

SMART MOBS

Consciousness and the Media

HOWARD RHEINGOLD

For nearly two years, futurist Howard Rheingold visited hotspots around the world where new technologies and societies were erupting. He had some idea of how to look for early signs of momentous changes, having chronicled and forecast the PC revolution in 1985 and the Internet explosion in 1993. He now sees a third wave of change underway in the first decade of the 21st century, as the combination of mobile communication and the Internet makes it possible for people to cooperate in ways never before possible. —John Brockman, *edge.org*

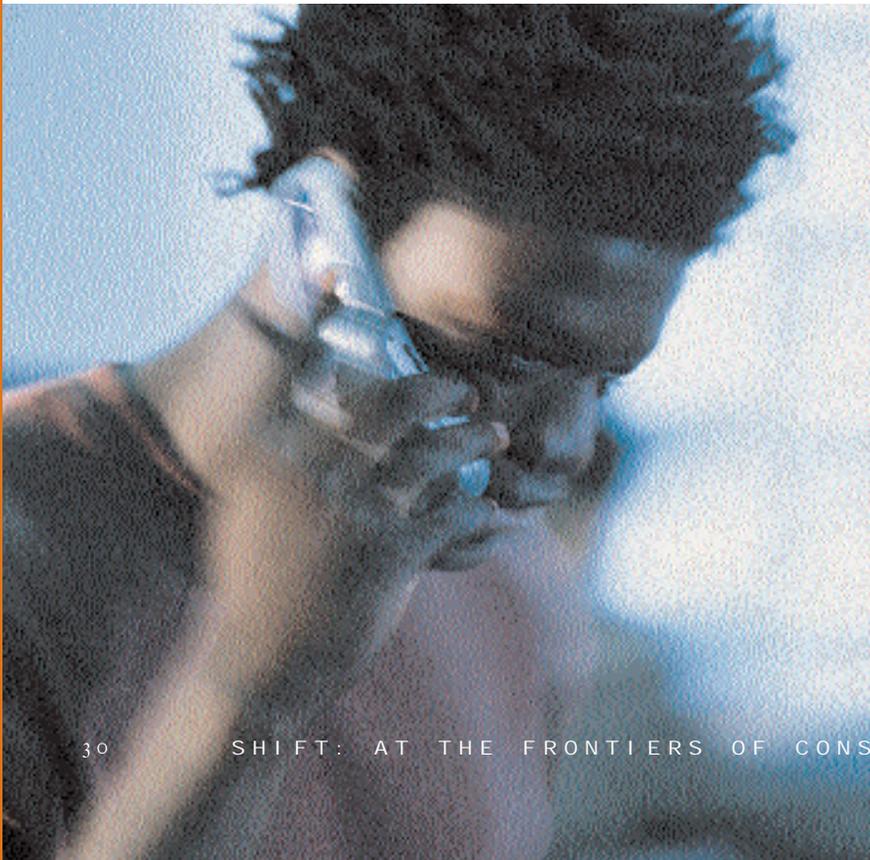
Smart mobs use mobile media and computer networks to organize collective actions, from swarms of techno-savvy youth in urban Asia and Scandinavia to cit-

izen revolts on the streets of Seattle, Manila, and Caracas. Wireless community networks, webloggers, buyers and sellers on eBay are early indicators of smart mobs that will emerge in the coming decade. Communication and computing technologies capable of amplifying human cooperation already appear to be both beneficial and destructive, used by some to support democracy and by others to coordinate terrorist attacks. Already, governments have fallen, subcultures have blossomed, new industries have been born, and older industries have launched counterattacks.

There are both dangers and opportunities posed by this emerging phenomenon. Smart-mob devices, industries, norms, and social consequences are in their earliest stages of development, but they are evolving rapidly. Current political and social conflicts over how smart-mob technologies will be designed and regulated pose questions about the way we will all live for decades to come.

A number of new technologies make smart mobs possible, and the pieces of the puzzle are all around us now, but haven't joined together yet. Wireless Internet nodes in cafés, hotels, and neighborhoods are part of it. The radio chips designed to replace bar codes on manufactured objects are part of it. Millions of people who lend their computers to the search for extraterrestrial intelligence are part of it. The reputation systems used on eBay and Slashdot, and the peer-to-peer capabilities demonstrated by Napster point to other pieces of the puzzle.

Some mobile telephones are already equipped with location-detection devices and digital cameras. Some inexpensive mobile devices already read bar codes and



send and receive messages to radio-frequency identity tags. Some furnish wireless, always-on Internet connections. Large numbers of people in industrial nations will soon have a device with them most of the time that will enable them to link objects, places, and people to online content and processes. Point your device at a street sign, announce where you want to go, and follow the animated map beamed to the box in your palm; or point at a book in a store, and see what the *Times* and your neighborhood reading group have to say about it. Click on a restaurant, and warn your friends that the service has deteriorated.

The big battle coming over the future of smart mobs concerns media cartels and government agencies that are seeking to reimpose the regime of the broadcast era in which the customers of technology will be deprived of the power to create, and left only with the power to consume. That power struggle is what the battles over file-sharing, copy-protection, and regulation of the radio spectrum are about. Are the populations of tomorrow going to be users, like the PC owners and website creators who turned technology to widespread innovation? Or will they be consumers, constrained from innovation and locked into the technology and business models of the most powerful entrenched interests?

Telephone companies and cable operators, with enormous investments in old technologies, are moving to control who can build enterprises on the Internet and the kinds of enterprises they can create. The expensive auctions of radio spectrum for next-generation “3G” mobile communications are threatened by the emergence of radically more cost-effective technologies in the form of grassroots wireless networks.

The entire 1920s scheme for regulating the use of the electromagnetic spectrum is thrown into question by the invention of “cognitive radios” and other wireless technologies that put power into the hands of user communities rather than central broadcasters.

Five Hollywood movie studios and the four giant companies that dominate the global recording industry say they are trying to protect intellectual property, but are backing legislation and “protection devices” that will lock down computers and the Internet into a pay-for-play model. In this model, only the largest players will be allowed to create or distribute content or services online, permitted to create new kinds of computers, or empow-



True Mass Media for the Future

From democracy to “adhocracy”: Enter “smart mobs”—an utterly unprecedented phenomenon where groups of people cluster temporarily around information and goals of mutual interest. According to author and techno-visionary Howard Rheingold, people are using smart “mobs” (rhymes with “robes”) to become smart “mobs” (rhymes with “robs”)—where sophisticated mobile Internet access is allowing people who don’t know each other to act in concert. In his new book *Smart Mobs*, Rheingold (author of *The Virtual Community*) describes how cell

phones, pagers, and PDAs are shaping modern culture. He traveled around the world and interviewed dozens of people who work and play with these mobile-networked technologies to see how a new revolution is manifesting, and his findings are stirring.

For example, the idea and reality of smart mobs has caught on among young Japanese, where cliques of teenagers hang out together all day, despite being in different places, by sending and receiving hundreds of iconic text transmissions on their iMode telephones. And demonstrators in Seattle and Manila relied on wireless telephones to coordinate their actions and evade barricades. In major cities, Rheingold says, techno-hipsters can congregate in “WiFi” areas and interact via their wireless devices—enabling them to participate in a virtual social scene. In one amusing example, he tells of upscale prostitutes who can enter their services and prices into their mobile phones, allowing customers to discreetly determine if anyone nearby is selling what they want to buy (a Japanese company, Lovegety, has already adapted this idea to dating). This study of the potential of mobile, always-on, fast Internet access nicely serves as a travelogue to the future, showing the possibilities and dangers of communications innovation.

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ered to invent things like the Web.

Although the recording industry succeeded in shutting down Napster, and the legal arguments were about the theft of copyrighted music, the technical significance of peer-to-peer resource sharing is far greater than even the future of the music industry. Seventy million people used Napster within the first months of its existence. When tens of millions of people pool their computing power, many things become possible.

SETI@home uses the idle processing power of millions of PCs to search for life in outer space, and other CPU-sharing “distributed computing” networks help search for new medicines, understand the immune system, crack codes, and predict the weather. Wireless networks show that communication bandwidth can be pooled. Combining the data-storage, computation, and communication power of millions of PCs makes possible entirely new kinds of science, business, and social enterprise, based on the emergent power of millions of individuals.

Combine wearable computing, wireless communications, and peer-to-peer resource sharing, and all the people in a building or a crowd walking down the street can join into ad-hoc networks.

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As influential as the Internet has been, it has been, for the most part, confined to computers on desktops. Mobile communication and pervasive computing technologies are permeating every part of our professional and personal lives with Internet-enabled capabilities. Just as the micro-processor and the television screen combine into an entirely new technology with its own capabilities, (the personal computer), and millions of computers linked through the global telecommunication network constitute an entirely new technology with its own capabilities, (the Internet), the marriage of the mobile telephone and the Internet will

result in far more than email or stock quotes in your pocket—the mobile Internet in a computation-pervaded environment will constitute an entirely new medium with its own properties.

Will the architecture and regulation of the emerging wireless Internet be dictated by and empower a few large, highly centralized institutions such as corporations and governments, or will it favor the cooperative innovations of millions of citizens—the way the architecture and regulation of the wired Internet made the Web possible?

The people who make up smart mobs cooperate in ways never before possible because they carry devices that possess both communication and computing capabilities. Their mobile devices connect them with other information devices in the environment as well as with other people's telephones.

Dirt-cheap microprocessors embedded in everything from box tops to shoes are beginning to permeate furniture, buildings, and neighborhoods—products with invisible intercommunicating smartifacts. When they connect the tangible objects and places of our daily lives with the Internet, handheld communication media mutate into wearable remote control devices for the physical world.

The cost, size, and performing power of computers, video displays, and wireless communications are moving from the computer industry into the fashion industry, as wearable computers embedded in clothing become cost-effective. Ultimately—with peer-to-peer methodologies, reputation systems that mediate trust between strangers, and ad-hoc broadband networks—wearable devices will be desired, purchased, and used as much for their social capabilities as for their utility as information appliances.

There are dangers as well as opportunities concerning smart mobs. I used the word “mob” deliberately because of its dark resonances. We humans have used our talents for cooperation to organize atrocities. Technologies that enable cooperation are not inherently pathological: Unlike nuclear bombs or land mines, smart-mob technologies have the potential for being used for good as well as evil.

Nevertheless, years before the September 11, 2001 attacks, commentator Thomas Friedman prophetically referred to “superempowered individuals” such as Osama Bin Laden who use modern technologies and networked organizations to execute acts of terrorism. RAND corporation analysts have pointed out that the Russian mafia

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and Colombian narcotics trafficking enterprises use “net-war” methods combining communication networks, social networks, and networked forms of organization.

On the other hand, when cooperation breaks out, civilizations advance, and the lives of citizens improve. This is the big opportunity of smart mobs. Language, the alphabet, cities, and the printing press did not eliminate poverty or injustice, but they did make it possible for groups of people to create cooperative enterprises such as science and democracy that increased the health, welfare, and liberty of many.

Just as medicine became an effective weapon against illness only when science furnished useful knowledge about the nature of diseases, the most effective use of communication and computer technologies could emerge from new scientific understandings of human cooperation. The most powerful opportunities for human progress are rooted not in electronics but in understandings of social practices. Sociologists, political scientists, evolutionary biologists, even nuclear-warfare strategists have contributed the first clues that an interdisciplinary science of cooperation might be emerging.

Mobile communications and pervasive computing have the potential for magnifying cooperation far more powerfully than previous technologies. Coupled with new knowledge about the social dynamics of collective action, smart-mob technologies could make improvements in the way billions of people live.



HOWARD RHEINGOLD fell into the computer realm from the typewriter dimension, then plugged his computer into his telephone and got sucked into the 'Net. In earlier years, his interest in the powers of the human mind led to *Higher Creativity*, written with former IONS president Willis Harman; His new book is *Smart Mobs: The Next Social Revolution*. He lives in Mill Valley, California.