Environment and Planning A 2003, volume 35, pages 1151 – 1156

DOI:10.1068/a3623

Guest editorial

The dialectics of geographic and virtual space

This theme issue originated in discussions at the AAG Economic Geography Specialty Group business meeting in Pittsburgh in early 2000. At that time, a dearth of published economic geographic research on the emergent Internet economy together with the dot.com boom made a set of sessions on "The Spatial Implications of the New Economy" an attractive proposition. By the time these sessions were held at the New York AAG meetings in March 2001, where most of these papers were initially presented, much had changed. The new economy had gone from boom to bust, and a cluster of related economic geographic research was emerging. Kellerman's (1993) *Telecommunications and Geography*, Graham and Marvin's (1996) *Telecommunication and the City*, and Castells's *Rise of the Network Society* (1996) were supplemented by Kitchin's *Cyberspace* (1998), Castells's *Internet Galaxy* (2001), Graham and Marvin's *Splintering Urbanism* (2001), and a variety of edited collections (Janelle and Hodge, 2000; Leinbach and Brunn, 2001; Wheeler et al, 2000; Wilson and Corey, 2000), and special journal issues ("Exclusion and empowerment for real and virtual communities" *Urban Geography* 1999; "Mapping globalization" *American Behavioral Scientist* 2001; and "Electronic commerce" *Tijdschrift voor Economische en Sociale Geografie* 2002). So what justifies another theme issue?

Although the 'new economy' may now seem passé, the issues surrounding the concept remain pertinent. Telecommunications technologies continue to change rapidly, focused on but also diversifying around the Internet. As has been the case again and again throughout history, a restructuring of the spatial and temporal nature of economic systems is also at the center of the distinct economic relations that are emerging. Thus the question of whether they are resulting in a qualitatively different economy, or economic geography, requires ongoing attention.

Of particular interest to geographers, and the focus of this theme issue, is the relationship between the virtual spaces of telecommunications networks and the geographic spaces conventionally analyzed by economic geographers. (We use the term 'geographic space' here as shorthand for the socially constructed spaces produced on the earth's surface.) Two broad claims about this relationship persist. First, it is argued that information technologies are creating a distinctive (here dubbed digital) era of globalization in which the marginalization of geographic distance enables new possibilities of human development. In this view, the Internet is a key catalyst of digital globalization, collapsing space, challenging the integrity of places, leveling the economic playing field, and also realizing a brave new world that can be governed by Adam Smith's invisible hand of the market. By facilitating the elimination of state-regulated territorial spaces, minimizing geographic space as a barrier to economic transactions, and raising the possibility of perfect information, the Internet can allow competitive capitalism to achieve Smith's dream on a worldwide scale. Many pro-globalization pundits thus present this as an era of globalization when geography and history end, and inequality and poverty disappear. Second, it is argued that telecommunications is producing a network society, in which a highly interdependent space of flows, constituted through electronic impulses, dominates the meaning and dynamic of places (Castells, 1996). Castells is profoundly critical of such pro-globalization views, but

shares with them the notion that the virtual geographies of cyberspace are dominating the production of geographic space.

As geographers begin to examine closely the relationship between cyberspace and geographic space, however, they are discovering, contrary to common beliefs, that geographic space offers defining principles that profoundly shape the structures of virtual spaces. Although distance-killing technologies enable real-time business-to-business, business-to-consumer, and peer-to-peer communications, freeing previously geographically constrained activities from their embedded places, seemingly footloose cyberspace activities remain dependent on constraints posed by geographic space. Geographic context, territorial structures of regulation, and physical communications infrastructure shape, to a large extent, production and consumption in cyberspace, and geographically induced frictions play a role in the relationship between virtual and real places. In short, dialectical tensions exist both within and between geographic and virtual spaces, meaning that neither is reducible to the other; dialectics, inter alia, of specificity and universality, of liberating flows and grounded forces, and of the contrasting logics of distance and proximity.

Research on networks, for example, has brought new ways of thinking about place and geographic relationships in the information age. Yet the danger exists of focusing too much on the network itself, neglecting to analyze forces on the ground that drive the very shape, structure, and relationships of networks, with the consequence that geographic places are increasingly understood simply as serving as nodes and hubs of global networks. Recognizing that network spaces are themselves internally differentiated, and their structures are shaped by geographical processes, can restore balance to the analysis by recognizing that virtual space is also shaped by geographic space.

Virtual space can challenge the logic of geographic space. The ability of cyberspace to deliver real-time information and digitized commodities across the globe can generate dramatically new locational patterns. Information-based commodities can be distributed with low set-up and marginal costs to worldwide markets. In addition, the growth of virtual communities in cyberspace can undermine the integrity and dynamics of geographic communities.

At the same time, however, virtual space may reproduce rather than challenge geographic space. Communities can be reinforced through both real and cyberspace interactions (Aoyama, 1999). The space–time challenge of shipping nondigitizable commodities, particularly nonstandardized and perishable commodities, depends on resolving logistical problems posed by geographic space. Communication in cyberspace also is often a poor substitute for face-to-face communication in geographic space. Furthermore, the production and consumption of services in cyberspace reflect the geography of existing social practices, cultural norms, and competing services. For example, urbanized areas generate demand for location-based services, whereas societies that favor mobility and portability adopt short-text-messaging using cellular telephones over PC-based Internet access. Finally, networks depend on inherited and geographically differentiated physical infrastructures that shape interactions between virtual and geographic space. The apparent flexibility of cyberspace contrasts with the fixed capital sunk into telephone lines, fiber-optic cables, and communications towers necessary to support it. This infrastructure exhibits a strong bias towards large metropolitan areas and technologically endowed nations, and shapes the geographic location of activities that take place in cyberspace.

Thus, real and virtual places are increasingly interdependent, much like horizontal and vertical threads woven together into a dense fabric. As yet, we know little about how these fabrics are produced, or their new color, texture, and patterns, and analysis is further complicated by the fast-moving nature of communications technologies.

By focusing on the evolving relationship between real and virtual places, the papers of this theme issue seek to bring new insights to these relationships.

In this issue

These papers investigate the mutual constitution of geographic and virtual space as it occurs within E-commerce. They are linked by a set of propositions that together challenge the claim that virtual space is coming to dominate geographic space, and the claims about the unalloyed benefits of globalization that often accompany it.

First, it is argued that communications technologies are not only designed to overcome barriers posed by geographic space, thus transforming it, but at the same time always have their own distinct geographical attributes that shape the degree to which such transformation is possible. Thinking of these as geographical information technologies, then, can reveal how the new spaces they create shape, but do not substitute for, geographical space. Wireless telecommunications technologies seem to free users even further than the Internet already has from any residual constraints of space and place. Images of taking the office to the beach, for example, are popularly associated with wireless communications. However, wireless technologies are catalyzing a revolution in location-aware computing that is in fact making geographic proximity into an important attribute, again, of information exchange (compare Goodchild, 2000). The prospect that stores can target consumers on the street, with real time advertisements and offers over their cell phones from the stores they are about to pass, suggests a whole new microgeography to advertising strategies and consumer behavior.

New communications technologies are also shaped by infrastructures with geographies of their own. Gorman and McIntee compare the Internet infrastructure to that of wireless, demonstrating that even wireless technologies depend on a telecommunications infrastructure of towers, bases, and geographically variable demands for the electromagnetic spectrum. This imposes constraints on wireless communication that can reinforce rather than challenge preexisting differences in urban communications networks and in urban hierarchies. They conclude that the distribution of wireless infrastructure (both telecommunications towers and high-speed local area wireless networks known as WiFi) is influenced by the existing urban hierarchy. Thus cores and peripheries seem to remain an important aspect of communications networks, and of the material spaces they connect together. Such research suggests that the ability to collapse space in absolute terms through telecommunications may have limited impact on differences in the positionality of places within those networks. In contrast to the claims of globalization's proponents, this implies that virtual space may not level the playing field and eliminate current geographies of inequality (Sheppard, 2002).

Second, it is argued that the ways in which virtual space is used for commercial transactions depends on preexisting geographies. For commodities that cannot be digitized, the profitability of E-commerce depends closely on the ability of E-merchants to manage the complex logistics of geographic space–time. Although these logistics can be altered by E-commerce, they cannot be ignored. Murphy argues that some E-grocers failed spectacularly because of their inability to manage time and space effectively. Aoyama shows how the geography of providing B to C (business to consumer) E-commerce and M-Commerce (mobile commerce) in Japan, such as using kiosks in corner stores and cellular telephones rather than the personal computer at home, is a consequence of the morphology of Japanese cities and its impact on consumer behavior. The questions of whether Internet transactions substitute for, or are contributing to, the demand for transportation, and the impact of E-commerce on the geography of warehousing, are important areas for further research. This is

particularly the case for B to B (business to business) E-commerce, whose geographies, and implications for the location of manufacturing, remain to be unraveled.

Third, it is argued that virtual communication cannot overcome the barriers to reliable communication of information that result from geographic separation. Of particular importance here are issues of information quantity and reliability. Whereas perfect information is presented as the ideal foundation for market transactions in economic theory, with the Internet being seen as a medium for approximating this, actual practices are quite different. More information from a broader geographic area does not necessarily result in more efficient economic transactions; it is harder to process and compare, and may simply increase the complexity of markets. Consider, for example, how difficult it has become to determine the cheapest airfare between any two destinations as a result of the comprehensive information provided through computerized and online ticketing (Sheppard, 1993). Determining the reliability of online information remains a major problem because, when in doubt, those seeking information prefer to rely on their direct experience and judgment of information sources. Geographic context is often important in making such assessments.

Niles and Hanson show that employers using Internet employment services do not consider workers from outside the local area both because of interviewing costs and because of the risks of increased commuting difficulties with geographic distance. They argue that employers eliminate much of the information available in online employment agencies, using place as their filter. A focus on local job candidates makes it easier to get references from other employers who they know and trust, as well as easing face-to-face interviewing. Localized advertising through wireless web is also based on the principle that many consumers would rather pick out their products directly, ceteris paribus, and carry them home. For nonstandardized products such as fresh groceries, this is a major barrier to implementing E-tailing, and some E-tailers use place filtering on their websites to limit locally available products (Murphy). The issue of overcoming mistrust of remote electronic transactions also has a cultural, geographic dimension, as in the reluctance of Japanese consumers to use credit cards they already own (Aoyama). The role of place in facilitating trustworthy economic transactions is, by now, a major area of research in seeking to understand how some places prosper notwithstanding the whirlwinds of capital mobility (compare Thrift, 1994), but a close examination of the impact of the Internet on such questions will remain important, particularly now that telecommunication is beginning to incorporate webcams.

Fourth, it is argued that preexisting geographies of regulation shape the location of E-commerce, in ways that both reproduce and challenge those geographies. The role of regulation in E-commerce is a tangled area about which we know little. But it is becoming clear that virtual space does not automatically result in the elimination of such regulatory activities, notwithstanding the dreams of free market advocates. Both Wilson and Zook examine E-commerce in areas whose marginal legality and questionable ethics would seem to make regulation an anathema: gambling and pornography. These activities can be carried out anywhere, because the commodities are digitized, and in both cases there is a strong incentive to avoid regulated territories. Even in these cases, however, preexisting geographies matter. Rather than fleeing the more regulated territories of their major markets, E-commerce firms develop strategies that enable them to operate partially within such spaces. Offshore operations are often found in countries that have already pioneered other offshore activities, such as banking. In some cases locating in regulated territories is seen as desirable because it conveys a sense of trust; consumers value regulation because it can prevent them from being cheated and offers the possibility of redress when they are cheated.

Finally, it is argued that the very trajectories of technological change are embedded in geographic space. Whereas proponents of globalization often envision development as following a common path of modernization, in a world where geographical differentiation is of diminishing importance, Aoyama shows how the very choice and use of telecommunications technologies varies between nation-states. While the US model of PC-based E-commerce may seem to be a natural path of progression, the evolutionary direction and sequence of technological change in Japan are quite distinctive, and explainable by geographic difference. Such findings are suggestive of a productive research agenda on the geography of technological change that raises important questions about whether globalization is a process of homogenization driven by the worldwide diffusion of best practices.

Concluding comments

At the time of writing, it is still unclear whether the two-year worldwide stock market bust has bottomed out. The boom and bust of dot.com-induced growth, and the failure to make good on a new economy characterized by inflation-free growth driven by entrepreneurship and deregulated market transactions and prosperity for all, calls for skepticism about future prospects. Geographic divides persist at scales ranging from the neighborhood to the globe, and the long-term processes driving the capitalist space economy (the circulation of labor, capital and commodities, technological change, governance processes, discursive understandings, gender and racial dynamics, and nature–society relations) remain as relevant as ever. Yet the Internet has altered our daily lives and has established new economic practices that are undoubtedly here to stay. In order to make sense of spatial economic change in an age of digital globalization, without falling into the dual traps of arguing that everything, or nothing, is new, it is necessary to avoid reducing geographic to virtual space (or vice versa). It is our hope that these papers point towards a research agenda into E-commerce that is cognizant of the complex dialectics of virtual and geographic space.

Acknowledgements. We thank Nigel Thrift who encouraged us to organize this theme issue, the contributors, and the anonymous reviewers whose useful comments and suggestions contributed to the quality of the papers.

Yuko Aoyama, Graduate School of Geography, Clark University
Eric Sheppard, Department of Geography, University of Minnesota

References

Aoyama Y, 1999, "Exclusion and empowerment for real and virtual communities", guest editorial for the special issue on "Cities and the telecommunications at millennium's end" *Urban Geography* **20**(4) 291–293

Brunn S O, Leinbach T R, 2002, "Introduction" *Tijdschrift voor Economische en Sociale Geografie* **93(5)** 485–488

Castells M, 1996, *The Rise of the Network Society* (Blackwell, Oxford)

Castells M, 2001 *Internet Galaxy* (Blackwell, Oxford)

Goodchild M, 2000, "Towards a location theory of distributed computing and commerce", in *Worlds of E-commerce: Economic, Geographical and Social Dimensions* Eds T Leinbach, S D Brunn (John Wiley, Chichester, Sussex) pp 67–86

Graham S, Marvin S, 1996 *Telecommunication and the City* (Routledge, New York)

Graham S, Marvin S, 2001 *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (Routledge, London)

Hargittai E, Centero M A, 2001, "Defining a global geography", Special issue on Mapping Globalization *American Behavioral Scientist* **44** 1545–1560

Janelle D G, Hodge D C (Eds), 2000 *Information, Place, and Cyberspace: Issues in Accessibility* (Springer, Berlin)

Kellerman A, 1993 *Telecommunications and Geography* (John Wiley, Chichester, Sussex)

Kitchin R, 1998 *Cyberspace: The World in the Wires* (John Wiley, Chichester, Sussex)

Leinbach T R, Brunn S (Eds), 2001 *Worlds of E-commerce: Economic, Geographical and Social Dimensions* (John Wiley, Chichester, Sussex)
Sheppard E, 1993, "Automated geography: what kind of geography for what kind of society?" *The Professional Geographer* **45** 457 – 460
Sheppard E, 2002, "The spaces and times of globalization" *Economic Geography* **78** 307 – 330
Thrift N, 1994, "On the social and cultural determinants of international financial centers", in *Money Power and Space* Eds S Corbridge, R Martin, N Thrift (Blackwell, Oxford) pp 327 – 355
Wheeler J O, Aoyama Y, Warf B, 2000 *Cities in the Telecommunications Age: Fracturing of Geographies* (Routledge, London)
Wilson M I, Corey K E (Eds), 2000 *Information Techtonics* (John Wiley, Chichester, Sussex)