

Planet of the phones

The smartphone is ubiquitous, addictive and transformative



THE dawn of the planet of the smartphones came in January 2007, when Steve Jobs, Apple's chief executive, in front of a rapt audience of Apple acolytes, brandished a slab of plastic, metal and silicon not much bigger than a Kit Kat. "This will change everything," he promised. For once there was no hyperbole. Just eight years later Apple's iPhone exemplifies the early 21st century's defining technology.

Smartphones matter partly because of their ubiquity. They have become the fastest-selling gadgets in history, outstripping the growth of the simple mobile phones that preceded them. They outsell personal computers four to one. Today about half the adult population owns a smartphone; by 2020, 80% will. Smartphones have also penetrated every aspect of daily life. The average American is buried in one for over two hours every day. Asked which media they would miss most, British teenagers pick mobile devices over TV sets, PCs and games consoles. Nearly 80% of smartphone-owners check messages, news or other services within 15 minutes of getting up. About 10% admit to having used the gadget during sex.

The bedroom is just the beginning. Smartphones are more than a convenient route online, rather as cars are more than engines on wheels and clocks are not merely a means to count the hours. Much as the car and the clock did in their time, so today the smartphone is poised to enrich lives, reshape entire industries and transform societies—and in ways that Snapchatting teenagers cannot begin to imagine.

Phono sapiens

The transformative power of smartphones comes from their size and connectivity. Size makes them the first truly personal computers. The phone takes the processing power of yesterday's supercomputers—even the most basic model has access to more number-crunching capacity than NASA had when it put men on the Moon in 1969—and applies it to ordinary human interactions (see pages 19–22). Because transmitting data is cheap this power is available on the move. Since 2005 the cost of delivering one megabyte wirelessly has dropped from \$8 to a few cents. It is still falling. The boring old PC sitting on your desk does not know much about you. But phones travel around with you—they know where you are, what websites you visit, whom you talk to, even how healthy you are.

The combination of size and connectivity means that this knowledge can be shared and aggregated, bridging the realms of bits and atoms in ways that are both professional and personal. Uber connects available drivers to nearby fares at cheaper prices; Tinder puts people in touch with potential dates. In future, your phone might recommend a career change or book a doctor's appointment to treat your heart murmur before you know anything is amiss.

As with all technologies, this future conjures up a host of worries. Some, such as "text neck" (hunching over a smartphone stresses the spine) are surely transient. Others, such as

dependency—smartphone users exhibit "nomophobia" when they happen to find themselves empty-handed—are a measure of utility as much as addiction. After all, people also hate to be without their wheels or their watch.

The greater fear is over privacy. The smartphone turns the person next to you into a potential publisher of your most private or embarrassing moments. Many app vendors, who know a great deal about you, sell data without proper disclosure; mobile-privacy policies routinely rival "Hamlet" for length. And if leaked documents are correct, GCHQ, Britain's signals-intelligence agency, has managed to hack a big vendor of SIM cards in order to be able to listen in to people's calls (see page 21). If spooks in democracies are doing this sort of thing, you can be sure that those in authoritarian regimes will, too. Smartphones will give dictators unprecedented scope to spy on and corral their unwilling subjects.

The naked app

Yet three benefits weigh against these threats to privacy. For a start, the autocrats will not have it all their own way. Smartphones are the vehicle for bringing billions more people online. The cheapest of them now sell for less than \$40, and prices are likely to fall even further. The same phones that allow governments to spy on their citizens also record the brutality of officials and spread information and dissenting opinions. They feed the demand for autonomy and help protest movements to coalesce. A device that hands so much power to the individual has the potential to challenge authoritarianism.

The second benefit is all those personal data which companies are so keen on. Conventional social sciences have been hampered by the limited data sets they could collect. Smartphones are digital census-takers, creating a more detailed view of society than has ever existed before and doing so in real time. Governed by suitable regulations, anonymised personal data can be used, among many other things, to optimise traffic flows, prevent crime and fight epidemics.

The third windfall is economic. Some studies find that in developing countries every ten extra mobile phones per 100 people increase the rate of growth of GDP-per-person by more than one percentage point—by, say, drawing people into the banking system. Smartphones will remake entire industries, at unheard-of speed. Uber is a household name, operating in 55 countries, but has yet to celebrate its fifth birthday. WhatsApp was founded in 2009, and already handles 10 billion more messages a day than the SMS global text-messaging system. The phone is a platform, so startups can cheaply create an app to test an idea—and then rapidly go global if people like it. That is why it will unleash creativity on a planetary scale.

By their nature, seminal technologies ask hard questions of society, especially as people adapt to them. Smartphones are no different. If citizens aren't protected from prying eyes, some will suffer and others turn their backs. Societies will have to develop new norms and companies learn how to balance privacy and profit. Governments will have to define what is acceptable. But in eight short years smartphones have changed the world—and they have hardly begun. ■