Warped Geographies of Development: The Internet and Theories of Economic Development

Mark Graham*
Department of Geography, University of Kentucky

Abstract

The Internet is frequently touted as the engine of a new revolution that can eliminate poverty and bring prosperity to producers of crafts and commodities in economically impoverished areas of the world. 'E-commerce', 'commodity chains', the 'digital divide', and 'disintermediation' are all inherently geographical ideas, as well as being integral components to many theories of economic development. However, despite a movement by geographers to recognize the nuanced relationships between the Internet and geography, such ideas have remained largely absent from much development discourse. By reviewing writing on geographical concepts such as 'commodity chains', the 'digital divide', 'disintermediation', and 'e-commerce' within the contexts of contemporary debates about development, this article highlights some of the geographic assumptions wrapped up in a range of theories of development and shows how these spatial assumptions matter. The article concludes by reflecting on alternate geographic metaphors that could be employed within development discourse to better express the complicated and spatially contingent relationships between information and communication technologies, geography, and economic development.

> The Internet will have [a] profound effect on the way we work, live and learn. By enabling instantaneous and seamless communication and commerce around the globe, from almost any device imaginable, this technology will be one of the key cultural and economic forces of the early 21st century. (Gates 2000)

Introduction

Bill Gates' vision of an 'Internet revolution' and Jeremy Deller's 'steam powered Internet machine' (Figure 1) exemplify much of the contemporary discourse about the Internet and information and communication technologies (ICT). Myriad books and articles discuss the revolutionary potentials of new communication technologies, frequently making comparisons to earlier technology-induced revolutions (cf. Harrison 2000; Roslow 2000). The Internet is widely thought to represent not just a new

Fig. 1. Jeremy Deller's steam-powered Internet machine.
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form of communication, but instead a new organizational form of modern society (Castells 2002).

The imaginary of an 'Internet revolution' has been readily adopted in discussions of economic development. Development practice has always employed existing links and created links between developers and those who are being developed.[1] Those links (e.g. roads or Internet connections) are not only integral to the actual implementation of development, but are also often justified as desirable in and of themselves. However, unlike past links between developers and developing, the Internet appears almost free of spatial constraints: any two computers can connect to one another irrespective of geographic location.

Development discourse and conceptualizations of communication and transportation (and more specifically for this article: the Internet imaginary and understandings of ICTs) are inherently intertwined. Much development discourse has been shaped by the Internet imaginary, and uses and implementations of the Internet have been similarly influenced by development practice and discourse.

This article begins by examining some of the ways in which geographers have theorized the often complex relationships between ICTs (and in particular, the Internet) and space. The discussion then moves to review some of the ways in which the 'Internet revolution' is thought to reorganize commodity chains and economic relations. Finally, the article turns

to a discussion of how certain ideas outlined in the first two sections are wrapped up in the discourse and practice of much economic development. Specifically, discourses of economic development are often based on unrealistic or exaggerated understandings of how the Internet can alter space. This article seeks to unravel some of the geographic bases of development discourse related to the effects of the Internet, and by suggesting alternate ways to imagine the relationships between geography and ICTs, this essay will allow alternate discourses and practices of development to be envisioned.

Geography and the Internet

All theories concerning the relationships between development and ICTs inevitably rest on specific geographic epistemologies. This section reviews some of the most frequently employed understandings, and then presents alternate ways of thinking about the complex relationships between ICTs and geography.

Immersive WWW environments coupled with powerful abilities to communicate have led many observers to talk about the Internet being or creating a 'cyberspace'. This spatial metaphor has in part been adopted because of the coming together of virtual topologies (through hyperlinks) and immersive graphical environments. However, while generally considered to be a 'space', cyberspace lacks distinct geographic coordinates; that is, a cyberlocation can be entered into from any point on the planet. The floating nature of cyberspace: always accessible, yet with a separate existence from physical space has caused many to refer to it as a fundamentally distinct entity, contrasting to geographic space (cf. Johnson and Post 1996).

This distinction between space and cyberspace has provided grounding for a number of binary theoretical constructs. Space and cyberspace are argued to form the respective bases for industrial and postindustrial economies (Gertler 1988; Poster 1995). With the aid of the Internet, firms can accelerate the practice of flexible accumulation, while traditional geographic space continues to fix capital (Harvey 1989; Hirst and Zeitlin 1991). The notion of fixity is an important element to another space/cyberspace binary. Geographic space is said be the sphere of fixity and stasis, while cyberspace enables the construction of fluid and fragmented identities without any spatial roots (Rheingold 1993; Turkle 1994, 1995). The fixed/fluid binary closely correlates with another common distinction frequently made between the two spaces: reality and virtuality. Cyberspace is assumed to be the binary inverse of geographical space, it is thus thought of as being spaceless, or without geography.

Recently, a large body of work has emerged that disputes and deconstructs the cyberspace/physical space binaries. The Internet has been shown to be necessarily grounded by supporting infrastructure with distinct geographical biases (Dodge and Kitchin 2001a; Hayes 1997; Moss and Townsend 2000; Townsend 2001; Zook et al. 2004). Cyberspace can thus

only come into being in particular geographic spaces. Much work has also been done on exploring the geographies of cyberspace itself. The Internet has by no means been freed of its spatial chains, and interactions and content in cyberspace continue to be both socially produced and shaped by geography (cf. Adams and Ghose 2003; Dodge and Kitchin 2001b; Zook 2003).

The idea that technologies can create a dimension of spacelessness has not just been applied to cyberspace. Numerous commentators have pointed to the imminent 'death of distance'. Authors, such as Richard O'Brien (1992) and Frances Cairncross (1997), have asserted that space and distance are of less significance for economic and cultural activities. Gillespie and Williams (1988) similarly argue that the convergence of time and space brought about by communications technologies will eliminate the geographic frictions that help to shape spatial differences, while Pascal (1987) notes that ICTs can decentralize space and transform any form of agglomeration into a mere holdover and relic of the past.

Yet, instead of enabling the death of distance, sociotechnical networks have always represented geographies of 'enablement and constraint' (Law and Bijker 1992, 301). Places are inherently relational or 'articulated moments in networks of social relations and understandings rather than areas with boundaries' (Graham 1998). In other words, geography has always been relational, and technology can therefore only ever supplement place-based existence instead of replacing it.

Eric Sheppard (2002) discusses the concepts of wormholes and posi-tionality as ways to think about the relational effects of technologies on geography. Positionality is used to capture 'the shifting, asymmetric, and path–dependent ways in which the futures of places depend on their interdependencies with other places' (p. 308). Wormholes are invoked to describe non-Euclidean geographies of positionality; for example, sustained economic transactions between producers of silk cloth in the northeast of Thailand and buyers in Boston alter the relative positionalities (and open wormholes) between relevant actors in both of those places. The wormhole concept can be used to conceptualize the ways in which networks can be both specific and contingent and jump over or largely ignore in-between spaces (Graham 1998; Latour 1991).

Wormholes provide a way to conceptualize how disintermediation in commodity chains can alter relational positionality. Understanding spatial proximity is, therefore, not a purely Euclidean exercise, as any node on a commodity chain (e.g. the buyer in Boston) could be seen to be 'close' to another node such as the Thai silk weaver (far away if measured in absolute miles according to latitude and longitude, but near if measured through the wormhole that provides countless communication, images, sounds, and other economic and social interactions). Any move to dis-intermediate a commodity chain, for example, by using the Internet to directly connect producers with consumers, consequently creates a wormhole

allowing two or more nodes/people/places to jump over place, people, and nodes that were previously in the middle (or intermediaries). Wormholes thus allow recognition of the fact that commodity chains stretched out over space will not disappear onto the head of a pin, but will instead continue to link people, places, and nodes albeit often in complex and non-Euclidean ways.

Finally, a number of commentators have recently begun addressing the complex and parallel considerations of electronic and physical propinquity (or occupying a shared virtual or hybrid space). Dodge and Kitchin (2004, 2005), construct a typology of physical and the virtual combinations: 'code/space', 'coded space', and 'background coded space'. *Code/space* exists where code is the dominant actor in producing space. In *code/spaces*, a failure in code inevitably results in a fundamental disruption of the space. A failure of code in c*oded space* would result in a loss of function instead of complete failure. The final type, *background coded space*, reflects a dormant space that can be accessed, and in so doing changes the space into *code/space* or *coded space*. Zook and Graham (2007a, 2007c) similarly focus on the coming together of cyberspace and place in *DigiPlace*. DigiPlace 'encompasses the situatedness of individuals balanced between the visible and the invisible, the fixed and the fluid, the space of places and the space of flows' (Zook and Graham 2007b, 7). In other words, the Internet and other ICTs can give rise to an individual sphere of hybrid geography in which certain space-transcending activities can be performed while being simultaneously embedded in and influenced by the performer's positionality in physical space.

In summary, the Internet has been frequently conceived of as an economic and social revolution with the ability to fundamentally reshape the globe. Many theorizations of cyberspace see it as both distinct from space and possessing the power to make space irrelevant. In reaction, a number of commentators critique such arguments and offer complex and hybrid conceptualizations of the relationships between space and cyberspace. However, despite these nuanced formulations, simplistic understandings of the Internet and its effects continue to inform a variety of economic development theories, especially those relating to e-commerce and commodity chains.

The 'Internet Revolution', E-Commerce, and Reconfigured Commodity Chains

The actualization of virtual space and cyberspace is argued to have brought about a new 'digital economy' (Leinbach 2001): a digital economy in which relative distances between producers and consumers of commodities have been diminished or even eliminated. In order to lay the groundwork for a discussion of how such ideas are integrated into development discourse, this section reviews ways in which the Internet is thought to effect flows of commodities across space.

A significant element in the 'digital economy', and indeed one of the most influential impacts of the Internet, has been the enabling of electronic commerce. E-commerce can simply be defined as the process of buying and selling via the Internet. Doing so can connect consumers with new producers (and vice versa) and have a number of effects. Of particular interest for this essay are the papers that have focused on the uses of e-commerce by firms to find new and distant customers (Daniel and Grimshaw 2002; Hamill and Gregory 1997; Kim and Mauborgne 1999; O'Keefe et al. 1998; Poon and Swatman 1999).

Michael Porter (2001) has argued that e-commerce can allow economic actors to significantly reduce their transaction costs. A reduction in transaction costs then often encourages the use of markets instead of internal hierarchies in order to organize economic activities (Malone et al. 1987). This is argued to increase efficiency not just at isolated firms, but throughout a commodity chain.

A commodity chain[2] can be defined as a 'network of labor and production processes whose end result is a finished commodity' (Hopkins and Wallerstein 1994, 18). Gereffi et al. (1994) distinguish between producer and buyer driven commodity chains. They observe that producer driven chains often are dominated by large corporations who coordinate the entire network. Such chains are readily observed in technology-intensive commodities. In contrast, buyer driven chains are frequently characterized by labor-intensive consumer goods such as garments. Retailers and merchants function as core enterprises in such chains and organize a range of decentralized production networks that are often located in the global economic periphery.

Gereffi (2001) has outlined three possible effects that the Internet could have on commodity chains. Commodity chains could be radically reorganized whereby consumers connect to producers through 'infomediaries' – companies that organize large amounts of data. The second possibility is that commodity chains could increasingly shift from the producer-driven to the buyer-driven model. Finally, the revolutionary potentials of the Internet could be muted by large companies as they seek to integrate any benefits into their existing chains instead of allowing radical reconfigurations.

The concept of a 'virtual value chain' has been proposed, and is used to conceptualize the rearrangement of the pre-Internet chain. Virtual value chains can represent new intermediaries, new products, efficiencies in procurement and sales, and expanded market reach (Golicic et al. 2002; Kenney and Curry 2001; Leonard and Cronan 2002; Porter 2001).

Sarkar et al. (1998) argue that new types of intermediaries (cybermediaries) will emerge in commodity chains, while the concept of 'disintermediation has been advanced to describe the potential of the Internet to threaten the existence of 'middlemen', brokers, and intermediaries in any commodity chain, and reorganize economic spaces and relations (Benjamin and Wigland 1995; Janelle and Hodge 2000; Javalgi and Ramsey 2001;
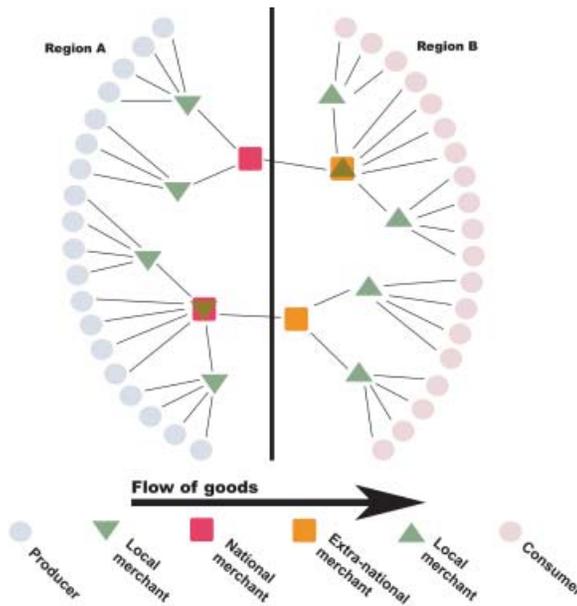
Fig. 2. Simplified representation of a commodity chain.

Office of Technology Assessment 1994). Direct economic links between producers and consumers are often argued to provide large benefits to both producers and consumers because the surpluses that were once extracted by middlemen can be redivided into the disintermediated commodity chain (Castells 2002; Miller 2003). Figures 2 and 3 have been created to visualize the potential reorganization of commodity chains by the Internet. Figure 2 is a highly simplified representation of a commodity chain involving a product that is partially sold abroad with a number of inter-mediaries between the producers and consumers. Figure 3A, in contrast, represents a partially disintermediated chain in which a foreign merchant is the link between producers and international consumers. Figure 3B represents a full state of disintermediation: consumers can buy directly from producers.

Disintermediation is an oft repeated notion in economic development discourse. In place of large-scale modernization projects of the past, many proponents of development projects in 'underdeveloped' areas are now proposing smaller, microscale projects that combine disintermediation (or reductions in spatial barriers and transaction costs), e-commerce, and the use of new and often virtual marketplaces (Amighetti and Reader 2003; Bijoy 2003; Chandrasekaran 2001; Kuchinskas 2005; Purcell and Toland 2004; Rhodes 2003; Sambandaraksa 2006). Purcell and Toland (2004, 241) claim: 'ICT[s] offer the opportunity to reduce the barriers of distance, and
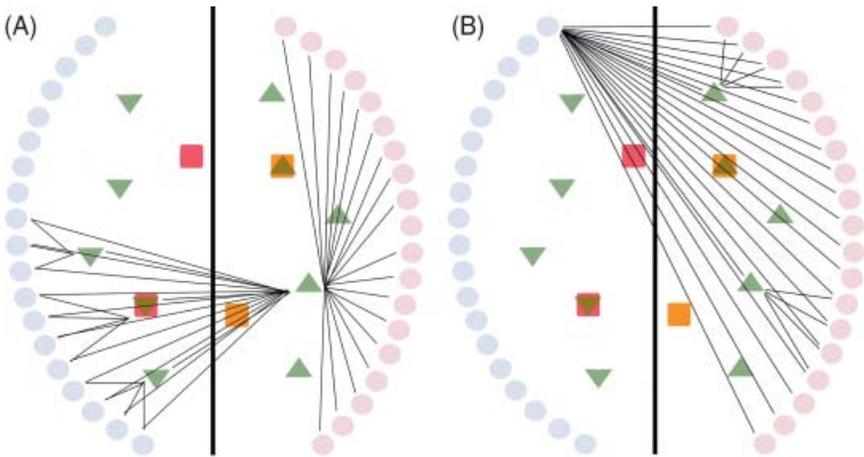
Fig. 3. (A) Partially disintermediated chain. (B) Disintermediated commodity chain.

give . . . countries better access to the global economy.' Romero (2000 in Leinbach 2001), for example, has reported on a group of rural Guyanese weavers who, with newfound connections to the Internet, began successfully selling hammocks online.[3]

Poon and Jevons (1997, 34) state that, 'the Internet creates a "borderless" virtual business platform on which suppliers, customers, competitors and network partners can freely interact without going through the pre-defined channels on the value chain, members of the same business network or of different networks can by-pass the traditional interaction patterns and form virtual value chains' (for a similar argument, see Benjamin and Wigland 1995). In a borderless world, it is argued that historical competitive advantages, such as firm, size become irrelevant because the Internet can 'level the competitive playing field by allowing small companies to extend their geographical reach and secure new customers in ways formerly restricted to much larger firms' (Oecd 1999, 153). However, drawing on Kessing and Lall (1992), Gereffi et al. (2005) observe that as suppliers in developing nations are integrated into global value chains they are often required to meet production requirements not applicable in their local markets. This, in turn, increases the amount of control required and exerted by buyers and also sets up a gap between capabilities needed for domestic markets and capabilities for export markets.

The 'Internet revolution' and e-commerce rely on reconfigured, and usually disintermediated, commodity chains. Reconfigured commodity chains, in turn, are based on an inherently geographic metaphor: the idea that eliminating a divide in digital space will bring people into the same virtual space or marketplace, thus facilitating trade. While some of the

nuanced understandings of the relationships between the Internet and geography that were outlined in the previous section have been incorporated into writings about the ability of the Internet to affect commodity chains, it is rather more simplistic formulations (i.e. the ability of the Internet to disintermediate chains and thereby render previously distant people and places in relative concursion with one another) that frequently are used to justify the theory and practice of much economic development. By setting up the idea that relative or virtual concursion can occur between geographically separated producers and consumers of commodities due to the space-transcending powers of the Internet and e-commerce, a counter-argument also comes into being. Namely, that an absence of ICTs will create a 'digital divide' that makes the coming together of producers and consumers into shared virtual marketplaces impossible. The following section of this article now turns to the idea of a digital divide and examines how the exaggerated understandings of the ability of the Internet to change geography that are wrapped up in discussions of disintermediation have been integrated into discourses of development.

Development and the Internet

Modernization theorists used the term 'backwards' to describe those who they viewed as living in traditional societies, the opposite of a modern society. Modernization was to be achieved through development, the project being to bring the 'backwards' people *forward*. Development is represented in the writings of modernization theorists as a linear, temporal progression toward the modern (cf. Lewis 1954; Myint 1954; Rostow 1960). The teleological epistemology of modernization sees bringing 'backwards' people into the modern world as a highly desirable and necessary accomplishment in and of itself.

Proponents of modernization theory claimed that 'backwards' people were economically unsuccessful because of their deviation from a productive optimum (Myint 1954). Commentators such as Myint consequently argued that the state should play a hand in developing the people and places that were undeveloped. 'Middlemen', in particular, were seen to be an impediment to development. Myint (1954, 157) states: 'We shall see then that the real damage done by the middlemen lies not in their "exploitation", considerable as it may be in many cases, but in the fact that they have put themselves between the backward peoples and the outside world and have robbed the latter of the educating and stimulating effect of a direct contact.' The ideas put forth by such authors proved to be highly influential; particularly at the United Nations, which using regional commissions laid out practical ways to implement modernization theory.

The notion of a divide between the 'backwards' and the 'modern' is not simply a characteristic of an historical epoch in development thought, but instead remains an integral component in the practice of development:

specifically, through the discourse of the 'digital divide'. The digital divide refers to the gap that exists between people and places with access to digital technologies and people and places that do not have this access (Crampton 2004; Warf 2001). By invoking the idea of a digital divide, many actors (state, private, and individual) are able to have powerful economic and political effects. The digital divide has sparked a United Nations summit (The World Summit on the Information Society), countless articles and reports (cf. United Nations 2003; United Nations Development Programme 2005), and most significantly, a range of programs and plans designed to reduce the divide and bring disconnected people into an information society (Castells 1996).

A number of authors have pointed to various dimensions of the digital divide. Kling (1998) identifies both a technical aspect (availability of hardware and software) and social aspect (skill required to use hardware and software). Norris (2001) distinguishes between a global divide (between Northern and Southern countries), a social divide (existing inequalities within a region), and a democratic divide (as the Internet begins to allow for different levels of civic participation). Keniston and Kumar (2004) instead focus on the divisions creating a digital divide. They distinguishes between the rich and the poor, English speakers and non-English speakers, those who live in technically well-established regions and those who do not, and those with the knowledge to use technologies versus those who do not.

In their description of the digital divide, the US Department of Commerce (2006) in Selwyn (2004, 344) notes that while some individuals 'have the most powerful computers, the best telephone service and fastest Internet service, as well as a wealth of content and training relevant to their lives . . . Another group of people don't have access to the newest and best computers, the most reliable telephone service or the fastest or most convenient Internet services. The difference between these two groups is the . . . Digital Divide.' The World Bank, in support of investments in ICTs in developing countries, similarly points out that, 'infrastructure is a major bottleneck to growth and poverty alleviation in developing countries' (World Bank 2005).

Information and communication technologies such as the Internet are often seen to be the panacea that can breach this digital gap. Reducing the digital divide is thought to increase education and access to public services by allowing users to harness the supposed spacelessness of the Internet, to transcend their geographic constraints (such as lack of education and distance from government representatives), and to become citizens of the informational society (Katz et al. 2001; Servon and Nelson 2001). Others have argued that narrowing the digital divide will increase economic equality, social mobility, social equality, democracy, and economic growth (Golding 1996; Marine and Blanchard 2004).

The similarities between 'digital divide' and modernization theory are striking. The idea that the Internet and other ICTs will transform places

into 'information societies' and 'knowledge economies' and people into participants in the 'Internet revolution' (see Castells 1996, 1998, 2003) mirrors the desire of modernization theorists to both bring places forward into industrial society and move people from being observers to being participants in an industrial revolution. Similarly, discussions of the digital divide often echo the teleological epistemologies of modernization theory that distinguish between linear temporal directions of backwards and forwards. Selwyn (2004, 342) observes that, 'many governments in industrialized countries have been spurred on by the apparent inevitability of the information society and have initiated ICT-based programmes which aim to ensure that their citizens do not get "left behind" and are able to "win" in the new global era.' Spatial differences are thus explained as temporal ones. Poorer places are positioned as being behind in the digital divide, while globalization and increased connectivity are seen as methods of advancement (Cox 1998; Massey 1999, 2005).

This conflation of spatial differences with temporal ones is far from the only poorly thought out use of geographic metaphor in development discourse. Discussions of digital divides usually draw on only selective understandings of the relationships between cyberspace and physical space: specifically, the ability of the Internet to create an ontologically independent cyberspace removed from geographic influences, and to thereby diminish the importance of absolute, physical distance. By reducing a digital divide, a spatial divide is also transcended, thus bringing students closer to teachers, citizens closer to government, and perhaps most significantly, producers closer to consumers. By altering positionalities, opening wormholes, and thereby bringing producers and consumers into virtual proximity, practitioners of development hope to facilitate a disintermedation of commodity chains.

Such ideas have been used to argue that a shrinking of the digital divide can bring increased commerce and wealth to the previously disconnected. While these ideas are grounded in very specific geographic epistemologies, they also represent the strong influences that neoliberal theory has also had in shaping discourses about the digital divide. Neoliberal theorists argue that by allowing the market to regulate society instead of being regulated by society, market forces will solve the world's development problems by effectively governing and creating wealth for all participants (Berthoud 1992; Hirschman 1981; Lal 1983, 1985). That is, if we could achieve copresence in the same physical or virtual marketplaces, we would all effectively market our skills and products, and in return acquire and benefit from the skills and products of others.

To return to the previous example of silk, we can observe the desire to break through a digital divide, participate in the 'Internet revolution', and disintermediate traditional commodity chains in the Web site of a development agency working with the Cambodia village of Robib. They state:

> The Internet now offers leapfrogging opportunities to take villages out of their isolation and poverty into our global village.
> – http://www.camnet.com.kh/cambodiaschools/villageleap/intro.htm

and then move on to claim that:

> One of the gaps which concerns those of us in the big cities and rich countries who are experiencing the digitalization of our lives, who are witnessing the rapid development of the Internet along with its ability to bring us greater knowledge, freedom and economic benefits, is the pitfall that little of this may be benefiting the developing world. Villages like Robib, unless we do something, are destined never to catch up.Join us in succeeding to bring cyber commerce through the Internet to remote villages like Robib everywhere in the world.
> – http://www.camnet.com.kh/cambodiaschools/villageleap/products.htm

The Sat-Ed group in northeastern Thailand, while operating a similar project, specifically highlight their use of the Internet to disintermediate commodity chains and achieve virtual copresence:

> The problem is that, before now, they have never had access to the world's markets. Instead middlemen come in and buy up the silk from them for a pittance and then take it to Bangkok and beyond, marking it up often 4 to and 6 times . . . Until now!
> – http://www.sat-ed.com/Buyfromthevillage.htm

These projects are far from unique. In fact, all over the world numerous development agencies are actively promoting projects that aim to export commodities from largely disconnected places by altering relative positionalities. However, there is not universal agreement that the benefits of attempts at disintermediation outweigh the costs. Critiques of the entire development regime, known as theories of postdevelopment or anti-development, arose in the early 1980s in conjunction with the rise of post-structuralism and postcolonialist works, such as Said's *Orientalism* (1978).

Instead of viewing technological development projects uncritically as a means to achieve progress, many postdevelopment thinkers argue that reducing a digital divide is a fundamentally harmful act. Commentators, such as Sardar (1996), see the Internet 'as a new phase in a long history of the West's attempt to colonize not only the territory and the body but also the mind of the Third World "other" ' (Schech 2002, 18). Domination can be extended to distant spaces through the knocking down of virtual and physical barriers (Adams 1995). By taking villages out of their isolation and placing them into the global village, they are thrust into the hegemony of Western knowledge and capitalism (Escobar 1995). Less totalizing criticisms can be found in the work of Gustavo Esteva (1987). Esteva does not argue for an outright rejection of the adoption of communication technologies, but instead stresses that any development should be made from an internal 'bottom-up' process of decision-making. Following this perspective, reducing a digital divide is not inherently harmful, but

nonetheless remains potentially dangerous and disruptive if forced on people and places by outside agents.

While modernism, neoliberalism, and postdevelopment are all radically different ways of approaching development, it is striking that they use such similar geographic frameworks to arrive at their dissonant conclusions. Much ink has been spilled debating what the effects of shrinking space, disintermediated commodity chains, and copresence in virtual marketplaces will be. However, when discussing the Internet, very few in the development debate have stepped back to question the spatial epistemologies that their ideas are based on.

An Alternate Groundwork for Development

This article has outlined some of the most influential schools of development thought and the ways in which they have come to shape, and in turn been shaped by, understandings of the Internet and ICTs. Arguments have been presented to posit that the Internet can create an aspatial dimension of cyberspace in which geography is irrelevant. Such positions often tie in with the parallel assertion that the Internet is making geography itself irrelevant and bringing about a 'death of distance'. In reaction, a range of more moderate understandings of the relationships between the Internet and geography, which focus on hybrid spaces, have been offered.

However, largely aspatial conceptualizations of the Internet combined with, and used to support, elements of modernization and neoliberal economic theories remain embedded in development discourse. Under such formulations, it is frequently argued that by reducing a digital divide, a spatial divide can also be diminished. Bringing the previously divided 'closer' to the connected will create economic benefits by allowing the former to share a marketplace with the latter. Critics of such ideas, in contrast, often point to the prospect of existing power imbalances intensifying as previously separated places now become relationally proximate.

The Internet has come to shape some of the ways in which development is conceptualized. The potentials of the Internet underpin a host of projects that seek to transform those potentials into actualities. The concepts and practices of disintermediation and ecommerce, in particular, have lead some practitioners of development to attempt to replicate the successes of Western firms such as Amazon.com. Yet, successes have thus far not been forthcoming. There are countless shells of Web sites, unused computers, and traditional commodity chains linking networks of intermediaries in defiance of development projects attempting to foster participation in the 'Internet revolution'.

Very little empirical research has been conducted on such projects to date, in part because of the contemporaneity of the Internet. But, it would appear that for either positive or negative effects of the disintermediation of commodity chains to occur, more than copresence in cyberspace

is required. As reviewed earlier, distance and positionality are complex and multidimensional. Distance, in its various forms, cannot simply be breached by the Internet technologies. Similarly, cyberspace itself is always grounded in and influenced by a multitude of geographic factors. Thus, any use of the Internet and other ICTs inevitably brings into being individualized and unique hybrid spaces, combining elements of the physical and the virtual.

The precise effects that the Internet will have on global commodity chains remain unknown. It, therefore, seems unwise to build both the discourses and the implementations of development around such narrow conceptualizations of the relationships between geography and the Internet. Alternate theories (such as those reviewed in the first section of this article) of the relationships between space and ICTs could be used as the groundwork for implementations of economic development that seeks to rearrange commodity chains. Thinking about the relationships between geography and the Internet in terms of hybrid spaces has the potential to add much to this discussion. In place of monocausal and unidirectional influences, we can begin to understand the situationally specific ways in which the Internet does influence space and economic positionality. Doing so would undoubtedly lead to more nuanced development projects. If applied to the previous example of Southeast Asian silk: a development agency would not necessarily expect villagers to sell their silk directly through disintermediated channels on the global marketplace. Because, even though a digital divide may have been breached, thus in theory allowing access to virtual marketplaces, myriad barriers (physical distance, linguistic distance, cultural distance, technical skill distance, distance from capital resources, etc.) continue to hinder efficient trade between producer and consumer. What may be needed are a series of cybermediaries, each intimately familiar with their adjacent nodes on the commodity chain. Or perhaps the commodity being traded is simply not suitable for e-commerce, and no amount of knocking down of digital divides will spark interaction between Asian weavers and potential customers in New York and Milan.

In summary, many of the theoretical debates presented in this article have decidedly powerful outcomes. The Internet is touted as the engine of a new revolution and as a way to eliminate poverty and bring prosperity to all participants. It is also considered to be a tool of oppression and economic slavery with the power to disrupt goals of self-sufficiency and displace traditions. The Internet is a highly disruptive technology, and it is frequently argued that, like the industrial revolution, the Internet Age will be the cause of fundamental economic and social changes. As this essay has shown, there are a variety of complex and interwoven opinions about those disruptions. However, while geographers have developed sophisticated understandings of the spatial effects of ICTs, it remains that many of the assumptions about technologically altered space in development theory have not been fully explored; and only by integrating nuanced

spatial understandings of geography with the practice and theory of development can we hope to move away from exaggerated assumptions and toward a better understanding of the spatially and temporally contingent promises and perils of the Internet.

Short Biography

Mark Graham is a PhD candidate in the Department of Geography, University of Kentucky, Lexington, KY, USA. His research centers on the economic, social, and spatial effects of technology. He is particularly interested in the multiplicity of attempts to implement development and reduce a 'digital divide' by altering relative economic distance and reconfiguring commodity chains in places on the global periphery. His work in the field of urban geography has examined how physical places are ever more defined by, and made visible through, not only their traditional physical locations and properties, but also their virtual attributes and positionalities.

His dissertation work focuses on the promises and the perils of the Internet as a tool of economic development in the Thai silk industry.

Mark Graham has authored and coauthored a range of articles and book chapters including: 'The Making of DigiPlace: Merging Soft-Ware and Hard-Where via GoogleLocal' in Environment and Planning B (34) 3, 'The Creative Reconstruction of the Internet' in Geoforum (38), and 'From Cyberspace to DigiPlace: Visibility in an Age of Information and Mobility' in Societies and Cities in the Age of Instant Access (2007).

Additional information on his research activities and publications can be found at http://www.geospace.co.uk

Notes

* Correspondence address: Mark Graham, Department of Geography, University of Kentucky, 1457 Patterson Office Tower, Lexington, KY 40506–0027, USA. E-mail: mark@geospace.co.uk.

[1] 'Developers' here are defined as people or organizations that create or enact specific economic policies directed at people and places that are 'developing' or being developed.
[2] The terms 'commodity chain' and 'value chain' are frequently deployed in interchangeable ways. Sturgeon, T. (2001) How do we define value chains and production networks? *IDS Bulletin* 32, pp. 9–18.
[3] However, despite being extremely economically successful, the project ultimately upset existing village relations and as a result is no longer in existence.

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