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Free Labor

PRODUCING CULTURE FOR THE DIGITAL ECONOMY

The real *not-capital* is *labor*.
—Karl Marx, *Grundrisse*

Tiziana Terranova

Working in the digital media industry is not as much fun as it is made out to be. The "NetSlaves" of the eponymous Webzine are becoming increasingly vociferous about the shamelessly exploitative nature of the job, its punishing work rhythms, and its ruthless casualization (www.disobey.com/netslaves). They talk about "24–7 electronic sweatshops" and complain about the ninety-hour weeks and the "moronic management of new media companies." In early 1999, seven of the fifteen thousand "volunteers" of America Online (AOL) rocked the info-loveboat by asking the Department of Labor to investigate whether AOL owes them back wages for the years of playing chathosts for free.[1] They used to work long hours and love it; now they are starting to feel the pain of being burned by digital media.

These events point to a necessary backlash against the glamorization of digital labor, which highlights its continuities with the modern sweatshop and points to the increasing degradation of knowledge work. Yet the question of labor in a "digital economy" is not so easily dismissed as an innovative development of the familiar logic of capitalist exploitation. The NetSlaves are not simply a typical form of labor on the Internet; they also embody a complex relation to labor that is widespread in late capitalist societies.

In this essay I understand this relationship as a provision of "free labor," a trait of the cultural economy at large, and an important, and yet undervalued, force in advanced capitalist societies. By looking at the Internet as a specific instance of the fundamental role played by free labor, this essay also tries to highlight the connections between the "digital economy" and what the Italian autonomists have called the "social factory." The "social factory" describes a process whereby "work processes have shifted from the factory to society, thereby setting in motion a truly complex machine."[2] Simultaneously voluntarily given and unwaged, enjoyed and exploited, free labor on the Net includes the activity of building Web sites, modifying software packages, reading and participating in mailing lists, and building virtual spaces on MUDs and MOOs. Far from being an

"unreal," empty space, the Internet is animated by cultural and technical labor through and through, a continuous production of value that is completely immanent to the flows of the network society at large.

Support for this argument, however, is immediately complicated by the recent history of critical theory. How to speak of labor, especially cultural and technical labor, after the demolition job carried out by thirty years of postmodernism? The postmodern socialist feminism of Donna Haraway's "Cyborg Manifesto" spelled out some of the reasons behind the antipathy of 1980s critical theory for Marxist analyses of labor. Haraway explicitly rejected the humanistic tendencies of theorists who see labor as the "pre-eminently privileged category enabling the Marxist to overcome illusion and find that point of view which is necessary for changing the world."[3] Paul Gilroy similarly expressed his discontent at the inadequacy of Marxist analyses of labor to describe the culture of the descendants of slaves, who value artistic expression as "the means towards both individual self-fashioning and communal liberation."[4] If labor is "the humanizing activity that makes [white] man," then, surely, humanizing labor does not really belong in the age of networked, posthuman intelligence.

However, the "informatics of domination" that Haraway describes in the "Manifesto" is certainly preoccupied with the relation between cybernetics, labor, and capital. In the fifteen years since its publication, this triangulation has become even more evident. The expansion of the Internet has given ideological and material support to contemporary trends toward increased flexibility of the workforce, continuous reskilling, freelance work, and the diffusion of practices such as "supplementing" (bringing supplementary work home from the conventional office).[5] Advertising campaigns and business manuals suggest that the Internet is not only a site of disintermediation (embodying the famous death of the middle man, from bookshops to travel agencies to computer stores), but also the means through which a flexible, collective intelligence has come into being.

This essay does not seek to offer a judgment on the "effects" of the Internet, but rather to map the way in which the Internet connects to the autonomist "social factory." I am concerned with how the "outernet"——the network of social, cultural, and economic relationships that crisscrosses and exceeds the Internet——surrounds and connects the latter to larger flows of labor, culture, and power. It is fundamental to move beyond the notion that cyberspace is about escaping reality in order to understand how the reality of the Internet is deeply connected to the development of late postindustrial societies as a whole.

Cultural and technical work is central to the Internet but is also a widespread activity throughout advanced capitalist societies. I argue that

such labor is not exclusive to the so-called knowledge workers, but is a pervasive feature of the postindustrial economy. The pervasiveness of such production questions the legitimacy of a fixed distinction between production and consumption, labor and culture. It also undermines Gilroy's distinction between work as "servitude, misery and subordination" and artistic expression as the means to self-fashioning and communal liberation. The increasingly blurred territory between production and consumption, work and cultural expression, however, does not signal the recomposition of the alienated Marxist worker. The Internet does not automatically turn every user into an active producer, and every worker into a creative subject. The process whereby production and consumption are reconfigured within the category of free labor signals the unfolding of a different (rather than completely new) logic of value, whose operations need careful analysis.[6]

The Digital Economy

The term *digital economy* has recently emerged as a way to summarize some of the processes described above. As a term, it seems to describe a formation that intersects on the one hand with the postmodern cultural economy (the media, the university, and the arts) and on the other hand with the information industry (the information and communication complex). Such an intersection of two different fields of production constitutes a challenge to a theoretical and practical engagement with the question of labor, a question that has become marginal for media studies as compared with questions of ownership (within political economy) and consumption (within cultural studies).

In Richard Barbrook's definition, the digital economy is characterized by the emergence of new technologies (computer networks) and new types of workers (the digital artisans).[7] According to Barbrook, the digital economy is a mixed economy: it includes a public element (the state's funding of the original research that produced Arpanet, the financial support to academic activities that had a substantial role in shaping the culture of the Internet); a market-driven element (a latecomer that tries to appropriate the digital economy by reintroducing commodification); and a gift economy element, the true expression of the cutting edge of capitalist production that prepares its eventual overcoming into a future "anarcho-communism":

> Within the developed world, most politicians and corporate leaders believe that the future of capitalism lies in the commodification of information. . . .

Yet at the "cutting-edge" of the emerging information society, money-commodity relations play a secondary role to those created by a really existing form of anarcho-communism. For most of its users, the net is somewhere to work, play, love, learn and discuss with other people. . . . Unrestricted by physical distance, they collaborate with each other without the direct mediation of money and politics. Unconcerned about copyright, they give and receive information without thought of payment. In the absence of states or markets to mediate social bonds, network communities are instead formed through the mutual obligations created by gifts of time and ideas.[8]

From a Marxist-Hegelian angle, Barbrook sees the high-tech gift economy as a process of overcoming capitalism from the inside. The high-tech gift economy is a pioneering moment that transcends both the purism of the New Left do-it-yourself culture and the neoliberalism of the free market ideologues: "money-commodity and gift relations are not just in conflict with each other, but also co-exist in symbiosis."[9] Participants in the gift economy are not reluctant to use market resources and government funding to pursue a potlatch economy of free exchange. However, the potlatch and the economy ultimately remain irreconcilable, and the market economy is always threatening to reprivatize the common enclaves of the gift economy. Commodification, the reimposition of a regime of property, is, in Barbrook's opinion, the main strategy through which capitalism tries to reabsorb the anarcho-communism of the Net into its folds.

I believe that Barbrook overemphasizes the autonomy of the high-tech gift economy from capitalism. The processes of exchange that characterize the Internet are not simply the reemergence of communism within the cutting edge of the economy, a repressed other that resurfaces just at the moment when communism seems defeated. It is important to remember that the gift economy, as part of a larger digital economy, is itself an important force within the reproduction of the labor force in late capitalism as a whole. The provision of "free labor," as we will see later, is a fundamental moment in the creation of value in the digital economies. As will be made clear, the conditions that make free labor an important element of the digital economy are based in a difficult, experimental compromise between the historically rooted cultural and affective desire for creative production (of the kind more commonly associated with Gilroy's emphasis on "individual self-fashioning and communal liberation") and the current capitalist emphasis on knowledge as the main source of value-added.

The volunteers for America Online, the NetSlaves, and the amateur Web designers are not working only because capital wants them to; they are acting out a desire for affective and cultural production that is

nonetheless real just because it is socially shaped. The cultural, technical, and creative work that supports the digital economy has been made possible by the development of capital beyond the early industrial and Fordist modes of production and therefore is particularly abundant in those areas where post-Fordism has been at work for a few decades. In the overdeveloped countries, the end of the factory has spelled out the obsolescence of the old working class, but it has also produced generations of workers who have been repeatedly addressed as active consumers of meaningful commodities. Free labor is the moment where this knowledgeable consumption of culture is translated into productive activities that are pleasurably embraced and at the same time often shamelessly exploited.

Management theory is also increasingly concerned with the question of knowledge work, that indefinable quality that is essential to the processes of stimulating innovation and achieving the goals of competitiveness. For example, Don Tapscott, in a classic example of managerial literature, *The Digital Economy*, describes the digital economy as a "new economy based on the networking of human intelligence."[10] Human intelligence provides the much needed value-added, which is essential to the economic health of the organization. Human intelligence, however, also poses a problem: it cannot be managed in quite the same way as more traditional types of labor. Knowledge workers need open organizational structures to produce, because the production of knowledge is rooted in collaboration, that is, in what Barbrook defined as the "gift economy":

> The concept of supervision and management is changing to team-based structures. Anyone responsible for managing knowledge workers knows they cannot be "managed" in the traditional sense. Often they have specialized knowledge and skills that cannot be matched or even understood by management. A new challenge to management is first to attract and retain these assets by marketing the organization to them, and second *to provide the creative and open communications environment where such workers can effectively apply and enhance their knowledge*.[11]

For Tapscott, therefore, the digital economy magically resolves the contradictions of industrial societies, such as class struggle: while in the industrial economy the "worker tried to achieve fulfillment through leisure [and] . . . was alienated from the means of production which were owned and controlled by someone else," in the digital economy the worker achieves fulfillment through work and finds in her brain her own, unalienated means of production.[12] Such means of production need to be cultivated by encouraging the worker to participate in a culture of exchange, whose flows are mainly kept within the company but also need to involve an "outside," a contact with the fast-moving world of knowledge in gen-

eral. The convention, the exhibition, and the conference—the more traditional ways of supporting this general exchange—are supplemented by network technologies both inside and outside the company. Although the traffic of these flows of knowledge needs to be monitored (hence the corporate concerns about the use of intranets), the Internet effectively functions as a channel through which "human intelligence" renews its capacity to produce.

This essay looks beyond the totalizing hype of the managerial literature but also beyond some of the conceptual limits of Barbrook's work. It looks at some possible explanation for the coexistence, within the debate about the digital economy, of discourses that see it as an oppositional movement and others that see it as a functional development to new mechanisms of extraction of value. Is the end of Marxist alienation wished for by the manager guru the same thing as the gift economy heralded by leftist discourse?

We can start undoing this deadlock by subtracting the label *digital economy* from its exclusive anchorage within advanced forms of labor (we can start then by depioneering it). This essay describes the digital economy as a specific mechanism of internal "capture" of larger pools of social and cultural knowledge. The digital economy is an important area of experimentation with value and free cultural/affective labor. It is about specific forms of production (Web design, multimedia production, digital services, and so on), but is also about forms of labor we do not immediately recognize as such: chat, real-life stories, mailing lists, amateur newsletters, and so on. These types of cultural and technical labor are not produced by capitalism in any direct, cause-and-effect fashion; that is, they have not developed simply as an answer to the economic needs of capital. However, they have developed in relation to the expansion of the cultural industries and are part of a process of economic experimentation with the creation of monetary value out of knowledge/culture/affect.

This process is different from that described by popular, left-wing wisdom about the incorporation of authentic cultural moments: it is not, then, about the bad boys of capital moving in on underground subcultures/subordinate cultures and "incorporating" the fruits of their production (styles, languages, music) into the media food chain. This process is usually considered the end of a particular cultural formation, or at least the end of its "authentic" phase. After incorporation, local cultures are picked up and distributed globally, thus contributing to cultural hybridization or cultural imperialism (depending on whom you listen to).

Rather than capital "incorporating" from the outside the authentic fruits of the collective imagination, it seems more reasonable to think of cultural flows as originating within a field that is always and already capi-

talism. Incorporation is not about capital descending on authentic culture but a more immanent process of channeling collective labor (even as cultural labor) into monetary flows and its structuration within capitalist business practices.

Subcultural movements have stuffed the pockets of multinational capitalism for decades. Nurtured by the consumption of earlier cultural moments, subcultures have provided the look, style, and sounds that sell clothes, CDs, video games, films, and advertising slots on television. This has often happened through the active participation of subcultural members in the production of cultural goods (e.g., independent labels in music, small designer shops in fashion).[13] This participation is, as the word suggests, a voluntary phenomenon, although it is regularly accompanied by cries of sellouts. The fruit of collective cultural labor has been not simply appropriated, but voluntarily *channeled* and controversially *structured* within capitalist business practices. The relation between culture, the cultural industry, and labor in these movements is much more complex than the notion of incorporation suggests. In this sense, the digital economy is not a new phenomenon but simply a new phase of this longer history of experimentation.

Knowledge Class and Immaterial Labor

In spite of the numerous, more or less disingenuous endorsements of the democratic potential of the Internet, the links between it and capitalism look a bit too tight for comfort to concerned political minds. It has been very tempting to counteract the naive technological utopianism by pointing out how computer networks are the material and ideological heart of informated capital. The Internet advertised on television and portrayed by print media seems not just the latest incarnation of capital's inexhaustible search for new markets, but also a full consensus-creating machine, which socializes the mass of proletarianized knowledge workers into the economy of continuous innovation.[14] After all, if we do not get on-line soon, the hype suggests, we will become obsolete, unnecessary, disposable. If we do, we are promised, we will become part of the "hive mind," the immaterial economy of networked, intelligent subjects in charge of speeding up the rhythms of capital's "incessant waves of branching innovations."[15] Multimedia artists, writers, journalists, software programmers, graphic designers, and activists together with small and large companies are at the core of this project. For some they are its cultural elite, for others a new form of proletarianized labor.[16] Accordingly, the digital workers are described as resisting or supporting the project of capital, often in direct

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relation to their positions in the networked, horizontal, and yet hierarchical world of knowledge work.

Any judgment on the political potential of the Internet, then, is tied not only to its much vaunted capacity to allow decentralized access to information but also to the question of who uses the Internet and how. If the decentralized structure of the Net is to count for anything at all, the argument goes, then we need to know about its constituent population (hence the endless statistics about use, income, gender, and race of Internet users, the most polled, probed, and yet opaque survey material of the world). If this population of Internet users is largely made up of "knowledge workers," then it matters whether these are seen as the owners of elitist cultural and economic power or the avant-garde of new configurations of labor that do not automatically guarantee elite status.

As I argue in this essay, this is a necessary question and yet a misleading one. It is necessary because we have to ask who is participating in the digital economy before we can pass a judgment on it. It is misleading because it implies that all we need to know is how to locate the knowledge workers within a "class," and knowing which class it is will give us an answer to the political potential of the Net as a whole. If we can prove that knowledge workers are the avant-garde of labor, then the Net becomes a site of resistance;[17] if we can prove that knowledge workers wield the power in informated societies, then the Net is an extended gated community for the middle classes.[18] Even admitting that knowledge workers are indeed fragmented in terms of hierarchy and status won't help us that much; it will still lead to a simple system of categorization, where the Net becomes a field of struggle between the diverse constituents of the knowledge class.

The question is further complicated by the stubborn resistance of "knowledge" to quantification: knowledge cannot be exclusively pinned down to specific social segments. Although the shift from factory to office work, from production to services is widely acknowledged, it just isn't clear why some people qualify and some others do not.[19] The "knowledge worker" is a very contested sociological category.

A more interesting move, however, is possible by not looking for the knowledge class within quantifiable parameters and concentrating instead on "labor." Although the notion of class retains a material value that is indispensable to make sense of the experience of concrete historical subjects, it also has its limits: for example, it "freezes" the subject, just like a substance within the chemical periodical table, where one is born as a certain element (working-class metal) but then might become something else (middle-class silicon) if submitted to the proper alchemical processes (education and income). Such an understanding of class also freezes out

the flows of culture and money that mobilize the labor force as a whole. In terms of Internet use, it gives rise to the generalized endorsements and condemnations that I have described above and does not explain or make sense of the heterogeneity and yet commonalities of Internet users. I have therefore found it more useful to think in terms of what the Italian autonomists, and especially Maurizio Lazzarato, have described as *immaterial labor*. For Lazzarato the concept of immaterial labor refers to *two different aspects* of labor:

> On the one hand, as regards the "informational content" of the commodity, it refers directly to the changes taking place in workers' labor processes . . . where the skills involved in direct labor are increasingly skills involving cybernetics and computer control (and horizontal and vertical communication). On the other hand, as regards the activity that produces the "cultural content" of the commodity, immaterial labor involves a series of activities that are not normally recognized as "work"—in other words, the kinds of activities involved in defining and fixing cultural and artistic standards, fashions, tastes, consumer norms, and, more strategically, public opinion.[20]

Immaterial labor, unlike the knowledge worker, is not completely confined to a specific class formation. Lazzarato insists that this form of labor power is not limited to highly skilled workers but is a form of activity of every productive subject within postindustrial societies. In the highly skilled worker, these capacities are already there. However, in the young worker, the "precarious worker," and the unemployed youth, these capacities are "virtual," that is they are there but are still undetermined. This means that immaterial labor is a virtuality (an undetermined capacity) that belongs to the postindustrial productive subjectivity as a whole. For example, the obsessive emphasis on education of 1990s governments can be read as an attempt to stop this virtuality from disappearing or from being channeled into places that would not be as acceptable to the current power structures. In spite of all the contradictions of advanced capital and its relation to structural unemployment, postmodern governments do not like the completely unemployable. The potentialities of work must be kept alive, the unemployed must undergo continuous training in order both to be monitored and kept alive as some kind of postindustrial reserve force. Nor can they be allowed to channel their energy into the experimental, nomadic, and antiproductive life-styles which in Britain have been so savagely attacked by the Criminal Justice Act in the mid-1990s.[21]

However, unlike the post-Fordists, and in accordance with his autonomist origins, Lazzarato does not conceive of immaterial labor as purely functional to a new historical phase of capitalism:

The virtuality of this capacity is neither empty nor ahistoric; it is rather an opening and a potentiality, that have as their historical origins and antecedents the "struggle against work" of the Fordist worker and, in more recent times, the processes of socialization, educational formation, and cultural self-valorization.[22]

This dispersal of immaterial labor (as a virtuality and an actuality) problematizes the idea of the "knowledge worker" as a class in the "industrial" sense of the word. As a collective quality of the labor force, immaterial labor can be understood to pervade the social body with different degrees of intensity. This intensity is produced by the processes of "channeling" a characteristic of the capitalist formation which distributes value according to its logic of profit.[23] If knowledge is inherently collective, it is even more so in the case of the postmodern cultural economy: music, fashion, and information are all produced collectively but are selectively compensated. Only some companies are picked up by corporate distribution chains in the case of fashion and music; only a few sites are invested in by venture capital. However, it is a form of collective cultural labor that makes these products possible even as the profit is disproportionately appropriated by established corporations.

From this point of view, the well-known notion that the Internet materializes a "collective intelligence" is not completely off the mark. The Internet highlights the existence of networks of immaterial labor and speeds up their accretion into a collective entity. The productive capacities of immaterial labor on the Internet encompass the work of writing/reading/managing and participating in mailing lists/Web sites/chatlines. These activities fall outside the concept of "abstract labor," which Marx defined as the provision of time for the production of value regardless of the useful qualities of the product.[24] They witness an investment of desire into production of the kind cultural theorists have mainly theorized in relation to consumption.

This explosion of productive activities is undermined for various commentators by the minoritarian, gendered, and raced character of the Internet population. However, we might also argue that to recognize the existence of immaterial labor as a diffuse, collective quality of postindustrial labor in its entirety does not deny the existence of hierarchies of knowledge (both technical and cultural) which prestructure (but do not determine) the nature of such activities. These hierarchies shape the degrees to which such virtualities become actualities; that is, they go from being potential to being realized as processual, constituting moments of cultural, affective, and technical production. Neither capital nor living labor want a labor force that is permanently excluded from the possibili-

ties of immaterial labor. But this is where their desires stop from coinciding. Capital wants to retain control over the unfolding of these virtualities and the processes of valorization. The relative abundance of cultural/technical/affective production on the Net, then, does not exist as a free-floating postindustrial utopia but in full, mutually constituting interaction with late capitalism, especially in its manifestation as global-venture capital.

Collective Minds

The collective nature of networked, immaterial labor has been simplified by the utopian statements of the cyberlibertarians. Kevin Kelly's popular thesis in *Out of Control*, for example, is that the Internet is a collective "hive mind." According to Kelly, the Internet is another manifestation of a principle of self-organization that is widespread throughout technical, natural, and social systems. The Internet is the material evidence of the existence of the self-organizing, infinitely productive activities of connected human minds.[25] From a different perspective Pierre Levy draws on cognitive anthropology and poststructuralist philosophy to argue that computers and computer networks are sites that enable the emergence of a "collective intelligence." According to Eugene Provenzo, Levy, who is inspired by early computer pioneers such as Douglas Engelbart, argues for a new humanism "that incorporates and enlarges the scope of self-knowledge and collective thought."[26] According to Levy, we are passing from a Cartesian model of thought based on the singular idea of *cogito* (I think) to a collective or plural *cogitamus* (we think).

> What is collective intelligence? It is a form of *universally distributed intelligence*, constantly enhanced, coordinated in real time, and resulting in the effective mobilization of skills. . . . The basis and goal of collective intelligence is the mutual recognition and enrichment of individuals rather than the cult of fetishized or hypostatized communities.[27]

Like Kelly, Levy frames his argument within the common rhetoric of competition and flexibility that dominates the hegemonic discourse around digitalization: "The more we are able to form intelligent communities, as open-minded, cognitive subjects capable of initiative, imagination, and rapid response, the more we will be able to ensure our success in a highly competitive environment."[28] In Levy's view, the digital economy highlights the impossibility of absorbing intelligence within the process of automation: unlike the first wave of cybernetics, which displaced workers from the factory, computer networks highlight the unique value of human

intelligence as the true creator of value in a knowledge economy. In his opinion, since the economy is increasingly reliant on the production of creative subjectivities, this production is highly likely to engender a new humanism, a new centrality of man's [*sic*] creative potentials.

Especially in Kelly's case, it has been easy to dismiss the notions of a "hive mind" and a self-organizing Internet-as-free-market as euphoric capitalist mumbo jumbo. One cannot help being deeply irritated by the blindness of the digital capitalist to the realities of working in the high-tech industries, from the poisoning world of the silicon chips factories to the electronic sweatshops of America Online, where technical work is downgraded and worker obsolescence is high.[29] How can we hold on to the notion that cultural production and immaterial labor are collective on the Net (both inner and outer) without subscribing to the idealistic cyberdrool of the digerati?

We could start with a simple observation: the self-organizing, collective intelligence of cybercultural thought captures the existence of networked immaterial labor, but also neutralizes the operations of capital. Capital, after all, is the unnatural environment within which the collective intelligence materializes. The collective dimension of networked intelligence needs to be understood historically, as part of a specific momentum of capitalist development. The Italian writers who are identified with the post-Gramscian Marxism of autonomia have consistently engaged with this relationship by focusing on the mutation undergone by labor in the aftermath of the factory. The notion of a self-organizing "collective intelligence" looks uncannily like one of their central concepts, the "general intellect," a notion that the autonomists "extracted" out of the spirit, if not the actual wording, of Marx's *Grundrisse*. The "collective intelligence" or "hive mind" captures some of the spirit of the "general intellect," but removes the autonomists' critical theorization of its relation to capital.

In the autonomists' favorite text, the *Grundrisse*, and especially in the "Fragment on Machines," Marx argues that "knowledge—scientific knowledge in the first place, but not exclusively—tends to become precisely by virtue of its autonomy from production, nothing less than the principal productive force, thus relegating repetitive and compartmentalized labor to a residual position. Here one is dealing with knowledge . . . which has become incarnate . . . in the automatic system of machines."[30] In the vivid pages of the "Fragment," the "other" Marx of the *Grundrisse* (adopted by the social movements of the 1960s and 1970s against the more orthodox endorsement of *Capital*), describes the system of industrial machines as a horrific monster of metal and flesh:

The production process has ceased to be a labor process in the sense of a process dominated by labor as its governing unity. Labor appears, rather, merely as a conscious organ, scattered among the individual living workers at numerous points of the mechanical system; subsumed under the total process of the machinery itself, as itself only a link of the system, whose unity exists not in the living workers, but rather in the living, (active) machinery, which confronts his individual, insignificant doings as a mighty organism.[31]

The Italian autonomists extracted from these pages the notion of the "general intellect" as "the ensemble of knowledge . . . which constitute[s] the epicenter of social production."[32] Unlike Marx's original formulation, however, the autonomists eschewed the modernist imagery of the general intellect as a hellish machine. They claimed that Marx completely identified the general intellect (or knowledge as the principal productive force) with fixed capital (the machine) and thus neglected to account for the fact that the general intellect cannot exist independently of the concrete subjects who mediate the articulation of the machines with each other. The general intellect is an articulation of fixed capital (machines) *and* living labor (the workers). If we see the Internet, and computer networks in general, as the latest machines—the latest manifestation of fixed capital—then it won't be difficult to imagine the general intellect as being well and alive today.

The autonomists, however, did not stop at describing the general intellect as an assemblage of humans and machines at the heart of postindustrial production. If this were the case, the Marxian monster of metal and flesh would just be updated to that of a world-spanning network where computers use human beings as a way to allow the system of machinery (and therefore capitalist production) to function. The visual power of the Marxian description is updated by the cyberpunk snapshots of the immobile bodies of the hackers, electrodes like umbilical cords connecting them to the matrix, appendixes to a living, all-powerful cyberspace. Beyond the special effects bonanza, the box-office success of *The Matrix* validates the popularity of the paranoid interpretation of this mutation.

To the humanism implicit in this description, the autonomists have opposed the notion of a "mass intellectuality," living labor in its function as the determining articulation of the general intellect. Mass intellectuality—as an ensemble, as a social body—"is the repository of the indivisible knowledges of living subjects and of their linguistic cooperation. . . . An important part of knowledge cannot be deposited in machines, but . . . it must come into being as the direct interaction of the labor force."[33] As Virno emphasizes, mass intellectuality is not about the various roles of the

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The pervasiveness of the collective intelligence within both the managerial literature and Marxist theory could be seen as the result of a common intuition about the quality of labor in informated societies. Knowledge labor is inherently *collective*, it is always the result of a collective and social production of knowledge.[35] Capital's problem is how to extract as much value as possible (in the autonomists' jargon, to "valorize") out of this abundant, and yet slightly intractable, terrain.

Collective knowledge work, then, is not about those who work in the knowledge industry. But it is also not about employment. The acknowledgment of the collective aspect of labor implies a rejection of the equivalence between labor and employment, which was already stated by Marx and further emphasized by feminism and the post-Gramscian autonomy.[36] Labor is not equivalent to waged labor. Such an understanding might help us to reject some of the hideous rhetoric of unemployment which turns the unemployed person into the object of much patronizing, pushing, and nudging from national governments in industrialized countries. (Accept any available work or else. . . .) Often the unemployed are such only in name, in reality being the life-blood of the difficult economy of "under-the-table," badly paid work, some of which also goes into the new media industry.[37] To emphasize how labor is not equivalent to employment also means to acknowledge how important free affective and cultural labor is to the media industry, old and new.

Ephemeral Commodities and Free Labor

There is a continuity, and a break, between older media and new media in terms of their relationship to cultural and affective labor. The continuity seems to lie in their common reliance on their public/users as productive subjects. The difference lies both in the mode of production and in the ways in which power/knowledge works in the two types. In spite of different national histories (some of which stress public service more than others), the television industry, for example, is relatively conservative: writers, producers, performers, managers, and technicians have definite roles within an industry still run by a few established players. The historical legacy of television as a technology for the construction of national identities also means that television is somehow always held more publicly accountable.

This does not mean that old media do not draw on free labor, on the contrary. Television and print media, for example, make abundant use of

the free labor of their audiences/readers, but they also tend to structure the latter's contribution much more strictly, both in terms of economic organization and moralistic judgment. The price to pay for all those real-life TV experiences is usually a heavy dose of moralistic scaremongering: criminals are running amok on the freeways and must be stopped by tough police action; wild teenagers lack self-esteem and need tough love. If this does not happen on the Internet, why is it then that the Internet is not the happy island of decentered, dispersed, and pleasurable cultural production that its apologists claimed?

The most obvious answer to such questions came spontaneously to the early Internet users who blamed it on the commercialization of the Internet. E-commerce and the progressive privatization were blamed for disrupting the free economy of the Internet, an economy of exchange that Richard Barbrook described as a "gift economy."[38] Indeed maybe the Internet could have been a different place than what it is now. However, it is almost unthinkable that capitalism could stay forever outside of the network, a mode of communication that is fundamental to its own organizational structure.

The outcome of the explicit interface between capital and the Internet is a digital economy that manifests all the signs of an acceleration of the capitalist logic of production. It might be that the Internet has not stabilized yet, but it seems undeniable that the digital economy is the fastest and most visible zone of production within late capitalist societies. New products and new trends succeed each other at anxiety-inducing pace. After all, this is a business where you need to replace your equipment/knowledges and possibly staff every year or so.

At some point, the speed of the digital economy, its accelerated rhythms of obsolescence, and its reliance on (mostly) "immaterial" products seemed to fit in with the postmodern intuition about the changed status of the commodities whose essence was said to be *meaning* (or lack of) rather than *labor* (as if the two could be separable).[39] The recurrent complaint that the Internet contributes to the disappearance of reality is then based *both* in humanistic concerns about "real life" *and* in the postmodern nihilism of the recombinant commodity.[40] Hyperreality confirms the humanist nightmare of a society without humanity, the culmination of a progressive taking over of the realm of representation. Commodities on the Net are not material and are excessive (there is too much of it, too many Web sites, too much clutter and noise) with relation to the limits of "real" social needs.

It is possible, however, that the disappearance of the commodity is not a material disappearance but its visible subordination to the quality of labor behind it. In this sense the commodity does not disappear as such;

rather, it becomes increasingly ephemeral, its duration becomes compressed, and it becomes more of a process than a finished product. The role of continuous, creative, innovative labor as the ground of market value is crucial to the digital economy. The process of valorization (the production of monetary value) happens by foregrounding the quality of the labor that literally animates the commodity.

In my opinion, the digital economy challenges the postmodern assumption that labor disappears while the commodity takes on and dissolves all meaning. In particular, the Internet is about the extraction of value out of continuous, updateable work, and it is extremely labor intensive. It is not enough to produce a good Web site, you need to update it continuously to maintain interest in it and fight off obsolescence. Furthermore, you need updateable equipment (the general intellect is always an assemblage of humans and their machines), in its turn propelled by the intense collective labor of programmers, designers, and workers. It is as if the acceleration of production has pushed to the point where commodities, literally, turn into translucent objects. Commodities do not so much disappear as become more transparent, showing throughout their reliance on the labor that produces and sustains them. It is the labor of the designers and programmers that shows through a successful Web site, and it is the spectacle of that labor changing its product that keeps the users coming back. The commodity, then, is only as good as the labor that goes into it.

As a consequence, the sustainability of the Internet as a medium depends on massive amounts of labor (which is not equivalent to employment, as we said), only some of which is hypercompensated by the capricious logic of venture capitalism. Of the incredible amount of labor that sustains the Internet as a whole (from mailing list traffic to Web sites to infrastructural questions), we can guess that a substantial amount of it is still "free labor."

Free labor, however, is not necessarily exploited labor. Within the early virtual communities, we are told, labor was really free: the labor of building a community was not compensated by great financial rewards (it was therefore "free," unpaid), but it was also willingly conceded in exchange for the pleasures of communication and exchange (it was therefore "free," pleasurable, not imposed). In answer to members' requests, information was quickly posted and shared with a lack of mediation that the early Netizens did not fail to appreciate. Howard Rheingold's book, somehow unfairly accused of middle-class complacency, is the most well-known account of the good old times of the old Internet, before the Net-tourist overcame the Net-pioneer.[41]

The free labor that sustains the Internet is acknowledged within many different sections of the digital literature. In spite of the volatile nature of

the Internet economy (<mark>which yesterday was about community, today is about portals, and tomorrow who knows what</mark>), the notion of users' labor maintains an ideological and material centrality that runs consistently throughout the turbulent succession of Internet fads. Commentators who would normally disagree, such as Howard Rheingold and Richard Hudson, concur on one thing: the best Web site, the best way to stay visible and thriving on the Web, is to turn your site into a space that is not only accessed, but somehow built by its users.[42] Users keep a site alive through their labor, the cumulative hours of accessing the site (thus generating advertising), writing messages, participating in conversations, and sometimes making the jump to collaborators. Out of the fifteen thousand volunteers that keep AOL running, only a handful turned against it, while the others stayed on. Such a feature seems endemic to the Internet in ways that can be worked on by commercialization, but not substantially altered. The "open source" movement, which relies on the free labor of Internet tinkers, is further evidence of this structural trend within the digital economy.

It is an interesting feature of the Internet debate (and evidence, somehow, of its masculine bias) that users' labor has attracted more attention in the case of the open source movement than in that of mailing lists and Web sites. This betrays the persistence of an attachment to masculine understandings of labor within the digital economy: writing an operating system is still more worthy of attention than just chatting for free for AOL. This in spite of the fact that in 1996 at the peak of the volunteer moment, over thirty thousand "community leaders" were helping AOL to generate at least $7 million a month.[43] Still, the open source movement has drawn much more positive attention than the more diffuse user labor described above. It is worth exploring not because I believe that it will outlast "portals" or "virtual communities" as the latest buzzword, but because of the debates it has provoked and its relation to the digital economy at large.

The open source movement is a variation of the old tradition of shareware and freeware software which substantially contributed to the technical development of the Internet. Freeware software is freely distributed and does not even request a reward from its users. Shareware software is distributed freely, but implies a "moral" obligation for the user to forward a small sum to the producer in order to sustain the shareware movement as an alternative economic model to the copyrighted software of giants such as Microsoft. *Open source* "refers to a model of software development in which the underlying code of a program—the source code, a.k.a. the crown jewels—is by definition made freely available to the general public for modification, alteration, and endless redistribution."[44]

Far from being an idealistic, minoritarian practice, the open source movement has attracted much media and financial attention. Apache, an open source Web server, is the "Web-server program of choice for more than half of all publicly accessible Web servers."[45] In 1999, open source conventions are anxiously attended by venture capitalists, who have been informed by the digerati that the open source movement is a necessity "because you must go open-source to get access to the benefits of the open-source development community—the near-instantaneous bug-fixes, the distributed intellectual resources of the Net, the increasingly large open-source code base."[46] Open source companies such as Cygnus have convinced the market that you do not need to be proprietary about source codes to make a profit: the code might be free, but tech support, packaging, installation software, regular upgrades, office applications, and hardware are not.

In 1998, when Netscape went "open source" and invited the computer tinkers and hobbyists to look at the code of its new browser, fix the bugs, improve the package, and redistribute it, specialized mailing lists exchanged opinions about its implications.[47] Netscape's move rekindled the debate about the peculiar nature of the digital economy. Was it to be read as being in the tradition of the Internet "gift economy"? Or was digital capital hijacking the open source movement exactly against that tradition? Richard Barbrook saluted Netscape's move as a sign of the power intrinsic in the architecture of the medium:

> The technical and social structure of the Net has been developed to encourage open cooperation among its participants. As an everyday activity, users are building the system together. Engaged in "interactive creativity," they send emails, take part in listservers, contribute to newsgroups, participate within on-line conferences and produce Websites. . . . Lacking copyright protection, information can be freely adapted to suit the users' needs. Within the hi-tech gift economy, people successfully work together through " . . . an open social process involving evaluation, comparison and collaboration."[48]

John Horvarth, however, did not share this opinion. The "free stuff" offered around the Net, he argued, "is either a product that gets you hooked on to another one or makes you just consume more time on the net. After all, the goal of the access people and telecoms is to have users spend as much time on the net as possible, regardless of what they are doing. The objective is to have you consume bandwidth."[49] Far from proving the persistence of the Internet gift economy, Horvarth claimed, Netscape's move is a direct threat to those independent producers for whom shareware and freeware have been a way of surviving exactly those "big boys" that Netscape represents:

Freeware and shareware are the means by which small producers, many of them individuals, were able to offset somewhat the bulldozing effects of the big boys. And now the bulldozers are headed straight for this arena.

As for Netscrape [*sic*], such a move makes good business sense and spells trouble for workers in the field of software development. The company had a poor last quarter in 1997 and was already hinting at job cuts. Well, what better way to shed staff by having your product taken further by the freeware people, having code-dabbling hobbyists fix and further develop your product? The question for Netscrape now is how to tame the freeware beast so that profits are secured.[50]

Although it is tempting to stake the evidence of Netscape's layoffs against the optimism of Barbrook's gift economy, there might be more productive ways of looking at the increasingly tight relationship between an "idealistic" movement such as open source and the current venture mania for open source companies.[51] Rather than representing a moment of incorporation of a previously authentic moment, the open source question demonstrates the overreliance of the digital economy as such on free labor, both in the sense of not financially rewarded and willingly given. This includes AOL community leaders, the open source programmers, the amateur Web designers, mailing list editors, and the NetSlaves willing to "work for cappuccinos" just for the excitement and the dubious promises of digital work.[52]

Such a reliance, almost a dependency, is part of larger mechanisms of capitalist extraction of value which are fundamental to late capitalism as a whole. That is, such processes are not created outside capital and then reappropriated by capital, but are the results of a complex history where the relation between labor and capital is mutually constitutive, entangled and crucially forged during the crisis of Fordism. Free labor is a desire of labor immanent to late capitalism, and late capitalism is the field that both sustains free labor *and* exhausts it. It exhausts it by subtracting selectively but widely the means through which that labor can reproduce itself: from the burnout syndromes of Internet start-ups to underretribution and exploitation in the cultural economy at large. Late capitalism does not appropriate anything: it nurtures, exploits, and exhausts its labor force and its cultural and affective production. In this sense, it is technically impossible to separate neatly the digital economy of the Net from the larger network economy of late capitalism. Especially since 1994, the Internet is always and simultaneously a gift economy *and* an advanced capitalist economy. The mistake of the neoliberalists (as exemplified by the *Wired* group), is to mistake this coexistence for a benign, unproblematic equivalence.

As I stated before, these processes are far from being confined to the most self-conscious laborers of the digital economy. They are part of a

diffuse cultural economy which operates throughout the Internet and beyond. The passage from the pioneeristic days of the Internet to its "venture" days does not seem to have affected these mechanisms, only intensified them and connected them to financial capital. Nowhere is this more evident than in the recent development of the World Wide Web.

Enter the New Web

In the winter of 1999, in what sounds like another of its resounding, short-lived claims, *Wired* magazine announces that the old Web is dead: "The Old Web was a place where the unemployed, the dreamy, and the iconoclastic went to reinvent themselves. . . The New Web isn't about dabbling in what you don't know and failing—it's about preparing seriously for the day when television and Web content are delivered over the same digital networks."[53]

The new Web is made of the big players, but also of new ways to make the audience work. In the "new Web," after the pioneering days, television and the Web converge in the one thing they have in common: their reliance on their audiences/users as providers of the cultural labor that goes under the label of "real-life stories." Gerry Laybourne, executive of the Web-based media company Oxygen, thinks of a hypothetical show called *What Are They Thinking?* a reality-based sketch comedy based on stories posted on the Web, because "funny things happen in our lives everyday."[54] As Bayers also adds, "until it's produced, the line separating that concept from more puerile fare dismissed by Gerry, like *America's Funniest*, is hard to see."[55]

The difference between the puerile fare of *America's Funniest* and user-based content seems to lie not so much in the more serious nature of the "new Web" as compared to the vilified output of television's "people shows" (a term that includes docusoaps, docudramas, and talk shows). From an abstract point of view there is no difference between the ways in which people shows rely on the inventiveness of their audiences and the Web site reliance on users' input. People shows rely on the activity (even amidst the most shocking sleaze) of their audience and willing participants to a much larger extent than any other television programs. In a sense, they manage the impossible, creating monetary value out of the most reluctant members of the postmodern cultural economy: those who do not produce marketable style, who are not qualified enough to enter the fast world of the knowledge economy, are converted into monetary value through their capacity to perform their misery.

When compared to the cultural and affective production on the Internet, people shows also seem to embody a different logic of relation between capitalism (the media conglomerates that produce and distribute such shows) and its labor force——the beguiled, dysfunctional citizens of the underdeveloped North. Within people's shows, the valorization of the audience as labor and spectacle always happens somehow within a power/knowledge nexus that does not allow the *immediate* valorization of the talk show participants: you cannot just put a Jerry Springer guest on TV on her own to tell her story with no mediation (indeed, that would look too much like the discredited access slots of public service broadcasting). Between the talk show guest and the apparatus of valorization intervenes a series of knowledges that normalize the dysfunctional subjects through a moral or therapeutic discourse and a more traditional institutional organization of production. So after the performance, the guest must be advised, patronized, questioned, and often bullied by the audience and the host, all in the name of a perfunctory, normalizing morality.

People shows also belong to a different economy of scale: although there are more and more of them, they are still relatively few when compared to the millions of pages on the Web. It is as if the centralized organization of the traditional media does not let them turn people's productions into pure monetary value. People shows must have morals, even as those morals are shattered by the overflowing performances of their subjects.

Within the Internet, however, this process of channeling and adjudicating (responsibilities, duties, and rights) is dispersed to the point where practically anything is tolerated (sadomasochism, bestiality, fetishism, and plain nerdism are not targeted, at least within the Internet, as sites that need to be disciplined or explained away). The qualitative difference between people's shows and a successful Web site, then, does not lie in the latter's democratic tendency as opposed to the former's exploitative nature. It lies in the operation, within people's shows, of moral discursive mechanisms of territorialization, the application of a morality that the "excessive" abundance of material on the Internet renders redundant and even more irrelevant. The digital economy cares only tangentially about morality. What it really cares about is an abundance of production, an immediate interface with cultural and technical labor whose result is a diffuse, nondialectical contradiction.

Conclusion

My hypothesis that free labor is structural to the late capitalist cultural economy is not meant to offer the reader a totalizing understanding of the

cultural economy of new and old media. However, it does originate from a need to think beyond the categories that structure much Net debate these days, a process necessarily entailing a good deal of abstraction.

In particular, I have started from the opposition between the Internet as capital and the Internet as the anticapital. This opposition is much more challenging than the easy technophobia/technophilia debate. The question is not so much whether to love or hate technology, but an attempt to understand whether the Internet embodies a continuation of capital or a break with it. As I have argued in this essay, it does neither. It is rather a mutation that is totally immanent to late capitalism, not so much a break as an intensification, and therefore a mutation, of a wide-spread cultural and economic logic.

In this context, it is not enough just to demystify the Internet as the latest capitalist machination against labor. I have tried to map a different route, an immanent, flat, and yet power-sensitive model of the relationship between labor, politics, and culture. Obviously I owe much of the inspiration for this model to the French/Italian connection, to that line of thought formed by the exchanges between the Foucault/Deleuze/Guattari axis and the Italian Autonomy (Antonio Negri, Maurizio Lazzarato, Paolo Virno, Franco Berardi), a field of exchanges formed through political struggle, exile, and political prosecution right at the heart of the postindustrial society (Italy after all has provided the model of a post-Fordist economy for the influential flexible specialization school). On the other hand, it has been within a praxis informed by the cybernetic intelligence of English-speaking mailing lists and Web sites that this line of thought has acquired its concrete materiality.

This return to immanence, that is, to a flattening out of social, cultural, and political connections, has important consequences for me. As Negri, Haraway, and Deleuze and Guattari have consistently argued, the demolition of the modernist ontology of the Cartesian subject does not have to produce the relativism of the most cynical examples of postmodern theory. The loss of transcendence, of external principles which organize the social world from the outside, does not have to end up in nihilism, a loss of strategies for dealing with power.

Such strategies cannot be conjured by critical theory. As the spectacular failure of the Italian Autonomy reveals,[56] the purpose of critical theory is not to elaborate strategies that then can be used to direct social change. On the contrary, as the tradition of cultural studies has less explicitly argued, it is about working on what already exists, on the lines established by a cultural and material activity that is already happening. In this sense this essay does not so much propose a theory as it identifies a *tendency* that already exists in the Internet literature and on-line

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exchanges. This tendency is not the truth of the digital economy; it is necessarily partial just as it tries to hold to the need for an overall perspective on an immensely complex range of cultural and economic phenomena. Rather than retracing the holy truths of Marxism on the changing body of late capital, free labor embraces some crucial contradictions without lamenting, celebrating, denying, or synthesizing a complex condition. It is, then, not so much about truth-values as about relevance, the capacity to capture a moment and contribute to the ongoing constitution of a nonunified collective intelligence outside and in between the blind alleys of the silicon age.

Notes

1. Lisa Margonelli, "Inside AOL's 'Cyber-Sweatshop,'" *Wired*, October 1999, 138.

2. See Paolo Virno and Michael Hardt, *Radical Thought in Italy: A Potential Politics* (Minneapolis: University of Minnesota Press, 1996); and Toni Negri, *The Politics of Subversion: A Manifesto for the Twenty-first Century* (Cambridge: Polity, 1989) and *Marx beyond Marx: Lessons on the "Grundrisse"* (New York: Autonomedia, 1991). The quote is from Negri, *Politics of Subversion*, 92.

3. Donna Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Routledge, 1991), 159.

4. Paul Gilroy, *The Black Atlantic: Modernity and Double Consciousness* (London and New York: Verso, 1993), 40.

5. Manuel Castells, *The Rise of the Network Society* (Cambridge, Mass.: Blackwell, 1996), 395.

6. In discussing these developments, I will also draw on debates circulating across Internet sites. On-line debates in, for example, nettime, telepolis, rhizome and c-theory, are one of the manifestations of the surplus value engendered by the digital economy, a hyper-production that can only be partly reabsorbed by capital.

7. See Richard Barbrook, "The Digital Economy," (posted to *nettime* on 17 June 1997; also at www.nettime.org; "The High-Tech Gift Economy," in *Readme! Filtered by Nettime: ASCII Culture and the Revenge of Knowledge*, ed. Josephine Bosma et al. (Brooklyn, N.Y.: Autonomedia, 1999), 132–38. Also see Anonymous, "The Digital Artisan Manifesto" (posted to *nettime* on 15 May 1997).

8. Barbrook, "The High-Tech Gift Economy," 135.

9. Ibid., 137

10. Don Tapscott, *The Digital Economy* (New York: McGraw-Hill, 1996), xiii.

11. Ibid., 35; emphasis added.

12. Ibid., 48.

13. For a discussion of the independent music industry and its relation to corporate culture see David Hesmondalgh, "Indie: The Aesthetics and Institutional Politics of a Popular Music Genre," *Cultural Studies* 13 (January 1999): 34–61. Angela McRobbie has also studied a similar phenomenon in the fashion and design industry in *British Fashion Design: Rag Trade or Image Industry?* (London: Routledge, 1998).

14. See the challenging section on work in the high-tech industry in Bosma et al., *Readme!*

15. Martin Kenney, "Value-Creation in the Late Twentieth Century: The Rise of the Knowledge Worker," in *Cutting Edge: Technology, Information Capitalism and Social Revolution*, ed. Jim Davis, Thomas Hirsch, and Michael Stack (London: Verso, 1997), 93; also see in the same anthology Tessa Morris-Suzuki, "Capitalism in the Computer Age," 57–71.

16. See Darko Suvin, "On Gibson and Cyberpunk SF," in *Storming the Reality Studio*, ed. Larry McCaffery (London: Durham University Press, 1991), 349–65; and Stanley Aronowitz and William DiFazio, *The Jobless Future: Sci-Tech and the Dogma of Work* (Minneapolis: University of Minnesota Press, 1994). According to Andrew Clement, information technologies were introduced as extensions of Taylorist techniques of scientific management to middle-level, rather than clerical, employees. Such technologies responded to a managerial need for efficient ways to manage intellectual labor. Clement, however, seems to connect this scientific management to the workstation, while he is ready to admit that personal computers introduce an element of autonomy much disliked by management. See Andrew Clement, "Office Automation and the Technical Control of Information Workers," in *The Political Economy of Information*, ed. Vincent Mosco and Janet Wasko (Madison: University of Wisconsin Press, 1988.

17. Barbrook, "The High-Tech Gift Economy."

18. See Kevin Robins, "Cyberspace or the World We Live In," in *Fractal Media: New Media in Social Context*, ed. Jon Dovey (London: Lawrence and Wishart, 1996).

19. See Frank Webster, *Theories of the Information Society* (London and New York: Routledge, 1995).

20. Maurizio Lazzarato, "Immaterial Labor," in *Marxism beyond Marxism*, ed. Saree Makdisi, Cesare Casarino, and Rebecca E. Karl for the Polygraph collective (London: Routledge, 1996), 133.

21. The Criminal Justice Act (CJA) was popularly perceived as an antirave legislation, and most of the campaign against it was organized around the "right to party." However, the most devastating effects of the CJA have struck the neotribal, nomadic camps, basically decimated or forced to move to Ireland in the process. See Andrea Natella and Serena Tinari, eds., *Rave Off* (Rome: Castelvecchi, 1996).

22. Lazzarato, "Immaterial Labor," 136.

23. In the two volumes of *Capitalism and Schizophrenia*, Gilles Deleuze and Félix Guattari described the process by which capital unsettles and resettles bodies and cultures as a movement of "decoding" ruled by "axiomatisation." Decoding is the process through which older cultural limits are displaced and removed as with older, local cultures during modernization; the flows of culture and capital unleashed by the decoding are then channeled into a process of axiomatiza-

tion, an abstract moment of conversion into money and profit. The decoding forces of global capitalism have then opened up the possibilities of immaterial labor. See Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia* (London: Athlone, 1984); and *A Thousand Plateaus: Capitalism and Schizophrenia* (London: Athlone, 1988).

24. See Franco Berardi (Bifo), *La nefasta utopia di potere operaio* (Rome: Castelvecchi/DeriveApprodi, 1998), 43.

25. See Kevin Kelly, *Out of Control* (Reading, Mass.: Addison Wesley, 1994).

26. Eugene Provenzo, foreword to Pierre Levy, *Collective Intelligence: Mankind's Emerging World in Cyberspace* (New York: Plenum, 1995), viii.

27. Levy, *Collective Intelligence*, 13.

28. Ibid., 1.

29. See Little Red Henski, "Insider Report from UUNET" in Bosma et al., *Readme!* 189–91.

30. Paolo Virno, "Notes on the General Intellect," in *Marxism beyond Marxism*, 266.

31. Karl Marx, *Grundrisse* (London: Penguin, 1973), 693.

32. Paolo Virno, "Notes on the General Intellect," in *Marxism beyond Marxism*, 266.

33. Ibid., 270.

34. Ibid., 271.

35. See Lazzarato, "New Forms of Production," in Bosma et al., *Readme!* 159–66; and Tessa Morris-Suzuki, "Robots and Capitalism," in *Cutting Edge*, 13–27.

36. See Toni Negri, "Back to the Future," in Bosma et al., *Readme!* 181–86; and Haraway, *Simians, Cyborgs, Women*.

37. Andrew Ross, *Real Love: In Pursuit of Cultural Justice* (London: Routledge, 1998).

38. See Barbrook, "The High-Tech Gift Economy."

39. The work of Jean-François Lyotard in *The Postmodern Condition* is mainly concerned with *knowledge*, rather than intellectual labor, but still provides a useful conceptualization of the reorganization of labor within the productive structures of late capitalism. See Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: University of Minnesota Press, 1989).

40. See Arthur Kroker and Michael A. Weinstein, *Data Trash: The Theory of the Virtual Class* (New York: St. Martin's, 1994).

41. See Howard Rheingold, *The Virtual Community: Homesteading on the Electronic Frontier* (New York: Harper Perennials, 1994).

42. See Howard Rheingold, "My Experience with Electric Minds," in Bosma et al., *Readme!* 147–50; also David Hudson, *Rewired: A Brief (and Opinionated) Net History* (Indianapolis: Macmillan Technical Publishing, 1997). The expansion of the Net is based on different types of producers adopting different strategies of income generation: some might use more traditional types of financial support (grants, divisions of the public sector, in-house Internet divisions within traditional media companies, businesses' Web pages which are paid as with traditional forms of advertising); some might generate interest in one's page and then sell the user's profile or advertising space (freelance Web production); or some

might use innovative strategies of valorization, such as various types of e-commerce.

43. See Margonelli, "Inside AOL's 'Cyber-Sweatshop.'"

44. Andrew Leonard, "Open Season," in *Wired*, May 1999, 140. Open source harks back to the specific competencies embodied by Internet users in its pre-1994 days. When most Net users were computer experts, the software structure of the medium was developed by way of a continuous interaction of different technical skills. This tradition still survives in institutions like the Internet Engineering Task Force (IETF), which is responsible for a number of important decisions about the technical infrastructure of the Net. Although the IETF is subordinated to a number of professional committees, it has important responsibilities and is also open to anybody who wants to join. The freeware movement has a long tradition, but it has also recently been divided by the polemics between the free software or "copyleft" movement and the open source movement, which is more of a pragmatic attempt to make freeware a business proposition. See debates on-line at www.gnu.org and www.salonmag.com.

45. Leonard, "Open Season."

46. Ibid., 142.

47. It is an established pattern of the computer industry, in fact, that you might have to give away your product if you want to reap the benefits later on. As John Perry Barlow has remarked, "Familiarity is an important asset in the world of information. It may often be the case that the best thing you can do to raise demand for your product is to give it away." See John Perry Barlow, "Selling Wine without Bottles: The Economy of Mind on the Global Net," in *High Noon on the Electronic Frontier: Conceptual Issues in Cyberspace*, ed. Peter Ludlow (Cambridge: MIT Press, 1996), 23. Apple started it by giving free computers to schools, an action that did not determine, but certainly influenced, the subsequent stubborn presence of Apple computers within education; MS-Dos came in for free with IBM computers.

48. Barbrook, "The High-Tech Gift Economy," 135–36.

49. John Horvarth, "Freeware Capitalism," posted on *nettime*, 5 February 1998.

50. Ibid.

51. Netscape started like a lot of other computer companies: its founder, Marc Andreessen, was part of the original research group who developed the structure of the World Wide Web at the CERN laboratory, in Geneva. As with many successful computer entrepreneurs, he developed the browser as an offshoot of the original, state-funded research and soon started his own company. Netscape was also the first company to exceed the economic processes of the computer industry, inasmuch as it was the first successful company to set up shop on the Net itself. As such, Netscape exemplifies some of the problems that even the computer industry meets on the Net and constitutes a good starting point to assess some of the common claims about the digital economy.

52. Ross, *Real Love*.

53. Chip Bayers, "Push Comes to Show," in *Wired*, February 1999, 113.

54. Ibid., 156.

55. Ibid.

56. Berardi, *La nefasta utopia*.