Mobilisation

The growing public interest in mobile technology

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O2 DEMOS

Contents

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James Harkin
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1. Introduction

For many of us, life without a mobile is scarcely imaginable. In a recent survey of British young adults, 46 per cent described the loss of their mobile as akin to bereavement.[1] As mobile technologies become more pervasive, the relationship between users and their mobile devices continues to strengthen and evolve. To take one recent example, when one of the characters in *EastEnders* met a sticky end at the beginning of 2003, his girlfriend found solace by attempting to text him in heaven.

This report seeks to map and explain the phenomenon of *mobilisation* – the process by which mobile technologies are folding themselves into the fabric of our economies, social lives and communities. It confirms that mobile users are far ahead of political institutions in the creative embrace of mobile telephony. But in an age of unprecedented atomisation, mobile use remains largely restricted within personal networks of friends, colleagues and family. If mobiles are important to the modern sense of self, it is because they function as comfort objects, antidotes to the hostile terrain of wider society. And just as teenagers flock to the mobile because it offers a communication channel that remains outside the surveillance of parents and teachers, one of the central attractions of mobile technologies for adults is that they appear to be tethered to nothing and beholden to no one.

The corollary of our intimate relationship with mobiles is that they

are widely perceived to be hostile to social life. Frowned on in public spaces, mobiles have been blamed – often with little or no evidence – for everything from frying our brains to the creation of a teenage crime wave. Despite the fact that over 75 per cent of Britons now own a mobile phone, and we send more text-messages than emails or personal letters, mobile technologies have merited relatively little intellectual or political attention – in sharp contrast to the warehouses full of books, pamphlets and policy papers about the internet.[2] When we are not scapegoating mobiles, they are too easily consigned to the playroom, derided as little more than toys.

To unlock their full potential, we need to move beyond our sterile love–hate relationship with mobile technologies and drag them further into the public domain. As a new generation of mobile technologies takes off – one in which the transfer of data will slowly replace voice conversations, and mobile services will become increasingly location based – the social potential of the mobile will vastly increase. The US–UK assault on Iraq, for example, was the first wirelessly enabled war. By equipping many of its tanks and personnel carriers with wireless positioning devices, US army officers were able to see 'real time' pictures of the unfolding war.[3] On the other side of the political divide, apparently spontaneous anti-war protests around Westminster by groups of schoolchildren were coordinated using mobile phones. Welcome to a wireless world.

What is the role of government in this world? The limited policy discussion about mobile phones that does take place tends to concentrate on the dangers and risks associated with their use. Yet the often negative portrayal of mobile telephony in the media, together with scepticism about the value of third-generation (3G) technologies, explains but does not excuse the glaring absence of a coherent mobile strategy from the deliberations of several government bodies, such as the Office of the e-Envoy and the Broadband Stakeholder Group.

The long-term effects of new mobile technologies, this report argues, will be unreservedly positive. But to drag mobiles into the public sphere will require creative thinking and political leadership.

As a first step, government bodies will need to open up their intestines to mobile users, enabling them to interact directly with national and local representatives. Second, government can lead by example, by integrating mobiles into newly flexible models for public-service delivery. And with adequate foresight, we argue, urban planners and policymakers could go much further to incorporate mobile technologies into our urban architecture, transport systems and public spaces.

It is not only our infrastructure but also our culture that needs to change. Compare the UK and Hong Kong. Since 1993, Hong Kong residents have been able to use their mobiles throughout the entire underground system. Why is this still not possible in Britain? Back in 1999, a spokesperson from one UK network cited differences in mobile etiquette between Europeans and Asians, adding that some people found it annoying to hear only one side of a conversation in a packed tube train.[4] Perhaps – but arguably it is even more annoying not to be able to receive messages or transport information while stuck on a stationary train.

This report is intended as a wake-up call for mobile Britain. If this country is to become a centre of mobile excellence, able to compete with the more advanced mobile cultures of Scandinavia and Asia, we need a radical overhaul in our opinion of what mobiles can do. Without a concerted effort to overcome our lingering hostility towards mobile technologies, our wireless future will remain tantalisingly out of reach.

Summary of recommendations

The report makes four recommendations for boosting the development of mobile Britain:

1. As it decides how to implement the Anti-Terrorism, Crime and Security Act 2001, the Home Office should give an undertaking that the police will only request mobile location data as part of investigations into clearly defined categories of serious crime and terrorism.

2. The Office of the e-Envoy should take practical steps to convert government information that it currently makes available online (in HyperText Markup Language, or HTML) into a language and a format appropriate for access by mobile devices (Wireless Markup Language, or WML).
3. The Department of Trade and Industry should establish a Mobile Government Forum, which enables all the stakeholders involved in the rollout of mobile technologies – network operators, civil servants, local authority managers and those in frontline public services – to identify applications of mobile technologies that will be distinctively responsive to the needs of government workers and citizens.
4. The development of new mobile services depends on ubiquitous coverage. Individual local authorities should not be allowed to slow that process down. Communication between network operators, local authorities and local communities needs to be improved. Aesthetic criteria about the siting of base stations also need to be taken into account. But beyond this, local authorities need to get off the fence. They should show an appropriate understanding of the role of uncertainty in the development of scientific knowledge, together with an understanding of the benefits of mobile technology and the relative risk factors, which can help to put phone fears into perspective. They must also take greater steps to make their own properties and land available for the siting of phone masts.

The research process

As part of the research for this report, a Demos team led four focus groups:

Group number	Age	Gender	Location
1	21+	Male	Isle of Man
2	16–18	Male	Ravensbourne School in Bromley
3	16–18	Female	Ravensbourne School in Bromley
4	21–45	Mixed	Cheam

- Each group consisted of six to eight people, and the discussions lasted for 1.5 hours.
- An incentive of £25 was provided for each adult. Each school participant was given £15.
- All participants brought their mobile phones/devices to the group discussions.
- Group 1 was recruited by Manx Telecom on behalf of Demos. Groups 2 and 3 were recruited by Demos in conjunction with a technology college. Group 4 was recruited by a professional recruiter in the South East.

The Isle of Man is currently a test site for 3G technology, and our focus group there consisted of 3G trial participants, who were primarily using the technology for business purposes.

Two groups of young people between the ages of 16 and 18 were included for two reasons. First, this is the age that is most commonly associated with early adoption of new technologies. Second, it enabled us to see how mobile technologies were interpreted within specific types of youth culture. All the pupils in the groups knew each other – which was not the case in the other groups.

Experienced moderators led all the groups and interviews. In the group situations, disagreement and debate were encouraged. Open-ended questioning and prompting and projective techniques were used in the discussions. No single individual was allowed to dominate a group discussion.

In addition to the focus groups, we undertook ten in-depth interviews with a range of mobile users, and nine expert interviews with a range of academics, trends analysts, policymakers and technology experts.

There are clear limitations to this process: the primary research referred to in the report is based on a relatively small sample. Having said this, our research revealed very strong and consistent messages about the changing nature of mobile usage, which we are confident can be generalised across a much broader sample.

2. Small objects of desire

We used projective techniques in China, asking what animal a mobile user would be. They say something like a reptile or dragon – quite aggressive, macho images . . . In Britain, the same techniques elicited much softer, warmer, feminine images – particularly cats.

Joel Down, MORI[5]

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 aspirational objects, explicitly linked to the fast-moving pace of modernisation. Just a decade ago in the UK, the mobile phone was something similar – an expensive accessory of thrusting entrepreneurs and the conspicuously well-heeled. In the early 1990s, Nokia UK presented the mobile user as a 'Cityman', a smiling businessman striding through an urban landscape and wearing an expansive smile. The strategy worked because the mobile had already become a symbol of aggressive individualism (Gordon Gekko famously waved one around in the film *Wall Street)* and had been colonised by certain kinds of professionals: city workers, drug-dealers and up-market prostitutes.

While Nokia continues to use the 'Cityman' theme in its Chinese market, in the UK the mobile has long since moved on. Nowadays, mobiles are marketed as softer, more feminine and personalised objects of reassurance. Once again, this marketing strategy speaks to

an important truth. Mobile phones have become so intimately a part of us that they have come to represent an extension of our physical selves – an umbilical cord, anchoring the information society's digital infrastructure to our very bodies. This transformation is reflected in changing patterns of language in Finland, in many ways the Mecca of mobility. In the early 1990s, when mobile telephony seemed to be a preserve of the professional classes, mobiles were referred to by many Finns as 'yuppie bears'. As mobiles migrated from the professional classes into youth culture, Finnish teenagers began to refer to them as *kanny*, a Nokia trademark that has now passed into Finnish vocabulary to mean 'an extension of the hand'.[6]

One sociologist links the intimate relationship between mobiles and their users to the fact that 'the mobile phone is the most intimately close [technology] to the body,' involving 'not only the ear but also the mouth and voice'.[7] A New York designer likens the mobile to a 'pacifier for adults' and 'a substitute for the mother's nipple'. It does, she says, 'make you feel connected, that you're not alone on this planet.'[8] The mobile even functions as a friend of last resort, when we while away 'dead time' fiddling with its buttons. Sadie Plant, the author of a global study into mobile usage, argues that the mobile phone has become 'an interactive object with all the qualities of a useful cyberpet'.[9]

Yet, for its users, the appeal of the mobile phone is more than practical. The sense of attachment that we feel towards our phones lies more in the imagined connections concealed within it than in the value of the actual connections it facilitates. The mobile phone effectively serves as a technological reminder of the network of friends and loved ones stored within its phonebook. Our research confirmed the peculiarly intimate relationship people have with their mobile phones:

> *I keep mine under my pillow.*
>
> Female, Ravensbourne School

I love my phone. It's my friend.

Female, 32, teacher

I love my phone because it means that anyone can get hold of me wherever I am, all the numbers are stored. I have to go home if I leave it at home.

Female, 25, retailer

I save messages, like I save sweet things from my wife. They're good to look at sometimes.

Male, 34, IT manager

The highly personal relationship that has developed between mobile users and their devices is most visible among teenagers. This is largely because the mobile offers them a communications channel beyond the purview of anxious parents. In the highly traditional culture of South Korea, for example, one ethnographic researcher found that 'the use of the mobile phone as a "personal" medium allows teenagers to make direct and individual communication, without being mediated by their family members.'[10] The fact that mobiles are usually under personal ownership, and fixed-line phones are considered a family or public utility, further reinforces the links between mobile devices and personal identity. Among teenagers, the gift of a mobile by parents is often associated with the arrival of an adult identity or adult personhood.[11]

I always phone friends' mobiles before their parents' landlines now.

Male, 18, student

Evidence of the personal and emotional relationships that teenagers have with their phones can be seen in the way many delight in adorning those phones with personalised ring-tones, covers and even jewellery. In 2001, a MORI poll discovered that 3.4 million people in the UK change their mobile ring tone once a month, with 15- to 24 year-olds by far the most enthusiastic buyers.[12] As well as offering a

private communication channel, mobile phones reflect their teenage owners' sense of style. Sadie Plant's global study of mobile telephony finds that teenagers

> *are particularly aware of the fashion aspects of their mobiles, competing to acquire the latest, coolest models and to customise them in their latest, coolest ways. Everything from the colour of the handset to the sound of its ring tone, and the logos and graphics it displays can be given a personal touch.*[13]

A closely related dimension of mobile use is the idea of the mobile device as a safeguard against external risk and a panic button in the event of emergency. MORI research found that 49 per cent of mobile users say that their mobiles make them safer and more secure.[14] For women in particular, mobiles represent a trusted form of protection – a 'symbolic bodyguard' for those who feel threatened and a barrier against unwanted attention in public places.[15] For example, when Italian sociologists quizzed mobile users, using free association techniques, 78 per cent of the users associated 'emergency' with the mobile, while only 22 per cent made the association between 'emergency' and a fixed-line phone.[16] Similarly, research among mobile users in Norway found that the majority make their initial purchase as a device to increase personal security – only after that, the researchers discovered, does the mobile phone become increasingly embedded in everyday life.[17]

Given the declining reserves of trust in modern society, it is hardly surprising that mobile phones can also function as comfort objects and antidotes to the hostile terrain of modern life. In France, for instance, qualitative researchers concluded that, by using mobiles to keep them in constant contact with their children, many parents had developed a 'paranoiac' vision of the community. In this way, trust in mobile devices becomes a cipher for a lack of trust in the community at large.[18]

An intriguing aspect of this trust relationship is that users often forget that their mobile is dependent on a largely invisible

infrastructure, which exists beyond their control. Our research confirms that, because of their wireless nature, mobile users retain a perhaps unrealistic high degree of faith in the resilience of mobile communications.

> *I'd rely on my mobile phone most of all in the event of a terrorist attack. Mobile is wireless, it works even if they cut your home phone off.*
>
> Female, Ravensbourne School

> *Definitely, I would rely on it most of all in a chaotic situation.*
>
> Female, Ravensbourne School

In an emergency, it is easy to forget that mobility depends on fixture. The consequences of such reliance, however, can lead to system failure. In New York, on 11 September 2001, most of the city's infrastructure was able to handle the extra load caused by the terrorist attacks on the World Trade Center. However, the breakdown of the city's mobile telephone networks in the hours and days after the disaster hindered emergency response and law enforcement efforts.

The joy of text: mobility and the new intimacy

Last New Year's Eve, I attended a party in south London. At the stroke of midnight, bracing myself for the customary hugging and jollity, I looked around to find that virtually all of my fellow guests were otherwise engaged, peering down at their mobiles and tapping furiously on the keys. That night, 102 million text-messages were sent as people took the opportunity to transmit New Year greetings to friends and relatives.[19] So many messages were sent, in fact, that the system frequently crashed.

From shy teenagers afraid to confront the objects of their affection to lusty clubbers straining to type 'R U up 4 it?', the simple mobile has given rise to whole new forms of courting ritual. According to one recent survey, 69 per cent of text-messages are passed between romantic intimates.[20] In another survey, a full 35 per cent of people in

the UK between the ages of 15 and 44 admitted to flirting by text: 22 per cent said they had secured a date with someone as a result of their text-messaging.[21] On Valentine's Day 2002, according to Department of Trade and Industry statistics, 57 million messages were sent by mobile users – many more than the 13 million senders of the traditional paper-based Valentine card.[22]

Our research uncovered myriad examples of people using text to send intimate and loving messages.

> *I use it to say things like 'I'm missing you' or 'I'm thinking of you.'*
>
> Female, 24, PA

> *You can deny sending a flirty message. Say your friend did it.*
>
> Female, Ravensbourne School

Research from Finland shows that text-messages are often shared among intimates as a sign of confidence. Lovers, for example, admitted that they display trust within a relationship by allowing their partners to read their messages. Many couples described the re-reading of messages as reliving the good and bad moments of their relationship together.[23] And precisely because they inject an element of uncertainty about physical location into our interactions. mobiles are often used as aids to infidelity. According to a survey in the US, as many as 20 per cent of mobile phone users, faced with the question 'Where are you?', routinely lie about their location.[24] On the other hand, the information trail left by mobiles can cause problems for philanderers. In her global study, Sadie Plant notes that many contributors to her survey confessed to checking their partners' mobiles for suspicious messages. Others complained that they would happily turn their mobile phone off during illicit liaisons were it not for the fact that doing so would arouse their partners' suspicions.[25] Even during an adulterous liaison, it seems, there is no easy way of avoiding the spectre of perpetual contact.

However, lovers are not the only ones to use mobile phones as emblems of intimacy. Swedish researchers have discovered that they

are employed as a 'collaborative resource' among groups of teenagers as a way of promoting group solidarity. 'There is,' the researchers conclude

> *much trust involved here. They* [the teenagers] *trust each other to borrow their phones, even when they are not in the same place and are therefore unable to see what the phones are used for. Showing someone the trust it means to let her or him use one's phone might be a way to display friendship; you don't let just anyone use your phone.*[26]

Similarly, Sadie Plant's global study found that

> *teenagers often use their mobiles collectively, sharing information and showing each other messages, as well as comparing the frequency, the nature, and the variety of the calls they make and receive in rather competitive ways: did their last ten calls come from a parent or from friends? How cool are their stored text-messages?*[27]

At least within teenage sub-cultures, it seems, access to a mobile and its secrets can function as an emblem of group trust and group solidarity as well as a medium for self-expression.

A popular theme within sociological research seeks to understand why the garbled, desiccated language of mobile texting – known technically as SMS (for Short Message Service) – is often experienced as more intimate than a telephone conversation or an email. The style and form of SMS is dictated by the difficult process of entering letters to form a message, along with the limitations on message length. Yet despite these limits, SMS has evolved into something more profound.[28] While the perceived intimacy of mobile communication may derive largely from the relationships that it helps to sustain, there is some indication that the 'one-way' or 'gift' nature of mobile text-messaging allows a greater ease or connection with those who are normally shy or less expressive. In our research, particularly among our schoolchildren interviewees, the intimacy afforded by mobile

communication was often associated with a means of overcoming shyness. Texting is often used for apologies, to excuse lateness or to communicate other things that make us uncomfortable. It offers intimacy of a particularly controlled form, useful for its discretion and emotional parsimony, but valued by those who find it difficult to express their emotions more discursively.

It's a more intimate way to flirt. You're not doing it to their face.
Female, Ravensbourne School

Texting can be intimate. You have to think about things to condense them down to a text-message. You can pretend to be flippant, but really you've thought about it.
Female, 30, professional

Me and my sister had a massive row over Christmas. It was a big screaming, walking-out job. I drove off and then I got a text-message saying: 'You're still the best sister in the world.' That was the best way to calm me down. It wouldn't have worked another way.
Female, professional

Sometimes the gift of a text-message can be less welcome. Within our research, it was instructive that several of young women claimed to have broken up a romantic relationship by text.

He was too argumentative, so I just thought I'd get rid of him by text.
Female, Ravensbourne School

Remapping the local

Design predictions were that 80 per cent of information would be pan European, 20 per cent local, but it is actually the other way around. Phones are about mobility, but they are also about localness and specific regionality. They are about a configuration of place that is a quite local sense of place. Phones are about remapping the locality.
Andrew Curry, The Henley Centre[29]

Unlike the internet, which is often presented as a globalising technology, there is some evidence that mobile communications have the potential to reinvent our ideas about the local. Mobile phones, according to a British anthropological study carried out in 2001, serve as an antidote to the alienation of rootless urban life by providing a means of connection 'anytime, anywhere, anyplace', thus recreating the kind of spontaneous connections enjoyed by close-knit groups in pre-industrial communities.[30] Similarly, in the advanced mobile culture of South Korea, one ethnographic researcher finds evidence that teenagers are using mobile phones to 'rearticulate locality' as a defence against the alienating effects of globalisation.[31]

A great deal of academic research into 'mobile communities' focuses on the way in which mobile telephony has been incorporated into youth culture. In his acclaimed book *A City in Your Pocket*, the Finnish sociologist Timo Kopomaa goes as far as to suggest that mobile technologies are helping young people to reinvent ancient, nomadic patterns of mobility.[32] In South Korea, sociologists are seeking to understand the way in which mobiles have fortified and transformed teenage sub-cultures. The fact that mobile phones hold special appeal for young people is explained by the fact that young people are more restless in their leisure pursuits than adults; access to mobiles facilitates the spread of that 'nomadic' life.[33]

Some empirical research has investigated the reach and extent of 'mobile communities' by querying how people select those for entry into their mobile phonebooks. The fact that the mobile user is rendered vulnerable to calls at any time of day or night invites careful selection among mobile users of those who will be granted access to their number. Such access is usually limited to those who are 'close' in the traditional sense: family, intimate friends, close colleagues and the like.[34]

The spontaneity and ease of mobile communication makes it easier to stay in touch and sustain existing friendships. 'The thing that you notice around young people,' says Andrew Curry of the Henley Centre, 'is the extent to which they have much longer lists of friends than older people do. That is also true of their buddy lists – the theory

that you can keep around 150 people in your head, and after that, people are just 'out there' somewhere. Before network communications, it was hard work to keep in touch. Now it is much easier to keep in touch with a higher proportion of them.'[35]

> *I have people who I don't see as often, but I keep in touch with them by text.*
>
> Female, Ravensbourne School

> *If you don't see someone – I've got a couple of mates I haven't seen since primary school – you can always keep in touch by text.*
>
> Male, 30, professional

> *As friends have gone off to university, I now mainly contact them by text just to keep in touch.*
>
> Male, 18, student

The way in which mobiles work to sustain existing local friendships and attachments emerged as a powerful theme within our research. Interviewees confirmed the highly localised nature of mobile communication, with the majority of mobile interaction – such as between teenagers in school, or between lovers – taking place between individuals who see each other frequently. Mobiles appear to have worked largely to shore up existing, highly personal networks of families and friends. They cannot be described as community-forming in their own right.

> *I get jokes and pictures that go round. But really I only get stuff directly from people I actually know.*
>
> Female, 24, PA

For most of our respondents, the mobile device was an essentially *local* rather than a *global* communications tool, so much so that the language of that communication – text-messaging – is often written in a dialect that is incomprehensible to those outside the local area or the local group.

I've got a mate who lives up North, and he doesn't understand a word I come out with on the text. It's regional, it's a London thing.

Female, Ravensbourne School

Everyone uses a different kind of slang.

Female, Ravensbourne School

Some argue that mobiles might help to overcome social atomisation by creating new forms of community. Our research suggests that the opposite is true. In the absence of any broader basis for social interaction, there is no such thing as a 'mobile community'.

Furthermore, the fact that mobiles are used to shore up existing and highly personal networks of friends and family means that mobile communications can fuel our retreat into personal networks. Andrew Curry argues that, as groups of friends morph into extended but porous networks of acquaintances, 'People's trust is migrating towards "my world group" and away from sources of authority. So what we will end up with is people in those "my world groups" acting as gatekeepers, where trust is formed around word of mouth.[36]

3. Phone fears: the mobile as a locus for social anxiety

Every new communication technology goes through an early panic. In the 1930s, the police wanted to prevent people who had ever been convicted of a crime from having a telephone. Vinyl went through this with dirty lyrics – the fear of corruption of young people by Dudley Moore and Peter Cook. We will continue to have moral panics about mobiles.

Perri 6, Demos associate[37]

In January 2003, on what was presumably a slow weekend for news, the *Observer* newspaper delivered its readers an astonishing scoop. Mobile phones, it announced, were responsible for the decline of the British sparrow population.[38] The only evidence cited by its reporter was a correlation between the dwindling of the sparrow population and the introduction of mobile phone masts. However, a correlation, as any science reporter ought to know, is not evidence of causation. Two months later, by the time the theory was officially disowned by the British Trust for Ornithology,[39] it scarcely seemed to matter. It was easy for the story to strike a chord. Mobile phones, many of us seem to believe, are doing us harm.

Critics of mobile technologies argue that they are essentially hostile to social life. Even if they cannot be blamed for sparrows falling off their perches, they are responsible for a growing range of social ills. Within the media, mobiles have been blamed for

everything from a crime wave to a growth in teenage illiteracy. The evidence for most of these allegations is shaky at best. In the context of a 'risk society', it seems that mobiles have become a convenient repository for existing anxieties that have little to do with the technology itself. Nevertheless, in a backlash against the mobile, a sizeable minority of pubs, restaurants and leisure centres have banned phones from their premises. On extremely flimsy evidence, mobiles are also forbidden in hospitals, a ban that is proving almost impossible to enforce and which doctors are currently campaigning to see lifted.[40] Despite the fact that the UK government often seems to be in thrall to new digital technologies, mobiles are even banned within the Palace of Westminster.

By far the greatest source of mobile anxiety surrounds the health effects of using them. It is curious that many people who are emotionally and practically dependent on mobile phones are simultaneously suspicious that they might be irradiating their brains. A survey published by *Guardian*/ICM in 2001 found that around half of the population are worried that mobile phones may be a health hazard.[41] In the same year, 12 British local authorities imposed bans on mobile phone masts on local authority-controlled land, in response to a rising tide of public anxiety.[42]

In May 2000, the UK government published the results of a scientific study by an independent group of experts – the Stewart report – into the possible harmful effects posed by mobile phones. The balance of evidence, it concluded, was that mobile handsets 'do not cause adverse health effects to the general population'.[43] Following publication of the Stewart report, the Government invited the Radiocommunications Agency to measure the emissions that flow from mobile base stations to ensure that they did not exceed internationally recognised guidelines for exposure to radiation. Again, the agency reported back that emission levels were many hundreds of times less than those recommended by the guidelines.[44]

While the Stewart report found no evidence that mobile phones are harmful, it also proposed a 'precautionary approach' to their use. But the resulting message – 'mobile phones are safe but take care

using them anyway' – seems to have done more to stoke irrational public anxieties than to assuage them. This fudged conclusion sent a very mixed signal to the community activists concerned about masts on top of their schools and churches, and to the local authorities forced to deal with those anxieties. It has also encouraged the establishment of official or unofficial moratoriums on the erection of mobile masts, which may seriously impede the rollout of third-generation technologies.

In Scotland, for example, the Scottish Executive has devolved the responsibility for dealing with the issue of mobile base stations to local councils. Of 32 councils, 16 currently have moratoriums in place to prevent the building of base stations on public land. As a result, the network operator 3 has shelved its plans to launch its 3G service in Edinburgh for at least a year.[45]

Government should, of course, heed the concerns of its citizens about the harmful effects of mobile phones. But a more responsible course of action would be to take a firmer and less ambiguous lead in dealing with those anxieties. Simply sitting on the fence, while the infrastructure for the next generation of mobile services waits to be rolled out, is no longer an option.

The chattering classes

'It's good to talk' claimed those famous BT ads during the early 1990s. But is it as good to communicate by mobile phone?

Mobile usage, most researchers agree, leads to an abrupt reorientation of our traditional notions of public and private space. When people use mobiles in public spaces to communicate, 'the public is put into the position of a "voyeur", involved whether it likes it or not, in the secrets of households or couples, accidentally overhearing private conversations in public places.'[46] On the other hand, when a person uses 'hands-free' equipment while walking along the road or fiddles with a mobile while waiting in a restaurant, the public sphere is subsumed into a bubble of personal, private space.[47] All of the subjects of our research acknowledged a shift in public etiquette that had accompanied the growth of mobile use.

I'm really aware of the 'I'm on the train!' syndrome and I'm still shocked when people go into in-depth conversations about really personal stuff. It's as if they don't care that people know their secrets.

Female, 30, professional

I find it really annoying when other people have noisy conversations in public places, so I always try not to do it.

Male, 18, student

Despite anxieties over etiquette, most of our subjects saw this as an inevitable trend: quiet coaches in trains were not generally observed, and a £5 fine at school for answering a phone in class was rarely enforced. Although most of our interviewees bemoaned the decline in public manners associated with mobiles, they were also convinced that the use of mobiles in public environments could be a great benefit.

The bonds with my family are stronger with my phone. I get up at 5am and leave the house for work. My little one calls every morning before she goes to school.

Male, professional

Within networks of family and friends, the most important use of mobile communications is not for chattering but for making and shifting arrangements to meet – so-called 'approximeeting' – which allows for greater efficiency and fluidity in social coordination. Our research confirmed that mobile users consider this to be one of the most important function of their devices.

Everyone's got the text: they know what time to meet.

Female, Ravensbourne School

I try to do more things in an evening now. I'm always late for things, but if I have my mobile, I will call and see what people are doing. I tend to meet three or four groups of people, when before I would just have met one.

Female, 25, postgraduate

People are a bit more lazy about things like punctuality, because they can just phone and say they're late or just leaving.

Male, 28, professional

Phone theft

At the beginning of 2002, the UK Home Office provoked a wave of media hysteria when it published a report stating that mobile phones were involved in a third of all robberies, with an estimated 700,000 stolen every year.[48] The report also argued that the vast majority of both perpetrators and victims were teenage boys, leading Home Office minister John Denham to call for a ban on phones within school grounds.[49]

Lost in the media coverage of the Home Office report was the fact that many mobiles only end up in crime statistics because they are concealed inside stolen bags or stolen coats: a windfall for the criminal rather than an incentive to steal. Also forgotten was the qualification, made by the Home Office researchers, that the high number of mobile thefts might simply reflect the fact that mobiles are now prominent among the smaller, higher-value items that people carry around.

Among the subjects of our research at a Greater London school, a small minority had indeed had their phones stolen. But while school students were concerned that mobile theft was a problem, they also volunteered that the thieves were usually their classmates. In the same way that children used to steal each other's toys and playing cards, they now, it seems, simply steal one another's mobile phones.

By March 2003, however, the moral panic about the mobile crime wave had largely run its course. Under pressure from the government, the mobile industry developed a technical solution for the disabling of stolen handsets. And even before that solution had time to take effect, the British Crime Survey had noted evidence of a year-on-year fall of 23 per cent in the rate at which mobiles are stolen.[50]

The digital leash?

Will the costs involved in unfettered access to the mobile user end up outweighing many of the benefits? Critics are concerned that mobile working erodes the barrier between work and our private lives, unwittingly transforming us into the slaves rather than the masters of the technology. Finnish research, for example, finds that mobility in the workplace does not necessarily lead to a feeling of freedom. Rather, the dependence on connections creates concerns about accessibility and a form of addiction to constant connection.[51]

Our research among mobile users revealed a wide range of views about the effects of being 'always on'. Our teenage interviewees assured us that the gift of a mobile phone from their parents had helped to build trust: many took the gift as a sign that they were capable of responsibility. Some employees were similarly relaxed about the gift of a mobile by their employer – you can, as one subject pointed out, 'always press divert and reject the call'. Others were less positive but resigned to the inevitability of being in perpetual contact.

> *I went to the airport on holiday. My company called me 15 times on the mobile. I don't mind. It doesn't take long to sort it out, and if you don't, it's only waiting for you later.*
>
> Male, 40, manager

> *It means you work more often. Work intrudes into your family life . . . I think it's just a way of exploiting workers more.*
>
> Female, 30, professional

The general pattern emerging from our research was that the acceptability of the 'always on' nature of mobile work depended largely on existing relationships of trust and power in the workplace. More senior and empowered workers relished the efficiency gains offered by mobile technology, while the less-empowered felt they needed defence strategies – such as turning the phone off at certain times. More generally, a fear of being 'always on' is often the result of a simple category error. If we want to escape the terror of our mobile,

our complaint is not with the technology but with our existing social relationships. And while being 'always on' is often construed as a threat, it is also important to remember that it has its advantages.

> *My flat has locks on its door and [there's a lock on] the front door, and I got locked in between the two. My flatmate was away for the weekend, and if I was without my phone, I wouldn't have been able to do anything!*
>
> Male, 28, professional

Mobile knowledge

Mobiles are also changing the way we perceive the relationship between technology, work and social status. The rise of mobile usage can be seen as part of the UK's transition to a 'knowledge economy'. While this has never been satisfactorily defined – even the most menial forms of work depend on the worker learning a body of knowledge – its terrain is usually limited to the relatively narrow sector of professional workers, where the introduction of new technologies is said to encourage innovation and make existing work more efficient.

Mobile communications, however, do not fit easily into that mould. When analysts think about a knowledge economy, they imagine someone beavering away at a complex application on a desktop computer, or sending spreadsheets over the internet. For knowledge work like this, the mobile is still a very long way from overtaking the computer on a desk. 'The great myth of the mobile phone,' according to Perri 6, 'is that it enables people to do things on the move that they would traditionally confine to the office. I don't think this is the case – for a lot of serious work you need a printer and papers on a desk. The mobile phone must have disappointed those who wanted to use it for data-intensive, argument-intensive work.'[52] But in dismissing the idea that mobiles can supplant desktop peripherals, Perri 6 implicitly reveals a prejudice common to many analysts of the knowledge economy. He is imagining that all workers are like him, toiling at a desktop and within range of a printer.

If the desk-bound knowledge worker took the trouble to look outside his window, he would find that mobile phones are silently revolutionising the wider working environment. 'Historically,' says one analyst, 'computers, mobile phones and palms have always been the privilege of "white collar" workers. They were to be found at the centre, in the office, but only rarely at the edges, in warehouses, trucks, in the bag of a salesman or hanging from the belt of an electrician. Nowadays, companies are putting some of the most advanced wireless solutions in the hands of the people who are the most mobile . . . repairmen, field engineers, security guards, health-care providers, sales representatives, maintenance crews, truck drivers, factory and warehouse workers.'[53]

The new generation of wireless technologies promises to democratise the benefits of mobility by making the most advanced technology available to a deeper cross-section of the working population. In the mobile future, the so-called 'knowledge workers' may find themselves left behind.

4. Location, location, location

Mobiles are currently undergoing a gradual metamorphosis from simple phones towards wireless communication devices geared as much to visual as to vocal interaction. Already, in the past couple of years, there have been significant enhancements to the current (second) generation of mobile devices. Mobile internet connections have become easier using a technology called GPRS (so-called 2.5G). Picture-messaging (MMS) is slowly starting to take market share from text-messaging (SMS).

Over the next two to five years, the mobile devices that will emerge will bear little relationship to the phones that we know now. The move towards third-generation (3G) mobile technology promises a permanent connection to the internet along with vastly increased bandwidth, bringing new capabilities and access to streaming audio and video content. Both SMS and MMS are likely to give way to video-conferencing and the sending of short video messages. Eventually, the new generation of mobile devices will swallow up many of the functions that we currently associate with other devices: the portable walkman or MP3 player, the electronic diary, the pager, even – as the technology for mobile payment systems reaches maturity – the credit card. They will eventually become as essential an accessory to modern life as the wristwatch. If the mobile already serves as a technological reminder of our networks of friends and family, our emotional attachment to it only looks likely to intensify as it evolves into a digital abbreviation of our entire lives.

'Where are you?' is one of the first things mobile users say in response to an unexpected call. Soon, however, even that cry will become redundant. The most distinctive leap forward enabled by 3G will be the introduction of 'location aware' technology. Already, wireless phone operators can, at least in theory, locate the source of a mobile phone transmission to the nearest cell: accurate to within about 500 metres. But as the infrastructure for 3G is assembled and the services rolled out, a convergence of different technologies will make it possible to locate the position of a wireless device to within just a few metres, thus enabling new types of location-specific services.[54] Our mobiles, in short, will not only be able to tell *who* we are but *where* we are.

This location-awareness may not immediately emerge as the 'killer application' that prompts consumers to buy the new devices. Nonetheless, as 3G tips into a mass-market proposition in the coming years, it is likely to be the application used most creatively by mobile users, and the one that will have the most profound effect on the social fabric. Location-based tracking will further cement the bonds forged within closely knit groups of friends and family. As it moves into the public domain, its most obvious applications may be in the fields of travel and tourist information, shopping and entertainment, and within different 'mobile' professions.

> *With location-positioning 3G technology, we will be able to see where our friends are – you can tell when someone is close to you and that can be the spur to get in touch and have a drink. Spontaneity is assisted. Knowing where you are links society very tightly and very clearly at the clique level.*
>
> Ian Pearson, futurologist, BT[55]

Yet there remains some reluctance within the mobile community to make the most of these distinctive wares. For instance, one recent report into mobile phones and everyday life argues that the difference between second- and third-generation mobile devices can be illustrated by an analogy between the slow dial-up connections that many people still use to access the internet and the faster speed of

broadband.[56] However, the idea of 'mobile broadband' is a wholly inadequate means of describing what is distinctive about these new devices. Three advances distinguish them from what went before: their capacity for an 'always on' connection, the increased speed at which they send and receive data, and their increased sensitivity to location. Together, these advances make it possible to accelerate the pace of social activity and bring us closer than ever to 'real-time' coordination. What is most exciting is not the rate at which data is transferred but the faster pace at which society can coordinate its activities as a result.

After the party, the hangover

In the heady days of the dotcom boom, a fanfare of investor bullishness about 3G led the mobile operators in the UK to pay a total of £22.4 billion to the UK government in return for the licences to operate those technologies. Very soon, we were told, we would be paying to download the latest film and games to our mobiles, to video-conference with our friends on the phone and to receive live music downloads on the bus.

Three years later, in line with the general depression that has set in across technology markets since 2000, there is far less enthusiasm about the mobile future. Most mobile operators have delayed the launch of 3G networks, and all of them are revising downwards their estimates of financial returns from the technology – as demonstrated in May 2003 when mmO_2 wrote down the value of its 3G assets by £5.9 billion. This overhaul of its balance sheet made mmO_2 the first UK operator to admit the extent to which the technology had been oversold during the 3G licence auction.

As a result of this earlier hype, goodwill towards mobile telephony in the financial world – and among many mobile users – is in short supply. 'The most critical barrier to 3G success over the next couple of years,' concludes a recent report into the UK mobile industry,

> *is the continued wireless sector recession and wider economic stagnation. To fulfil the early vision of 3G providing universal mobile*

> *multimedia access would require massive capital investment, but the markets are currently in no mood to indulge such plans. With 3G capex budgets slashed, most operators will channel available funds into dimensioning their networks 'thinly' to meet their licence requirements. As a result, bandwidth to the end user will be substantially lower than originally expected in the early phases of 3G.*[57]

In an environment that is intensely averse to risk, the mobile phone operators have fallen foul of their former cheerleaders in the city. A recent research note distributed by analysts at Datamonitor even advised financiers to stop throwing good money after bad and jettison 3G entirely. 'No financier, venture capitalist or enterprise,' it concluded sarcastically, 'would consider investing in something with payback "somewhere in the next three to eight years"'.[58]

A vicious circle has ensued: financial problems, planning constraints and a choking cynicism about new technologies have further slowed the move towards 3G. With the exception of 3, most UK mobile operators have postponed their launch of 3G networks until 2004, and some are huddling together to share the costs of building the infrastructure.[59] Perhaps the most realistic scenario for 3G rollout was contained in a report published in November 2002, which recognises that its launch will be slightly delayed, but will take off quickly thereafter. The report predicts that around 50 per cent of mobile users will be on 3G networks by the year 2007.[60]

Since 3G devices have so far failed to materialise, it is hardly surprising that mobile users are sceptical about the benefits. A poll published in February 2003 found British mobile users the least likely out of the 11 European countries polled to be interested in using 3G: a full 66 per cent of British mobile users surveyed said they were 'not interested' in using 3G when it arrives.[61] Widespread scepticism about the mobile future was mirrored in Demos interviews with mobile users. Much of this was based on a rational appraisal of the shortcomings of industry hype.

Video clips are silly. It's only a little phone.

Female, Ravensbourne School

Beyond the cynicism about mobile hype, however, many of our subjects displayed a suspicion of what the new generation of mobile technologies would do – and a highly conservative preference for the status quo.

More than a plaything

There is always a toy phase of a technology, when exploring it or discovering all the potentials. But the mobile phone has been around a long time and we haven't got out of that phase yet.

Chad Wollen, technology consultant[62]

Another widespread perception is that the new mobile devices are little more than playthings. After the surprise success of text-messaging and the failure of WAP, many within the mobile industry and beyond are convinced that the new devices are best left to their owners to play with as they will. Marketing campaigns and media coverage surrounding the new devices have, as a result, focused on the more trivial ways in which they might be used: playing games, downloading music and video clips.

While it is true that consumers can discover creative uses for new technologies without the help of technology companies, too often the mobile industry is content to present new devices as nothing more than glorified toys. This may be a canny marketing pitch – the vogue for fun and games goes back much further in the culture than mobile phones – but it sells the devices far short. At its worst, the 'toy' model of mobile communications signals an inability on the part of the mobile industry to inspire their consumers with a richer account of what the technology can do. Hence the cynical joke within the industry that the three Gs in '3G' stand for girls, gambling and games.

This is lazy thinking. Just because pornography, gaming and gambling have driven commerce on the desk-based internet, there is no inevitability that these applications will drive the new mobile

markets. It is not obvious that consumers will want to use the small screens of mobile devices for activities that they can happily pursue on a desktop at home. Gambling will always be with us, and gambling by mobile will make a highly diverting sport for bored commuters. Downloading games on to a tiny mobile screen, on the other hand, might not be worth the bother, and may only find its feet when those games are tied to location, bringing together communities of gamers or setting them against each other in 'treasure hunt'-type games that unfold in the real world.

The suggestion that pay-for-access pornography will migrate from the internet to mobiles is even more dubious. A recent report into mobile porn concludes that 'the advantages of the mobile phone as a personal and discrete device for viewing pornography are overstated.'[63] The authors are sceptical of the revenue potential for streamed or downloaded adult services, and argue that demand for adult material will continue to be met by the desktop internet. However, the same report does recommend that mobile companies investigate the potential of peer-to-peer (or perhaps member-to-member) adult services. The real value in the new mobiles will lie in interacting with other people rather than in playing with ourselves.

As an alternative to the 'toy' model of mobile usage, the mobile industry needs to develop compelling applications that work best while users are in social environments, or which are tied to location. A recent survey by industry analysts Gartner concluded that European consumers have no idea what 3G is or how to use it. Mobile operators, the survey concluded, will be forced to identify needs that the technology can satisfy and then train consumers on how to use it.[64] To do so, the industry requires a greater confidence in its ability to spark innovation among users and a whole new language with which to articulate its distinctively social benefits. It is about time that they made a start.

Mobiles and the real-time economy

Presenting the new generation of mobile devices as little more than toys has had another unfortunate consequence. It has given rise to the

idea that 3G is nothing more than an optional extra that we can happily do without. The most immediate advantage of 3G, however, is that it will allow mobile operators to expand the range of applications available to end users, reduce transmission costs and so enable networks to support more users and higher volumes of both data and voice traffic. 'The 3G upgrades to the mobile network,' conclude analysts at Ovum,

> *are an important building block in the long-term future of the industry. They are absolutely necessary to ensure that mobile network operators have the capacity to provide data services to large numbers of customers. They are the platform upon which mobile data can be scaled up for the mass market.*[65]

They will, in short, prevent the system from crashing every New Year's Eve.

Over the medium term, the more profound opportunities offered by 3G will stem from its ability to do things that no other technology can do, with wider productivity gains throughout the economy. There are at least three areas of business activity that will benefit from the new generation of wireless technologies: improved supply chain logistics, empowered workers, and enhanced processes of marketing, sales and service. At the moment, only a few companies such as FedEx and UPS are using wireless communications to improve efficiency. But as 3G networks make the use of wireless services cheaper and more reliable, we can expect that more and smaller companies will take advantage of the cost-savings generated by wireless logistics. The real money to be made out of 3G, according to one analyst, 'is buried in the warehouses and trucks and in imaginatively extending enterprise resource planning (ERP) ... and other unglamorous acronyms that contribute to the competitiveness of the company.'[66]

Beyond helping companies locate their wares, the most important application of the new technologies will be in introducing greater flexibility, efficiency and geographical mobility to the workplace. Many taxi drivers, for example, now have two communications

systems installed in their taxis: the traditional radio that they use to communicate with the call centre, and the mobile that 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 out of the radio. In practice, says one academic, 'this new decentralised network results in a far more efficient system for coordinating the transmission of information.'[67]

As location-based technologies mature, the fruits of decentralisation will be passed on to the consumer. Londoners in search of a taxi, for instance, now have the option of dialling Zingo, a mobile taxi-hailing service that enables customers to contact a nearby licensed taxi by calling a national-rate phone number from their mobile phone. When a customer calls Zingo on a mobile device, the service pinpoints his or her location and reports it to the nearest cabbie: 3,000 of London's 20,000 taxi drivers are already connected to the service. Zingo is currently only accurate to 500 metres. But when location-based technology matures, it expects its accuracy to increase to within 10 metres. Such services not only make it possible to hail a taxi when you don't know where you are, but also enable a form of 'disintermediation' – bypassing the call centre and its associated costs – and ultimately making possible cheaper taxi fares for users.[68]

London's cabbies are not alone. Wireless technologies create the opportunity for more efficient coordination among vast numbers of field and maintenance workers. If, instead of talking on the phone, field workers can receive and send visual and data-rich information on the move, this is likely to save them time and paperwork. By being able to report back in 'real time' about the status of a job, or receive updated sales literature, dispatch notes or repair instructions, the overall workflow can be enhanced and response times made faster. This applies both in commercial settings and also in the public sector: housing officers, health visitors, street cleaners and environmental health officers could all benefit from data-rich wireless services.

In January 2003, Demos carried out some qualitative research on the Isle of Man – the only place in the UK that boasted a working 3G infrastructure prior to the launch of Hutchinson's '3' service in March

2003. Our research revealed that business users of 3G greatly value the way it allows them to download and exchange data while on the move.[69] For example, we spoke to a car dealer who was able to show photos of the cars and provide specifications to interested buyers without being in the showroom; and an estate agent who regularly took photos of property and uploaded them to his website, guaranteeing an almost instantaneous listing.

> *I see 3G as a faster way of getting from A to B. I use it to transfer data and photographs. It's so efficient.*
>
> Estate agent, Isle of Man

> *On the radio, they said that it was £400 for a handset, and I thought that was so cheap. For a business, it saves you a lot of time, and if it saves you time, you'd pay a couple of grand.*
>
> M, Isle of Man

The challenge will be to persuade large businesses to integrate their existing applications with new wireless technologies, since most companies have already made expensive investments in existing IT equipment. For forward-looking enterprises, however, the benefits are immense. Already in Hong Kong, for instance, location-tracking technology is being used to keep track of field technicians – and is said to have increased their productivity by 7–10 per cent.[70] The military is also ahead of the game. In its recent war in Iraq, by equipping many of the tanks and personnel carriers in its 3rd Infantry Division with state-of-the-art wireless communications systems, the US Army provided its commanders with a 'real-time' picture of the unfolding war. Officers rode in armoured vehicles equipped with laptops that mapped movements across the entire battlefield. US vehicles, equipped with global positioning satellite chips, showed up as blue icons, Iraqi vehicles as red ones.[71]

A whole range of companies can also take advantage of 3G as a tool for marketing and customer relationship management. Perhaps the most widely disseminated idea for a location-based marketing

service is to beam discounts and special offers from retailers to mobile users located nearby. Retailers could, as a consequence, use time-sensitive discounting during slow periods to more fully utilise their capacity. In much the same way, shops could communicate with passers-by outside working hours, offering information about products on display or a demonstration video even when the shop is closed. Soon, location-based 3G technology may even render the process of queuing redundant. Instead, a virtual queue ticket could be transferred to a mobile device, followed by an alert when your turn arrives.[72]

The spectre of spam

Mobile communications, as we have seen, feel more intimate and trustworthy than any other communications platform. It consequently feels more intrusive when mobile communications arrive unsolicited. As 3G services enable more intriguing communications in the form of colour pictures and video messages, and location-based services enable marketers to send communications specific to the shops we are passing, mobiles are slowly being drawn into the commercial realm. This could threaten our perception of mobiles as private objects. The arrival of mobile messages from sources other than our immediate friends and family may dissipate the privacy and trust that we place in mobile communications. Just as the public dissemination of fixed-line phone numbers and the rise of telemarketing led in part to the ordinary fixed-line telephone being replaced by the mobile as the key platform for sustaining close, 'endogenous' relationships, the arrival of video, location-based services and other 'exogenous' communications on our mobiles may spell an end to the exclusivity and intimacy of mobile communications.[73]

Central to these concerns is the issue of mobile spam. The personal relationship that exists between mobile users and their devices offers potentially lucrative rewards to astute marketers, for whom response rates to SMS marketing campaigns can be much higher than those on email or on the web. According to a report published in November

2002, more people in Europe now use SMS than email, and mobile phones provide twice the reach of the PC-based internet.[74] As mobile devices become more pervasive as a means of communication, they will also become more open to abuse by unscrupulous marketers. Already in the UK, the Independent Committee for the Supervision of Standards of Telephone Information Services (ICSTIS) has announced that complaints about unsolicited text-message promotions (or 'spamming') represent 50 per cent of all its inquiries – up from 10 per cent on the previous year.[75]

Many of the subjects of our research had at some point received unsolicited mail – either a commercial message or a wrong number. Some of those messages prompted mild irritation. Others resulted in friendly text-banter between strangers. None had found an unsolicited message threatening, apart from one isolated case where a girl had received an overtly sexual message, ostensibly from a paedophile. While our subjects were relaxed about spamming on their existing phones – most of them only received one or two ads by SMS each month – there was suspicion about how the new generation of mobile technologies would impact on the frequency of messages from 'exogenous' sources. Too much of this kind of communication, our subjects argued, would feel like a violation, an approach made without consent.

> *I'm getting more marketing messages from T-Mobile all the time. It's annoying.*
>
> Female, Ravensbourne School

> *At the moment, it is a tool for me, but this new stuff, a lot of it is coming towards me, I might want some of it, but a lot of it I don't. I'd just end up trusting it less.*
>
> Male, 37, factory worker

ICSTIS is already empowered to fine spammers, but tougher anti-spam laws are notoriously difficult to enforce. It is important to remember that mobile spam will entail a direct transmission cost to

the sender, so is unlikely to reach the epidemic proportions of email spam. But for those who are still tempted to spam, a more realistic approach will be to appeal to commercial self-interest – to impress on companies that spamming mobiles is counter-productive. The majority of the participants in a recent survey on 3G said that they would only look favourably towards messages they had opted to receive.[76] If companies cannot find the means to ask consumers to 'opt in' to their messaging lists, at the very least they would be well advised to politely introduce themselves to consumers – giving them the opportunity to 'opt out' of further communications – before attempting a hard sell. On the upside, properly administered and requested information might successfully woo consumers whose mobiles would become a more direct route to information that they urgently need.

A further solution to spamming may come from the network operators themselves. Research shows that most mobile users place a high degree of trust in their network operator to actively protect them from unsolicited messages – much more so than, for example, internet users place in their internet service providers. Virtually all the aforementioned survey participants said 'that they would hold their operators responsible if they received unsolicited messages.' This was confirmed by Demos research – many of our respondents believed that too much unsolicited communication would seriously affect their relationship with their mobile operator.

Despite the challenges of acting as a gatekeeper, there is little doubt that network operators will need to take seriously our fears about spamming. Already, in separate cases in Japan and Australia, network operators have been forced to offer refunds to subscribers because their phones were constantly bleeping with unsolicited messages.[77]

The mobile as tracking device

A technology such as CCTV is ubiquitous; it is a structural feature of public space . . . Mobile technologies, on the other hand, are both personal and intimate . . . because they contain and symbolise much

of an individual's social network. Surveillance therefore becomes more personal, more intimate, and much closer to home for most people.

Nicola Green, University of Surrey[78]

In 2002, 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 victim, he was handed over to officials and subsequently convicted of being a public nuisance.[79] It was an isolated case, but bad news about mobiles travels fast. By October of the same year, a group of hotels and fitness centres in Singapore responded to the arrival of the camera phone by banning them from the premises.[80] In the same month, camera phones were banned throughout Saudi Arabia, where the Commission for Promoting Virtue and Preventing Vice feared that they would be 'misused by wicked people'.[81]

Closer to home, some of the trendiest London night spots have already banned camera phones in an effort to mollify their celebrity clientele. A Home Office taskforce is also examining the threat to children's safety, even though there have been no reported arrests of paedophiles armed with camera phones.[82] In January 2003, a coalition of child protection groups and local government associations went so far as to issue a call 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 the *Observer*, 'and it's only a matter of time before it's abused on a massive scale.'[83]

As reserves of trust in contemporary societies continue to erode, mobile devices can easily become a scapegoat for our anxieties about other people. The maturity of location-based technologies, together with the advent of picture-messaging, video-messaging and audio recording, will bring a new urgency to existing debates about privacy and the control of information. Our attitudes towards mobile operators, marketers and government may well alter as we start to feel harried by the demands made on us by our mobiles and

imagine ourselves to be under constant surveillance by the new technology.

Many of us have already had the experience of eavesdropping on a conversation deposited on our answering machine by an erroneously dialled mobile phone. While none of the subjects of Demos research voiced a concern about being photographed without their permission, a striking finding was the high levels of trust that our subjects felt towards their mobile communications. Through their personal experience with friends and lovers, the subjects of our research were painfully aware that the storage facility on their mobile devices could be kept for posterity and used as persuasive evidence against them.

> *I don't feel confident about using mobiles – the messages can be stored. Voice-mails and texts can be kept and used against you.*
>
> Female, Ravensbourne School

> *I've just split up from my boyfriend and he keeps bringing up stuff with his boy mates. So I saved all the texts he sent me to back up my story. If he starts lying, I can say, 'No, you did text me that – because I've got it on my phone.'*
>
> Female, Ravensbourne School

The effects of the forthcoming generation of picture-messaging and multimedia applications on the credibility of mobile data look likely to be huge. 'Cameras in phones which are carried at all times allow new opportunities for recording and witnessing of events,' argues technology consultant Chad Wollen.

> *This is very powerful and raises issues about surveillance and the distribution of information. Peer-to-peer surveillance would become heightened and furnished with evidence. We will soon be beyond the situation of 'your word against mine' and towards 'your word against my surround-sound recording'.*[84]

As applications are designed to imprint code representing the date,

time and location in which photographs and film are made, we can predict consequences for everyday life as well as the legal system. An intriguing sociological manifestation of the new location-based technologies is that, as mobiles become more rooted to place, the 'space–time delocalisation' that academics attribute to mobile communications – the idea that a disembodied voice at the other end of a mobile is impossible to contextualise – will be turned on its head. If mobile phones are currently an accessory to infidelity, for instance, the new range of mobile devices may overturn that arrangement: a suspicious partner can easily request video, picture or location based proof that you are where you say you are.

> *You can't fake your own photo – one of the major applications has been a proof against infidelity!*
>
> Andrew Curry, The Henley Centre[85]

However, as yet, Demos research suggests, mobile users show little awareness of the debates surrounding mobile privacy. It is only when those people are provoked into thinking about the mobile future that they began to evince concern.

> *This is bad, bad, bad. I think it's an intrusion on your privacy and freedom of movement. In fact, it's dangerous. I wouldn't let anyone have information about my location. I can see why people would want it for their children, but even so, I wouldn't want it.*
>
> Female, 30, professional, no mobile

> *The big brother potential of mobile phones is terrifying, especially the location-tracking stuff.*
>
> Male, 18, student

As the issues become clearer to the general population, debates about the ownership and control of personal mobile information are set to become more intense. Particular tensions look likely to arise if governments help themselves to broad powers of access to location-

based data. Last year, the UK government proposed an amendment to the Regulation of Investigatory Powers Act 2000 to extend the powers to use that data – which are currently limited to law enforcement agencies, the Inland Revenue and Customs & Excise – to a whole range of government bodies including the Department of Health, the Food Standards Agency and even local authorities and fire authorities. This would include access to data such as the identity of websites visited and mobile phone locations. Only after vigorous protests from civil liberties campaigners did David Blunkett, the Home Secretary, back down. Even under the current dispensation, the police need only internal authorisation – and not a judicial warrant – to sequester 'traffic data' that includes information about our location gleaned from mobile devices.[86]

According to data released by the human rights group Privacy International in May 2003, the police and other UK government agencies already request personal data concerning 100 million phone calls every year.[87] True, the authorities are not empowered to access the content of our emails and our phone calls without a warrant signed by the Home Secretary. But the new mobile devices will make legal distinctions between 'traffic data' and 'content' redundant. With the increased sensitivity to location of the new mobile devices, the authorities will have ready access to a map of our daily movements – plotted to pinpoint accuracy.

It is too simplistic to collapse such a variety of disparate issues into a single debate about 'privacy': the intrusions of marketers, the intrusions of government and the intrusions of other people. Resolution of the debate about location-based marketing may well turn on whether the user will perceive the benefits of advanced mobile technology – greater personalisation of service delivery on our mobiles, greater access to services and targeted information – as worth the intrusion into personal space. Individuals may well be happy to trade their 'right' to privacy in specific circumstances – for instance, in order to use location-based technology to hire a taxi in an unfamiliar part of town. Just like the spammers, mobile marketers who take advantage of location-based technology will soon

find out that, unless their communications are welcome, context-sensitive and solicited, their attempts to communicate will backfire hopelessly.

> *People have some willingness to make trade-offs in the levels of exchange of information. There is an 'information bartering' of services for information. I don't mind these people knowing this address or how much wine I drink or what newspaper I read, if what I'm going to receive from them is personally sensitive and interesting.*
>
> Andrew Curry, The Henley Centre[88]

The fear that each of us might end up under eternal surveillance by everyone else is just another symptom of our hostility to the social dimensions of the mobile. If we are so determined to thwart the occasional voyeur or nosy parker, we might as well ban disposable cameras or tape recorders. In any case, it is much more likely that such informal 'surveillance' can be a force for good. What, Howard Rheingold wonders, if the new mobile technologies could empower entire populations to engage in peer-to-peer journalism? Imagine, he says, 'the impact of the Rodney King video multiplied by the people power of Napster?'[89]

However, unless there are clear limits on how government can employ the information that it gleans from our mobile communications – and in the current climate of international terrorism, few governments are keen to impose limits on their own meddling – there may well be a backlash that will impede the development of the technology itself. In the hands of governments who are keen to add to the machinery of surveillance, British sociologist Nicola Green predicts that location-based technologies might be used to hold individuals institutionally accountable for their day-to-day activities.[90] Yet such opportunistic uses of the new technology may well 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 for the Department for Work and Pensions.[91]

In March 2003, in accordance with the provisions of the Anti-Terrorism, Crime and Security Act 2001, the UK government launched a consultation exercise on its plans for the retention of communications data. This exercise ended in June 2003 and will inform a code of practice due to be issued shortly by the Home Secretary.[92] If it wants to maintain and build confidence in mobile technologies, **the Home Office should give an undertaking that the police will only request mobile location data as part of their investigations into clearly defined categories of serious crime and terrorism.**

If not resolved satisfactorily, the debate about mobile privacy may even result in the most distinctive feature of the new generation of mobile technologies – their increased potential for 'location awareness' – being turned off by disgruntled users. Important though some of them are, we should strive to ensure that concerns about privacy do not impede the development of the technology itself.

5. Dragging mobility into the public domain

Each generation has a defining technology – the baby boomers were defined by the television . . . We will have a cohort of people around the world who have mobile giving them togetherness. And we can expect this identification to have certain consequences for how we constitute and carry ourselves politically.

Howard Rheingold, futurologist[93]

In one hour of one day in November 2002, more than 200,000 votes were cast via SMS for the show *Popstars*.[94] The popularity of interactive voting on our television screens has led some to argue that m-voting might help to re-engage young people in the electoral process. It is clear that text-messaging generated by the mass media is only in its infancy, and many media companies are currently investing heavily in the technology of interactive voting. The arrival of third-generation technology will help to make voting more interactive and more rewarding. Viewers 'could vote for their favourite on *Popstars*, and receive a thank-you video-SMS'.[95]

The success of interactive SMS voting in TV shows such as *Popstars*, *Pop Idol* and *Big Brother* has been watched closely by the political classes. For the last couple of years, the UK government has been running a series of pilots in interactive voting – via email and text-message – during local authority by-elections. At the beginning of June 2003, to coincide with the latest series of *Big Brother*, the Hansard Society published a report that argued that the world of

politics has much to learn from reality TV. 'Politics,' its author Stephen Coleman complained, 'is too closed and obscure for most people. They literally do not understand what is going on.' By contrast, he argues, the success of *Big Brother* is based

> *on its capacity to involve the viewer in an interactive process. The viewer becomes a player in the game, forming judgements about and determining the fate of the contestants. Interactivity is political; it shifts control towards the receivers of messages and makes all representations of reality vulnerable to public challenge and disbelief.*[96]

With the arrival of the new generation of wireless technologies, it is possible that voters might play short video clips of political broadcasts or download party political manifestos before they cast their mobile vote. But beyond the limited efficiency gains made possible by text-voting and the distribution of campaigning material through mobiles, there is no reason to believe that such a 'techno-fix' can resuscitate the body politic and renew public faith in the political process.

In a climate of political apathy, narrowly defined initiatives based around m-voting might even work to further alienate people from politics, allowing individuals to support issues or groups without articulating that support on a day-to-day level. As Ian Pearson, futurologist at BT, argues, 'People may outsource political activity when they haven't got the energy to participate themselves.'[97] Results of trials conducted during the May 2002 local elections fail to provide conclusive evidence in favour of e-voting. Despite participant feedback suggesting that they found e-voting 'easy, convenient and quick', an evaluation carried out by the Electoral Commission concluded that technology-based pilots appeared to have 'no significant impact' on turnout.'[98]

Attempts to supplement representative democracy with a '*Pop Idol*' approach to politics, as implied by the Hansard Society report, betray a somewhat patronising approach to the democratic process and are unlikely to succeed in their objectives. If voters are estranged from the

political process, it is not because they are ignorant of what is going on, but because politicians have failed to inspire them with a vision of what politics can achieve. Such initiatives also distract from more substantive ways in which government could use mobiles to improve the texture of our lives.

Wireless public services

In the absence of more substantive investment in wireless government, investment in m-voting schemes can feel like a cheap gimmick. 'All this talk of an information society,' James Woudhuysen says,

> *relies on a large amount of investment in infrastructure. The government should put energy into infrastructure and not e-democracy. There is no point in* Pop Idol *politics. The desire to include people is political, because e-democracy won't cost a lot. It should be low on the scale of priorities if the infrastructure remains poor.*[99]

It is a central argument of this report that government has been slow to understand how the distinctive attributes of mobiles might be used to improve the quality of our interactions with it. Given that mobiles now have twice the reach of the desktop internet,[100] the continued focus of the Office of the e-Envoy and industry bodies such as the Broadband Stakeholder Group on the terrestrial internet represents a missed opportunity.

It is time that government took mobiles more seriously. **The Office of the e-Envoy should take practical steps to convert government information that it currently makes available online (in HyperText Markup Language, or HTML) into a language and a format appropriate for access by mobile devices (Wireless Markup Language, or WML).**

Furthermore, the full integration of mobility into the workings and systems of government and public services will require the expertise and the inspiration of those at the frontline. **The Department of Trade and Industry should therefore establish a Mobile Government Forum, which enables all the stakeholders involved in**

the rollout of mobile technologies – network operators, civil servants, local authority managers, and those in frontline public services – to identify applications of mobile technologies that will be distinctively responsive to the needs of government workers and citizens.

While the subjects of our research were dubious about the use of mobile technologies by central government, they were highly enthusiastic about the possibilities for local communication from public service providers.

> *I really like that idea. It would mean I wouldn't have to write a hundred messages to myself.*
>
> Female, 33, local government worker, in response to the idea that her GP could text her to remind her of an appointment

As the new generation of mobile technologies matures, there are myriad opportunities to link them into the intestines of government. New mobile devices could help to develop more consumer-centric models of public service delivery and make government more responsive to the shifting preferences of its citizens. Just as importantly, they could be deployed to improve the performance and working conditions of public sector workers who spend a significant part of their jobs out of the office: fire fighters, social workers or street cleaners. The technologies cannot by themselves alter the pattern of employer–employee relations. But with a little creative thinking, it is possible to see how putting mobile devices in the hands of frontline workers could help to dissolve fossilised hierarchies that exist between workers and managers and generate whole new ways of working.

Transport

Already in the UK, some organisations are offering basic travel services to mobile users. Kizoom, for example, offers regular updates of public transport information to WAP-enabled phones.[101] More significantly, Transport for London (TfL) has pioneered the use of

mobile technology by government in its implementation of the congestion charging scheme in February 2003. SMS is one of six possible methods of payment, and during the first four weeks of the scheme, a full 15 per cent of all payers opted to pay by text.[102]

If TfL's initiative has given citizens an appetite for paying by mobile, there are plenty of opportunities. Motorists in Vienna, for instance, can now buy parking tickets by SMS. The scheme, which claims to be the first of its kind in Europe, allows drivers to register their mobile phones and licence plates, as well as their credit card details, when they sign up for a virtual parking ticket account. Adding to the popularity of the system is the option for drivers to receive a reminder message on their mobile ten minutes before their ticket is due to expire.[103]

As the new-generation mobile devices mature, they will also enable more creative interventions in the management of traffic flow. Location-based technologies will soon offer mobile users 'real time' traffic data, guiding users along alternate routes after calculating the quickest path through congested areas. A recent trade fair in Sweden saw the launch of a new wireless navigation product that offers step-by-step navigation and 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.[104]

Mobile technologies could also be deployed to improve the accessibility and efficiency of public transport. Placing base stations throughout the tube network and on trains could send timetables and maps to mobile devices. Train operators could offer 'real time' schedule and pricing information directly to mobile devices: special pricing rates could even be arranged for the mobile-carrying public. At the Tokyo Motor Show in November 2002, a prototype of a mobile-enabled bus was unveiled – principally aimed at foreign visitors and the hearing-impaired. The system uses mobile technologies to provide bus and other information to passengers, who can pay their fares electronically, and receive an alert when the bus is approaching their destination.[105]

Crime and security

In February 2003, two Italians, Daniel Puiu and Dorin Oborcianu, achieved the dubious distinction of being the first criminals ever to be convicted by a picture-message. The two were spotted by a tobacconist hanging around outside his shop in the suburbs of Rome. Believing that they were acting suspiciously, he used his new picture-phone to snap them and promptly forwarded the result to the police. When the police checked their files, the two were identified as wanted criminals. A squad car was dispatched immediately, and both were subsequently locked up for six months.[106]

The evidential quality of mobile data will have implications for how law and order is administered. When video-messages become ubiquitous, victims of crime will be able to press one button on a phone and send live footage of the incident directly to the police. In the future, a thief might even make off with a mobile device only to realise that his handiwork has been caught live on digital film and is already in the hands of the police.

Aside from chance encounters with criminals, one of the most immediate applications of location technologies will be in improving the response systems of the emergency services. Wireless phone operators can already locate the source of mobile phone transmission to the nearest cell in which that phone is being used – at best, accurate to within about 500 metres. 3G technologies, however, offer the emergency services the promise of locating the user of a mobile phone to within ten metres, thereby dramatically improving response times.[107] Since people don't always have their bearings when they require emergency assistance, it is likely that mobile users will respond positively to the use of location-based technology. According to a recent poll carried out in the US by Harris Interactive, 'Enhanced 911' – a federally mandated programme that will force mobile operators to locate handsets with pinpoint accuracy – is keenly awaited by the American public. Three out of five Americans would prefer an E911 service more than other wireless features such as e-mail, digital imaging, radio and gaming.[108] Over the next five years,

location-based emergency services will be integrated with sophisticated mapping systems that plot the location of calls. These maps could include the area's crime statistics and type of housing, and any 'real time' events occurring there, such as traffic jams or police activity – enabling the emergency services to decide how best to respond to a call.

Health

Integrating mobiles into health services does not have to be complicated. To take one example: a Singaporean fertility clinic has recently launched a service that sends text-messages to female patients on a certain date each month reminding them that they may be ovulating.[109] With the arrival of 'always on' mobile devices, however, applications will become more sophisticated and ambitious.

A recent report claims that a potential £1.5 billion-a-year market exists for mobile services that can help doctors monitor patients remotely – services that will depend on the ability of network operators to offer a fast and reliable unbroken connection.[110] Several organisations are gearing up to enter this market. For instance, Roke Manor Research is developing a technology that remotely 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 temperature and pulse rate. The device relays this patient data to an application server, and initiates an alarm signal if the data indicates an incipient infection. This, in turn, causes the application server to send either a SMS message or a pager alert to the patient's clinician.[111]

In a similar experiment, network operator mmO_2 and the Department of Engineering Science at Oxford University are jointly trialling a mobile device aimed at improving asthma management among sufferers. In their solution, a mobile handset is combined with an 'always on' connection to monitor the condition more effectively and detect early signs of an asthmatic attack. Whereas current asthma treatments rely on retrospective discussion of symptoms with a GP, the mobile apparatus, by providing accurate 'real time' information

on patient health, allows the treatment of asthma to become more proactive, thus saving the time and resources of general practitioners.[112]

In addition to the potential for monitoring patients, the increased location-sensitivity of new mobile devices will assist in the care and monitoring of mental health patients. Under a research project partly funded by the UK Engineering and Physical Sciences Research Council, a group of academics is 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 a wireless monitoring system. The system could, for example, warn staff when patients fall or suffer an injury, and would ensure prompt assistance if residents became violent or uncontrollable.[113]

Education

It pays to be sceptical about the use of information technologies within the educational system. Too often, e-learning is used as an excuse for an inferior educational experience – one that is delivered at arm's length and provided on the cheap. Nevertheless, within a learning environment that is already mobile, wireless technologies can pay huge dividends.

As part of our field trip to the 3G showcase in the Isle of Man in January 2003, the Demos team witnessed a unique experiment using 3G mobile technologies to bring the internet to an entire class of schoolchildren. Set up by information technology teacher Alex Townsend in 1998, the 'Telecomputer' bus uses a single 3G handset to bring a fast, mobile internet service to children who live beyond the reach of terrestrial broadband services.[114]

It is also important to remember that some forms of education do not require a classroom and are better suited to being undertaken 'on the job'. In Sweden, for instance, 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-on-location 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. They fill in the practical details of skills as the need arises.*[115]

Making it happen: confronting our phone fears

Mobile users, as we have seen, are highly enthusiastic about the prospect of mobilisation within *local* public services. The new generation of mobile technologies will make possible a whole range of ways to improve and enhance the relationship between citizens and local public service providers. Given the possibilities, it seems a cruel irony that so many local authorities are hindering our access to the new mobile devices. The Mobile Operators Association estimate that a full 14,000 new masts will be required to build third-generation mobile networks over the next five years.[116] At the same time, many local authorities have put in place moratoriums on the construction of mobile masts on public land, and many more are hesitant to allow planning permission to build those masts on private land.

As noted earlier, mobile users often forget that mobility depends on fixtures – that their mobiles are dependent on a functioning network of base stations or masts. But the public needs to know that the cost–benefit analysis being employed by many of their local representatives errs somewhat recklessly on the side of caution. It amplifies out of proportion the risks of harmful effects, and recklessly discounts the benefits for citizens, consumers and local governments of using the new technologies. If such a cautious approach had been taken to the rollout of second-generation networks in the UK, we would never have been able to use mobiles in the way we do now.

The development of new mobile services depends on ubiquitous

coverage. Individual local authorities should not be allowed to slow down that process. There is no doubt that communication between network operators, local authorities and local communities needs to be improved. Aesthetic criteria about the siting of base stations also need to be taken into account. But beyond this, local authorities need to get off the fence – they should seek to communicate an appropriate understanding of the role of uncertainty in the development of scientific knowledge, together with an understanding of the benefits of mobile technology and the relative risk factors, which can help to put phone fears into perspective. They must also take greater steps to make their own properties and land available for the siting of phone masts.

Mobilisation: speeding up the urban metabolism

The speed at which mobile coordination takes place has the potential to spur wider patterns of social change. In a recent book, social forecaster Howard Rheingold describes the emerging phenomenon of 'smart mobs.' These, according to Rheingold,

> *consist of people who are able to act in concert even if they don't know one another. The people who make up smart mobs cooperate in ways never before possible because they carry devices that possess both communication and computing capabilities . . . Groups of people using these tools will gain new forms of social power, new ways to organise their interactions and exchanges just in time and just in place.*[117]

In their haste to declare a new era, techno-enthusiasts often exaggerate for effect. There remains, however, a largely latent potential that mobile-based coordination might give form to the expression of existing social and political interests. The use of mobile phones during the riots at the 1999 World Trade Organization (WTO) meeting in Seattle starkly illustrates the potential for using mobile devices to coordinate political action. 'By being able to shift resources to flashpoints on the city streets faster than the local police,

who relied on centralised systems for communications and decision-making', one urban geographer notes, 'the opposition was able to gain a decisive advantage'.[118]

Another striking example is the way in which coordination through text-messaging was instrumental in the public demonstrations that forced Philippine President Joseph Estrada from office in January 2001. During the four days of uprising, which ended with Estrada's fall, SMS was used to coordinate the protests, to keep protesters abreast of events as they unfolded and to mobilise citizens to march, bring food and maintain a vigil. Although the traditional media – newspapers, radio and television – were covering events freely and aggressively, 'they could not keep pace with the speed with which information travelled through SMS. Nor were they as interactive as SMS, lacking the ability to link individual users to each other.'[119]

In countries where information is strictly controlled, the ubiquity of mobiles can pose a direct threat to the existing order. China, for example, is the world's biggest market for mobile phones: in November 2002, the number of Chinese mobile users passed 200 million.[120] During a strict media and political blackout about the existence of an outbreak of sudden acute respiratory syndrome (SARS) at the beginning of 2003, the first that many Chinese people heard of the virus was through their mobile phones. On 8 February, a text-message – 'There is a fatal flu in Guangzhou' – was re-sent 40 million times, 41 million times the following day and 45 million times the day after that. As a direct result of this epidemic of texting, the media and subsequently the Chinese government were forced to admit the existence of the virus. For their part in the cover-up, the mayor of Beijing and the country's health minister were promptly fired.[121]

Closer to home, and at a more superficial level of citizen resistance, it is worth remembering that the spate of illegal 'raves' organised at the beginning of the 1990s was largely coordinated by mobile phone. More recently, mobiles were the coordinating force behind apparently spontaneous eruptions of public discontent, such as the fuel protests

of 2000 and the March 2003 protests against the Iraq war by schoolchildren outside 10 Downing Street.[122] In the same month, British police took the trouble to confiscate mobile phones from a party of anti-war demonstrators travelling to a demonstration.[123] That the police are cracking down on activists who come equipped with mobiles – and they are apparently empowered to do so under the provisions of the Terrorism Act 2000 – is a good indication that the authorities are taking the potential of mobilisation seriously. So should we.

> *More and more people everywhere will use idle time to do productive work [in a wide sense], making appointments, [having] meetings, checking voice-mail, touching base socially. With a ubiquity of knowledge about crime, restaurants, neighbourhoods, the flow of people through cities will change and change faster. Cities need to be prepared for faster oscillations.*
>
> Howard Rheingold, futurologist[124]

Mobilisation is best understood as a social rather than a political phenomenon. At the University of St Andrews, where Prince William is working diligently at his studies in art history, he faces regular onslaughts from a curiously well-organised army of star-struck young students. What are their weapons? 'A sophisticated text-messaging network has sprung up,' one campus insider confided in the *Daily Record*.

> *If William is spotted anywhere in the town then messages are sent out. It starts off quite small. The first messages are then forwarded to more girls and so on. It just has a snowball effect. Informing 100 girls of his movements takes seconds.*[125]

Such 'swarming' behaviour among lustful students – using the exchange of mobile data as a means to faster coordination – is a microscopic example of how mobile telephony is set to affect urban life. The fact that mobile phones are seen as highly personal objects by

their users makes it easy to lose sight of their aggregate effect on the urban environment, an effect that is only likely to intensify with the advent of 3G.

A report by Anthony Townsend at New York University's Urban Research Center, for instance, argues that the most significant long-term effects of the new mobile technologies will lie in 'the intensification of urban activity – the speeding up of the urban metabolism'. The new generation of location-aware technologies will give rise to the 'real-time city', in which systems can be monitored and reacted to instantaneously.[126] In addition, they will make people more aware of their surroundings through access to richer, more relevant information. If the principal function of mobiles is already to help us coordinate our activities, devices that enable us to track our own movements as well as those of friends and colleagues will take mobile coordination to a whole new dimension – one of 'hyper-coordination'.

At least in embryonic form, this is already happening. At the San Diego campus of the University of California, students already have location-enhanced buddy lists to show them where their friends are on campus.[127] In Japan, customers of NTT DoCoMo have for years been authorising their handset phones to reveal their location to select associates. If a friend is known to be within, say, 800 metres of the user, the service notifies them and vice versa.[128]

Much of what will be valuable about the new mobile devices will be, as we have seen, peer-to-peer interaction: tracking where your friends are and coordinating to meet them. They will make it possible to send real-time video images of important events to one another, or to send digital video directly to the web. They will also add a new dimension to the courting rituals that mobile users already take for granted. The more courageous among us might even begin communicating with people we don't already know. In Japan, the use of 'buddy lists' with which to locate friends has been extended to make possible spontaneous encounters with like-minded strangers. Using the I-mode service, Tokyo residents can already ask permission to contact strangers whose profiles matches their own and who are

passing nearby.[129] Meanwhile, in Helsinki, as part of an experiment called FLIRT, single mobile users in Helsinki were asked to leave behind messages about themselves as 'hanging data' when they wandered around the city. As other people encountered that data and began to respond, the FLIRT experiment 'turned Helsinki into a citywide chat room'.[130]

The new location-based technologies also have the potential to revolutionise the relationship between physical places and information spaces. Whereas much of what goes on within the World Wide Web is cocooned in the parallel world of cyberspace, the new location-based technologies promise to tie mobile devices ever more firmly to place, locality and the social realm. 'Imagine,' says one urban geographer, 'being able to assemble and integrate every bit of information that exists about a place and being able to access and use it *at that place*.'[131] We can already predict, says another, 'a scenario in which people travel to certain places for the possibility of serendipitous encounters with interesting information, the way they travel now for the same types of chance encounters with people.'[132]

The project of creating of enriching urban spaces with 'hanging data' is an ambitious one, and requires substantial investment of time and resources. However, tentative steps are already being taken in this direction. The London Tourist Board recently showcased an application that provides 'map streaming' to a mobile device, providing it with information on local services – restaurants, hotels, museums and travel in London – to enable users to make decisions on the move. This service works with existing 2G phones, but will become much richer with 3G.[133]

Eventually, the impact of the new mobile technologies – together with complementary technologies such as WiFi and Bluetooth – will need to be reflected in urban architecture and the design of public places. Much of the enabling infrastructure for the 'real-time city' is too diffuse to be provided by the market. In the creation of mobile public goods, government will need to take a lead. 'Cities that want to attract young people,' argues Howard Rheingold, 'will need to invest in creating hotspots of connectivity. And we need to start thinking of

this connectivity as no different from any other utility, water, electrical or gas.'[134] With adequate preparation, foresight and resources, urban planners, public policy-makers and the designers of public spaces could help to create an exciting urban environment that maximises the potential of new mobile technologies.

Much of the reason why businesses and government are interested in new mobile technologies is because they can be used to cut costs or do existing things more efficiently. It is no surprise that organisations have latched on to these more immediate, short-term possibilities. But as momentum builds behind a new generation of mobile devices and services, a climate of experimentation and opportunity will emerge. It is up to us to make the most of it.

Notes

1 The study, published by Henley Management College, discovered that 46% of 25- to 34-year-olds 'could not live without' their mobiles. 'Young people "could not live without their mobiles"', Press Association, 12 May 2003.

2 According to the Office for National Statistics, Britons send more text-messages than emails or personal letters. 'More text messages and emails sent than letters', Press Association, 28 Aug 2002. A recent survey by industry analysts Gartner confirmed that Europeans use text-messages more often than they do email, and argues that mobile devices – used by 62% of Europeans – offer twice the reach of the desktop internet. 'Study: SMS exceeds internet use in Europe', *RCR Wireless News*, 11 Nov 2002.

3 'The wired war has arrived: unproven technology is seeing its first action', *Business Week*, 31 Mar 2003.

4 'New frontier for mobile-phone operators lies underground', *International Herald Tribune*, 1 July 1999. 'Mobile phone users suffer tone deafness underground', *Irish Times*, 12 Feb 1999.

5 Joel Down, Associate Director of MORI UK, Demos interview, Jan 2003.

6 'Just say Nokia', *Wired*, Sep 1999.

7 Leopaldina Fortunati, 'Italy: stereotypes, true or false' in James E Katz and Mark Aakhus (eds), *Perpetual Contact: mobile communication, private talk, public performance* (Cambridge: Cambridge University Press, 2002).

8 'If the phone had a cord, you could strangle the user', *New York Times*, 30 Sep 1999.

9 Sadie Plant, *On the Mobile* (London: Motorola, 2001).

10 Yoon Kyongwon, 'Extending familialism through the mobile,' unpublished proceedings of the Digital World Research Centre conference (Surrey: 2002).

11 Dawn Nafus and Karina Tracey, 'Mobile phone consumption and concepts of personhood' in James E Katz and Mark Aakhus, *Perpetual Contact*.

12 MORI Omnibus Survey, 2001.
13 Sadie Plant *On the Mobile*.
14 'Not without my mobile', MORI survey published in Jan 2003: www.mori.com/polls/2002/vodafone.shtml.
15 Kate Fox, *Evolution, Alienation and Gossip: the role of mobile telecommunications in the 21st century* (Oxford: Social Issues Research Centre, 2001).
16 Leopaldina Fortunati, 'Italy: stereotypes, true or false' in James E Katz and Mark Aakhus, *Perpetual Contact*.
17 Richard Ling and Birgitte Yttri, 'Hyper-coordination via mobile phones in Norway' in James E Katz and Mark Aakhus, *Perpetual Contact*.
18 Chantal de Gournay, 'Presence of intimacy in France' in James E Katz and Mark Aakhus, *Perpetual Contact*.
19 Figures released by the Mobile Data Association – see www.mda-mobiledata.org.
20 Quoted in 'We just don't click any more', *Observer*, 30 Mar 2003.
21 'Not without my mobile', Jan 2003.
22 'Britain is a nation of text maniacs, says Government', Press Association, 12 Feb 2003.
23 Eija-Liisa Kasesniemi and Pirjo Rautiainen, 'Mobile culture of children and teenagers in Finland' in James E Katz and Mark Aakhus, *Perpetual Contact*.
24 Survey by US mobile operator OmniPoint, quoted in Anthony M Townsend, 'Life in the real-time city: mobile phones and urban metabolism', *Journal of Urban Geography* 7, no 2 (2000): 85–104.
25 Sadie Plant, *On the Mobile*.
26 Alexandra Weilenmann and Catrine Larsson, 'Local use and sharing of mobile phones' in Barry Brown, Nicola Green and Richard Harper (eds), *Wireless World: social and interactional aspects of the mobile age* (London: Springer, 2001).
27 Sadie Plant, *On the Mobile*.
28 Eija-Liisa Kasesniemi and Pirjo Rautiainen, 'Mobile culture of children and teenagers in Finland' in James E Katz and Mark Aakhus, *Perpetual Contact*.
29 Andrew Curry, Director of the Henley Centre, Demos interview, Jan 2003.
30 Kate Fox, *Evolution, Alienation and Gossip*.
31 Yoon Kyongwon, 'Extending familialism through the mobile.'
32 Timo Kopomaa, *The City in Your Pocket: birth of the mobile information society* (Finland: Gaudeamus, 2000).
33 Shin Dong Kim, 'Korea: personal meanings' in James E Katz and Mark Aakhus, *Perpetual Contact*.
34 Ibid.
35 Andrew Curry, interview, Jan 2003.
36 Ibid.
37 Perri 6, Demos associate, Demos interview, Jan 2003.
38 'Mobile phones blamed for sparrow deaths', *Observer*, 12 Jan 2003.
39 'Modern housing, not magpies, blamed for decline of sparrow', *Independent*, 10 Mar 2003.
40 In a letter to the *Lancet*, for example, a group of doctors argued that 'the absence of any real evidence of risk to patients' safety, coupled with advances in hand-held technology, should cause

hospital trusts and their advisory bodies to reappraise restriction.' 'Use of mobile phones in hospital: time to lift the ban?', *Lancet* 361 (1 March 2003).

41 'Britons grasp net and mobile phones', *Guardian*, 24 Jan 2001.

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43 *Report on Mobile Phones and Health: independent expert group on mobile phones* (Didcot: NRPB, 2000): www.iegmp.org.uk/report/text.htm

44 For full results of the Radiocommunications Agency's audit of mobile phone base-station emissions, see www.radio.gov.uk/topics/mpsafety/school-audit/summary2001.htm.

45 'Mast site turn off for 3G phones', *Scotsman*, 2 Apr 2003. 'Mast ban thwarts 3G launch', *Scotland on Sunday*, 20 Apr 2003.

46 Chantal de Gournay, 'Presence of intimacy in France' in James E Katz and Mark Aakhus, *Perpetual Contact*.

47 Timo Kopomaa, *The City in Your Pocket*.

48 Victoria Harrington and Pat Mayhew, *Home Office Research Study 235* (Home Office Research, Development and Statistics Directorate, 2001): www.homeoffice.gov.uk/rds/pdfs/hors235.pdf

49 'Home Office urges schools to ban mobile phones', *Guardian*, 9 Jan 2002.

50 See www.homeoffice.gov.uk/rds/pdfs2/hosb503.pdf

51 Jukka-Pekka Puro, 'Finland: a mobile culture' in James E Katz and Mark Aakhus, *Perpetual Contact*.

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