

TOWARDS A NEW ERA
ECONOMIC, SOCIAL AND POLITICAL REFORMS

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CHAPTER I

Information Technology and Integration

Craig Calhoun

As the twenty-first century opens, social scientists are called on to inform public discourse, government policy, and private business. Both scholarship that preserves and continues to renew insights from the past and research and theory-building designed to develop new knowledge are important. Indeed, more social scientists than ever before are working to enhance our understanding of the social world; they come from more different countries and emphasize more different research problems. In most regards the social scientists of today are better trained than their predecessors, especially in research methods, and they are supported by a vastly improved infrastructure including not least ever-improving computers and communications technologies. So, there is reason for optimism about the contributions of social science. At the same time, social scientists need to renew their commitment to producing knowledge that can inform public understanding of key contemporary issues and transformations. Among the most important of these are the development and application of information technology.

New information technologies are helping to transform almost every dimension of social life. Business transactions, consumption patterns, leisure activities, international relations, political participation, higher education, and scientific research are all being reshaped by computers and new communications media. Some of these changes are material—new wealth is created, new organization of production, new military technologies. Equally, the new technologies transform social relations, promoting globalization and growth but also new

patterns of inequality and exclusion, empowering protesters but also corporate and government surveillance, bringing new access to information but also new challenges to basic values.

Information technologies are the subject of frequent conversation, voluminous journalism, massive investment, and very little social science research. The lack of social science is unfortunate, since part of the mission of social science is to inform the public and policy makers about major social issues. Clearly the introduction of new technologies poses challenges that could be better understood and managed with better social science knowledge. Equally, the changes associated with information technology--and for that matter the continuity of new processes with earlier technological changes--point to basic scientific issues that are not as well understood as they should be. Grasping what is going on in this era of dramatic change is important, thus, not just for understanding contemporary questions but for theorizing enduring patterns in social life. Finally, and too often overlooked, the new information technologies are part of a process of a change in the practice of social science itself. How we use them has implications for the future of research, scholarly communication, the organization of disciplines and interdisciplinary fields, and even what kinds of jobs social scientists hold and what sorts of institutions support their research.

It is not as though there is a dearth of writing about the Internet. On the contrary, an enormous literature of speculation and journalistic reportage informs an active popular discussion. Some of this has brought important themes to public attention--privacy, inequality of access, the fallibility of complex systems. But this literature--and thus the formation of public opinion and policy--is remarkably uninformed by systematic research. There is some good work on information technologies on which social scientists can build, but it is mostly very narrowly focused and not oriented to many of the crucial large questions.

For one thing, existing work is fragmented and dispersed. Economists, thus, are addressing key themes in the pricing of information, a few sociologists are beginning to look at information technology in work organizations, a handful of political scientists have studied the role of the Internet in

popular mobilizations, and even fewer international relations experts its place in global conflicts. But these different groups communicate minimally if at all with each other. The organizers of the present conference are to be congratulated on seeking to integrate knowledge of economic, social, political (and I would add, cultural) dimensions. The issues involved in information technology are dealt with inadequately by members of individual disciplines working in isolation.

But we must be even more interdisciplinary. Many attempts to understand information technology treat it as an independent force in social change, as though technology simply produced social changes, and the task of social scientists was to identify these. But this is not so; technology is shaped by the social organization within which it is produced and in which it is used. Take the so-called "digital divide"; this is not a result of inherent attributes of computers but of the larger social organization of the world into which computers and related communications technologies are introduced. Likewise, the development and application of information technology is itself a social process. A complex computer programme like those used in managing missile defence or funds transfer systems may be the product of literally hundreds of different programmers working in a social organization that may encourage or inhibit careful checking for errors, redundancy of safeguards, and other desiderata.

Finally, existing analysis of information technology is informed largely by more anecdote and personal experience than by systematically collected empirical data. This is partly because such data have not been collected or are controlled only by proprietary users and thus not available to social science; it is partly because the task of organizing the available data for effective research is enormous and beyond the capacities of individual, relatively isolated, researchers. It requires a collaborative effort. Importantly, it also requires an international effort. Precisely because social factors determine how information technology is developed and used, different patterns may emerge in different settings. What holds in the US may well not always hold in India.

These three obstacles apply to all of social science, though unevenly. There has been research on economic issues that are

close to market analysis, including markets for information, markets for technology, and markets for labour. There has been less research on how economic factors including the financial basis for innovation have shaped the development of the technology itself. There has been research on computer use patterns, both rooted in systems analysis and oriented to the way in which individuals explore the Internet. But there has been surprisingly little systematic empirical work on the actual processes and patterns of organizational innovation through which technical systems—or, I should say, 'social-technical systems'—are adopted and integrated into social contexts. There has been research on social psychological issues raised by individual computer use, but less on the relationship of information technology to creative processes, production, flows, and experiences of culture, and the reshaping of society through collective imagination and the reconfiguring of identities. Not least of all, research has begun on inequality of access to information technology, but this is not yet complemented by much depth of research on how unequal access is related to patterns of actual use—what people do with information technology when they do have access.

Let me now turn to outlining very briefly some of the important ways in which information technology holds implications or raises issues for social integration. By the latter term, I mean all the ways in which society is held together, kept organized, given its distinctive solidarity. New computer and communication technologies—and indeed closely related biotechnologies like those involved in mapping the human genome—raise concerns among policy makers and citizens. Is it possible, they wonder, to benefit from the new technologies as engines of economic growth and sources of improvements in the material conditions of human life without losing traditional values, weakening social bonds, or creating troublesome inequalities?

The Infrastructure of Modernity

The new technologies need to be understood in a historical context. They are part of a long process of socio-technical

innovation that has shaped the whole modern era. Modernity has been a matter not just of cultural change or economic growth but of the development of a new infrastructure of social integration. Transportation and communication technologies have both been basic. These provide the basis for economic exchanges, not only expanding markets but enabling new kinds of division of labor and organization of production. They also underpin the rise of nation-states and many other changes.

Consider, for example, the basic importance of roads in national development. They enable people from different regions to enter into more frequent contact with their countrymen and thus facilitate both material interdependence and a common consciousness of the nation. A country whose people cannot easily come into contact across their lines of difference and distance will have a hard time maintaining a common culture or a sense of national solidarity. Nationally integrated transportation systems are thus key to bringing – and keeping – people together. They are complemented by communication systems that enable message to transcend distance – by print, telegraph, telephone, and broadcast means long before the Internet. Transport and communications infrastructures are basic to national development, thus, because they enable social integration of diverse local regions and groups.

At the same time, though, transport and communications infrastructures have enabled globalization to advance throughout the modern era. It is common to speak as though globalization just started in recent years, but in fact it is basic to modernity. Through commerce but also colonialism, the spread of common languages but also wars, globalization has been connecting diverse people and countries throughout the last several hundred years. It built on the basis of old empires, but also new transportation and communication technologies. This continues, with the growth of international or transnational organization and communication challenging the autonomy and boundedness of nation-states. New information technologies are basic to global communication systems that keep us informed about the world. But these also carry messages – from Western consumerism to various forms of so-called religious

fundamentalism (though I think that term a misnomer)—that may be threatening to locally valued ways of life.

Among the questions posed by the transforming infrastructure of modernity is the relative balance of centralization and decentralization. Each may operate in different dimensions of social life, and far from contradicting each other in practice they may be linked. Consider how the new technologies figure in an old industry. Automobile production has often been organized as a premier national industry, but much of it has today become dramatically international. The parts of any particular car made by an officially American or German or Japanese manufacturer are apt to have been produced in several different countries. The production process is organized by global, largely computer-mediated communication. From the beginning of computer-assisted design through computer-assisted manufacturing and computerized inventory and shipping management, the parts of the production process that take place in different countries are linked. Half of what is officially counted as foreign trade between some countries is in fact trade between branches of the same corporation. What we see, in other words, is that information technology makes possibly simultaneous dispersal or decentralization of production and increased concentration or centralization of control over production (and generally, of capital). The most important thing to remember is that the technology does not in any simple sense dictate either centralization or decentralization; specific patterns of the two depend on how it is used.

The Social Fabric: Challenges and Opportunities

The possibilities are also open as to whether and how information technology disrupts to fabric of social life, undermining social integration, or brings people closer together, building solidarity. Let me just try to evoke a few of the areas where significant change has begun, but social choices remain open.

Work: Workplaces are settings for social life as well as economic production; people value work often for the social relationship of the workers or the satisfaction of contributing to social

welfare, not just for their salaries. As new information technologies have been put to use so far, they have often changed workplaces.

Once again, we should be cautious about technological determinism. There was a great flurry of predictions twenty years ago that information technology would quickly bring the "paperless office". In fact, a primary result of the new computer and communications technologies has been that even more trees are cut down to produce paper to feed the appetites of computer printers. There is, of course, a good deal of paperless communication like e-mail. But there is also a good deal more information readily available to print out. The computers enabled us to do more of what we were doing already – whether writing academic papers or issuing memoranda, to do so in more frequently revised and updated versions, and to share them with more people. So, we should be cautious about simple predictions.

Nonetheless, work is changing in settings where new information technologies are widely used. We need to see that this means different things for people in different niches within the economic and class structures. Probably the most widespread visions of work associated with the new technologies are (a) working from home, and (b) working in the new 'corporate campuses' associated with many leading information technology companies in places like Silicon Valley. These, however, are options mainly for an elite. They help companies attract the most creative programmers, for example. Even here, there are mixed aspects to the attractions. Working from home is helpful flexibility – if one has appropriate space for a home office. It is also potentially isolating. Moreover, even those who work in offices find that the new technologies may mean that are expected to bring work home with them, check in to the e-mail system in the evening, and sacrifice more of leisure and family time to their jobs. On the other end of the economic hierarchy, much of the employment generated by information technology industries is relatively low-skilled and low-paid. It involves routine, repetitive action – data entry for example – that may not only be mentally stultifying but physically injurious. Indeed,

such work may even be more closely (if impersonally) monitored – as computers are programmed to count keystrokes and otherwise measure performance rates and vary payment accordingly. It is important not to be misled by the glamour of Silicon Valley and to remember that much of the work created – and distributed to remote settings – is more or less clerical in nature, or involves only rudimentary programming with little opportunity for creativity, advancement, or the development of dot-com riches.

Still, in the higher end of the information technology industry – and in other fields making substantial use of information technology – there are significant shifts in the organization of work. The building of teams and their constant reconfiguration has become a prominent feature. The work is often organized around particular projects rather than permanent departments; staff is drawn to the projects on the basis of specific skills and network linkages rather than formal job titles. Such an approach challenges traditional, more bureaucratic management styles familiar not only from government bureaucracies but traditional industries. It is significant in academic and intellectual work as well, with networks of individual researchers and teams from various settings forming the background of collaboration and exchange rather than top-down organization in departments and institutes. There is likely to be resistance to the new, more flexible managerial styles in many settings, and whether and where bureaucracy reasserts itself will be one of the interesting questions to address. If the new 'matrix' and 'flexible team' approaches are indeed more productive in our new era, than countries or companies that commit themselves to centralized, top-down organization may suffer a competitive disadvantage no matter how smart or well-educated their employees.

Community: A good deal of writing about information technology touts the likelihood and virtues of "virtual communities". This points to something significant, but I think does so in a misleading way. There are indeed a host of websites and listservs through which dispersed computer-linked people join in discussions and learn about common interests. There are

so-called "communities" focusing on everything from hobbies like stamp collecting to sports like tennis, from users of the same computer systems to advocates for the same political change, from followers of the same guru to followers of the same movie star. Some of these "communities" have played an important role in mobilizing people for social action—e.g., mobilizing environmentalists and advocates of indigenous peoples to join with labour unions in protesting at the World Trade Organization meeting in Seattle.

What is misleading about referring to these groupings as "virtual communities" is that they usually involve single-issue links among relative strangers. Research has shown that they are strongest where people linked by the Internet also sometimes come together in face-to-face relations. In this way, computer-based communication may be an important supplement to face-to-face community. One study of college students showed that an enormous percentage of their e-mail communication was with friends at the same school and concerned plans for meeting in person. Likewise, computers can be extremely helpful to people in rural villages or other dispersed settings, connecting them not only to each other but to more distance resources. Information technology may indeed support community by providing effective ways to make local, especially rural, communities more economically viable and reducing the flow of younger people to cities. But it is crucial to see information technology as a supplement to face-to-face communities rather than a replacement for them.

Family: Similar questions arise with regard to family and personal relationship. Do computers and IT generally weaken the social fabric of the family or provide families with new resources? Or, rather, in what proportion and circumstances do they do each?

One important dimension of this has to do with whether computerized communication is accessed in isolation or in social space. There is a good deal of worry, for example, about the extent to which Internet use is an individual activity that links people to distant contacts but cuts them apart from those nearby. Do children, for example, have less interaction with their

parents in proportion as they make more use of the Internet to link up with friends or indeed strangers in chat rooms and the like? Do parents produce a similar effect when they access their email or do other work on the home computer? In fact, compared to the US, India has organized a much higher proportion of computer access to occur in social space—e.g., in cyber cafes or in special resource centers. It is possible to orient investment to providing more of this social access and discouraging people from purchasing individual systems—though this flies in the face of the predominant profit-seeking logic of at least the hardware dimension of the IT industry, and to some extent the software as well.

On the other hand, the new information technologies are wonderful for keeping family members in touch despite the long distances that sometimes separate them. When someone migrated internationally in the 19th century, this commonly meant that he or she was lost to family members. At best there might be occasional postal connections. But now there can be daily e-mail, even sometimes supplemented by videocam pictures. Parents can stay in touch with their children who move to America, say, and even watch the growth of their grandchildren on a nearly daily basis. This is certainly not a replacement for face-to-face contact, of course, but the very simultaneity—the so-called 'real time' linkages—the computer-mediated connections provide, greatly enhances the sense of maintaining a current relationship.

Much of the potential of the new computer technologies will be realized only as children grow up with them. They will be more flexible adapters of new habits than us oldsters—but we should try to make sure that they have the opportunity for good choices, and try to produce the social science that will allow them to be more aware of some of the consequences of those choices. We see the implications of the fact that children pick up information technology skills—like languages—quicker than adults in the common reliance of parents or grandparents on young children as their technical advisors or tutors. This can be a positive form of relationship—but it can also make older people feel that they are losing something of their authority if they must learn from their children rather than teach them in an important area.

This may affect parents' ability or confidence in regulating how their children use computers. Internet access makes a wide and minimally regulated range of content available. Children may find a wealth of resources for doing science projects or studying history. They may also find pornography, violent games, and other less attractive content. Like so much else, this is not technologically determined. The computer doesn't determine what is communicated to it, people do, including people organized in capitalist ventures trying to make money. There are technical measures available to screen what children see—though none is as effective as actual parental involvement in the child's life and computer use. There are also more general mechanisms for trying to filter out undesirable content, though at present these are generally very blunt instruments that also take away much of the advantage of the new technologies.

Culture: The question of what content is produced for or distributed by the Internet brings up the more general theme of culture. Information technology enables new forms of cultural creation, new paths of cultural dissemination, new opportunities for participation and new regimes of exclusion. It also depends on and is embedded in culture. Accumulated knowledge makes it possible; cultural models guide the imaginations that create it. Cultural patterns also travel with it, borne both by the technology itself and by the received wisdom about how it should be used and the habitual practices that fit it into social institutions and human lives. Diffusion of the technology among users, across firms or across nations, is thus also always diffusion of culture.

New technologies not only change culture from the outside, or make possible new patterns of dissemination for cultural products. New technologies are part of culture, shaping it from the inside as they are shaped by it. Marshall McLuhan argued more than a generation ago that "the medium is the message", and we see today a host of ways in which use of the technologies shapes communication and social interdependence. But the notion of medium—as simple channel, certainly, but even as metaphor—is too limited a way of understanding the cultural implications of the new technology. It is not just that culture

flows in new ways, hot or cold, fast or slow. Rather, the meanings and uses of cultural transmission change as it becomes a much more ubiquitous and potentially powerful activity. As it empowers some, however, information technology may create new zones of exclusion, where access to the benefits of the information society are out of reach. It may result in new forms of cultural participation, as well as new forms of social control, as anonymous networked systems keep track of larger areas of our lives.

Equally important are changes in the nature of cultural creativity itself. Here it may be useful to distinguish provisionally between the new creative possibilities opened up by information technology and the new relationships to existing forms (such as books or music) that information technology makes possible. Both are likely to have profound and wide-reaching social consequences. As with most infant media, the early uses of information technology are likely to be shaped by notions, needs, and content drawn from older media (such as the distribution of songs, the viewing of paintings, or perhaps, the notion of web 'pages'). These may turn out to be transitional uses on the way toward the fuller exploitation of new technological possibilities—as so many visions of cyberspace and cyberculture would suggest.

The increased interactivity that technology makes challenges many of the distinctions between cultural production and reception that underlie cultural activity, from art, to learning, to games. Indeed, our experience of culture may be transformed when cultural goods are shaped predominantly by the possibilities of the electronic media rather than simply created under one media regime and reproduced electronically (as Walter Benjamin famously suggested happened with the advent of mechanical reproduction). The ease with which many cultural goods can be reproduced, copied, and circulated electronically will certainly continue to change the economics and institutions that structure cultural distribution (as Napster has begun to demonstrate), and with them, the nature of the external pressures and incentives for cultural producers. What this will mean for public education, artistic careers, distinctions between

art and popular culture, the cultivation of the human spirit, and the prospects for cross-cultural communication is fascinating but thoroughly uncertain. What is certain, however, is that these changes are occurring now with unprecedented speed (the World Wide Web is only seven years old), and are in many cases driven by technological developments (such as the increasing ratio of processing power to cost) whose short term consequences are enormous and perhaps, to a degree, predictable.

These cultural issues have consequences not just for the arts, but for all sorts of culture, and not just for individuals but for countries. Consider the question of national culture? Will dramatically increased use of information technology further solidify the integration of national culture by bringing more access to it to people in dispersed locations? Or, will it undermine national culture by spreading some more or less international culture? So far, the content of Internet communication is probably even more shaped by dominant American producers (or production by others by American consumers) than is the content of TV or film. But simply reacting defensively may undermine government attempts to defend national culture. A key question is how to encourage more productivity in different cultural idioms beyond those of Western consumerism or Western tastes. A basic question here is how much governments do to make computer-mediated communication (and cultural creativity) available to people who couldn't afford them without help. For example, will there be a major investment in bringing the new technologies to dispersed rural villages and will this be done in ways that are culturally as well as economically empowering?

The Digital Divide

In fact, the introduction of information technology is shaped by a variety of social divisions and inequalities. The most glaring of these are perhaps international. There are dramatic disparities in how much of Internet content derives from (or reaches) different countries, with America predictably by far the largest producer and consumer. Likewise, there are dramatic disparities among countries in how much their economies gain productivity

from information technology. Some countries are all but left out of the rapid advancement of the new technology; some are being transformed by it; most sit somewhere in between. The implications for the future of different countries may be considerable

For example, in places where citizens are not widely exposed to the new technology, those citizens will often not have skills for the best jobs in the increasingly technology-dependent economy. Relative disconnection from global communication will mean not only a limit to pernicious influences from outside, but also the ability to influence world opinion and culture.

Huge as the global dimensions of the digital divide are, they should not obscure domestic inequalities in access to new technology, education to provide skills at using it, and ability to benefit from its proliferation. Domestic inequalities occur on several lines: class, perhaps most obviously, but also ethnicity, gender, age, and rural vs. urban residence. Since ability to use the new technology is mediated not only by money, by cultural inclinations and education levels, some groups are likely to feel more inhibited than others. In many places, information technology has been developed and marketed as an especially male domain. This is shaped not only by male and female differences in tastes, but by the predominance of certain kinds of computer game cultures in the IT world, by the traditional biases in which gender studies engineering, by cultural notions about which gender should mediate access to public information. An unequal spread of information technology may thus undermine some of the gains women have made in employment and other conditions.

The digital divide needs to be understood as rooted in other divides. Perhaps the most basic is that of literacy. Ordinary print literacy remains a basic mediator of access to information technology in the workplace or as a form of communication. It is true that there are advances underway in voice-recognition software and in visual/iconic interfaces. Nonetheless, illiteracy means social exclusion in renewed and even sharper ways in an era more than ever dependent on information technology. Not all the policy implications of IT, thus, focus narrowly on IT itself.

While it can be helpful in encouraging literacy, the real link is that it should redouble the determination of policy-makers to advance universal education.

Public Communication

One of the things the illiterate are cut off from if information technology advances is a new arena of public communication. IT opens up a host of new capacities. The possibility of better access to information can, for example, be extremely empowering for citizens. This includes both information about government work and information about social conditions in general. Indeed, much of the latter comes from social science research and it could be much better disseminated and thus be of much more value both to citizens and to policy makers.

Government officials have often treated information as a monopoly they should control. They have been loath to give ordinary citizens access to it, and this tendency continues even when new information technologies would make it easy. Many countries—including notably the Nordic countries and some other European states—have taken proactive measures to make government more transparent to citizens by means of Internet access to public information. They create user-friendly websites and offer free public access. Most of the other countries of the world have in varying degrees been slow to open their stores of information to their citizens or indeed have actively resisted doing so. This is an era where decisions about how to use the technology will have major effects. This has to do not only with the transparency of government operations, but with the government's control of basic information about social life—census data, economic statistics, and the like.

As noted above, though, governments are not the only player in making data available on the Internet. Academics, social movement activists, NGOs, businesses, and a host of other groups also do so. If governments fail to provide accurate and honest and free information to the public, other groups may fill the gap. The information may or may not be accurate; it may be harnessed to ideology or special economic or political projects. It may be provided for a fee—and thus not available to all

citizens. Social scientists should be taking the lead in urging the development of free, open, and above all accurate information resources.

Unfortunately, one of the basic problems with finding information on the web is the difficulty of assessing the quality of what one finds. The Internet is full of rumors and sometimes active disinformation. It is hard to tell which provider is trustworthy. Indeed, one of the tasks before us is developing some method of establishing which web sites and data sources should be treated as authoritative and which viewed with skepticism.

I mentioned the value of new information technology in helping to secure the integration of dispersed populations. This is not automatic. Like many other possibilities, it depends not just on technical capabilities but investment. If those dispersed populations—in remote areas or simply rural areas—do not have the resources to buy computer technology on the open market, then its advantages will only come them through government or philanthropic programmes. This is not only a matter of buying them machines and software, but of steering software developers to create programs that speak to their specific needs.

In addition to helping dispersed populations and remote regions, information technology can be very helpful to social movement activists. It provides a way for people working in local settings to link up with others confronting similar issues. Thus campaigns for the rights of indigenous peoples in many different settings have not only used websites to explain their cases, but used the Internet to establish links with each other. They sometimes join forces, more often simply compare experiences and learn from each other. This figures not just in regard to politics, but in regard to questions like who owns rights to local genetic content—whether, in other words, local people may gain economic benefits when pharmaceutical companies exploit their knowledge of biological diversity. Similar links are important to environmental activists, labour groups, religious groups, and a host of others. IT can greatly help ordinary people to share information.

At the same time, there are possibilities that are more worrying. Some propose, for example, using IT not only to enrich public communication but to substitute for the legislative process. They are suggesting that democracy would be advanced by having ordinary citizens make decisions through frequent electronic referenda. This neglects the importance of the discussions that go on within political parties and among legislators. Representatives may, to be sure, pursue their own interests rather than those of the people who elected them, but when they are honest and responsible, they are usually in a position to understand issues and work out compromises in a way ordinary citizens are not. Most ordinary citizens take only an episodic interest in politics, and their views are subject to rapid swings and emotional pulls. Referenda would exaggerate the influence of these.

There is also some reason to be concerned that a society that relied on some forms of information technology would become more a society of special interests. People using search engines on the web—even to find news—tend not to read the news in general. They tend to hone in on specific topics that interest them. By contrast to the typical newspaper or TV news programme, thus, the Internet tends to provide less of a general information context. In this as in many other things, the answer may lie with supplementation rather than replacement.

There are also questions about the relationship between international and national political communication—and indeed, flow of information generally. The Internet is hard to regulate. Some programmers like to say that it regards censorship as damage and finds ways to route around it. In any case, governments are often interested in learning how to regulate and monitor Internet use. This raises two kinds of concerns, though. First, there is the question of whether this can be done in ways that do not sharply undermine the very advantage of the Internet as a global communications tool. China and Vietnam, for example, have tried to build firewalls that allow their citizens to communicate with each other but not with the outside. These tend to be more effective against ordinary citizens and less effective for highly educated (and especially younger) users. They also produce considerable resistance from businesses

that need better Internet access to work effectively. Second, surveillance may become an issue. Already, the new information technologies offer unprecedented capacities for states (or others) to monitor the habits, actions, tastes, and associations of ordinary people. Use of the web like use of credit cards leaves records behind. Most people are not aware of how easily traced these are. One question is what kind of legal protections for privacy are established in different countries.

Conclusion

Much more could be said. I have hardly exhausted the range of different uses of information technology, and different areas of social life where they could have significant effects. I hope I have at least illustrated the importance of the topic. I hope too that it is clear that we will understand the issue poorly if we treat information technology as an independent cause of social effects rather than integrating it into an understanding of socio-technical systems.

Information technology, finally, is an interestingly non-linear influence on international social science itself. It supports dramatic increases in international connections, shared participation in scholarly communication, shared access to data sets, education, and collaboration. At the same time, it is likely to be basic to new lines of distinction, inequality, and exclusion. "High tech" social science will almost certainly be global in organization, but it will also almost certainly privilege one fraction of the globe against the rest. Different kinds of social science knowledge will flourish in different settings, and this in turn will shape not just the participation of social scientists in a new social order, but that of everyone. One of the goals of international cooperation among social scientists should be to help to achieve more collaboration among equal partners and more equal and open access to research and its results.

In this way, our practices as social scientists will contribute to how the most basic issue for public communication is resolved. That question is participation vs. exclusion. When and for whom will IT open up participation and prove empowering? When and for whom will it be basic to a new regime of exclusion or inequality?