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Internationalization and information technology as challenges for the future of social science

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Internationalization and Information Technology

as Challenges for the Future of Social Science

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The social sciences were creatures of the 18th and early 19th centuries, attained disciplinary organization and firm university bases towards the end of the 19th century, became systematic producers of empirical research in the 20th century, and enjoyed explosive growth after World War II. Their expansion, proliferation of new research programs, and generation of interdisciplinary fields all continue. Terrific work is being done. Yet, I want to contend that social science is on the verge of dramatic transformation, that many of the long established ways in which we work will not survive, and that we are not are applying to our own circumstances the techniques of social science research or analysis that could help us understand and more productively shape what is going on.

The world outside social scientists' windows is changing as rapidly as at any time since the 18th and 19th century revolutions in politics and industry. Yet too many social scientists' gaze is turned inside their offices, towards shelves full of disciplinary journals and computers full of data addressing abstract and ostensibly general processes that do not have purchase on actual social transformations. There are exceptions, of course. Social science is vital to design of new financial instruments in global markets, struggles to protect the environment, and efforts to improve civic participation and democratic deliberation. But social scientists need to pay more attention to contemporary transformations.

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.

At the same time, the terrain of social science is shifting in momentous ways. These are not simply shifts in the prevalent theories or research designs. The very organization of academic work is at issue. Universities and scientific institutions are being transformed by the influence of market forces, new demands for accountability, and new trends in internal organization. The social sciences are also becoming dramatically more international than ever before, both in the extent to which their attention is focused beyond national boundaries and in the distribution of social scientists around the world and the interconnections among them. Information technology poses its own challenges, as indeed does spectacular success in some other fields of science including biology. The orientation and organization of work within disciplines is shifting; questions are rightly raised about whether disciplinary boundaries further or impede intellectual advances.[1] Interdisciplinary relations are also changing, and indeed the integration—even the very idea--of the social sciences is under challenge. So, optimism needs to be tempered.

Weighing all of these issues is beyond the scope of the present paper. Instead, I want to focus on two of the most basic. I want to try to explain why I think globalization is more than a temporarily fashionable topic—and yet at the same time a misleading way to state a new agenda for social scientific research. And I want to explore some of the many implications of information technology for social transformation and also transformation of social science. I will focus especially on culture, both to keep to a manageable scope and to make it easier to connect my discussion of the social sciences to issues in then humanities. Many social scientists have concurred with politicians and journalists in pronouncing these implications momentous, but there is strikingly little serious social science research on many of the key issues. In the course of considering these two large themes, I will touch more briefly on questions of the infrastructure for and organization of social science itself, insofar as it shapes our capacity to respond effectively to demands for new knowledge.

Internationalization.

The complexity of international issues today is suggested by controversies over the very term. Should we instead say 'global', 'transnational', 'cross-cultural', or perhaps 'non-national'? The terminological disputes are not without meaning. Among other things, they reflect questions about whether the nation-state is being eclipsed as the overwhelmingly dominant organizational unit of activity. It has been the pre-eminent wielder of power, container of populations, and even arena of economic activity through much of the modern era. It has shaped our very idea of culture, as this was cast in the image of nation, giving us an approach to cultures as discrete and internally integrated units.[2] Of course the ideology of nation-states always masked the amount of activity

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[1] See, for example, Immanuel Wallerstein, et al. *Open the Social Sciences: Report of the Guilbenkian Commission on the Restructuring of the Social Sciences*. Stanford: Stanford University Press, 1996.
[2] See, among many discussions, Arjun Appadurai, *Modernity at Large*. Minneapolis: University of Minnesota Press, 1997.

cutting across their borders. The development of passports, for example, reflected the scale of this as well as attempted to control it.

The rise and practice of social science has been closely tied to the nation-state. The modern discipline of history developed in large part as national history, serving a public and often nationalist function as well as a more 'scientific' one. Economics, political science, and sociology all have roots in a political economy that grew as a source of information for public policy and debates about that policy. It grew out of cadastral, demographic, industrial and other surveys investigating the state of national populations and their economic productivity. It grew out of questions of whether the wealth of nations was better advanced by mercantilist or free-trade policies. It grew out of attempts to reform welfare policies, working conditions, and criminal justice systems—within and for nations. When social science turned its attention to international phenomena, the nation-state remained organizationally basic. I do not mean just that the social scientists continued to work in ways that reflected their own national locations, though this is true. I mean that they took nation-states as the basic units of analysis, equating them with 'societies'.[3] As a result, multinational states appeared as problematic deviations from the ideal-type, internal integration was exaggerated and the fluidity of boundaries underestimated. Comparative research flourished, but continued to be organized primarily as comparisons of nation-states—even when it asked questions about families, businesses, or social movements. This was reinforced by the ways in which large-scale data sets were created. Often, they were—and still are--based on data provided by states. Even where this was not their provenance, the states remained the typical units of study. As a result, social science helped to reproduce the pre-eminence of the nation-state as an organizational form as well as to mislead itself by exaggerating this. Accordingly, a number of social scientists as well as journalists and others could discover 'globalization' in the 1980s and 90s as though it were a new phenomenon.

The place of nations and states in the world is changing, but the capacity of social science to grasp the changes is itself impaired by its own embeddedness within state projects and national categories. We see the change even in fields like international relations. The name reflects an overwhelming concentration on relations between one nation and others—which in practice means between the agents of one state (claiming to represent a nation) and others. As a discipline (or subdiscipline of political science, depending on how you see it) international relations grew up with a heavy emphasis on informing the foreign policies of individual states. But among the hottest topics for IR specialists today is the growing prominence of nonstate actors in the 'international' arena. Non-governmental organizations, multilateral international organizations, and multinational or transnational corporations all are being recognized as playing vital roles both in the political arena and in an organization of global activity that transcends the political control of states.

It is worth noting that much of the change in the views of social scientists has been driven by the internationalization of social science itself. This is not a substitute for

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[3] See Calhoun, "Nationalism, Political Community, and the Representation of Society: Or, Why Feeling at Home Is Not a Substitute for Public Space," *European Journal of Social Theory*, Vol. 2 (1999) No. 2, pp. 217-31.

research on international phenomena, but it has been a spur and a source of new perspectives. This internationalization includes at least four dimensions.

First, there is simply the growth of social science outside the regions where it first became prominent. In the simplest terms, this means that there are more and more social scientists outside Western Europe and North America. Such growth in numbers has not been evenly distributed. For example, social science grew very importantly in the former Soviet Union and some Eastern European countries during the mid-20th century, and indeed was closely tied to policy-making. It has been transformed since the late 1980s, though not always with new sources of funding replacing lost ones or with a simple result of 'growth'. Elsewhere in the world too, advances have sometimes been followed by setbacks attendant on financial crises, political repression, or other problems. Nonetheless, social scientists are much more widely distributed throughout the world today than ever before. Indeed, our host country China has itself seen some of the most dramatic recent growth of social science anywhere. This broader distribution in the growth of social science brings not only a new range of new cultural perspectives, but also attention to different institutional arrangements, and perspectives shaped by the development of research in different kinds of institutional settings and in different relations to both global political economy and global social science itself.

Second, there are greater international linkages among social scientists and better flow of information and perspective among regions and countries. This reflects new communications technologies, of course, and also greater ease of travel to international meetings. It also reflects the growth of high quality research traditions in a variety of settings. Not least, it reflects generations of international training and higher education. Much of this has involved the education of social scientists from all over the world in European, American, and Australian universities. For a time, there was a partially complementary flow to Soviet and East European universities. Increasingly, though, this is now also a matter of the development of international centers located outside the OECD countries. Within each region there are universities that attract nationals from neighboring countries. There are also other long-distance flows: Africans who study in India or Brazil, for example.

These flows are not limited to education and this really amounts to a third factor. Social science is also become international because of the international migration of social scientists—and of people who may become social scientists. One of the factors transforming "foreign area studies" in the United States, for example, is the dramatically increased presence of social scientists who have migrated—temporarily or permanently—from other regions. Such migration is uneven, however, and one of the most important factors differentiating different national social science research communities today is the extent to which they have benefited from attracting international migrants. This is closely related to both the long-term economic growth and prosperity of countries, of course, and to their internal multiculturalism. In any case, the influence of intellectual diasporas on contemporary social science is profound.

Fourth, and partly because of the first three, social science has become substantially more international in its content. While it has included comparative and cross-cultural dimensions from its inception, these have not always been central to research and especially to the pursuit of theory and generalizable empirical knowledge.

Despite the strong international concerns of many of the early founders of social science traditions—from Adam Smith to Karl Marx, Alexis de Tocqueville and Max Weber—disproportionate funding was available for domestic research and problem-solving efforts, particularly in the crucial period of growth after World War II. Social science concentrated increasingly on the study of the domestic affairs of nation-states (and especially Western nation-states). Much work sought universal laws or at least generalizations about social processes that were (and in some cases still are) conceived as outside cultural, historical, or regional variation in the world. The study of the non-Western world was located largely in distinct fields like anthropology and orientalism. In the United States and in varying degrees elsewhere area studies fields became prominent in the 1960s, organizing knowledge of "foreign regions". While such fields remain important, in recent years there has been growing movement away from the 'compartmentalization' of knowledge in regional terms. A beneficial result is that a growing diversity in the range of empirical cases informs the development of social science generally. This means partly that work in other national settings has more influence on the development of general theory, overcoming bias towards home countries built into generalizing from local cases. It means also that more work specifically addresses international phenomena—from international trade to international migration--not just different national cases.

This said, it is important not to be overoptimistic about how much internationalization we have achieved. This is an area in which we still have a long way to go. Much of the vaunted internationalization of social science (as of the rest of research) has joined scholars in a small number of rich countries, and sometimes a very narrow elite from elsewhere. There is substantial growth of other flows and connections, but the transformation this portends has just begun and inequalities and exclusions are apparent. Access to the Internet is a great boon to international connection, for example, but it is itself very unequally distributed.

More generally, disparities in funding are a big factor. Substantial investments in social science are needed from governments and private sources in developing countries. Too often, however, such investments in research and education are not recognized as an important part of development strategies. Similarly, political freedom for scientific inquiry is vital. Too often, sadly, scholars feel they gain a freedom for critical analysis when they work outside the contexts they analyze. It is useful—indeed crucial--for international intellectual centers and networks to provide settings for this. It is important, though, that these be as widely distributed as possible. More growth of major international (as distinct from national) centers outside the OECD countries is needed. So are new partnerships linking scholars from a range of countries.

Not least of all, we should not overestimate how much the greater international interconnections among social scientists have transformed knowledge. A great deal is still produced with nation-states uncritically assumed as the basic units of variation (and thus with insufficient attention to intra-national variation as well as to patterns that cross-borders). A great deal still seeks the universal rather than incorporating attention to differences in culture, history, and institutions. It is a commonplace to stress the significance of globalization but still important. This poses a tremendous demand for new knowledge which we have barely begun to meet. Some of this is literally knowledge of

globalizing forces, but some of it is also knowledge of how these are shaped and reshaped in various local and regional contexts.

Economic dimensions of globalization have commanded the most attention and are indeed dramatic.[4] But even here it is important to remind ourselves that the processes—whether of capital flows or international trade—are not evenly distributed around the globe. Not only inequality generally, but new organizations of inclusion and exclusion are basic. Many of the past achievements of economics have focused on the development of highly general abstract models. Much of the future belongs, I think, to those who attend better to mediating institutions, to divergent local and regional cultures of capitalism, and to the development of alternative institutional forms.

Similarly, the role of culture and media in globalization are often remarked but less often studied systematically by social scientists. The issues here are profound, however. They include questions about what content is circulated and who controls it (linked partly to the narrow range of large corporations that dominate in the global media). They include questions about the relations of global media to local media and networks in which discussions flow. Among other things, we need to ask where and how different media support public spheres within which democratic discussions may flourish. Not least, though, global media raise questions about governance and sovereignty. States have attempted various strategies for regulating the media or producing their own state systems. These are challenged today by the Internet and other new media, with implications we are only beginning to discern.

Globalization has brought a proliferation of new kinds of organizations. These actors in 'global' civil society demand the attention of social scientists—and are also employers of social scientists and producers of new kinds of knowledge. These include obviously, as I remarked above, NGOs and international organizations. But they include also and crucially business corporations operating internationally or nonnationally. Social science has yet to adequately examine the implications of these for questions of power and inequality—and also for questions of social solidarity and belonging, cultural flows, and individual participation in global society.

Globalization is not a new process, of course, but one that in varying degrees has shaped the whole modern era. European exploration, colonization, and imperialism shaped globalization from the 15th through the 19th centuries. All this time markets also grew, reorganizing long distance relations. States mediated both sorts of processes, organizing them in relations between the domestic and international as well as zones of peace and violence, force and persuasion. The current phase of globalization is marked, like earlier ones, by respatialization. The shifting place of nations and states is central to this. These both still matter, and indeed come to the fore as they are challenged. But on the one hand the power of states to regulate and/or produce a variety of goods is challenged. On the other hand, national aspirations drive rebellions against existing state structures throughout the world. It may be paradoxical, thus, but it is understandable why nationalist movements flourish, seeking to form new states, even while the state as such

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[4] I will not attempt to review the literature on globalization here. Perhaps the best single overview is to be found in the work collected in David Held, Anthony McGrew, David Goldblatt, and Jonathan Perraton: *Global Transformations: Politics, Economics, and Culture.* Cambridge: Polity, 1999.

is undergoing curtailments of some of its powers. At the same time, we should not be too quick to speak of a total eclipse of the state. Some states retain enormous strength, though this varies, and states remain crucial mediators of global processes. Similarly, national identities are by no means vanishing before a simple global cosmopolitanism. They remain resonant and in certain ways are brought to the fore as people struggle to establish how they will fit into this new global order (or disorder).

Globalization, nonetheless, transcends states and international relations in important ways. One of the most significant is the effort to achieve regional integration of various sorts. This may be limited to some basic forms of cooperation or it may extend to full-scale projects of transnational unification. Either way, globalization is in part a process of regionalization. Just what the regions are is a matter of political, economic, and cultural projects, though, not simply given by history. Might there, for example, be a kind of Islamic region in the world in which religion is more salient than geography? Thinking of our location here, it is not obvious when to speak of East Asia as distinct from Southeast Asia or Indochina and when to consider them joined. What of the Pacific rim more generally, or of the countries of Chinese diaspora more narrowly?

If globalization gives supra-national regionalization more importance, it also returns subnational regionalization to the forefront. Demands for regional autonomy, devolution of power, and sometimes secession are a concomitant—perhaps ironic—of greater global integration. In addition, cities have become vital nodes in networks of global flows. They carry their own identities, not fully absorbed into national ones. They produce their own mixtures of ethnicities, their own patterns of cultural creativity, and their own economic agendas. Renewed attention to cities as basic units of social organization is important for social science.

Flows of people, goods, services, substances, knowledge and culture transcend nation-states. Yet, states remain the primary units for trying to regulate and monitor such flows. They are the main sources for laws classifying some activities as criminal or illegal and sanctioning others. Some international law is growing, but unevenly. One of the byproducts of this is that different sorts of flows are more or less visible, and state-level data about international flows more or less distorting. Estimates of the annual value of illicit trade—that which operates outside customs agents and tax authorities as well as that involving exchange of forbidden goods—run into the trillions of dollars. Clearly an issue for states, and for economic and social life generally, this is also an issue for social science because it means that we either lack data or have very problematic data on a large and important class of activities.

Globalization and new international processes matter in a host of other ways I can't delineate here. I would note, though, the significance of global "emergencies" as a new class of social phenomena. These may be natural or humanly produced in varying degrees. What is new is the extent to which they are globally visible in real time because of new media, and the extent to which attempts are made to deal with them by a combination of international state action and action by international and nongovernmental organizations. This reflects a sense of complicity in some of the tragedies, and a new sense of connection to distant events. It also reflects a frequently illusory sense that we have a technical capacity to "manage" such emergencies. In any case, alongside images of global social structures and global flows of culture, people or

goods, our image of the world is increasingly one of a fluctuating global set of emergencies. Indeed, images of emergency may be as important today and for the near future as images of development, with their more confident suggestion of progress. Social science has a role to play in understanding the implications of how we see—and thereby give shape to—the world, as well as how we can understand specific contexts and plan practical action in them.

Information Technology

Information technologies are the subject of frequent conversation, voluminous journalism, massive investments, 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 then practice of social science itself. How we use them as 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 larger 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. In addition, the issues involved in information technology are inherently multidisciplinary; they are dealt with inadequately either by technologists seeking to study them without the discipline of social science theory and methods or by members of individual disciplines working in isolation. Finally, Existing analysis of information technology is informed largely by anecdote and personal experience. It has a minimal basis in 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.

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 labor. 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 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.

These obstacles impede understanding that is important not just domestically but internationally. The Internet is touted as a basis for civil society, democracy, and social movements—as in the 1999 Seattle protests against the WTO. But it seems even more prominent a basis for the international organization of markets and production. Unfortunately there is little empirical work systematic enough to provide for a comparative analysis. Difficulties in sustaining access to the Internet hold back large parts of the world's population from full participation in economic, political, and cultural opportunities. Equally, the policies of many states as well as the organization of markets in much of the world shape patterns of Internet access and use that are quite different from those in the US or other OECD countries. Individual-level access may be more restricted, with greater attempts at censorship, and state organizations may lay a larger role in both providing and filtering access. The implications are huge—as for example the Internet shapes both the public availability of political information and the opportunity to join in the creation and distribution of culture—but the empirical research needed to understand them is just getting started.

A number of theorists have begun to reshape understandings of contemporary society and culture in ways that recognize the importance of information technology. Some have adapted existing resources, like Habermas's theory of communicative action or Giddens' structuration theory.[5] Others have begun to generate new syntheses and perspectives.[6] It is striking, though, that the leading synthetic analyses of the field show almost no linkage between these theoretical

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[5] See, among several, Terje Rasmussen, *Communication Technologies and the Mediation of Social Life* (London: Ashgate 2000), and Craig Calhoun, "Community without Propinquity Revisited: Communications Technology and the Transformation of the Urban Public Sphere," *Sociological Inquiry*, vol. 68 (1997) #3, pp. 373-397; "The Infrastructure of Modernity: Indirect Relationships, Information Technology, and Social Integration," in H. Haferkamp and N.J. Smelser, eds.: *Social Change and Modernity*. Berkeley: University of California Press, 1992, pp. 205-236. Overall, however, it is surprising that neither Habermas's nor Giddens's theory has been the basis for sustained empirical inquiry into information technology, either by the author or others. Rasmussen's work makes some links but is concerned mainly with relating their theories (and Calhoun's) to media theory.
[6] The most important of these to date is that by Manuel Castells, *The Information Age: Economy, Society, and Culture* (Cambridge, MA: Blackwell, 1997; rev. ed. 1999). See also the review symposium in *Prometheus* #3 (March 2000).

visions and empirical research.[7] Equally striking, the Internet and information technology figure in none of the most influential recent anthologies of social science research on culture.[8] They have had somewhat more presence in cultural studies as developed in the humanities, but seldom based on systematic empirical research, and most commonly focused on interpretation of content without linkage to a more encompassing analysis of practices or institutions.[9] Media studies has made the strongest links between theory and research, though again, the links are strongest when connections to broader dimensions of cultural analysis are least pursued.[10]

There has been relatively little systematic research on the social implications of information technology, and what there is has concentrated most on individual usage patterns and market activity.[11] There is only a beginning to research on institutional dimensions of informatics, and cultural factors are seldom the focus of attention.[12] There are scattered anthropological inquiries into communities mediated by information technology, including some analysis of the broader cultural implications.[13] And there is research on social psychological aspects of the information society, some of which does make cultural factors central.[14] In fact, many of the best analyses are synthetic interpretations, with only rudimentary bases in either theory or systematic research.[15] It is

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[7] In addition to Rasmussen, op cit., see., Frank Webster, *Theories of the Information Society* (London: Routledge, 1995; rev. ed. 1999);

[8] Diana Crane, *The Sociology of Culture: Emerging Theoretical Perspectives* (Cambridge, MA: Blackwell, 1994); Victoria E. Bonnell and Lynn Hunt, eds., *Beyond the Cultural Turn: New Directions in the Study of Society and Culture* (Berkeley: University of California Press, 1999); Sherry B. Ortner, ed., *The Fate of "Culture"* (Berkeley: University of California Press, 1999).

[9] See, e.g., Simon During, *The Cultural Studies Reader* (London: Routledge, 1999; information technology is mentioned in passing); see also the journal, *Cultural Studies*, which does include work on information technology, especially from a media studies orientation. For an exemplary account of information technology as a literary theme and motif, see Richard Coyne, *Technoromanticism: Digital Narrative, Holism, and the Romance of the Real* (Cambridge, MA: MIT Press, 1999).

[10] David Gauntlett, ed., *Web Studies: Rewiring Media Studies for the Digital Age* (London: Edward Arnold, 2000) calls for more attention; Andrew Calabrese and Jean-Claude Burgelman, eds., *Communication, Citizenship, and Social Policy* is excellent, but only touches glancingly on cultural analysis. See Donald R. Browne, *Electronic Media and Industrialized Nations: A Comparative Study* (Ames: Iowa State University Press, 2000) for a useful empirical survey of state policies, though with minimal analysis and almost nothing on culture.

[11] See the forthcoming review by Paul DiMaggio and Eszter Hargittai, *Annual Review of Sociology*. Also Karen Cerulo, "Editor's introduction" to the special issue of *Sociological Perspectives*, vol. 68 (1997) #3. See also Daniel Miller and Don Slater: *The Internet: An Ethnographic Approach* (New York: New York University Press, 2000), which mostly focuses on the individual user, but suggests ways to reach beyond this.

[12] Remarkably, Doug Guthrie's study of patterns in use of the Internet by Fortune 500 companies stands almost alone as a systematic empirical study of institutional factors (including cultural models). See *American Sociological Review*, 2000. See Donald R. Browne, *Electronic Media and Industrialized Nations: A Comparative Study* (Ames: Iowa State University Press, 2000) for a survey of state policies, though with minimal analysis.

[13] David Hakkan's *Cyborgs@Cyberspace* (NY: Routledge, 1999) is a good inquiry into the strengths, weaknesses, and possibilities of anthropological work in the field. The serious examination of online and other 'virtual' communities dates to Howard Rheingold's *The Virtual Community* (NY: HarperCollins, 1993).

[14] Most notably, see the work of Sherry Turkle, including *Life on the Screen* (NY: Simon and Schuster, 1997).

[15] See, e.g., James Slevin, *The Internet and Society* (Cambridge: Polity, 2000); Tim Jordan, *Cyberpower: The Culture and Power of Cyberspace and the Internet* (London: Routledge, 1999).

clear, however, that a great deal more research is needed before scholars, policymakers or the public will have a good grasp of information technology—or of contemporary culture, since information technology looms so large in it. Accordingly, the present proposal does not simply seek funds for a specific research project. Rather, it seeks to generate a research agenda that can be shared among a large number of scholars, and a collective sense of key intellectual problems and approaches that can help to anchor a self-sustaining program of research in the field.

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 but also new patterns of inequality and exclusion, changing the significance of distance and proximity, empowering protesters but also corporate and government surveillance.

Running through each of these but also demanding attention as a topic in itself is culture—the manifold ways in which human beings give meaning to their lives together; develop specific identities; pass on local traditions and conceive religious faiths, philosophical truths, and artistic expressions that transcend them. Let us take this up briefly as an example of how social science attention to information technology is needed not only in seemingly obvious domains like "digital divide" and markets for information, but throughout social life. It is also worthwhile to consider because more than some other aspects of IT it bears equally on humanities and social sciences.

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. McLuhan argued more than a generation ago that "the medium is the massage", and we see today a host of ways in which use of the new technologies shapes communication and social interdependence.[16] 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

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[16] Marshall McLuhan and Quentin Fiore, *The Medium is the Message* (New York: Bantam Books 1967).

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 possible 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 suggests 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. Here lies the opportunity and challenge for the contemporary social sciences.

Culture is never simply a fully settled inheritance but always also a creative undertaking. New production and reproduction are never sharply separable. Old themes retain cultural currency, for example, partly because they are reworked in new novels, plays, and paintings—as well as because new ways are found to think about or teach older art. An approach to the relationship between information technology and contemporary culture, thus, needs to address both active reproduction and new creation. It needs to resist romanticizing the novelty of the web or other electronic media, examining the ways in which new technologies are harnessed to enduring themes of cultural production—and indeed cultural conflict. At the same time, an attempt to grasp culture entirely externally, without attention to the creative process (of interpreters as well as artists) or to dimensions of experience or meaning is deeply problematic. One need not exaggerate novelty to focus on creativity in culture.[17] One need not sacrifice rigor to attend to meaning.[18]

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[17] See Hans Joas, *The Creativity of Culture* (Cambridge, MA: MIT Press, 1998), esp. chapter one.
[18] A movement in the sociology of culture during the 1980s and 1990s stressed entirely external analysis in order to achieve objectivity and legitimate the study of culture within a skeptical discipline. For the

At stake, among other things, is the way in which new technologies change social relations themselves by contributing to change in creativity and the social imaginary. The term "social imaginary" points to the extent to which social life is made possible by certain ways of imagining the world, the ways in which creativity makes possible new social practices, new identities, new senses of reality.[19] A nation or a corporation, thus, exists in part because it is imagined in literature or law and that imagining is extended into everyday social practice. The question of how people conceptualize and act in relation to electronic networks—as exemplified by the notion of 'virtual reality'—is fundamentally an issue of this kind.

More generally, much of the work of culture consists of creating—and constantly shaping and reshaping—the understandings of self, social relations, humanity, and indeed the natural world—which are constitutive for life together. The most profound possible impacts of new technologies come as they change the very imaginary processes by which social life is made possible. Print did this, helping through novels and newspapers to create a new narrative consciousness of reality and a new understanding of the ways multitudes of individuals fit together in historical narratives and indeed in nations.[20] Print did this not simply on its own, as externally technologically determinative, but because it was taken up by what Anderson calls "print capitalists" and made the basis for an enormous industry of production and circulation, and because creative culture producers provided that industry with imaginary products more compelling than shipping news and exchange rates. Computers, likewise, have already changed our understanding of what it is to be a person. Television has reshaped our images of a common humanity. The Internet and a dozen other faces of new information technology may do likewise, transforming identities person or political, felt connections and even the relationship between local and space-transcending community. At the same time, new information technologies also come bundled with capitalism, and with particular enterprise and market cultures.[21] What aspects of these will they help embed so deeply in the social imaginary that they seem simply objectively real? It is important to link attention to the most immediate questions of how the new technologies are being used in cultural production and circulation to these broader questions about how they may figure in cultural change that changes the shape of society itself.

Consider the business of creativity. The very phrase seems to cross two domains that social science has kept separate. Yet, creativity has become a byword of the

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argument of one of the most subtle researchers to make this turn, see Robert Wuthnow, *Meaning and Moral Order* (Berkeley: University of California Press 1989). See also the discussion in Craig Calhoun, "Beyond the Problem of Meaning: Robert Wuthnow's Historical Sociology of Culture," *Theory and Society*, vol. 21 (1992): 419-444.

[19] The term "social imaginary" was used in a related (but also heavily psychoanalytically informed) sense by Cornelius Castoriadis; see *The Imaginary Institution of Society* (Cambridge, MIT Press, 1998; orig. 1975). The usage here is informed also by Benedict Anderson's similar but less theorized phrasing in *Imagined Communities* (London: Verson, rev. ed. 1991). See discussion in Charles Taylor, "Modern Social Imaginaries," draft ms., and Craig Calhoun, "Nationalism and the Modern Social Imaginary," draft ms., both for a special issue of *Public Culture* on "New Imaginings".

[20] Anderson, op cit.

[21] On the remarkable libertarian individualism of some part of these cultures, see the critical polemic by Paulina Borsook in *Cyberselfish: A Critical Romp through the Terribly Libertarian Culture of High Tech* (Washington: Public Affairs Books, 2000).

information economy, and the conception of technology professions as creative occupations has reshaped corporate cultures, office design, the relationships between large and small producers, and—thus far in relatively small ways—the place of artists in relation to that economy. But what really constitutes creativity in the information economy—in comparison, for instance, to ostensibly old economy corporate structures and practices on one side and artistic creation on the other. Moreover, how should creativity in these different contexts be fostered? The intensifying battles over copyright protection are one aspect of this issue, and include not only traditionally 'artistic' professions such as musicians, but increasingly writers of computer code and other areas of what has been more traditionally conceived as economic property. Legally, however, copyright is not the same as property right, and incorporates a notion of the public good (at least in the United States). The free software and open source movements that have formed in the context of these issues are distinct and in some respects powerful technology counter-cultures that may restructure the notion of intellectual property in ways that have implications far beyond the software industry itself. One of their common claims is that in the absence of copyright, personal branding or 'reputation capital' would become a viable economic resource for cultural producers. These are issues that have generated considerable controversy and position statements, but very little empirical research.

So much has high technology capitalism become identified with creativity—and indeed a kind of aesthetic engagement, at least in some of its sectors—that this is changing basic images of capitalism for many people. Capitalism has often been subject to criticism on aesthetic grounds.[22] Especially in its mass produced forms (though also in its environmental depredations and sometimes its contributions to the built environment) it has been declared ugly. Aesthetic criticism sometimes provided an artistic supplement to the redistributive criticism of workers and social critics. To what extent has this link been broken? To what extent has high technology capitalism created a new aesthetic sensibility and image? If so, what is it? What dimensions of advertising, design, workplace culture, machine aesthetics combine to give it shape and meaning? To whom is it meaningful? How does the culture of information technology get reshaped and exert its own shaping influence in different host cultural traditions—China, say, or the Arab world?

Likewise, consider cultural markets. Electronic media largely eliminate the economies of scale in production and distribution traditionally enjoyed by large firms. They thus raise the possibility—celebrated by many technologically forward-thinking artists—of direct publication or distribution of cultural goods by cultural producers. Cutting out the corporate middlemen (such as publishers or record companies) may radically lower the cost of access to cultural goods. It may also remove many of the pressures on artists and cultural producers to conform to corporate-tested formulas for success. The emerge of a less mediated market for cultural is dependent on micro-payment schemes and other infrastructural and cultural issues—including changes in the tactile and sensual expectations that structure markets for books and other cultural goods, and the technical ability to avoid widespread piracy of relatively high-priced goods, such

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[22] See the insightful discussion in Luc Boltanski and Eve Chiapello, *La Nouvelle èsprit du capitalisme* (Paris: Gallimard 1999)

as movies. Nascent examples of such direct markets already exist, but little effort has been made to study their viability or potential.

New media are also changing patterns of participation in art worlds. Rapidly dropping costs in computing power and other technologies are putting new and more powerful tools in the hands of cultural producers, lowering the costs of production of a wide range of cultural goods. But what new forms of creative activity actually become possible in this context? How do older genres adapt and/or disappear in the face of technological media that promise do some things, such as immersive 'virtual world' experiences, far better than older media? How is the experience of viewing (or more generally accessing) work on-line different from that of books, museums, galleries, and other venues or media? How are 'technoartists' and other experimenters exploring these possibilities and prompting us to examine how we conceive of technological systems. More empirically, who is gaining access to this art work and how interactive is that access? How is it distributed across different dimensions of the population? How does this vary with the kind of art, the national context, and other factors? What patterns of criticism, commentary, and pedagogy mediate electronic access to art?

The Internet raises a range of issues about individual and collective identity. As a new communications medium, the Internet offers a variety of opportunities for communication within a variety of groups, and also collective representation of various socio-cultural identities. For example, web sites and listservs link members of numerous diasporas, maintaining national or other connections. Some sites are targeted at members of specific racial and ethnic groups; others are media for racial and ethnic antagonism. Whether the new technology fosters enclaves or cross-cutting patterns of association, a broader sense of shared humanity or special-interest associations is an important matter for further research and theorization.

Closely related to this is the question I posed above about media amid globalization: to what extent and in what ways are they enabling people to come together in public discourse. This is a question about localities, and whether they are aided or impeded by use of the Internet. It is also a question about whether information technology can provide infrastructure for an international public sphere. The Internet is widely touted as the basis for an emerging global civil society, a basis for political and cultural participation, social movement mobilization, opinion formation, and mutual understanding. Is the Internet actually providing an effective basis for this cosmopolitan vision? What are the actual patterns of use of the Internet in global civil society? How much is proprietary, and how do commercial uses of the Internet affect non-commercial ones? To what extent is does the Internet underpin a global formation of public opinion, and to what extent does it underpin multiple largely separate publics (e.g., on religious or linguistic lines)? How are these linked? What is the ecology of relations among various media in providing information (and opinion) on a global scale and about global affairs? To what extent (and by whom) is the reception of such communication matched by interactive responses in the public sphere?

To what extent also is this apparently universal medium or set of technologies shaped by culturally specific uses? It was asserted above that new information technologies often come in a package with features of Western (especially US) culture, including especially commercial culture and perhaps a libertarian-individualist ethos.

How generally is this true? What are the ways in which information technology had been incorporated into and/or made the medium for other cultural traditions and other lines of cultural creativity? How are computers and electronic communication used differently when informed by different cultural contexts? How are various cultures changed by the incorporation of the new technologies?

Last in this list, but not least of all, culture is one of the many domains in which information technology is likely to both introduce help overcome some inequalities and introduce new ones. Much is made of the extent to which lack of access to information technology may hamper economics development in much of the world. What of the effects of unequal access on cultural participation? This is a question about who gets to shape global culture, but also about what kinds of cultural creativity can be expressed within various national and local cultures. Information technology can and does give voice to many in struggles for cultural survival as well as political rights and economic development. Witness the Internet linkages among groups of indigenous peoples and organizations campaigning on their behalf. In addition, global media saturation is an important background to the widespread agenda of a cosmopolitan concern for humanity as such. But the most massive penetrations of information technology may not be organized in ways that provide for indigenous cultural expression or respect for the rights of indigenous peoples (including to cultural knowledge on issues like plant diversity which touch on the alternative cultures of Western science and capitalist commerce). The interests and thus the information technology and cultural policies of national elites may conflict with those of more local populations. In short, there are challenges from both the spread of information technology and gaps in access to it, and the topography and internal dynamics of both sorts of challenge are inadequately understood.

As it is creatively produced and reproduced, as it is spread globally by satellite television and the Internet, as it is rendered a good for sale and consumption, culture is shaped by computers, communications media, and a host of related information technologies. Not least, since the technology is costly, the diffusion of culture continues to be shaped by the availability of economic resources. This is not simply a matter of access or exclusion—though it is that. It is also a question of what kinds of creativity will be brought forward through information technology, what practices will become customary within it, and at the most extreme, of what cultural traditions will survive and which will flourish. These are themes in need of research from humanists and social scientists, each branch of learning influencing the other, and scholars from both in direct communication with interested members of the worlds of art and technology.

Conclusion

Social science is challenged by demands for new knowledge amid globalization, new information technology, and a host of related social changes. It is also challenged to produce this new knowledge in a changing institutional framework. One part of that change is itself the creation of new international organizational bases for social science. We need new partnerships, but also organizations that nurture international networks without defining themselves in national terms. We also need centers for research and education that both bring together social scientists and provide them with the necessary infrastructure for research.

We must figure out how to meet this challenge, as it happens, in a period when the institutional bases for science and higher education and themselves undergoing a transformation. Around the world, higher education (and large-scale scientific research) have been largely based on public funding. In most places, this has meant primarily state funding, though in the US and some other settings private philanthropy has played a large role in providing public goods. Currently, though, much of the growth in higher education and research is driven by markets and indeed in many cases the pursuit of profit. This is partly a matter of private universities, and partly of corporate internalization of scientific research (including the reorganization of research often started in universities as private business based on venture capital).

This trend holds considerable important for all manner of educational questions, of course, including equality of access, what subjects are likely to flourish and which fade, and how closely linked research and teaching will be. Its implications for research are equally momentous. Among those which social scientists and humanists should consider are what the implications are if this brings an increasing separation between scientific research closely related to technology and thus potentially profitable products and other lines of research such as most of our own. If many natural and physical science researchers shift from universities to industry at the same time that universities become more driven by market considerations, what will this do to the production and indeed reproduction of social science and the humanities. The social sciences have always straddled the boundary between science and the humanities. Will there be new pressure to choose one side or the other?

A variety of questions follow about the organizational forms within which higher education and research will be pursued in the future. Many combine influences from information technology. For example, will distance learning become more important? Whether on campuses or working at a distance, it seems clear that students, teachers, and researchers will all rely more and more on informational resources stored on computers and distributed by networks (including the Internet). What does this mean for libraries? How will it reorganize scholarly access? And what of scholarly collaboration? Certainly the new technologies suggest new ways for researchers to join forces, to share data, and to communicate—nearly in real time. This is a promising possibility, but it will also bring changes and challenges. Indeed, this is already happening as the new technologies and new market forces combine to threaten academic publishing with radical transformation.

There are also more substantive changes. New computational power and new informatic modes of data collection are apt to change research methods. In some fields, they may allow for extremely large data sets (including such enormously large sets as serious data on the Internet itself). In other fields, they may allow for total population data, and suggest that analytic techniques focused on pattern recognition should gain prominence alongside (or sometimes instead of) more familiar linear approaches to statistical inference. The effects of the new technologies will be felt unevenly across fields of knowledge and very likely will introduce new biases by making attractive data and powerful techniques available for some questions and analytic approaches and not others.

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,

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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.