The MIT Media Lab: techno dream factory or alienation as a way of life?

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The MIT Media Lab is a kind of genius institution, a place of wild and woolly intellectual endeavor holding nothing back. If the place were a person, it would be a mad scientist, someone who breaks conventional rules and is unafraid to experiment with radical ideas. (Madlin, 1999: 35)

Connecting, diversifying, increasing human complexity rather than reducing it – these are the instruments of culture. (Brand, 1986: 263)

MIT Media Lab, founded in 1985, the brainchild of Nicholas Negroponte and Jerome Wiesner, has enjoyed over a decade and a half of extraordinary commercial and developmental success. Their work in the development of advanced Information and Communication Technologies (ICTs) has been instrumental in the creation and development of a whole range of what are now media industry standard applications such as digital video and multimedia. Driven by the creative eclecticism of Negroponte, the Media Lab's mission has been nothing less than to 'change the world' through creative and innovative ICT-based products that have 'everyday' applications for consumers (Haase, 2000: 4). With a mile-high reputation and super-funding from corporate America and elsewhere, the Media Lab acts as a magnet for the 'best and brightest' faculty and graduate students from diverse disciplines such as computational physics, engineering, linguistics, semiotics and multimedia.

The Media Lab is engaged in a wide array of research projects that traverse a whole range of subjects and disciplines. The scope of the research under way by such assorted talent is impressive and is perhaps best left to the Lab itself to describe:

The Media Laboratory provides a unique environment for exploring basic research and applications at the intersection of computation and the arts. Areas of research include: software agents; machine

understanding; how children learn; human and machine vision; audition; speech interfaces; wearable computers; affective computing (a new branch of computing that relates to, arises from, or deliberately influences emotions); advanced interface design; tangible media; object-oriented video; interactive cinema; work in various forms of digital expression, from text, to graphics, to sound; and new approaches to spatial imaging, nanomedia, and nano-scale sensing. (Media Lab Research)

All this is made possible through the assistance of some 170 corporate sponsors who provide for an annual budget of \$35 million, employing over 30 faculty and research staff, 80 support staff and 170 graduate students. Sponsorship, like the public perception of the Media Lab, is of an ‘unorthodox’ kind, where sponsors have access to all the research findings across all fields of inquiry (Freedman, 2000: 72). In this the Media Lab operates a kind of ‘open source code’ ethic – for those who pay the gate charge. The ‘ultimate goal’ of this highly productive transdisciplinary activity is to create a ‘world of playfully creative people, who are constantly inventing new possibilities for themselves and their communities’ (Haase, 2000: 4). But it is more ambitious than even this. It is about our relationship with information technologies and the mediating roles they play between our physical self and the natural world that surrounds us. As Negroponte argues in his *Being Digital*, the purpose of Media Lab research into the application of information technologies in everyday life is to try to transcend the barrier between ‘bits and atoms’. The primary thematic underlying all the research is how ‘bits meet atoms’ and to find ways in which bits can *overlap* atoms in a seamless relationship between the physical and the digital (Negroponte, 1995).

Since 1985 Negroponte’s restless energy and the growing reputation of the Media Lab’s research have paid off. For example, the Media Lab marked up a major sponsorship success in 1998 when it announced the donation of \$27 million from Isao Okawa, Chairman of Sega Enterprises Ltd. This is the largest sum ever donated to any faculty or department at MIT in its 137-year history and the largest gift ever by a Japanese individual to an overseas institution (MIT Media News). The money funded a major extension to the Media Lab’s Wiesner Building, in effect doubling its size. In May 2000 the Media Lab struck a ten-year, \$200 million deal with the Irish government to open a research and teaching laboratory in a renovated hopstore that once belonged to the Guinness brewers in Dublin. The Irish government pledged an initial \$55 million as well as providing a permanent facility for the Media Lab facility will be called MediaLabEurope (MLE) and will:

... grow to a community of 20 faculty members and 35 full- and part-time research staff, more than 100 graduate students, and 100 undergraduate students. To facilitate the free exchange of information, the MIT Media Laboratory and MLE and will share all intellectual property developed at both locations over the initial 10-year period. (Media Lab Information)

In a relatively short time Negroponte’s dream of a ‘global Media Lab’ has begun to take shape through these major developments. The dream- horizon, however, extends well beyond Ivy League Institutions and tastefully renovated Irish hopstores. The Media Lab has a Research Consortia programme called ‘Digital Nations’. Its focus is on developing countries such as Mexico, Costa Rica, Argentina, Thailand and India and undertakes research that will:

. . . address major social challenges (improving education, enhancing health care, supporting community development) through the innovative design and use of new technologies. The consortium's ultimate goal is to empower people in all walks of life to invent new opportunities for themselves and their societies. (MIT Digital Nations)

By covering all its bases the fair-haired child of the IT industry can do no wrong, it seems. Not only does the Media Lab build success upon success in the rich developed countries, the dream of 'connecting' and 'diversifying' human experience also takes seriously the problem of the global digital divide. It actively works from both ends of the gap to connect developed with developing countries and IT-rich with IT-poor countries in the quest to enrich world culture(s) and to enhance our collective self- knowledge. The only resentment, it would appear, is of a more professional kind, from observers at other universities who, usually on condition of anonymity, criticize the Lab's 'arrogance' – an overconfidence, it is alleged, brought about through the 'cozy' relationship between the Lab and its sponsors (Freedman, 2000: 80).

The rationale

This article will take a more critically detached view of the work of the Media Lab and will look at its research and its ethos from a range of perspectives. Several major questions will underpin the critique. What, for example, are the factors that explain the Media Lab's undoubted success? Where do the Lab and its work fit in the larger picture of a globalizing capitalism whose aggressive expansionist logic is dialectically interwoven with dynamics of the ICT revolution? Moreover, what are some of the possible social, cultural and ontological consequences of 'being digital' within a hypermediated digital ecology of interconnectedness?

Interconnectivity is a primary feature of the Media Lab's work. It aims to develop a wide range of products that expand and deepen the processes of connectivity. For example, one Research Group Project is called 'Sociable Media' which looks at how people perceive each other in an 'networked world' and seeks to explore ways of building experimental interfaces and installations that will develop new forms of social interaction in a technologically mediated world. Another research area is the 'Digital Life' Consortium that looks at the connections between 'bits, people and things in an online world' and aims to construct a digital ecology where humans and ICT-based applications blend as completely as possible. The main emphases in the 'Digital Life' research are on learning, community building, entertainment and human interfaces with ICTs (MIT Research Consortium).

What are the effects of these new applications? What does the Media Lab contribute to the 'networked world'? It will be argued that the role that the Media Lab evolved into and grew large upon is that of *digital connector* of the social and temporal interstices of human subjectivity, a filler of the gaps left by the broad meta-dynamics of globalization and the ICT revolution. As we move through the 21st century the role of the Media Lab and similar organizations will become increasingly important. The 'digital stitching' of the fabric of culture and of life will not only help

to make possible a world where bits *do* meet and interact with atoms, it will also lay the basis for a world addicted to ICT fixes for almost everything.

Finally, the article will put forward the argument that the Negropontean ethos and Media Lab achievements are centrally bound up in the process of the shift from *chronological* to *chronoscopic* time. This is a condensed, ultra-fast, digitally determined temporality that is a ‘hyper-intensification’ of the Newtonian clock-time of chronologic duration. This process, I will argue, is inaugurating a radical change in the social dynamics of temporal orientation and the very means by which we make sense of our lives (Purser, 2000: 11). Increasingly the ‘real-time’ of the online environment is becoming the ‘real-time’ of our everyday lives. Utilizing the work of Barbara Adam (1995) on the nature of time in society, I will show that the variegated temporal rhythms of our social and cultural lives are beginning to synchronize with chronoscopic ‘real-time’ through the suffusion of ICTs into increasingly large areas of our existence.

The result is that the Negropontean and Media Lab ethos of connecting ‘bits with atoms’ will lead not to diversity and to complexity, but gradually to a more standardized and one-dimensional alienation.

When PR meets VR

What is it that makes the Media Lab so successful? Consider the quotations at the beginning of this article. The first exemplifies the cliché regarding certain scientific research. It conjures up a picture of men (usually) in white lab coats with Einstein haircuts, maniacally and endlessly experimenting and tinkering, making up for what they lack in social skills with a proclivity for genius-inspired innovation. The second correlates more to how the Media Lab sees itself: a rigorous *research* center in the university tradition, where free-thinking is prized and the ultimate point is not to make money but to enrich the human condition through ICT-based applications. However, on a popular, media-driven level the Media Lab, as will become evident, is quite happy to be portrayed in the former light, too. The Lab shapes its public relations and the public perception by oscillating skillfully between these two poles. Why? First we need to look at the relationship between science, technology and society.

Those who think systematically about the role of science and technological innovation tend to fall into two general categories. On one hand there are the technological ‘utopians’ who welcome most forms of technology, as evidence of human ‘progress’ – Negroponte and the Media Lab would come into this classification. Alternatively, there are the ‘dystopians’ who see in technological innovation nothing but increased oppression, alienation and subjugation. In between these extremes are the general public who, when they think about science and technology at all, see it characterized through media representations as something rather mysterious, something that happens *to* you. This representation, though, is not something that is generally laden with a sense of foreboding. Since well before the 18th-century Enlightenment, science and technology have been represented by

individuals such as Francis Bacon and institutions such as the Royal Society as the twin ‘engines of providence’ (Stewart, 1992). For over 200 years, those whom Neil Postman has called the ‘technocracy’ – that is, the elites of society who have a vested interest in technological innovation – have propagated the ideology that science and technology are unambiguously ‘good’ for society. For those who lacked a deep knowledge of scientific and technological development, the dominant ideology was internalized or became something mysterious and inevitable (Postman, 1993). In a deeper sense, science and technology came to be seen as what Thomas Carlyle termed the peoples’ ‘true deity become mechanism’, a new savior that would militate against the insecurities of social life and the chaos, disorder and barbarism of the elemental, natural world (Postman, 1993: 38).

Society’s ‘mysterious but good’ perception of science and technology helps partly to explain, for example, the huge popularity of Einstein’s Theory of Relativity when it was first articulated in 1905. Although hardly anyone understood it, people were able to accept that it shattered cherished dogmas in science. It opened up a sense once more of the *possible* and a renewed sense of some sort of *control* over our collective destiny after a generation or more of going through the meat-grinder of the Industrial Revolution. Likewise the so-called ‘information revolution’ and the alleged life-changing technologies it has spawned, such as the Internet and the digitalization of increasing parts of our lives in the name of convenience, efficiency and connectivity, are seen in an overwhelmingly positive light.

However, there is another element to this relationship, one that has evolved with the mass media industries. Not only was Einstein’s Theory of Relativity well known, if barely understood, Einstein himself was hugely famous – the first media star from the world of science. The role of the media was a critical factor in popularizing both the theory and the man. Einstein, through his camera-friendly demeanor – the shock of white hair, rumpled suits and grandfatherly air – imprinted on the collective imagination a trusted and safe public face of the workings of science and technology in a powerfully immediate and popular ways – something which academic papers and books could never hope to do. The existence and the particular dynamics of mass media were key to this.

Historically, media priorities and agendas have been notoriously fickle. In the age of the ICT revolution and globalization, however, certain media priorities and agendas have been rather more predictable. The media, ICTs and the processes of economic globalization are locked into a tripartite interaction where one relies increasingly upon the other. For the industries of globalizing capitalism ICTs are a strategic tool, without which world-wide expansion would be impossible. As Manuel Castells puts it:

. . . the entire planet is organized around telecommunicated networks of computers at the heart of information systems and communication processes. (1998: 6)

Of course media industries are as much a part of globalizing capitalism as are Nike, Ford, Intel or Microsoft, but they have a distinctive role to play in the tripartite dialectic. The media are linked to

the processes of globalization and the ICT revolution through the selling of the idea of capitalism and its industries – not simply direct and obvious advertising in the form of printed ads or television commercials, but in much of the general media content, too, what Serge Halimi (1997) has termed ‘market journalism’. ‘Advertising’ for corporate capitalism and the ICT industries is inherent in television news, science programmes, the burgeoning business supplements, IT sections, trade publications and so on. Taken as a whole, all forms of media generally present a glowing picture of both globalization and the ICT revolution (McChesney and Herman, 1998). Both are portrayed as an a priori ‘good’ in their many different ways, for society. What the vast majority of media industries don’t articulate, however, is that they too have a deeply invested interest in both the health and continuance of these techno-economic dynamics.

With a 90 percent dependence upon private sponsorship, the Media Lab was from the beginning an enterprise very much in need of a way of ‘selling the proposition’. As Freedman observes:

Negroponte proved remarkably adept at selling the proposition, bolstered by the growing perception that something magical was happening – the result of brilliant public relations and a flattering popular book by Stewart Brand called *The Media Lab: Inventing the Future at MIT*. (2000: 72)

Negroponte and the Media Lab have hit upon a powerful public relations formula that embraces the media/ICT/globalization nexus. It strikes a deep chord within the populace as well as the ICT and non-ICT industries that power and dominate the processes of globalization. To begin with, as Freedman implies, Negroponte is media-savvy to a high degree and recognizes the role of the media in the nexus – indeed Negroponte is on record as saying that he and the Media Lab largely ‘engineer the good press’ (Freedman, 2000: 72). He provided the start-up funds for *Wired* magazine, a ‘cool’ and influential monthly for those who see ICTs and the Internet as the wave of the future. Negroponte himself wrote regular columns for it and through this and other media outlets has fashioned himself as a ‘guru’ who has a window on the future – which is, as he sees it, unerringly bright.

The public relations strategies of Negroponte and the Media Lab also satisfy the criteria that states that a favorable ‘spin’ be put on public perceptions of science and technology. First, as we have seen, there is a carefully crafted aura of a ‘genius institution, a place of wild and woolly intellectual endeavor’ (Madlin, 1999: 35). It is a perception of the development of socially useful technologies by unthreatening, Einstein-type individuals. Second, these socially useful technologies are developed in areas of deep-seated public concerns – such as health, education, poverty and so on. Typical of this ‘public good’ research is that done by the Lifelong Kindergarten Group that ‘develops technologies and activities to help people (especially children) learn new things in new ways’ (Lifelong Kindergarten Group). Negroponte and the Media Lab also feed into the positive perception of globalization through its ‘global media Lab’ projects, the expansions into Ireland and elsewhere. They recognize, too, the ‘downside’ of globalization and the ICT revolution that is sometimes portrayed (i.e., the ‘digital divide’), and so ameliorative ‘public good’ works, through ICTs, are undertaken here in the ‘Digital Nations’ projects.

What is clear is that the Media Lab has tapped a strong current flowing from the globalization-ICT revolution and the currently positive perceptions that these processes enjoy in industry and in society generally. However, sponsors, no matter how ‘unorthodox’ the relationship, have expectations, and these expectations, from sponsors as diverse as Microsoft and Wal-Mart, are similar. They expect commercially viable products and services; innovations that create social practices leading to mindsets and cultures that connect them, their business and their markets to the ICT revolution and the so-called ‘new economy’. Both Negroponte and his sponsors dream of the informationalization of society: of ‘being digital’ in a collective and social sense, where everyone is linked to the networks of immediacy, efficiency, convenience and connectivity. However, Negroponte’s vision of ‘being digital’ is articulated in an almost literal, ontological sense, a stage in the progressive development of human subjectivity towards, presumably, a machine-like state of perfection. Sponsors, on the other hand, see ‘being digital’ as being deeply embedded in the ‘new economy’, a Gatesian ‘friction free’ capitalism (Gates, 1995: 157), where ‘connectivity’ means a vast market and where ‘immediacy’ and ‘efficiency’ relate primarily to forms of consumption and distribution.

Becoming digital

‘Being digital’, whether in the shape of the Negropontean dream or the commercial imperative is nonetheless fast becoming a social, cultural and economic reality. The informationalization of every nook and cranny of life continues apace. As we have seen, ICTs are perceived either as an unambiguous good or a mystifying thing that we unquestioningly adapt to. For these reasons the speed and the comprehensiveness of the process seems likely to increase in the future. The Media Lab and the many subsequent ‘start-ups’ that have tried to emulate its success, play a subsidiary, but important role in the blanket informationalization process. In this section I wish to trace, very briefly, the broad outlines of the ICT– globalization nexus, and then look in some more detail at the function played by the Media Lab in the building of what Dan Schiller (1999) has termed ‘digital capitalism’, to create a ‘digital ecology’. This environment will be radically new and comprehensive, permeating much of our lives through connectivity, ‘time-space compression’ (Harvey, 1989) and a constant real-time perspective.

The restructuring of capitalism out of the aftermath of the ‘crisis of Fordism’ in the mid-1970s paved the way for the informationalization of productive processes in the industries of the advanced economies and in society more generally (Harvey, 1989; Castells, 1996). Productivity and competitiveness were the new watchwords in the 1980s and 1990s as economic restructuring progressed. These imperatives placed an emphasis upon automation and the development of new and improved communications technologies, both to expand the productive capabilities of industries and to make them more efficient. Restructuring also made capitalism much more flexible than it had been under the regime of Fordism. This newfound flexibility allowed for the

convergence of previously discrete technologies such as satellite, computing and telephony, to produce the basis for the super-powerful ICTs that underpin globalization and the ICT revolution today (Hassan, 2000).

The ICT revolution, however, differs from previous technological revolutions in an important way. Previous technological breakthroughs have had narrow or relatively limited effects outside their own domains. It took a very long time for the effects of even major breakthroughs, such as the printing press, to ripple out through the whole of society. ICTs, on the other hand, especially since they have developed out of the processes of convergence, have been recognized to have powerful ‘enabling’ properties: that is to say, their effects are easily diffused across almost all industries (Barr, 2000). This is what makes the ICT revolution truly a revolution. The dynamics of this revolution feed off its own incredible momentum, producing a force that super-charges the productive and diffusionary capabilities still further in an ongoing dialectic of technological change. It is the interaction between the powerful momentum of the ICT revolution and economic globalization that has allowed capitalism to go global and virtual at the same time.

The processes of globalization and the ICT revolution have not, of course, been restricted to industries and businesses. This extensive and intensive growth has suffused (colonized) so much of the space of culture and society that was traditionally outside the ‘proper’ realm of work, that it is no longer easy to demarcate between work and non-work times and spaces (Morley and Robins, 1995). So rapidly have ICTs flooded the lives of many within the advanced economies, that it is increasingly possible to speak of life being conducted within an information environment, an *informational ecology* (Nardi and O’Day, 1999). Interconnectivity under-pins the creation of the informational ecology. Interconnectivity is what ICTs are essentially about and is what makes them special. In a very short time, the Internet, for example, has changed, and is continuing to change, the way we communicate, do business, conduct research, access entertainment, do personal banking, shopping and so on. As it develops and suffuses life still further, the Internet is set to become the foundation stone of the informational ecology that we increasingly are part of. As the momentum of the ICT revolution gathers speed, many subsidiary and related ICTs will connect to it, evolve from it and add yet more complexity and interconnectivity to the ecology. Personal computers, mobile phones, pagers, Palm Pilots, email, WebTV, text-messaging, plastic money, e-commerce and so, on underpin connectivity. This is just the beginning. Almost every week a new, more ingenious and innovative application or device comes on to the market to intensify our informational ecology even further, with increased competition between corporations for the ‘killer application’ simply driving the pace yet faster.

It is here that the Media Lab finds its very important ecological niche. Its products and applications inhabit those social and cultural interstices that do not immediately fall under the broad and uneven colonizing logic of informationalization and globalization – hence their claims to unique and innovative research. The themes of the Media Lab’s Research Consortia reach deep into the realms of what and who we are; how we learn, how we interact with each other, how we think, and our

various interfaces with technology in and out of work. We briefly looked at some of the Media Labs projects in a very general way. It would be useful at this point, therefore, to look at a few projects in some more detail, as given by the Media Lab itself. These specific projects were selected more or less at random from the Media Lab's website during April 2001 and are typical of the direction the research takes and the philosophy that guide them.

Media Windshield:

The media windshield is a demonstration that changes the use of an automobile windshield to serve multiple purposes. When no one is in the car, it can present information to the outside world; advertising, augmentation of the road signs, even personalized information for a party that is walking by. When the driver gets into the car, it adjusts the audio to be appropriate for their seating arrangement and puts up an Internet interface. When the driver lies back, the windshield can be used as a movie screen for DVD videos. Finally, when the driver is using the car, the windshield can shade the sun and lights, put up virtual signs, and annotate difficult-to-see objects.

EyeAre:

'The Party Scenario' – Everyone wears a unique pair of EyeAre glasses, which can send information back and forth to each other, recording information like to whom you talk and how long your conversation lasts. Every so often you stop by one of several base stations around the room to download the stored information on your glasses, and you will be able to find out more information about the people you met, such as their contact information, their business cards, perhaps their webpages, or allowing you to send them an email, etc. – giving you an easy way to follow up later with your new acquaintances.

Digital Manipulatives:

We are adding digital capabilities to the traditional toys of childhood, and, in the process, redefining how and what children learn. For example, we are developing 'programmable beads' that communicate with neighboring beads along a string. Put these beads together in different ways and you get different dynamic patterns of light. When children play with traditional toys (such as beads, blocks, and balls), they can gain an understanding of concepts such as number, size, and shape. With our new digital versions of these toys, children can learn concepts (such as process, probability, and emergence) that were previously seen as too complex for children. (MIT Media Lab)

These examples concisely underscore what 'being digital' means to both Negroponte and the Media Lab. Becoming digital, however, would be impossible without the technological and economic basis being laid by the ICT revolution and economic globalization. The dynamics of these meta-processes constitute the great infrastructure of the evolving digital ecology in rough form only. What Negroponte and the Media Lab work towards is shaping these irregular outlines into something seamless, whole and coherent. Their work is at the micro-scale, filling the gaps in our

lives where digital technology has not yet made its presence felt, always seeking to connect, connect, connect. Indeed, it is at the micro-level that the macro- level dynamics of the ICT revolution and economic globalization are given viability. Interconnectivity, in ever-increasing levels of complexity is vital to envelop consumers in the evolving new economy based in and around the Internet, carrying the revolution forward. As Mark Weiser and John Seely Brown put it:

Today the Internet is carrying us through an era of widespread *distributed computing* towards the relationship of ubiquitous computing, characterized by deeply embedding computation in the world. (Weiser and Seely Brown, 1997: 75; emphasis in original)

Ubiquitous computing is vital to the development and economic viability of online education systems, e-commerce, personal banking, new media, multimedia and so on. It is crucial to the development of new markets, new products and yet more new ways of connecting, allowing computing, in turn, to become yet more ubiquitous. The inevitability of interconnectivity was stated in no uncertain terms by Microsoft employees Gordon Bell and James N. Gray. 'In 2047', they write:

. . . almost all information will be in cyberspace – including a large percentage of knowledge and creative works. All information about physical objects, including humans, buildings, processes and organisations, will be online. This trend is both desirable and inevitable. (1997: 5)

More recently, Negroponte himself touched on these themes. It was in typical Negropontean style that attempts to link a techno-utopian future with a munificent globalization – combining to create what he sees as culturally rich and diverse 'digital nations'. Giving the closing address at eLink 2001 in Berlin, Negroponte spoke of how economies of scale will bring 'ubiquitous computing' to the world's most populous nations, India and China. Within 12 months, he predicted, PCs would be available for less than \$1, allowing (in theory) hundreds of millions more people to be on the threshold of connectivity and 'being digital' (Zarabi, 2001). Negroponte's own view is a rather simplistic and instrumentalized one. Living in a world of public relations, with each pronouncement partly pitched toward what corporate capitalism wants to hear, it is very easy to believe one's own rhetoric. Corporate capitalism and the stock markets crave reassurance that the future will consist of a digital ecology where most, if not all will be connected or connectable to the global network. It is a planet where the potential consumer multitudes of India and China contribute to a wired world, a vast market where 'physical objects, including humans, buildings, processes and organizations, will be online' (Bell and Gray, 1997: 5). In this world, the dream is not of the enrichment of cultures and the diversity of human experience, but a much more prosaic reality of markets, consumers, profits, regularity and standardization – the basic elements of a capitalist economy.

In the next section I will present what I believe to be a more considered perspective on what 'being digital' in an informational ecology may be like. It looks at how time and the ways we perceive it is radically changing through the process of informationalization and synchronization with the 'real-time' of online environments. Importantly it will show how this new 'chronoscopic' time militates

very strongly against the Negropontean ethos of diversity in culture and in the range of human experience.

From chronologic to chronoscopic time

Time, as Barbara Adam (1995) reminds us, is something that is deeply embedded in our social life, our social practices, our social structures and interactions. It is also a very slippery concept that eludes final classification. The complexities of societies are mirrored in the complexities of the experience of time(s). Adam describes these complexities with some clarity and so deserves to be quoted at some length:

There is no single time, only a multitude of times which interpenetrate and permeate our daily lives. Most of these times are implicit, taken for granted, and seldom brought into relation with each other: the times of consciousness, memory and anticipation are rarely discussed with reference to situations dominated by schedules and deadlines. The times expressed through everyday language tend to remain isolated from the various parameters and boundaries through which we live *in* time. Matters of timing, prioritising and sequencing stay disconnected from collective time structures, and these in turn form the rhythms, the transience and the recursiveness of daily existence. (1995: 12)

By applying what is described in these words to our own lives, it is not difficult to appreciate how multifaceted time really is, and how fundamental it is to the maintenance of human diversity in thought, in practices and in culture. These temporal rhythms contribute to what we are, and lend a sense of coherence, identity and individuality to self-perception and our place in the world. However, amid this profuse and multi-hued human relationship with temporality there have been many attempts to organize, rationalize and *regulate* specific time with the actions of individuals, groups of people and sociocultural institutions. This *synchronization* was in many ways an unavoidable consequence of moving from tribal society to ‘civilized society’ with its hierarchies, bureaucracies and socio-political structures. Nigel Thrift has shown how organized and rationalized time, from the beginning of the civilized societies of ancient times evolved into the dual temporalities of sacred and secular time during the early medieval period (1996: 168–202). As the medieval feudal period gave way to the rise of capitalist modernity, secular Newtonian *clock-time* (chronological time) impinged more and more on the time-lives of people drawn into industrial society. As Lewis Mumford noted, the key technology of the Industrial Revolution was not the steam engine but the mechanical clock (1934/1967:14). Importantly, clock-time was not simply a system of discipline for the new working class, it was time that had become commodified. Time(s) and increasing numbers of people and institutions became part of the work-time-money-efficiency-profit cycle. The logic of such an approach, as Adam puts it, is the ‘decontextualisation, rationalisation and commodification of time, in the calculation of time in relation to money, efficiency, competition and profit’ (1995:101).

As the Industrial Revolution took hold in the 18th and 19th centuries to expand into a world system

in the 20th, hundreds of millions of people were drawn into its logic and routinized disciplines of commodified time. Governments, industries, bureaucracies and a multitude of other social institutions evolved and grew on the basis of commodified chronologic time. As capitalism expanded spatially and suffused more and more temporal realms of life it became increasingly hegemonic, a core rhythm in our individual and social life. There were (and still are) many other temporalities of the kind Adam describes that still permeate and inter- penetrate our experience of times in time. Nonetheless, this growing core of chronologic temporality is time hired out by us in the marketplace and is for many people *alienated* time, time that occurs ‘through its concentration within institutions, which then reacts as something external [and] to be felt as a constraint . . .’ (Nowotny, 1994: 147).

Since the root-and-branch restructuring of the global economy of the late 1970s, the everyday lives of people have been brought much closer to the dynamics of market forces. The concomitant effects of the ideologies of ‘competition’ and ‘efficiency’ have radically changed the way we perceive work and leisure, the role of the state and ‘market forces’. Increasingly the variegated temporal rhythms that Adam describes, and that make us diverse in thought and in culture are synchronizing with the dominating time regime of market forces. As Fredric Jameson has argued, these dynamics have penetrated more and more parts of non-economic life, realms ‘hitherto sheltered from it [globalizing capitalism] and indeed for the most part hostile to and inconsistent with its logic’ (Jameson, 1996: 9).

The processes of interconnectivity, however, do not simply tend towards the synchronization of the temporal rhythms of chronological work-time to ever more realms of life. The essence of the ICT revolution is *connectivity* and *speed*. Consequently the ICT revolution has begun radically to change the nature of chronologic time, with its linear, sequential and narrative logic. What is emerging out of the ICT revolution and the hypermediation of interconnectivity is a non-linear *chronos*, a digital instantaneity of *chronoscopic* time. Chronoscopic time is a digital concentration of chrono-logic time, suspending it in the electronic present of online inter-connectivity. Paul Virilio (1991) has called this process the ‘dromocratic revolution’, one that will ultimately lead to the annihilation of time. Virilio’s work has been extended by Ron Purser, who has written that:

The shift from chronological to chronoscopic time involves a radical change in temporal orientation, and the very means by which we make sense of our lives. Chronoscopic time signals an intense compression. The extensive time of history, chronology and narrative sequence implodes into a concern and fixation with the real-time instant. (2000: 5)

This is the temporality that inhabits the informational ecology of inter- connectivity. The hyper-accelerated pace of life (the temporal rhythm) that the denizens of this ecology sustain may be traced back to the economic imperatives of economic globalization and the ICT revolution. Consequently, living in *this* time is to live in alienated time. As the ICT revolution and economic globalization embeds itself further; and as the work of the Media Lab and similar organizations

work assiduously to connect and interconnect us, a *single* time, a monolithic perspective, begins to replace the multiple times that interpenetrate and permeate our daily lives. In such a time, where a sense of past, present and future are degraded and compacted into the here-and-now, the Negropontean dream of ‘diversity’ through communication technologies seems increasingly remote.

Connective dementia

The information and communication technology revolution has had undoubted benefits for many individuals and for many aspects of society. Innovations in computerization and automation have created new jobs and new processes, eliminating at the same time those repetitive and labor-intensive tasks that made countless occupations both tedious and alienating. The ICT revolution has unquestionable public benefits, too. One only has to think of the advances made in medicine. Computers have revolutionized the sciences of pharmacology and biotechnology, producing powerful new drugs and genetic techniques that combat many diseases once thought incurable (Gorman, 1999). The mapping of the human genome and all that it may hold in prospect for humanity would have been impossible without the use of supercomputers. Interconnectivity, an essential feature of the ICT revolution, has been indispensable to these processes. Without networks of scientists and engineers working together on common projects, swapping information, testing, experimenting and refining procedures and theories, the applications and successes of computing power on its own would have been limited.

Technology and communication are at the very center of what it is to be human. Indeed, the development of the capacity for language could be described as the first information and communication technology revolution. McLuhan (1964:79–80) called it the ‘technology of human extension’ and it was the first instance of symbolic connectivity. Connectivity in a limited Negropontean sense also has its advantages for people and society. Telephony has become cheaper and more widespread, and newer techniques such as email, Internet usergroups and so on are connecting people and building communities of knowledge and interest where there were none previously (Donath, 1999: 32). However, full-blown Negropontean interconnectivity is something altogether different. To understand the difference, it is necessary to look at the pioneering work in media and communications theory of Raymond Williams. In his *Television: Technology and Cultural Form* (1974: 135), Williams wrote that:

. . . [a] new technology is itself a product of a particular social system, and will be developed as an apparently autonomous processes of innovation only to the extent that we fail to identify and challenge its real agencies.

Williams identifies the yardstick for judging the social utility of technological innovation, that is, whose interests are really being served by the introduction a technology? In other words, we need to identify where power lies in the ongoing processes of economic globalization and the information

technology revolution, and whether enough ‘checks and balances’ exist to serve the interests of the ordinary people. The restructuring of the global economy was also a restructuring of the class relations within global capitalism. The decades of the 1980s and 1990s saw the pendulum of class power swing decidedly back to the owners and controllers of capital. These decades installed the rule of so-called ‘free enterprise’ and the power of the corporation to respond to market forces as it saw fit, introducing the processes and techniques of production and service delivery that enabled it to ‘compete’ in the marketplace. Over this period, the social, economic and cultural power shift away from organized labor and representative government, towards corporate boardrooms and stock exchanges (Barber, 1995; Martin, 1997; Bauman, 1998).

With power comes control over technological development. I have mentioned some of the undoubted benefits that have stemmed from these processes; but there is a significant cost, one that does not feature in the profit-and-loss ledgers of the accountant. Speed and interconnectivity, as noted, are the basis of the informational ecology that is becoming more and more the environment of our daily lives in the developed economies. The nature of time, as we have also seen, is radically changed within this ecology, and this is having profound effects upon human subjectivity. It is here that we find the crux of the problem. Earlier technological innovations such as the telegraph, railways, automobiles, etc., contributed to what Harvey (1989) called ‘time-space compression’. This was part of the acceleration of modernity and centrally connected to capitalist development. These developments were on a macro-level. Certainly, they changed the lives of many people in profound ways, and chronologic clock-time inserted itself ever more deeply, but various other temporalities through which they experience life were marginally affected or not affected at all (Harvey, 1989: 240–82). ICTs and economic globalization are simultaneously macro- and micro-processes working from both ends of the continuum. Economic globalization provides the broad and rough-edged dynamics of markets, distribution and coordination; ICTs work here as well, but they provide the interconnectivity between the small-scale and the large; the local and the global, the individual and the world (Bauman, 1998).

This top-to-bottom, inside-and-out connectivity, uniquely in the history of technological development, has created its own ecology – an ecology based on interconnectivity that is becoming more pervasive. To live in the digital ecology is to live within a chronoscopic temporality of the constant present. This is creating its own form of tyranny, the ‘tyranny of real-time’ (Purser, 2000: 5). Linear, narrative time, through which we gain a sense of past, present and possible futures are becoming compressed into instantaneity. Those ‘multitude[s] of times which interpenetrate and permeate our daily lives’ (Adam, 1995: 12) are themselves interpenetrated and permeated by ICT interconnectivity, digitizing them onto a single, temporal, plane. Psychological research into human–computer interaction suggests that we are only able to perceive what we concentrate upon, and when we do not have time to concentrate on a particular thing we suffer from ‘inattentional blindness’ (Nardi and O’Day, 1999:14). In an informational ecology based on real-time chronoscopic temporality, this poses serious problems. If we are effectively ‘blind’ to that which we cannot devote a durational time-span, in ‘the buzz of the flickering present’ (Purser, 2000: 5), then

major problems loom as interconnectivity spreads deeper and wider.

It is not too alarmist, indeed, to argue that such a development poses problems for civil society. Writers such as Ulrich Beck et al. (1995) have argued that the capacity to think *reflexively* is central to the functioning of a vibrant democratic culture. It engenders diversity in thought and in perspective across the spectrum of social life, leading to what Ronald Barnett calls ‘moments of the creation of imaginative alternatives’ (1997: 7). It takes time to develop this capacity, time to reflect, refine, test and re-articulate ideas. The informational ecology is not conducive to such thinking (Hassan, 2001). This in turn has profound issues for our collective cultural and political literacy. The danger to a diverse and inclusive cultural literacy is that in the informational ecology, we will be dominated by globalizing and homogeneous consumer culture, cruising from one fad to another, unable, increasingly, to compare, discuss and contextualize cultural artifacts such as Madonna and Modigliani. A degradation of our political literacy implies that we will simply agree with the last thing we read or hear – increasingly unable to critique and judge for ourselves. Indeed, there is evidence of this already, with voter inertia prevalent in most of the developed economies, with the ‘swinging voter’, that is, those who make their political choice almost literally when they pick up the ballot paper, becoming a growing constituency (Hassan, 2001).

Terry Eagleton, in his book *Ideology*, noted that ‘the final alienation would be to not know that we were alienated’ (1991: 47). In earlier times, during the Industrial Revolution, for instance, workers were keenly aware of their alienation, even if they were unable to put a name to its acuteness and force. The rigors and harshness of life had an identifiable locus, be it the factory, the boss, unemployment or starvation wages. As the Industrial Revolution and modernity progressed, rising living standards and relative material well-being ameliorated the earlier intense sense of alienation. Today, in a Western world full of commodities and distractions it is still possible to feel alienation in and through pressures of life in things such as job insecurity, low wages and dead-end jobs of the burgeoning service sector. Nonetheless, we are still able to reflexively analyze our situation, to step back to assess our position and decide where we want to go and strategize upon how to get there. Interconnectivity and living in the informational ecology is taking away what Barnett (1997: 65–6) calls ‘the domain for criticality’. Inside the domain of constant real-time the *friction* of the real world, that which produces dissonance, chance and motivation is eroded through dense interconnectivity. But this Negropontean world will be an anaemic place, a society running on autopilot, propelled by market forces and steered by computers. We can view this development as a sort of ‘social dementia’, a mass ‘forgetting’ where our thoughts and actions are based on the experiences in the buzz of real time, and a degraded interface with the multitude of times that ‘interpenetrate and permeate our daily lives’ (Adam, 1995: 12). The result will be that, having lost our collective capacity to draw back from our immersion in the here and now – as in the onset of dementia, most of us will be unaware of it.

Conclusion

The Media Lab's role and the reason for its successes become somewhat clearer and more understandable if they are viewed from the point of view of the political economy of ICTs and the dynamics of globalization. The importance of the Lab, and the myriad new 'start-ups' that have come into being in the last decade or so, is in their role as 'digital stitchers'. They work at the interstices of social and personal life, between the macro-dynamics of the ICT and globalization processes and our involvement with them. They help create and make viable the informational ecology upon which these meta-processes are dependent. The goal is to draw consumers into a seamless environment of connectivity that, on face value, seems, like apple pie and motherhood, something inherently unproblematic. For Negroponte it is. 'Being digital', bringing 'bits and atoms' together, is the centerpiece of his philosophy and constitutes the central research agenda and intellectual ethos of the Media Lab. The informational ecology is unproblematic for corporate capital that underwrites the Media Lab. Indeed, big business views it as vital to the future viability of the so-called 'new economy'. As they see it, interconnectivity and the new economy go hand in hand, a friction-free and networkable cycle of production, distribution and consumption. The vision is that deep and wide inter- connectivity will create markets on a scale and with potential such as has never been seen before.

The media/ICT revolution/economic globalization nexus paints its vision of the future in bright primary colours. Problems exist, the media guru, technologist and economist will admit if pressed, but what is needed, they will point out, is not reasoned discussion, involving the 'stakeholders' concerned; but more ICT fixes, more economic globalization, and the problems will right themselves. Consequently, abstract theorizing about the kind of world that is in the making is relegated to the margins, or decried as negativity or Luddism. I have tried to think abstractly and critically about the major technological, economic and social dynamics that are shaping the near future – and the creation of an informational ecology based on chronoscopic temporality seems a plausible outcome – as do some of the social outcomes I have discussed. The parts played by individuals such as Nicholas Negroponte and his creation the MIT Media Lab have been radically under-theorized. This article has been a modest attempt to place the dynamics, the people the institutions and the philosophies into some critical context. Unless these questions are raised with more and more insistence, 'connective dementia' will loom ever larger as interconnectivity deepens and widens. And sooner, rather than later, a stage will be reached when, having been so habituated to the here and now of the informational, chronoscopic ecology, it will be difficult to think imaginatively and critically any longer about ourselves and the sort of society we are building.

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