Dan Schiller

Digital Capitalism

Networking the Global Market System

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For Sunie, Lucy, and Ethan

Today more than ever, reason needs to be wide awake.
—José Saramago, "On Communication"

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Introduction: The Enchanted Network

We have all heard the prognostications: the Internet will vault us into global brotherhood, revitalize our children's education, usher in an era of robust direct democracy—and, ultimately, create the conditions for the development of what the chief executive officer of Microsoft hails as a "friction-free capitalism."[1]

These predictions depend on a pair of related assumptions. The first assumption is that the Net comprises an informational cornucopia, the fruits of which will yield what former U.S. House Speaker Newt Gingrich calls (in a curious image) "a world that is bathed in information."[2] The second foundational assumption is frankly millenarian: that society, by exploring the Net's swelling cybercircuits and overstocked data warehouses, will shed its savagery and somehow morph into a kinder, gentler place.

Are these assumptions valid? What evidence exists that information is actually passing into a realm apart from prevailing economic relationships and institutional structures? Are dearth and domination truly disappearing into the maw of cyberspace? Are the social and moral inadequacies of the established media—publishing, film, musical recording, television, and telecommunications—giving up the ghost before a cybercornucopia?

This utopian vision—Internet as salvation—expresses ancient yearnings. Historical detoxification through scientific knowledge: the truth—information?—will make us free.

Hopes that a wired future will prove blissful are generally conditioned today by fears that our system of schooling is inadequate, that civic commitment has flagged, and that social groups are polarized and economically unstable.

I argue that we should be skeptics about the potential of cyberspace. Knowledge carried through the Internet is no less shaped by social forces than it is elsewhere. Far from delivering us into a high-tech Eden, in fact, cyberspace itself is being rapidly colonized by the familiar workings of the market system. Across their breadth and depth, computer networks link with existing capitalism to massively broaden the effective reach of the marketplace. Indeed, the Internet comprises nothing less than the central production and control apparatus of an increasingly supranational market system.

"Capitalism has always been an international system," writes the economic historian Richard B. DuBoff, "but *globalization* now implies an internationalizing of financial and economic flows that is far more integrated and puts new constraints on domestic policy options."[3] In this book, I show that the Internet and, indeed, the greater telecommunications system with which the Internet has intertwined comprise a leading edge of this epic transnationalization of economic activity.

In addition to broadening the effective reach of the marketplace, cyberspace is making feasible what Edward S. Herman calls a "deepening of the market"—both for commercial home entertainment and for education, which has long been exempted, at least in part, from commercial imperatives. Networks are directly generalizing the social and cultural range of the capitalist economy as never before. That is why I refer to this new epoch as one of *digital capitalism.*

The arrival of digital capitalism has involved radical social, as well as technological, changes. In this book I trace these metamorphoses through three interlinked realms. As is shown in chapters 1 and 2, the telecommunications system has been given an overarchingly new social purpose as it is subjected to *neoliberal,* or market-driven, policies. This metamorphosis empowers transnational corporations and concurrently aggravates existing social inequalities. In chapter 3, I show that cyberspace offers uniquely supple instruments for cultivating and deepening consumerism on a transnational scale, especially among privileged groups. Finally, in chapter 4, I show that digital capitalism has already begun to prey on education, placing some of the most sensitive processes of social learning at the mercy of a proprietary market logic.

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In order to make this a book for the informed general reader, a few preparatory remarks about the history and structure of the Internet may prove helpful. Digitization—reconciling telecommunications with the computer logic of 1s and 0s—comprises a sweeping and multifaceted tendency. Its general object is to increase the economic efficiency of networks by allowing them to be shared more thoroughly and effectively among many users. In an era of ever-accelerating demand, today's digital networks are built to accommodate greater traffic than their predecessors—plain old telephone service networks—can manage. Increased network capacity in turn rebounds back on the movement toward service integration: hitherto distinct services can be bundled together on high-capacity, or *broadband,* digital networks to realize gains in cost efficiency. The Internet offers a particularly important instance of this drive to establish more capacious digital networks. To understand why requires a brief excursion into its underlying technology.

In general, a network is a set of computers interconnected at both physical and logical levels. At each of these two levels, the Internet breaks with established practice. On the physical level, networks are established when computers are linked through telecommunication media such as copper telephone lines, optical fibers, or satellite relays. The Internet makes crucial use of this physical telecommunications infrastructure but soups it up with additional equipment. Specialized *switches* and *routers* encode messages into digital form, break them down into individual *packets* of data, assign an address to each packet, establish a transmission path for each separate packet to traverse, and recombine packets into complete messages at destination points. Chapter 1 examines how this technology differs from that used in older telecommunications systems.

On the logical level, computer networks, and the new capabilities that they layer onto the telecommunications system, also are structured by software, which endows them with the capacity for specific service applications, or *functionalities,* such as file transfers. Specifically, networks employ *protocols,* software programs whose joint use permits interconnected computers to exchange messages of different kinds. In the most basic sense, the Internet came into being because an expanding group of computer systems acquired the capacity to communicate by deploying a common set of protocols known as TCP/IP (subsequently, additional key

protocols were also incorporated). From the perspective of its end users, the Internet may appear to be a unified system, but it is actually a gigantic assemblage of cooperating computer networks, a so-called *decentralized network* of networks. What motivated this increasingly widespread decision to interoperate computer systems? This vital question also is addressed in chapter 1.

The true uniqueness of Internet technology (TCP/IP) is that it may be used to establish fluid and versatile links between previously noncommunicating islands of computer functionality. On this foundation, a cascade of applications binding together an increasingly supranational Internet community suddenly became possible. Corresponding networks were built for highly specialized purposes in the United States, France, Britain, Japan, Australia, and other nations. Then, once the decision was taken to separate out the U.S. military's privileged network from its fledgling civilian counterpart, a hitherto restricted subscriber base became free to mushroom. A relatively informal system of computer addresses was devised. A succession of protocols permitting new kinds of intercommunication—the World Wide Web was far and away the most important—added explosively to the resultant surge in usage.

Because the Net bridged isolated pockets of characteristically more limited computing activity, users rapidly found uses for it. Indeed, it unexpectedly became sufficiently ubiquitous to force aside other prospective systems of network interconnection. By offering a ready means of adjustment to the main trend, the Internet *became* the main trend.

How and why this came to happen, and to what effect, comprise the unifying themes of this book. My aim is not to explicate the Internet's engineering but to uncover its dominant social patterns and directions. From this perspective, cyberspace not only exemplifies but today actually shapes the greater political economy of which it has become a critical part.

The networks that collectively comprise cyberspace were originally created at the behest of government agencies, corporate military contractors, and allied educational institutions. However, over the past decade or so, many of these cooperating networks have begun to serve end-users located principally in and around corporations. This shift in end-users suggests that the underlying logic of the Internet is also being transformed.

"Built to one set of economic principles," an authoritative report emphasized in 1996, the Net has commenced on a "transition to another set of economic principles."[4] As it comes under the sway of an expansionary market logic, the Internet is catalyzing an epochal political-economic transition toward what I call digital capitalism—and toward changes that, for much of the population, are unpropitious. What, then, are the chief causes and primary features of digital capitalism, and what does this millennial shift to digital capitalism entail? It is these questions that I seek to grapple with here.

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1

The Neoliberal Networking Drive Originates in the United States

The architects of digital capitalism have pursued one major objective: to develop an economywide network that can support an ever-growing range of intracorporate and intercorporate business processes. This objective encompasses everything from production scheduling and product engineering to accounting, advertising, banking, and training. Only a network capable of flinging signals—including voices, images, videos, and data—to the far ends of the earth would be adequate to sustain this open-ended migration into electronic commerce.

To create such a system meant that the foundations of the world's electronic information infrastructure had to be recast. The new network system, within which the Internet loomed largest by the mid-1990s, required a sweeping metamorphosis of the structure and policy of existing telecommunications.

To set about this task, computer companies and leading telecommunications carriers allied themselves with the few thousand transnational enterprises that comprised their primary customer base. This partnership was animated by a shared political axiom: that corporate capital's ownership and control of networks should be put beyond dispute, even beyond discussion.[1] This neoliberal freedom to fashion networks into instruments of enterprise should remain unalloyed.

Neoliberalism comes by its name because its adherents' primary aim—paring unwanted state oversight and regulation of the economy to gain more unfettered freedom of action for private firms—resuscitates the liberal economic policy of Victorian Britain. Markets should be left alone to obey their presumed natural logic: so goes the laissez-faire doctrine that was reenshrined as domestic orthodoxy during the 1980s and

assumed global preeminence during the 1990s. Because the best economic outcomes were produced by negotiations among individual economic actors who were unencumbered by extraneous obligations, government regulation must be minimized.[2] Paradoxically, however, to actualize something approaching such a free-market regime in telecommunications today (just as in Britain during the 1840s), unremitting political intervention was necessary. Thus, as we will see, the evolution of networking comprised as much a political as an economic work in progress.

During the 1990s, a top-to-bottom overhaul of worldwide telecommunications drove toward completion. Two features of this transformation stand out, as we will see in chapter 2. First, the network system-building boom was of a magnitude that the world had never seen. Old networks were upgraded to support novel services, while capacious new systems sprang up at every level, from local loop to global grid. Equally significant, however, was a second feature of the emerging regime. Policymakers the world over simultaneously abandoned public-service policies for market-driven tenets and acceded to the integration of networks on a transnational scale. National welfarist controls over this critical infrastructure dropped away, while disparities in access widened.

This tumultuous transformation was triggered inauspiciously, by an obscure series of piecemeal changes beginning in the United States in the 1950s.

Liberalization of U.S. Network Development

During the mid-1950s, near the beginning of the digital computer era, U.S. government agencies and educational institutions possessed perhaps three-quarters of the nation's several hundred computer installations. Throughout the 1960s, however, the not-for-profit orientation of early computing shifted. By the mid-1960s, manufacturers, banks, insurance companies, utilities, and retailers were operating two-thirds of a greatly enlarged base—some 35,000 installations—of computing facilities.[3] Many computer applications sought to rely increasingly heavily on telecommunications to make data-processing power available more broadly throughout business organizations. Originating as discrete islands of computer *functionality* (as different classes of service, or discrete applica-

tions, are sometimes called) in payroll, accounting, inventory, and other administrative areas, disparate networks soon began to unfurl into other fields: sales, credit authorization, customer service, production scheduling, and research and development. In 1960, a mere thirty-one U.S. computer systems permitted *online use,* meaning that these computers might be accessed via remote terminals connected by telecommunications links. These early online applications were limited to such areas of *transaction processing* as airline ticketing. A scant six years later, however, one survey showed that more than 2,300 online systems had been installed by U.S. businesses. Through an uneven but continuing process, to which we return momentarily, more and more corporate services began to be placed online.[4]

Anticipating this rapid buildup of network applications as early as 1947, one trade association—the American Petroleum Institute—created a Central Committee on Radio Facilities. The head of this curiously named unit declared that "practically every division or branch of the petroleum industry can well be served by one or more adaptations of radio to effect economies in operation, increase safety, or raise efficiency."[5] Oil companies were far from unique in sensing the industrial potential of telecommunications. An interindustry trade group, the Microwave Users Council, was established in 1954. Growing corporate dependence on early computer-communications networks in turn prompted the largest U.S. companies from every economic sector to undertake a long march through the nation's regulatory arena.

The Long March
Throughout the twentieth century, the telecommunications system had become subject to extensive governmental oversight. Federal and state regulation served several ends. Foreign ownership of this strategic industry, to begin with, was deemed inimical to U.S. national sovereignty. Far-reaching precautions were taken, therefore, to ensure that the telecommunications industry remained in U.S. hands. Legislation strictly limited foreign ownership of U.S. telecommunications companies, which contributed to forestalling, within a vital sector, the corporate economy's trend toward transnationalization.