Digital Networks: The Medium of Globalization, and the Message

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Abstract: This paper looks at the convergence between business-information networks and those associated with digital mass media in light of the proposition that the digital networks represent the core medium of globalization. It looks at the new business-organization paradigm of virtuality associated with globalized digitized business and interprets this in light of communication theory, building especially on the legacy of Harold Innis.

Résumé: Cet article jette un regard sur la convergence entre les réseaux d'information en affaires et ceux associés aux médias digitaux, en tenant compte de la proposition que les réseaux digitaux représentent la voie centrale de la mondialisation. L'article examine le nouveau paradigme organisationnel qui postule un monde virtuel résultant des affaires digitales mondialisées, et interprète ce paradigme au moyen de théories en communication, se fondant particulièrement sur l'héritage d'Harold Innis.

When communication scholars think convergence, they often think broadcast, publishing, and other media (Babe, 1996; Winseck, 1998), not corporate networks for investment and taking care of business. Yet developments here warrant critical analysis for at least two reasons. First, with global digital networks, capitalist organization is entering a postindustrial phase of virtuality and almost pure electronic communication, with material goods and services becoming the epi-phenomena of ongoing customer/marketing relationships. Second, the corporate and financial management streams associated with wide-area networks, intranets, and the business side of the information highway are themselves converging with the culture, consumption, and citizenship streams associated with the World Wide Web, the 500-channel universe, and the Internet. The latter could be consolidated with the former into a business model of communication where carrier and content are not only merged but controlled by head office as a matter of course.

The stakes are being raised far beyond who has access and even whose voices are heard or silenced in the evolving public and private spaces of digital communications. These global digital networks are not just collapsing the boundaries between carrier and content, between personal communication and customized

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broadcasting, between the business of culture and the culture of business, between production and consumption, between the private sphere and the public sphere, and between the previously separate sectors of resources, manufacturing, finance, education, entertainment, and so forth. They are radically altering how society is organized and managed in space and time. In the process, they are introducing profound systemic biases that will influence how people can live and make a living as well as how they can organize and express themselves. In response, communications policymaking must move beyond the traditional players of regulated private enterprise versus public enterprise and include a range of institutions, from libraries and unions to social movements and even the self-employed. It should also be open to more direct and participative forms of decision-making both at a global level and at a micro level.

In this speculative piece of writing, I lay out elements of what I see as this larger picture of convergence, particularly the links between convergence and globalization and the growing importance of "virtuality." I then examine this picture in light of communications theory, particularly the legacy of Harold Innis, and interpret his insights through the interrelated lens of structures and cultural expression. My hope here is to highlight what to me is the most urgent question of our time: whether the social relations of communication and representation and, within that, the social relations of production, distribution, and consumption within the global digital networks will be negotiated or imposed. How that issue is addressed will, in turn, inform the seemingly larger question of who will control the global infostructures.

One thing is clear. What Harold Innis called the bias of space in modern communications is being dramatically fulfilled in today's multimedia digital networks, something Vincent Mosco (1989) cogently predicted nearly 10 years ago when he flagged big business' rising interest in communication technologies and related policymaking as something worthy of its close attention.

Digitization, globalization, and the information highway

One key to the link between digitization and globalization is the critical convergence of computers and communications, which occurred with the invention of microchips in 1972. This geared up the shift from industrial to postindustrial production through automation and, more importantly, the digitization of information, that is, its transformation from grounded paper in concrete institutions to the mutable and mobile form of electronic bits. In the second phase of this process, modules of digitized information were integrated to form management-information systems and related manufacturing and materials-handling systems (Menzies, 1989). In the networking phase, which has dominated the 1990s, the organizational paradigm started to shift. Global instant connectivity and the easy mobility of digitized files, knowledge, and procedural instructions permitted a radical reorganization of economic activity in space and time, producing what David Harvey (1989) has dubbed the "space-time compressions" of postmodernity and the related "flexible accumulation" model of capitalist organization (p. 284). With digital networks, the management of the corporate economy is being de-institu-

tionalized from grounded places (factories, offices, etc.), and shifted inside the net. It is being launched into cyberspace, into the networked infrastructure of digital communication itself. Benneton clothing stores' on-line inventories linked to head-office computers for just-in-time knitting orders contracted out to local suppliers is a working example of this, as is the multinational Bechtel using its networks to first bid on and then pull together the necessary materials and personnel for a construction project in Saudi Arabia, for example. The networks are no longer just a transmission line or conveyance ancillary to getting things done. They are where things are done, and done now. They are the metropolitan centre of a new systems economy. In the webwork of the global digital networks themselves, the digitized postindustrial economy is being reconstituted as a network of corporate and subcontracting connections operating continuously on a global scale.

Others have tracked the growing importance of communication in the organization of late-modern business. This ranges from the banks' and other businesses' interest in lower telecommunication rates for on-line business and business services (Winseck, 1998) to critiques of customized digital advertising and promotion networks where "marketing suffuse[s] the entire information highway" (Dawson & Foster, 1998, p. 52). But it all adds up to more than these separate developments. Digital networks are more than just a tool of business. They are becoming its central organizing principle. As I have argued elsewhere (Menzies, 1996, 1998a), the global webwork of these digital networks is itself the axis of the globalized postindustrial economy. The networks as an increasingly integrated whole are becoming the site where business deals are forged, where work is dispatched, and where "flexible accumulation" is both managed and articulated through global economies of scale, scope, and speed operating in every sector of the economy and almost any line of endeavour. The emerging "global enterprise webs" are a new economic world order (Reich, 1991, p. 111).

Although the term *information highway* is often taken to mean a specific model of media transmission, the more inclusive definition as a global infrastructure of increasingly interlocking digital networks (Angus & McKie, 1994) is more in keeping with its catholic roots. The comfortingly familiar highway metaphor was coined by U.S. vice-president Al Gore in 1993 when he introduced his National Information Infrastructure Program, which built on his 1980s *High Performance Computing Act* geared to retooling U.S. industry with super-fast computers and networks "to enable this country to leapfrog the Japanese" (in Coy, 1991, p. 13). As in Canada, where the federal government launched a similar information-infrastructure program in 1994 (through a largely private-sector consortium called CANARIE), "economic renewal" was an early priority, with renewal focused broadly on the business sector. A 1994 publication called *The Canadian Information Highway: Building Canada's Information and Communications Infrastructure* was unequivocal: "The key to competitiveness will be the ability of firms to develop, acquire and adapt . . . the tools that will be available on and through the information highway" (Industry Canada, 1994, p. 8). And sure

enough, digital investment flows plus inter-firm trade and collaboration agreements "fostering globalization" have been on the rise (Gera, Lee-Sing, & Newton, 1998, p. 15). As Dan Schiller puts it in *Digital Capitalism*, "cyberspace comprises an enormous construction site on which a great variety of political-economic projects are underway" (Schiller, 1999, p. 89).

For a while, the Internet and the Web connoted the citizen and consumer side of digital networks, while the information highway and superhighway meant big business and media. But lately the boundary between private business networks and the Internet has blurred, not only with Internet telephony (Caragata, 1998) but also as business dispatch systems are piggybacked onto the Internet (Marron, 1998) and as major banks become involved in service providers like Unitel/AT&T (Winseck, 1998). This blurring underscores the importance of retaining Internet/information highway distinctions because the different approaches to communication use are marked in their different design priorities, with the information highway associated with integrated broadband networks and with big business and the Internet defined by end users and sustained by lower-cost technologies such as ISDN (Winseck, 1998). These distinctions nicely frame a discussion about the need and practical possibilities for a universally accessible non-commercial infrastructure for digital communication in support of civic society, democratic discourse, and public culture which, in turn, could serve the interests of workplace democracy, the not-for-profit sector, and even independent small business. At the same time, however, it is important not to treat this debate in isolation. It is important to consider the implications brought to it by the larger set of global corporate players and their networking initiatives around the Information Highway model. At a generic level, the initiatives taken by both sets of groups—big business and media business—seem to be two sides of the same coin: on the one hand, mass-media conglomerates are converging with point-to-point personal communication for customized information and entertainment delivery via phone or cable lines; on the other, point-to-point communications for globalized investment, market distribution, and, increasingly, production are converging with broadcasting/narrow-casting media for marketing and promotion using the same networks for home access. Rogers Cable markets tools for people to telework at home, through "cable-link work." Financial investment businesses provide on-line news as part of their value-added information services to business clients.

Viewed together, however, these trends are more than simply a two-sided coin. The mind shifts, and what we see is something new. Not a coin, but a new dematerialized coinage. Global digital networks for communication, co-ordination, and control are becoming the new currency, not just of exchange but of communication transactions generally. They are also becoming the core medium or operating environment (Meyrowitz, 1997; see also McLuhan, 1996) for social action. They are becoming the new context for taking care of business, for value-added activity in anything from making and merchandising garments to making and merchandising culture.

This medium includes a new way of organizing social and economic activity. Global digital networks offer a meta-institutional framework for organizing, co-ordinating, and managing de-institutionalized work (subcontracted, out-sourced, telework), and for running de-institutionalized banks (MBANX, for example), bookstores (www.Chapters, .Amazon, or .Indigo, for example), libraries, cinemas, and even health and educational services (such as IBM's on-line health-information service) anywhere at any time. As such, they represent the framework for a new geopolitical economy: the mega-conglomerate drama of globalization, staged across the nets.

This globalized economy is facilitated by NAFTA and the World Trade Organization which have inscribed corporate investors with global citizenship and inoculated them against local and national accountability constraints that governments might otherwise oblige them with in the countries where they want to do business. Globalization is also propelled by deregulation and privatization in communication and by neo-conservative/neo-liberal social-welfare "reforms" lowering and levelling national "payroll taxes" and privileging the market as regulator of public priorities. But first and foremost, globalization is an economic paradigm made possible by global digital networks. These networks are the medium of globalization, offering built-in economies of scale, scope, and speed to those who can operate globally on a sustained basis. In other words, global digital networks might not only offer a new global scale of monopoly capitalism to those who can command it. It might subtly impose it as well.

If the networks are the medium, this is perhaps their core message. It is a message signalled in buzzwords like "virtuality" (Gera, Lee-Sing, & Newton, 1998, p. 11).

Virtuality and its implications

The term virtuality is used to describe the ability of a person or corporation to establish a virtual presence anywhere at any time through digital connections, that is, through the transfer of electronic documents, proprietary software and business forms, electronic funds, and so on, via a computer, a modem, and a jack in the wall or satellite hookup. A virtual corporation, virtual joint venture, or virtual corporate alliance can be established, therefore, without a spade going into the ground or much of anything being physically moved. Similarly, an individual can turn a bedroom, a kitchen, a basement workshop, or a garage into a virtual workplace with little more than a computer, a modem, and telephone or cable hookup. As long as the requisite technologies are compatible, virtuality can involve little more than having an e-mail address or a domain name on the Web. As New Brunswick's assistant deputy minister responsible for the Information Highway Secretariat enthused at a government-sponsored conference on telework as early as 1994, "To us, telework is not only telecommuting—it is also being able to take the office anywhere in the world through the Information Highway."

A government-industry think-tank in the United States called The Agility Forum describes the virtual organization as "the dominant world industrial order of the 21st Century" (Goldman, 1993, p. 5). It envisions interfirm alliances

linking different parts of different corporations in parallel research, product-development, marketing, and market-feedback activities for different periods of time. These linkages are made possible by "streamlined legal practices," "standardized interfaces," and a "pervasive connectivity" (Goldman, 1994, p. 41) through the increasingly standardized networking systems which the forum is promoting. Integration is "electronic" as companies agreeing to act as suppliers or distributors on this or that "product" or "service product" are given access to certain data files, software, and other technologies to allow project-centred co-operation—for the life of the project.

One document offers a recipe for streamlining everything from technology and legal protocols to modules of people and their skills—what it sees as a global "contingent labour force"—so that technological and human-capital modules can be plugged into any collaborative combination for work along the Information Highway at minimal start-up costs to the company involved. This means just-in-time suppliers of car parts to General Motors or of sweaters from self-employed knitters for Benneton's clothing stores. It also means the kind of quick response in retailing that has allowed Wal-Mart to bulldoze its more traditional retailers aside, and has propelled it into the fourth largest communication user in the U.S. (Mosco, 1996). The game plan also calls for more and better computer "metrics" so each subcontractor's "value-added" contribution, or each individual's hourly performance, can be measured for "value-based compensation" and profit sharing (Goldman, 1994, p. 17).

A few themes stand out above all these gladsome details. The first is the growing integration of production and services as information, associated with everything from design, co-ordination, marketing, and distribution, plus production knowledge and skill, becomes separated from grounded contexts and digitized. Related to this, material production is becoming an adjunct of information services, especially marketing and promotional services geared to customer clubs and market niches identifiable and mutable through market feedback and analysis. The forum's documents talk about "hooking" customers into "long-term relationships" and "cradle-to-grave" product support. Examples include Harley Davidson which has historically promoted a club-like loyalty among Harley bikers through endless add-ons which owners can install themselves. Similarly, Honda marketed a "multiple personality" two-stroke motorcycle in Japan that owners tap into using the magnetic strip on their owner's card to unlock the built-in engine-management system (Goldman, 1994, p. 11). Hotel and motel chains such as Journey's End are tracking customer information on what people need and want in accommodation and services, and developing databases for customized service.

As information becomes "both a commodity and a form of control central to the creation of new commodities" (Mosco, 1996, p. 115, fn. 35), borders disappear between formerly distinct and separate economic sectors. Similarly, time zones blur between market research, product development, marketing, popular culture, and feedback on buying patterns. Everything becomes an information-management business, a continuous loop of marketing/market-feedback

communication within which a lot of what had been considered culture is subsumed. It is also increasingly immaterial whether the product is a movie, jeans, breakfast cereal, or the morning's investment news. The main business is massaging the medium for marketable messages to be articulated through multiple products and media-genre packages, and keeping the infrastructures humming.

As virtual companies and alliances leverage the network for global economies of scale, plus related economies of multiproduct/multigenre scope and economies of instantaneous speed, it does not much matter whether the sizzle is for hot news, hot fashions, or healthy food. It is the economies of scale, scope, and speed themselves that count. Increasingly, what matters is mastering space-time compression on a routine basis. As The Agility Forum put it, the key to virtuality is to work the global networks as a "unified system" of production, marketing distribution, and consumption (Goldman, 1993, p. 110). This is a key point in understanding global digital networks as a kind of grammar if not a meta-media language and global supercurrency. It is the ability to articulate and organize business activity instantly and immaterially through global digital networks. The networks promise to deliver these new standards, of scale, scope, and speed, for corporate economic renewal in the millennium.

It is notable, therefore, that virtuality is a growing feature of contemporary business practices in Canada, as evidenced in the growth of electronic documents interchange and of interfirm collaboration agreements (Gera, Lee-Sing, & Newton, 1998). It is also suggested in the commoditized emphasis on skills and knowledge as intellectual capital and human capital and the growing importance of human resource innovations such as performance-based pay and employee participation. These all attest to a growing readiness among firms to leverage the space/time biases of global digital networks and, through them, virtual forms of organization and corporate management.

Understanding these biases is important for thinking about communication these days. As broadcasting and narrowcasting converge with the digital marketing and distribution arms of conventional business, it might well be on this template: The globally individualized template of instantly customizable mass production, distribution, and marketing, and the related language that reduces everything to commodities—be this value-added performance at the production end or pay-per service at the consumption end. A seeming cornucopia of market niches and specialty channels might start looking like more of the same when they are all financed (or not) and sponsored (or not) according to the relentlessly uniform logic (global economies of scale, scope, and speed) driving the global digital networks and the handful of multimedia conglomerates who run them. These are giants in information- and financial information systems, in telephone, cable, and power transmission, as well as conventional media.

Once entrenched in fact and through enabling national and international policies such as NAFTA, the global standards of scale, scope, and speed, functioning like a geopolitical grammar, could strongly determine the real economic as well as cultural practices that will prevail in the new multimedia environment. Whether

the goods and services that emerge from these converged media networks are brought to us by Disney, Sony, Microsoft, NBC, and General Electric or by Rogers, AT&T, America Online, Thomson, Bell, or a bank might be relatively unimportant. It might be merely a question of who sits where in the musical chairs, with the game already fixed as one of exclusion.

This suggests too that the systemic biases built into the network infrastructures could corral and limit current initiatives for participative digital networking, transforming a would-be commons on the information highway that could have served as a medium for an inclusive democratic economy and culture, into marginal footpaths associated with health and education networks, and with freenets and community nets paternalistically kept by corporate Internet service providers much as community programming is managed by cable companies.

This is not a deterministic or hegemonic prediction. Public-interest groups have used intercorporate competition to leverage ad hoc deals for public-service, public-space digital networks, which the federal government has then backed with policy statements (Reddick, 1997). Enterprising individuals have also made a difference. Finnish university student Linus Torvald seems to have broken Microsoft's would-be operating systems monopoly with his Linus open-source operating system (Laver, 1999). The counterhegemonic initiatives by groups using the Internet for democratic communication and organization are impressive as well. They range from women using the net to organize the U.N. Women's Conference in Beijing despite efforts by the world's largest dictatorship to thwart them (Davis, 1998; Shade, 1997) to the Zapatista uprising in the Mexican state of Chiapas (Dyer-Witheford, 1999) and, in Canada, community networking through freenets, Community Access Programs, and Community Learning Networks (Reddick, 1998). Nick Dyer-Witheford not only argues that the move toward globalized digital capitalism was big business' counterrevolutionary response to the success of postwar social movements around the world. He also offers a persuasive array of examples to support his hopeful thesis of a new countervailing dialectic—with social-justice and democracy groups appropriating the very tools big business has deployed to defeat them through Peacenet, Usenet, anti-Free Trade networks, plus those in Chiapas and Indonesia (Dyer-Witheford, 1999). Still, it would be naive to ignore the systemic biases built into the now commercial infrastructures on which all these initiatives depend. It would also be instructive to note the absence of Subcomandante Marcos from the celebrations marking the fifth anniversary of the Zapatista uprising, explaining in a taped message sent from the mountains instead that "we have turned inward to organize the resistance among our people" (in Blair, 1999, p. 16). Marcos' seeming sense of the limitation of global digital "hacktivism" echo strongly through critical communication theory.

Implications for communication theory

It is important to track changes in media ownership and ownership concentration. It is important to track public versus private investment in media and telecommunication systems and the shifting sites of control over communication infrastructures and policies. It is also crucial to grasp what communication theorists from

Harold Innis (1984) to Armand Mattelart (1994) see as the shaping character of communication networks themselves, whether they are funded by the state or by private corporations.

Both scholars' work is useful in understanding digital networks today. Both mapped more than transmission lines of communication—sailing ships, canoe routes, and railways, plus the telegraph. They also mapped the related spread of universalizing space-binding languages. Innis chronicled "the penetrative power of the price system" (Innis, 1965, p. 252) while Mattelart tracked the abstractions of metric weights and measures in Napoleonic France. This integrated medium-and-message perspective is germane when placing the social standard-izations of virtual work and corporate organization and supervision into context with the digital networks facilitating the political economy of globalization. While gunpowder might have been the grammar of military expansion, standardized weights and measures and prices have been the grammar of industrial market expansion. And so it is today: standardized skill sets and related credentialism, and standardized legal protocols for subcontracting and virtual alliances, are the new grammar of global business, while globalized multimedia promote new forms of identity and networked association in much the same way as national media promoted national public opinion a century ago. Thus, digital networks fulfill the bias of space in the late modern era as more and more social actions are de-institutionalized from grounded place and time, and are modularized and per-formed according to the rules of commodity production, that is, to the norms of business.

Vincent Mosco's recent work builds on this shaping-power-of-media analysis. For example, his concept of spatialization that focuses on structures for crossing geographic space quickly nicely captures the bias of space operating in the dema-terialized networks of postmodernity (Mosco, 1996). Virtual corporations and virtual co-venturing seem to embody this concept, combining economies of scale with economies of scope (multiproduct, multigenre, etc.) and economies of speed through their dynamic networked operations. The concept also opens up David Harvey's idea of space-time compression because it is through global networking that space can be annihilated and time both transformed into a function of space (pure speed) and compressed through just-in-time inventories, quick-response retailing, and agile manufacturing. Mosco's neologism of structuration is also helpful for understanding Harvey's analysis of capitalism's new phase of "flexible accumulation." It transposes an analysis of corporate structures from the inert terms of mere structures into the dynamic realm of agency (Mosco, 1996). As such, it helps to dramatize how, through the virtual forms of corporate association, core corporations associated with investment and management can ply the digital networks of postindustrial mercantilism much as eighteenth-century mercantilists plied the open high seas. They can bid on service or supply contracts, subcon-tracting the physical work to be done (assembling a medical team or machining auto parts) at the press-enter cue and offloading any risks (a possible lawsuit or oversupply of materials) just as quickly. Such an analysis, focusing on scale in

agency, that is, acknowledging the differential clout between the agency of an individual citizen and that of a global conglomerate, is timely. It could help rekindle a debate about the trade-offs involved when corporations were legalized and accorded the rights of citizenship. Not only did people's right to speak and to receive information diverge from corporations' right to distribute it even to the point of public saturation, as Dwayne Winseck (1998) has eloquently pointed out. Other fundamental human rights and freedoms (equality rights and freedom of association being two examples) have been squeezed as well.

Mosco's third concept, commoditization and all its fetishizing of quantifiable things, sheds more useful light on the structuring and shaping power of digital networks as environments. Not only do digital networks permit the intensification of capital accumulation by fragmenting various communication services into commodity-like pay-per units, which is fulsomely documented in Mosco (1989). Not only do they extend this into areas once governed by the values of equality, universality, and participation (Mosco, 1996). They also permit the kind of pay-per-input fragmentation of work at the creation and production end of communication. The most obvious examples of this involve telework either in call centres or in homes turned into "virtual workplaces" through computer and modem linkage (Menzies, 1997). Furthermore, they permit the Taylorist fragmentation of work—as work intensified into commoditized tasks then contracted out via digital networks to home-based or foreign-factory workers. They also obscure what disappears in the transformation from an ongoing relationship and community of workers into a just-in-time job-task as people are enclosed in an entirely commoditized expression of the work to be done. The digital systems that monitor and measure the performance of work then print this out as x many (commoditized) calls processed per hour, x many (commoditized) patient-care orders executed per shift, or cars assembled, and so on. Moreover, nothing else computes and is counted. With pay directly hinged to performance—especially as performance-based compensation has become widespread in North America in recent years—workers start to identify with this commoditized expression of their work and to drive themselves faster and faster. They almost have no choice as the context of their work is stripped of any meaning except the fragmented task and its statistical measures of performance. The new context, the new social field, is whatever the employer projects onto the computer screen in any particular workstation, be it data files for creating recombinant texts in customized courseware or on-demand delivery of videos, newspaper stories, financial, or other customer services.

The elements of this analysis acquire an added urgency when you turn the frame around, switching from the macro frame of structures to the micro frame of experience. In other words, when you consider that digital networks are not just forging a new political economy—they are shaping culture and identity as well. Again, Innis' analysis is helpful, especially as scholars such as James Carey have emphasized the dialectic it attempts to frame. As Carey puts it, Innis did not just argue that fast, globe-spanning lines of communication centralized authority and

strengthened the relations between centres and margins. He also argued that they undermined local communication and weakened relations within localities. Furthermore, they "degraded many social relations and aspects of the cultural environment . . . and led to purely technical processes dictating social relations" (Carey, 1975, p. 32). This last point overlaps with the cultural dimension which along with the physical and structural represent the three dynamics through which the dialectics of fast, long-distance versus slower and more local communication can be seen to operate.[1] In the cultural dimension, Innis argued, media do not just structure social organization and social relations; they also structure thought:

> Innis argued that changes in communication technology affected culture by altering the structure of interests (the things thought about), by changing the character of symbols (the things thought with) and by changing the nature of community (the area in which thought developed). (Carey, 1975, p. 35)

These tools of analysis shed light on globalization at the micro level, as personal and social experience. They also underscore why globalization is so difficult to resist.

Applying the structural aspect first, the dialectic twin of globally remote forms of work organization and control is local fragmentation, social isolation, and passivity. With digital networks permitting virtual work arrangements, work can be out-sourced and contracted out to a variety of suppliers, small businesses, and teleworkers. The work is de-institutionalized into commoditized modules. What had been a coherent group, if not a community, of people working in direct association with each other over time becomes a set of social isolates linked digitally and only for the life of a contract or project. People are not only fragmented in space, they are fragmented in time through asynchronous communication. What lends them coherence and provides continuity is the meta-institutional structure of the digital network itself. But while they are plugged into the network they are hardly engaged to the same degree as in grounded social engagement. Where people worked directly in contact with each other or with the public they served, they were engaged at least to some extent in defining what was to be done or how it might be done. With computer-mediated operating environments, a lot of this has been predetermined and is rigidly set down in software codes and access protocols built into the networked system. Much of the initiative has been removed in time and space and, increasingly, people simply adjust to what does or does not compute. They become passive, going with the flow of digital data. They have little time to do otherwise.

This is where the physical aspect, pure speed, does its conditioning. As people spend more of their time engaged in digital networks and networking, they are not only cut off from grounded contexts through which they might have retained their own particular perspective. They are cut off from time as well, including the discretionary time to add a personal touch. For many people too, they are driven by the pace built into these networks through their accelerating processing speeds and instant global connections. Many are being driven to the point that stress is more prevalent than illness or injury in the workplace (Coutts,

1998). But the problem is not just the damage caused by stress, burnout, and chronic fatigue syndrome and the fact that for many people, they have time only to react and provide feedback, not to rethink things for themselves. The problem is also that people cannot stop, cannot slow down. They become hooked on beating their own computer count or meeting the targets of various "total quality management" employee-involvement team-player schemes, which, I would suggest, can themselves be fruitfully analyzed under the rubric of the cultural conditioning described above. Or they simply become habituated to the rap-fast beat of digital connectivity generally.

The disciplining and pacing to which people are "subjected" through digital networks is not only a health problem. It has political implications too, seeming to exemplify Foucault's insights on control and power in contemporary society. In fact, these networks almost embody his main argument that the key form of power now operates through the disciplining routines of daily life which people then internalize. The digital networks can not only mute people's agency as whole individuals and members of whole communities; they can then hook people (involuntarily in the case of teleworkers) into the dynamic patterning and pacing of networked action in which people are involved on-line. In turn, these massage them as "servo-mechanisms" of the computerized work regimes, that is, the fleshy operating parts of these cybernetic systems, conditioned to respond to preprogrammed cues much as the thermostat servo-mechanism attached to a furnace (Menzies, 1996, p. 114; see also McLuhan, 1996). As Scott McLean (1996) has written, applying Foucault to the challenge facing adult educators, "We know little of how to cultivate patterns of human personality that can resist the disciplining and regulating of individuality that are at the heart of contemporary forms of power" (p. 20). Consider global digital networks as Foucault's "capillary" forms of power and control (Foucault, 1986, p. 232). Consider too how much these are at the heart not only of contemporary forms of power but also of culture and the structures of social memory.

The challenge is to deepen the analysis of digital networks along these lines. Not just among communication theorists, but among the dedicated activists who would structure digital networks for democratic participation in a rich diversity of public and private social, economic, and cultural activity, and all those who are trying to resist a new enclosure movement where any and all human activity is reduced to commoditized e-commerce.

In conclusion

Innis' enduring strength is that his analysis was fundamentally about civilizational values, not just the media that delivered these values into the hinterland of a country or the hearts and minds of a people. Furthermore, it was a dialectical analysis contrasting the bias of space (his shorthand for material values and power as control) with the bias of time (his shorthand for spiritual values and the power of memory). He did not favour one type over another, but advocated a balance between them for a peaceful, stable society. Thus he supported public cultural institutions—for communication that was "free from commercial bias" (Innis,

1952, p. 20)—in a mediascape that was dominated by commercial concerns. This would also imply a balance between fast and slow communication, between long-distance and local communication, with the slower and more local forms helping to restore the expressive complexity sacrificed to the scale and pace of instant global connectivity.

Above all, Innis wanted to revive the "living tradition" of oral communication, not just in the private sphere but in the discourses of the public sphere (Innis, 1984, p. 190) which are now so dominated by print and the mass media. In his view, both creative thought and the reciprocal dialogue essential for democracy depended on the oral tradition: "The oral dialectic is overwhelmingly significant where the subject matter is human action and feeling. . . . [It] inherently involves personal contact and a consideration for the feelings of others, and it is in sharp contrast with the cruelty of mechanized communication . . ." (Innis, 1984, p. 191). The bias here is toward the embodied human voice speaking his or her experience and the empathetic ear listening and reciprocating—that is, intimate scale and human pace, not the disembodying scale and pace of instant global connectivity.

This is Innis' plea for time, and it is mine as well. It is a prerequisite for communicative democracy (after Habermas; see Winseck, 1998) everywhere from the digitized social environment to the media associated with citizenship and a robust civic society. It is a plea for people to be in touch with themselves and with each other through grounded face-to-face conversation in the institutions through which they live out their daily lives. It is a plea also to develop communication practices and policies that will extend those engaged participative voices beyond the private sphere and special-interest group.

Innis' dialectic might inform the kind of emancipatory politics that Foucault advocates in calling for "a multitude of resistance against the regulation of who we are" (McLean, 1996, p. 20) by "promot[ing] new forms of subjectivity" (Foucault, 1982, p. 785) on the net and on the ground. This might include breaking the silence on the boredom, isolation, and exploitation of teleworkers and others in the new "contingent work force" (Menzies, 1997, p. 75), yielding a politics based on the particular "contingencies" of actual experience (Finn, 1996, p. 136).

It might open up new areas of research and action among scholars and activists in the field of labour and political economy. It might inform and legitimize work in the participatory design field (Balka, 1997) and collective organizing among the new work force of part-timers and the self-employed (Menzies, 1998b; Slaughter, 1998). It might also promote collaboration between media theorists and popular-democratic and social-justice activists promoting open-network architecture in digital communication infrastructures and a public lane or common-carrier commons within the digital mediascape open to a range of cultural and even economic activities by institutions and individuals not aligned to the corporate super powers (Reddick, 1995; Winseck, 1998). In other words, a public digital medium-environment through which all can participate in society, on terms of their own choice and negotiation.

It is a vision of convergence that could serve both economic democracy and democratic culture while resisting the hegemonizing rigidities of global corporatism.

Notes

1. The terms of reference (the things thought about) strip participants of their grounded particularities and bind them together in the grammar of skill sets and value-added performance. The things thought about are increasingly disembodied and de-institutionalized. Similarly, a different form of community emerges. It is no longer grounded communities of people working face-to-face over a protracted length of time. It is short-term groupings of just-in-time workers (in factories) or aggregates of isolated teleworkers, spun out globally and paced to the speed of microchip processing times. Community might be a management add-on such as "total quality management" and various team-building efforts for cementing workers' identification with corporate productivity goals and their mutual identification with ongoing "business-process engineering" (Menzies, 1996, p. 75). Or, for the self-employed teleworker, it might derive simply by being plugged in, logged on, and on-line, schmoozing for contacts, and bidding on contacts. The experience of being digital.

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