence did serve to highlight the uncertainties surrounding current scientific knowledge in this area. So the committee did not feel it could rule out the possibility of a health risk, and therefore suggested that the gaps in knowledge justified a precautionary approach until more scientifically robust information was available.

> Some groups, including children, could be more vulnerable than the population at large

The committee also felt there could be sensitive groups, including children, who would be more vulnerable than the population at large. There were three reasons why children might be more vulnerable: their nervous systems are still developing; they may absorb more energy in their head tissues; and they have a longer lifetime of exposure. The committee therefore recommended that children should be discouraged from using mobile phones for non-essential calls.

One area in which there was clear evidence of an adverse effect related to the use of mobile phones while driving. The distraction caused by using a phone meant a substantially increased risk of an accident, and that risk was regardless of whether the phone was hand-held or hands-free.

The Stewart report recommended that a national research programme be set up, funded equally by government and the mobile phone industry, and managed by an independent panel. This resulted in the establishment, in February 2001, of the £7.4m Mobile Telecommunications Health Research Programme (www.mthr.org.uk). So far, 17 research projects have been funded directly by the programme, while a further four have been managed by the programme but funded by the Home Office or the Department of Trade and Industry. Several other projects are under discussion and should be announced by the end of the year. The Home Office also has a major research programme concerned with the police mobile phone system, Tetra.

The aim of all this work is to study directly the effects of radio frequency signals on people. No assumptions are made about whether these effects are from heating or from other, more subtle mechanisms. Considerable effort has been made to ensure that the work is carried out by strong research teams using standardised exposure systems.

Support has been given to epidemiological studies investigating whether phone use increases the risk of brain tumours or leukaemia, and whether residence close to base stations can affect the incidence of childhood

cancer. Volunteers are participating in studies examining the possible effects of phones on brain function and blood pressure. There are two studies (still recruiting volunteers) investigating the relationship between disagreeable symptoms such as headaches and nausea, and exposure to mobile phone signals. There is also a study comparing the use of mobile phones while driving with other distractions such as talking to a passenger.

Other studies are examining possible mechanisms by which pulsed radio signals might produce biological effects, or obtaining more detailed information on the deposition of energy in the body. Part of this latter work is aimed at resolving current uncertainties about absorption in children's brains.

One difficulty the Mobile Telecommunications Health Research committee recognised in framing its programme is that there is much greater public concern about the possible risks from base stations than from phones themselves. It may seem perverse, therefore, that all the work on volunteers so far concerns exposure from phones. The reason is that if you are looking for what may be a small biological effect from a radio frequency signal, it seems sensible to use the strongest source available – a phone – and not one that is at least a thousand and often a million times smaller – a base station. Furthermore, since the total exposure a head gets in 24 hours from a base station is small compared with the exposure from a phone in one typical conversation, most scientists think they have the best chance of seeing any epidemiological link between radio frequency exposure and disease by studying exposure from phones.

> A day's exposure from a base station is small compared with that from a mobile in one typical conversation

Had the relative sizes of the exposures been the only factor, it might have been appropriate to respond more to public concern. But unfortunately there is another problem: it is very difficult to measure the daily exposure an adult receives from base stations. It varies from room to room in a house, and most adults spend part of their day at work or another location where their exposure is likely to be very different. It is also necessary to know the daily exposure over many years. Furthermore, most adults use mobile phones, exposure to which complicates measuring the effects of exposure to base stations.

Because of these and other uncertainties, it is widely accepted that it is not possible to carry out a reliable epidemiological study on adults with regard to base stations. An unreliable study might either miss a link that does exist or find one that does not. However, the exposure problem might be eased in the future if appropriately sensitive dose meters can be obtained.

Many other countries are actively pursuing research in this area, and there is a clear need for international co-operation to avoid covering too much of the same ground. Britain's Mobile Telecommunications Health Research Programme has played a role in this, inviting representatives from international programmes to its annual research seminar in November 2002 and participating in discussions to develop the World Health Organisation's research agenda on the subject.

While there is currently no convincing evidence that mobile phones or their base stations cause harm, there are still significant gaps in our knowledge. The ongoing research should do much to reduce this uncertainty.

Lawrie Challis is emeritus professor of physics at the University of Nottingham. He was vice-chairman of the Stewart committee and is chairman of the Mobile Telecommunications and Health Research Programme

ILLUSTRATION: DAN MURRELL

What is 3G good for?

Despite all the hype, the new technology has been slow to attract users. But not for long. By GAVIN SHERIDAN

When 3G services were launched in the UK back in March, many believed that the company behind the lurid "3" adverts, Hutchison Whampoa, would be faced with the same public reaction that greeted the launch of WAP services three years earlier: apathy.

However, after a reduction in prices and an expensive marketing campaign, Hutchison is beginning to increase its subscribers. An estimated 150,000 people have made the leap to 3G since its launch, and while this figure does not compare well with numbers of mobile users in general, optimists predict that take-up worldwide will grow by 140 per cent by the end of the year.

It was back in 2000 that the UK government auctioned off the frequency to be used by 3G (different to the frequencies used by existing services) to telecommunications companies, raising around £22bn for the Treasury. O2, Orange, T-Mobile and Vodafone also bought licences, but so far only Hutchison has launched any services.

The new 3G technology is just the latest in a series of developments since the first generation of phones became available in the 1980s, but it is certainly one of the most hyped. With more bandwidth than earlier services, 3G can handle more information, faster, and is thus able to offer its users a richer experience through a plethora of new gadgets and features. Instead of just text-messaging and voice calls, 3G makes it possible to take and receive live video, to watch recorded video and live TV images, and to access the internet, all without wires.

But the £22bn question is whether any of these features be widely used in the near future. On existing mobiles, even the idea of colour screens is a relatively recent phenomenon, and picture-messaging has only just become easily available and used.

The relatively slow take-up of 3G may be partly explained by the newness of it all: once people become more used to colour screens and digital cameras, they are likely to open up to the more advanced services that 3G offers.

But another reason has to do with the fact that mobile phones have been so popular in recent years that penetration levels throughout western Europe have peaked – almost all of us now own one. This poses something of a problem to operators: how do you get people to buy more phones? They are hoping that 3G might just be the answer to their prayers – if every existing mobile user were to upgrade to 3G, the profits would be enormous.

> Operators have a problem: how to get people to buy more phones

But what will it be about 3G that makes everyone want it over their existing device – what will be the so-called killer application of the new technology?

When Short Message Service (SMS) was first introduced on mobile phones, it was seen merely as an extra feature that might be used by people on an irregular basis. But in fact, text-messaging turned out to be one of the device's most desirable assets, and is regarded by many as one of the most significant cultural developments of the past decade. It was also, for the mobile network operators, one of the biggest money-spinners of all: text messages might use just a second of air time but can be charged on a per-message rather than per-second basis, equating to huge revenues.

But what about 3G? It is extremely hard to predict just what the technology will be used for, over and above the making of voice calls. In general, the industry's attitude is one of wait and see: give consumers as many interesting features as possible and let them decide what the killer app will be.

Perhaps we are getting a glimpse of what is to come with the current surge in camera phones, with the resulting flood of pictures of bums and drunks. The recent stream of updated models that are technically similar but aesthetically different is also part of a strategy to separate us from the mobiles that we might have owned for only six months.

But the question remains: is 3G take-up likely to supersede the phones we already have. Will we really want this new technology? The short answer is probably.

Before third-generation technology becomes widely used, some issues will have to be dealt with – for example, the overall reliability and coverage of the network, and the size of existing handsets and their power consumption. But the future does look bright. The market for personal digital assistants (PDAs) is expected to decline as mobile phones begin to perform all of the same tasks: the long-awaited convergence is about to begin. Not long from now, we are likely to see hybrid phones able to use all the different frequencies. And then there will be 4G, promising yet more bandwidth and a higher level of quality than 3G.

It is now widely believed that 2004 will be the year 3G really takes off in Britain. Until then, if you are happy just making and receiving calls and sending the occasional text message, ignore the hype.

ns observations on the move

america

This is no raspberry

DAN ROSENHECK

Let's say you're a US congressman or high-ranking government official, and when another terrorist attack strikes, your cellphone and pager networks are overloaded and inaccessible. How do you find out where the emergency response meeting is? Thanks to the BlackBerry, an internet-connected PDA that has become an omnipresent fixture of American boardrooms and business-class compartments, a reassuring vibration in your pocket will help you find your way to the hidden war room. "On 11 September, they were the only thing that worked," the Ohio Republican congressman Robert Ney told the *Washington Post*. "That's how I found out how to go to an undisclosed location."

Not only serving as a last line of communication in such dire circumstances, the BlackBerry has superseded all other methods of interaction for hundreds of thousands of fanatically dedicated high-powered professionals in the US. Its latest incarnation, the BlackBerry 7230, offers a razor-sharp colour screen for wireless web access and doubles as a mobile phone, but its original killer application – e-mail on the go – remains its main selling point. Unlike competing products that allow you to download e-mails, the palm-sized, blueberry-coloured BlackBerry is "always on" technology that notifies you automatically whenever a message arrives.

The 615,000 people who have taken up the gadget (including 35,000 in the UK) have eagerly abandoned the last vestiges of freedom from contact for an unprecedented degree of accessibility and productivity. Whether you're on holiday, at the opera or in a board meeting, anyone can reach you – and you can respond – without making a sound. The easy-to-use thumb-tap keyboard and five-day battery enable users discreetly to keep in contact any time and anywhere. Its manufacturer, the Canadian company Research in Motion, boasts that BlackBerries save their users an average of 53 minutes a day – such as time in the loo or on the Tube – that can instead be used for urgent business, forwarding joke e-mails or making fun of the employee sitting between you and your BlackBerry-armed colleague.

From both a corporate and an individual perspective, the BlackBerry is a mixed blessing. Many American investment and law firms distribute them to employees and expect the devices will be left on at all times, giving managers 24-hour, 7-day access to their underlings. Yet while white-collar workers whinge about waning weekends, they gain the ability to correspond with family and friends even when their boss is making a presentation. It's still early days for BlackBerry etiquette.

No matter how rude the BlackBerry makes us and how much of our free time it erodes, sales continue to spiral upwards, both in the US and Europe. While options for e-mail on the go are likely to increase, options for those of us who prefer to keep our inboxes on our desks are dwindling daily.

design

Function over fashion

NICK WRIGHT

Travelling on the number 12 bus to Peckham offers an insight into peculiar and particular aspects of London life. First, an apartheid rooted in class which makes some bus routes capsules of proletarian, and particularly black, experience. Second, the bizarre verbal youth culture of the upper deck, where almost everyone is speaking but not to anyone actually present, and where silence signifies not introspection but an energetic exercise in communication skills that would gratify the most demanding English teacher. Kids whose schools cannot compel them to put pen to paper can't stop texting.

With their mobiles, young people have evolved informal modes of communication that mirror viral infection in their adaptability and speed. The super-fast and deliciously clandestine way in which young people mobilised, for example, against the war on Iraq transformed political culture. It privileged personal trust, direct action and shared values.

But the marketing decisions of phone companies – which evolve in the context of a desperate struggle to maximise market share in the face of falling profit margins and thus beat off competitive takeover – speak of a techno-fetish that has a remarkably superficial purchase on the collective mind.

> The design aesthetic of the mobile is at odds with the real use to which it is put

Our Routemaster bus and the fast-disappeared street furniture of London Transport's heroic heyday are expressive of a particular design culture: an essentially modern and humane world where function and form fitted together and where public policy and investment decisions were negotiated within a clear measure of consensus.

This can be contrasted with the design aesthetic of the mobile phone, which seems at odds with the real use to which these instruments are put. It is not completely possible to strip away the techno-babble, dispose of the adspeak and deny the function of fashion in shaping the purchasing decisions of mobile consumers. But it is the use to which these instruments are put that determines their ubiquity, not the form they take, and the mass of people are using mobiles to their own social and sometimes subversive ends.

Mobile technology: what does it all mean?

2G
Second-generation digital wireless communication. With improved voice-messaging and an **SMS** capability, 2G made a big improvement on the early analogue mobile systems and was responsible for the explosion in mobile use and text-messaging during the 1990s. About to be superseded by **3G** technology.

2.5G
An extended form of **2G** technology, with additional features such as **WAP** and **MMS** but without the capacity or real-time capabilities of **3G**.

3G
Third-generation wireless communication is the latest mobile system to be rolled out. The significantly greater **bandwidth** of 3G enables far more data to be passed through a wireless device, bringing **broadband** capabilities to your 3G mobile.

Bandwidth
The data transfer capacity of a communications channel. Usually expressed in kilobits per second (kbps).

Base station
A radio transmitter and receiver that communicates with mobile devices within a given range, providing access to a mobile network. Competition between network operators has meant a duplication of base stations around the country, hence the mobile masts you've noticed appearing everywhere. The area covered by each base station is known as a cell; many cells connected form a network.

BlackBerry™
A wireless, hand-held, "always on" e-mail device that sends and receives e-mails via a mobile network. The advantage of a BlackBerry over conventional "dial-in" mobile devices is that you can receive mail as and when it is sent.

Bluetooth™
Bluetooth provides a free and easy way of connecting a range of electronic devices without wires or the need for a network. Sounds good, but in practice use of Bluetooth technology is limited by its short range (just a few metres). The most common application of Bluetooth to date has been in wireless headsets for mobile phones, wireless mice for PCs and in-car electronics.

Broadband
Broadband frequencies can transmit more data at a higher speed than conventional "narrowband" frequencies. The most talked-about application for mobile users is **video-messaging** – the ability to send and receive moving pictures in real time.

CDMA
Code Division Multiple Access. One of a number of methods of encoding wireless communications. As well as greater security, CDMA and similar encryption methods allow multiple users to share the same airspace without interference.

Cellular phone or cellphone
In the UK, a now rather antiquated name for your mobile phone, though still widely used in the United States. The name derives from the cellular structure of wireless networks (see **Base station**).

Dual-band
Describes mobile phones that will work within different frequency bands. In practice, that means different global regions, where the frequency used by a network may vary from that in the UK.

GPRS
General Packet Radio Service. The high-speed technology that enables internet access through a mobile device. See also **2.5G** and **WAP**.

GSM
Global System for Mobile Communications. The world's

most widely used second-generation (**2G**) mobile system, GSM operates on three different frequencies: 900 and 1800 MHz are used in Europe, Asia-Pacific and Australia; 1900 MHz is used in the Americas. Virtually all consumer mobile phones are GSM compatible. See also **Dual-band** and **Roaming**.

Mesh networks

In a mesh network, individual subscribers replace the base stations used by conventional cellular networks. Transmitted data then travels via a network of enmeshed users. Still in their infancy, mesh networks promise more efficient, faster mobile connectivity. The concept that mesh users are all connected via one another (rather than via a series of base stations) bears comparison with the structure of the (wired) internet.

MMS

Multimedia Messaging Service. Allows images (including short video clips), as well as voice and text messages, to be sent to and from a mobile phone. See **Picture-messaging and video-messaging**.

PDA

Personal Digital Assistant, often referred to as a "palm top". Though originally little more than a sort of flash electronic personal organiser, PDAs have recently become more powerful (and thus more useful) mobile devices in their own right.

Picture-messaging and video-messaging

Allows users to capture and send pictures and short video clips via **MMS**. It's not real-time, but quite handy in case you bump into Beckham at the supermarket.

Roaming

Allows movement within a network's coverage area with no loss of connectivity. International roaming allows movement between networks when travelling abroad. Efficient roaming is what makes mobile technology truly mobile.

Satellite phone

A type of wireless mobile system that uses a satellite, instead of land-based antennae, as a **base station**. Satellite phones can be used where there is no network infrastructure – such as at sea or in the desert.

SMS

Short Messaging Service. A limited but incredibly successful service that allows short text messages (up to 140 or 160 characters) to be sent to and from a mobile device. Also known as text-messaging, texting or txtng.

TDMA

Time Division Multiple Access. Developed as the North American standard for digital mobile communication, though largely overtaken by the **GSM** system.

Urban cell

The coverage provided by a **base station** located in densely populated urban areas, with a much smaller range than a suburban or rural cell.

Video-conferencing

Real-time, continuous video and audio communication through a mobile device – video-conferencing is the main draw of **3G** technology. The jury is still out over whether there is a real demand for it (initial sales of handsets have been slow), but one thing is for sure: the technology is here to stay.

WAP

Wireless Application Protocol. The standard method of accessing the internet from a mobile device.

Wi-Fi

Wireless Fidelity. A standard for high-speed wireless networking. The advantage of Wi-Fi is a much faster connection than conventional cellular communication. On the downside, Wi-Fi access requires a nearby hub or Wi-Fi access point (within a hundred metres or so of the user). That's fine for an internal network or **WLAN**, but more difficult in the real world. However, the installation of Wi-Fi access points in hotels, coffee shops, airports and the like mean that very high-speed communication via public WLANs is becoming widely available in certain high-demand areas. Wi-Fi is also known by its real name, 802.11b technology.

WLAN

Wireless Local Area Network. Imagine being able to connect to your organisation's internal network, or LAN, through your mobile. That's WLAN.

WPA

Wi-Fi Protected Access. A standard for making **Wi-Fi** networks more secure.