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1.
Free Labor: Producing Culture for the Digital Economy

Tiziana Terranova,
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The real not-capital is labor.
Karl Marx, *Grundrisse*, 1857-1858

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. 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,

[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*

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 criss-crosses 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.

"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.

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

[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).

> 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

[8] Barbrook, "The High-Tech Gift Economy," 135.
[9] Ibid., 137

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, 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 general. 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?

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[10] Don Tapscott, *The Digital Economy* (New York: McGraw-Hill, 1996), xiii. Human intelligence provides the much needed value-added, which is essential to the economic health of the organization.

[11] Ibid., 35; emphasis added.

[12] Ibid., 48.

We can start undoing this deadlock by subtracting the label digital economyfrom 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 capitalism. 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

[13] For a discussion of the independent music industry and its relation to corporate culture see David Hesmondalgh, "Indie: The Aesthetics and Institu- tional 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).

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 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

[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).

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

[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).

> 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

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[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

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 possibilities 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,

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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 axiomatization, 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.

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

[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.

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

[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.

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 knowledge workers, but is a " quality and a distinctive sign of the whole social labor force in the post-Fordist era."[34]

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

[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).

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

[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).

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

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

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 (which yesterday was about community, today is about portals, and tomorrow who knows what), 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"

[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'".

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

[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.

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

[48] Barbrook, "The High-Tech Gift Economy," 135-136.
[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.

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

[52] Ross, *Real Love*.
[53] Chip Bayers, "Push Comes to Show," in *Wired*, February 1999, 113.

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

[54] Ibid., 156
[55] Ibid.

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 widespread 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

[56] Berardi, *La nefasta utopia di Potere Operaio*.

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 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.

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2.
Attention, Economy And The Brain

Tiziana Terranova, «Attention, Economy And The Brain», *Culture Machine*, vol. 13, 2012.

'Whoever treats of interest inevitably treats of attention…'
William James

'I consume my consumers'
Grace Jones 'Corporate Cannibal'

'Attention, conatus of the brain...'
Gabriel Tarde

In recent years, the notion of attention has come to occupy a key place within the overall discourse surrounding what has been called 'the new economy ' or 'digital economy', but also within the critical analyses of cultural theorists evaluating the politics of digital media. Theories of the attention economy are considered here as a continuation of the modern theme of the 'crisis of attentiveness' (Crary, 1999), this time elaborated in terms of the impact of Internet usage on the cognitive architecture of a neuroplastic and mimetic social brain. This essay maps some of the ways in which the notion of 'attention' is mobilized as an economic category within theories of the Internet, framed in terms of neoclassical or mainstream economics theory and within theories attempting to account for processes of psychic transindividuation and social cooperation in contemporary capitalism.

The Attention Economy

The centrality of the notion of attention to recent theorizations of the economy of the Internet and digital media marks a significant difference with regard to the centrality of information in earlier theorizations of this kind (Goldhaber, 2006; Barlow, 1993; Kelly, 1999). While information was said to be a radically new type of commodity that challenged established economic models, attention seems to bring with it a recoding of the economy of new media along more orthodox lines, in as much as it reintroduces a principle of scarcity where there used to be only abundance and limitless possibilities. If information is bountiful, attention is scarce because it indicates the limits inherent to the neurophysiology of perception and the social limitations to time available for consumption.

In an earlier phase, new media economists stressed the abundance of information in the digital economy to assert a new kind of economic Darwinism, based on the capacities of a proliferating, connected life to create the new. This was an artificial kind of life, which the digital entrepreneur had to learn to harness and selectively channel in order to extract surplus value (Terranova, 2004). The bios of the new economy, then, entailed a continuity with the Darwinian dynamics of competition, while

eschewing the harsh constraints of natural scarcity which framed the notion of the survival of the fittest. The return of scarcity in theories of the attention economy implies a normalization of the new economy. However, the latter manifests a tension between the previous, abundant, inventive bios of organic life and the new centrality accorded to the bios of a special organ, the brain, but one that is strangely deprived of its capacity for creation and innovation.

In theories of the attention economy, attention is first of all a scarce resource, which is what allows the Internet to become an economic medium again, that is, a medium to which all the axioms of market economics can once again be applied. Scarcity is the condition that can give rise to a proper economy, the 'attention economy'. Attention is a scarce resource because 'the sum total of human attention is necessarily limited and therefore scarce' (Goldhaber, 2006). As Michael Goldhaber explains,

> By the Attention Economy, then, I mean a system that revolves primarily around paying, receiving, and seeking what is most intrinsically limited and not replaceable by anything else, namely the attention of other human beings. (2006)

According to theorists of the attention economy, in as much as attention is both scarce and measurable, it can become not simply a commodity like others, but a kind of capital. The abstract quality of attention and at the same time the fact that the 'attentional assemblages' of digital media enable automated forms of measurement (as in 'clicks', 'downloads', 'likes', 'views', 'followers', and 'sharings' of digital objects) open it up to marketization and financialization (from the floating value of Internet companies to the accumulation of celebrity capital by means of a number of followers on Twitter to the changing value of 'clicks' as calculated by Google's software AdSense and AdWords).[1]

While already in 1999, Georg Franck attempted to describe attention as 'the new currency of business', proposing that attention constitute a new kind of capital ('attentive capital') and even a kind of wage or income (attention income such as that generated by fame and celebrity, for example) (Franck 1999), the attempts to capitalize attention have recently gone even further. Thus, for example, the Wikipedia entry for 'attention economy' reports proposals for 'attention transactions' (Goldhaber); the institution of new property rights in attention; and, of course, also the issuing of 'attention bonds', that is, 'small warranties that some information will not be a waste of the recipient's time, placed into escrow at the time of sending' (Loder, Van Alstyne & Wash, 2004). Hence '…receivers could cash in their bonds to signal to the sender that a given communication was a waste of their time or elect not to cash them in to signal that more communication would be welcome' ('The attention economy', Wikipedia n.d.).

It is true that such theories constitute a kind of 'fringe' discourse within the field of economics at large, and one that lacks the legitimacy that is usually granted to more academic work. Published mostly on the Internet, and then also occasionally translated into paperback publications for the market of incumbent and aspiring Internet entrepreneurs, they constitute a specific genre which, while also being somehow ephemeral, in some way translates what are the more general

preoccupations of economic actors operating within the context of what used to be called the 'new economy'. In particular, as Henry Jenkins has argued in his study of 'convergence culture', the notion of attention as a scarce resource corresponds to the preoccupations of corporate giants when facing a new context of communication characterised both by a large offer of information and a new type of consumer/viewer who is tendentially in a state of drift (Jenkins, 2006).

Digitization and networking, and the special status of information as a non-rival good, do not produce, as in theories of social production, the conditions for the emergence of a new 'nonmarket' mode of production, but rather point to the circularity of normative market economics. By consuming attention and making it scarce, the wealth of information creates poverty that in its turn produces the conditions for a new market to emerge. This new market requires specific techniques of evaluation and units of measurement (algorithms, clicks, impressions, tags, etc).

A Poverty of Attention

Within current discussions of the economic implications of shifts in technologies of attention, the latter is seen not only as 'scarce' because limited, but also as increasingly 'degraded'. In a strange reversal of early information theory's take on entropy, attention here becomes the scarce quantity which is 'consumed' by that which is abundant, that is, information. In the recent wave of publishing around the idea of a 'crisis of attention' (which parallels and supplements discussions of attention economy), it is common to find the notion of a 'degradation of attention' provoked by digital technologies and its economic effects. In an article by Sam Anderson in the New York Magazine on the 25th of May 2009, one finds, for example, a quote referring back to the writings of 'polymath economist' Herbert A. Simon, who in 1971 offered what Anderson describes as 'maybe the most concise possible description of our modern struggle':

> 'What information consumes is rather obvious: It consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.' As beneficiaries of the greatest information boom in the history of the world, we are suffering, by Simon's logic, a correspondingly serious poverty of attention. (Anderson, 2009)

If attention that is actually paid can be measured by numbers of clicks and viewings, however, attention that is lost in paying attention requires a different kind of measurement. If the financialization of attention relies on the possibility of measuring attention by means of techniques operating on data and meta-data abstracted from digital interaction, the poverty of attention is related to the measurement of physiological reactions of the brain to stimuli and to the new neuroplastic potential of the brain. As Anderson explains,

> Before the sixties, they measured it through easy-to-monitor senses like vision and hearing (if you listen to one voice in your right ear and another in your left, how much

> information can you absorb from either side?), then eventually graduated to PET scans and EEGs and electrodes and monkey brains. Only in the last ten years – thanks to neuroscientists and their functional MRIs – have we been able to watch the attending human brain in action, with its coordinated storms of neural firing, rapid blood surges, and oxygen flows. This has yielded all kinds of fascinating insight… (Anderson 2009)

In a widely read essay published in 2009 in Wired magazine and later turned into a book, Nicholas Carr weaves together such research to formulate an argument that resonates with current interest on the part of new media economists in the value of attention (Carr, 2010b). Citing research by neuroscientists on experimental exposure to new media objects, Carr argues that such exposure rewires neural pathways within individual brains. The affect of new media would thus be a rewiring of attention, whereby activities such as multi-tasking and reading hyperlinked texts would produce, both in seasoned Internet users and new ones, a shift of neuronal activity from the hippocampus (where brain scientists usually locate activities such as focused reasoning and long term memory) to the prefrontal cortex (which would be occupied by rote tasks and short term memory). Exposure to new media would thus cause a remodelling of different types of memory within individual brains, making individuals faster at carrying out routine tasks, but at the same time less efficient in the ways they carry out those tasks and weaker at deeper comprehension and understanding (Schwartz, 2011).

In contemporary neuroscience, these ambivalent properties of the brain's attentive capacities are understood through the notion of plasticity, which Catherine Malabou in her controversial essay on neuroscience and the spirit of capitalism has called 'the dominant concept of the neurosciences… their common point of interest, their dominant motif and their privileged operating model' (Malabou, 2008: 4).[2] The brain for Carr is rewired by the Web in such a way as to make it a faster automaton when it comes to routine tasks but at the price of severely impairing its 'higher' cognitive faculties. The economic/informational plastic brain is thus caught in a double bind: on the one hand, in order to participate in the attention economy, it must enter a technological assemblage of attention; on the other hand, becoming part of this assemblage implies a dramatic cognitive loss that is translated into a subjectivity more adept at carrying out routine tasks but less capable of reasoning, reflecting and intimacy (see also Berardi, 2010; Turkle, 2011).

The 'brain scientists' quoted by Carr, in fact, describe the attentional assemblage of brain and Internet as a costly one for the efficiency of thinking:

> The Internet is an interruption system. It seizes our attention only to scramble it. … The penalty is amplified by what brain scientists call switching costs. Every time we shift our attention, the brain has to reorient itself, further taxing our mental resources. Many studies have shown that switching between just two tasks can add substantially to our cognitive load, impeding our thinking and increasing the likelihood that we'll overlook or misinterpret important information. On the Internet, where we generally juggle several tasks, the switching costs pile ever higher. (Carr, 2010a: 1)

In this sense, the attention economy brings to the fore and makes explicit the long tendency of modern culture to produce what Jonathan Crary has called an 'ongoing crisis of attentiveness' in which 'the changing configurations of capitalism continually push attention and distraction to new limits and thresholds, with an endless sequence of new products, sources of stimulation, and streams of information, and then respond with new methods for managing and regulating perception...' (Crary, 1999: 13). For Crary, in fact, the crisis of attentiveness goes back to the nineteenth century, where already the notion of attention within the new assemblages of production and consumption of industrial capitalism provided the means by which a new type of subject was constituted. This was then the beginning of what he also calls 'a revolutionizing of the means of perception', which for the last hundred years has exposed perceptual modalities to 'a state of perpetual transformation, or, some might claim, a state of crisis' (Crary, 1999: 13). As Crary also argues, however, already in its early days, 'the articulation of a subject in terms of attentive capacities simultaneously disclosed a subject incapable of conforming to such disciplinary imperatives' (13).

When read together, both statements about the attention economy and the crisis of attention point to the reconfiguration of the attentive capacities of the subject in ways which constitute attention at the same time as a scarce, and hence a valuable resource, while also producing an impoverished subject. The brain provides the scarce resource that allows the digital economy to be normalized, while also suffering a depletion of its cognitive capacities. This seems akin to what Bernard Stiegler has recently called the 'proletarianization of the life of the mind', which remains one of the possible outcomes of the diffusion of digital and reticulated technologies (Stiegler, 2010: 21).[3] However, whether the reconfiguration of cognition triggered by new technologies is assessed as an impoverishment of attention or rather as a more ambivalent mutation of subjectivity is still an open question (Hayles, 2007).

Paying Attention and Imitation

The economic subject of attention as it is drawn by theories of the attention economy expresses also another challenge, this time produced not only by individual exposure to new media technologies, but also by the hyper-sociality of the connected brain. It is neither, then, only a matter of what the individual does when accumulating or spending one's limited stock of attention nor simply a question of the degradation of the individual's capacity to pay attention as the cost incurred by being constantly plugged into the attentional assemblages of digital media. Paying attention to what others do on networked social platforms triggers potential processes of imitation by means of which network culture produces and reproduces itself. The brain mobilized by theories of the attention economy in a milieu of reticulated communication is measurably social (Latour, 2011).

Participating in the attentional assemblages of digital media implies becoming part of social processes where paying attention triggers responses of imitation which shifts between the virtual form of a passing impression and the actual form of acts such as reading and writing, watching and listening, copying and pasting, downloading and uploading, liking, sharing, following and bookmarking. The economy of attention is,

then, also the economy of socialization of ideas, affects and percepts, and hence an economy of social production and cooperation. But are theories of the attention economy equipped to deal with the socially productive character of attentional assemblages or do they remain confined to an individual model of cognition which is too centred on the individual brain?

As Charles T. Wolfe argued, in the past ten or twenty years, at least the neurosciences as such have indeed 'begun to take something of a "social" turn …, with the publication of books, anthologies, and journal issues called Social Neuroscience, Social Brain and such, picking up momentum in the past five years. Topics such as imitation, empathy, "mind-reading," and even group cognition have come to the fore' (Wolfe, 2010: 185).[4] In particular the 'social' in social cognition 'focuses notably on mirror neurons, which indicate the existence in the brain of a particular recognition or decoding of action and thus of the imitation of action, implying an understanding of other people's intentions, goals and desires' (186). The notion of mirror neurons for Wolfe opens up discussion of the brains to new materialist accounts of the social intellect, but unfortunately at this stage it tends to rely on sociobiological theories of primate behaviour and hence sees the 'social intellect' as driven by a 'Machiavellian intelligence' (de Waal, 1982). This is a recoding of networked subjectivity onto the figure of the manipulative primate, whose social intelligence is imitative in nature and where imitation is basically the key to social manipulation by a self-interested, calculative subject endowed with 'strategic rationality' (Haraway, 1989: 147-148). It is, then, a social intellect which is ultimately determined by the calculative, self-interested rationality of homo oeconomicus.[5]

What is at stake in the relation between attention and imitation evoked by theories of the attention economy is a new translation in economic terms of the theme of imitative, swarming and contagious behaviours as characterizing networked communication (Thacker, 2004; Parikka, 2010). The neuroplastic brain, then, not only reconfigures its cognitive architecture in response to new media exposure, but, when seen together with the enactive and involuntary impressions produced by paying attention as an act of potential imitation, turns the self-possessive and rational economic subject into a potentially mimetic node. And yet, processes of social emergence which characterized the discourse on innovation in theories of the information economy are here downplayed. Recent theories of financial markets, which to André Orléan appear driven by contagious and mimetic behaviours undermining the notion of the rationality of the economic agent, for example, seem to emphasise the short-circuiting of rational choice produced by imitation (see Orléan, 2010).[6] Paying attention in a socially networked environment, then, exposes the paradox of a self-interested, calculative subject who is, however, at the same time also exposed to the inhuman forces of mimesis and contagion.

Attention, Value, Cooperation

In an early essay entitled 'For a Redefinition of the Concept of "Bio-politics"', Maurizio Lazzarato asked us to reconsider the well known post-workerist thesis that the information economy no longer captures and puts to work the 'time of work', but

rather the 'time of life' (Lazzarato, 1997).[7] As Lazzarato argued, the concept of the 'time of life' implied in the information economy evokes what he calls 'an a-organic life' by which he means 'time and its virtualities': 'Not abstract time, measure time, but time as puissance, time as "source of continuous creation of unpredictable novelties", "that which allows everything to be done", according to some statements of Bergson' (116). As Lazzarato argued, the information economy mobilizes a new kind of vitalism 'that is temporal and not just organic, a vitalism that refers to the virtual and not simply to biological processes' (116).

In the fifteen years since the publication of Lazzarato's essay, such a-organic life has acquired an organic character that is evident in the increasing salience of neuroscience and its object, the brain. As we have seen, the cognitive architecture of the brain organized by principles of the neurophysiological limits to attention, the neuroplasticity of brain cells and the imitative capacity of mirror neurons provides the organic reference that determines the way the brain acts as a force in theories of the attention economy and networked media. In his later work on Gabriel Tarde, however, Lazzarato also assumes explicitly the concept of the 'brain-memory' as a means to conceptualize the character of such a-organic life, but in radically different ways that those assumed by theories of the attention economy. In particular, Tarde's concept of the 'brain-memory' is at the basis of his critique of mainstream and Marxist political economy in as much as both of these theories, in his opinion, fail to account for the production of value within social cooperation.

Tarde uses the brain as a model for his theory of social cooperation in as much as nerve cells exhibit peculiar features within the larger milieu of biological life. They are the most homogeneous and less specialized of the body's cells, but most importantly, they are connected to each other in such a way as to influence each other's states at even a great distance. Synaptical connections enacted by axons defy physical proximities of neurons, generating what Malabou calls the 'general landscape of memory' (Malabou, 2008: 23). Furthermore Tarde's 'brain-memory' is not an individual organ belonging to a subject, but it is by nature constituted by the outside, a fold crossed and shaped by the currents produced by the circulation of the social quanta of beliefs and desires. In Tarde's psychological economy, brain cells are open monads, infolding the outside and reactualizing it at every turn (Tarde, 2010a; 2010b).

In Tarde's account, communication technologies such as the press enabled the socius to become more akin to the network of neural cells in the central nervous system. They imply a conception of subjectivity as that which unfolds in relation to action-at-a-distance by other subjectivities or monads, making our alliances and ideas more fluid and less set in tradition. Economic value, he argued, is derivative with relation to social, cultural and aesthetic values, which are the product of social cooperation or cooperation between brains, whose labour is defined as the 'labour of attention'.

> Attention, defined as the 'conatus of the brain', is that which expresses the desire of the brain-memory to affect and be affected through this peculiar form of action at a distance. Memory (or spirit, or soul) expresses our power of acting on the world and its labour is above all the labour of attention. (Lazzarato, 2002: 20)

The labour of attention enables social cooperation and is thus the real source of the production of value – a social kind of production steeped in relationality. The openness of the brain-memory to action-at-a-distance by other brain-memories is what allows the value produced by invention to be socialized through imitation. It does not leave the economic subject exposed to the irrational capture by external forces, but it implies that it is sociality as such that realizes value (Tarde, 1903).

Psycho-powers

Tarde considered the invention of modern communication technologies as positive in as much as they increased such powers of cooperation and extended the reach of mutual influence. Modern media enhanced and extended the range and scope of those processes of invention and imitation that for him constituted the essence of economic life. In Bernard Stiegler's work, however, what he calls 'attentional' or 'psycho' technologies, such as radio, television and digital technologies, have done more than simply extend the powers of mutual affection of connected brains (Stiegler, 2008). Starting from a reading of Husserl's phenomenology that is substantially at odds with Lazzarato's emphasis on 'a-organic life' (and his overall philosophy of difference), Stiegler reads modern media as 'tertiary retentions' or 'mnemotechnic technologies' which concretize modes of 'psycho-power' affecting the relation of self to self and self to other. Attention is the name for that relation between 'retentions' and 'protentions', that is, between the movement of consciousness that retains the trace of that which has just passed and its expectation of that which is to come. For Stiegler, in modern societies, the relation between retentions and protentions is mediated by those specific instances of tertiary retentions that are the media as psychotechnologies.

From this perspective, the contemporary economy of attention needs to be read as a new moment in the long duration of modern media as psycho- and social technologies. Such media have historically enacted 'the systematic capture of attention… resulting in a constant industrial canalization of attention', whose effects on libidinal energy have been substantially destructive. What they have destroyed is on the one hand a set of knowledges which he describes as 'savoir-vivre' (which corresponds to the Foucauldian notion of 'care of the self') and civility (care of others as founded on 'philia', that is socialised libidinal energy), and, on the other, the 'psychical apparatus and the social apparatus' as a whole (Stiegler, 2008).

For Stiegler, it is not a question of denouncing the technical colonization of libidinal energy by technique (in as much as technique, as he argued in Technics and Time (1998), following Leroi-Gourhan, is a constitutive element of anthropogenesis), but of considering the harmful effects of the industrial economy, based on the division between production and consumption, and on the quality of socialized libidinal energy (see also Dean, 2010). If the attention economy degrades somehow the quality of libidinal energy, this is not due to some intrinsic limits of the human capacity to pay attention or to the inevitable effects of technique, but rather to a specific conception and organization of the economic system which overlooks the importance of libidinal energy to the production of the psyche and the social (Stiegler, 2010). This conception

and organization has caused the processes of individuation that connect psychic and social life to be short-circuited, resulting in the destructive hegemony of the short term over the long term. Social network technologies, like those associated with the social web, for Stiegler intervene exactly in this milieu of psychic proletarianization provoked by modern media and marketing techniques:

> It is a matter of technologies of indexation, annotation, tags and modelised traces (M-traces), wiki technologies and collaborative technologies in general…. After having destroyed the traditional social networks, the psychotechnologies become social technologies, and they tend to become a new milieu and a new reticular condition of transindividuation grammatising new forms of social relations. (Stiegler, 2008)

It is important to underline that, for Stiegler, social network technologies are not necessarily bound to extend the psychic and social impoverishment that the marketing and consumption-driven modern media perpetrated. On the contrary, the new forms of social relations grammatised by social networks produce new conditions of transindividuation that might allow a reversal of the hegemony of modern psychotechnologies. Paying attention to social networks can potentially imply truly taking care of self and others in ways that can renew depleted libidinal energy and trigger the emergence of a new collective organisation.

Conclusion

Tracing the properties attributed to attention in theories of the attention economy we can see, then, how the former enacts a tense relation among a number of attributes of attention as a measurable economic entity: scarcity (as a limit that signals a return of 'normal' economics within the 'new' economy); poverty (the qualitative degradation of attention); and imitation (the vulnerability of the brain to capture by external forces quantified by measurement of diffusion of behaviours such as liking, following, etc). Attention is scarce from the point of view of the seller/provider of corporate commodities; it is poor when conceived from the point of view of efficient performance (Hayles, 2007). Theories of the attention economy, then, appear locked within the limits of scarcity, unable to account for the powers of invention of networked subjectivities, falling back into 'herd-like' models of connected sociality, and delegating to speculative mechanisms of financialization the capacity to create value out of partial attention and continuous distraction.

On the other hand, we have seen how in critics of political economy such as Stiegler and Lazzarato the concept of attention is enrolled within a general framework aiming at overcoming the impoverishment and scarcity provoked by the subsumption of attention under capital (or, in the terms used in this article, the ways in which attention is used to 'normalize' the excessive abundance of the information economy). In such a context, attention does not simply indicate the effort by which the individual brain works, nor can it be reduced to a scarce, and hence tradeable commodity, or to that which exposes the individual to a dramatic cognitive impoverishment. On the contrary, attention is the process by which value is produced as inseparable from the

technological production of subjectivity – that is, from the invention and diffusion of common desires, beliefs and affects.

What I have mapped here, then, is a bifurcation in thinking about attention and the economy which exposes two very different ways of organizing a practice of paying attention. While theories of attention economy, however, correspond to explicit commercial and business practices of organizing and managing attention, what we need is a further exploration of some other ways in which paying attention can become a practice that will be able to produce different forms of subjectivity and different models of what an economy of social cooperation could be like.

Notes

[1] For J. McGregor Wise, the concept of 'assemblages of attention' is meant to constitute an alternative to the way in which attention is mobilized as a notion by theories of the attention economy. Such theories not only reduce it to visual attention, but also 'presume a particular model of attention based on an information-based model of the brain. In this model, the brain acts like a computer' (Wise, 2011: 165). Instead, Wise insists that the concept of 'assemblages of attention' implies a focus on the 'distribution and formation of attention across body, brain, tool and environment. We have a plane of attention, with gravitational points of intensity and valuation… It is a plane of attention not centered around just the perceptual field of an individual, but in devices scattered across our bodies and devices, which note, recognize and attend' (169). On the ways in which attention is capitalized in the form of 'clicks' and 'traffic' and then subjected to financial evaluation in the business of search engines see Battalle (2005). On Google as a parasite of the general intellect see Pasquinelli (2009).

[2] For Malabou, the etymology of the word plasticity 'from the Greek plassein, to mold – … has two basic senses: it means at once the capacity to receive form (clay is called "plastic", for example) and the capacity to give form (as in the plastic arts or in plastic surgery)' (2008: 5). The wired brain described by Carr is, however, more than a plastic brain in the two senses of the word, a flexible brain that receives the form imprinted on it by new technologies in such a way as to make it under-perform. As she argues, the contemporary spirit of capitalism tends to flatten plasticity onto 'its mistaken cognate' flexibility. 'To be flexible is to receive a form or impression, to be able to fold oneself, to take the fold, not to give it' (2008: 13).

[3] The notion that digital network technologies cause a kind of decomposition of libidinal energy and hence a cognitive and political degradation is also to be found in Dean (2010), Berardi (2010) and to some extent also in Turkle (2011). Unlike Dean and Berardi, however, Stiegler also points to the 'the critical intensification of the life of the mind' as another possible outcome of the interaction with digital and reticulated technologies (Stiegler, 2010: 21).

[4] On mirror neurons and imitation learning in human evolution see Ramachandran (2000); see also Churchland (2011) for a critique of the validity of the notion of mirror neurons for understanding social cooperation.

[5] In other cases, however, as in V. S. Ramachandran's account of mirror neurons and evolution, the imitative character of sensory-motor cognition expressed by mirror neurons is nothing else than the key to the emergence of human culture 40,000 years ago – where mirror neurons allowed 'a rapid transmission and dissemination of ideas', with human brain and human culture co-evolving into 'obligatory mutual parasites' (Ramachandran, 2000: 4-5).

[6] Orléan's analysis of the behaviour of financial actors, however, has been criticized by postworkerist economists such as Andrea Fumagalli, Christian Marazzi and Carlo Vercellone. Vercellone, in particular, quotes recent research by three economists (Stefania Vitali, James B. Glattfelder and Stefano Battiston) from the Department of Management, Technology and

Economics at the Federal Institute of Technology in Zurich, who have reconstructed the 'network of global corporate control'. According to such research, 'multinationals (or "transnational corporations") form a structure of giant "butterfly-nodes", and a great part of control is absorbed by a core of tightly-knit financial institutions. This core can be seen as an "economic super-entity" whose existence raises new and important questions for researchers and policy makers' (in Negri and Mezzadra, 2012; my translation). While Fumagalli describes such networks as inherently collusive, Marazzi argues that such a core knowingly creates the mood of the market, where investors move mimetically, as a herd. However, during panic phases, even the core struggles to maintain its control. 'During those phases of panic... when Thaleb's black swans appear, leadership enters a crisis and is upset by the unforeseen and the unpredictable. Such black swans are not necessarily those of the financial crises… but rather those social and political events escaping any political-financial modelizations. When panic sets in, even leadership is unsettled' (Marazzi in Negri and Mezzadra, 2012).

[7] The concept of 'time of life' recalls Foucault's thesis that capitalism works through techniques of power that he defined as 'disciplinary' and 'biopolitical'. Biopolitical techniques, Foucault argued, concern a human multiplicity as much as it is invested by processes concerning life. such as 'death, life, production, illness' (Foucault in Lazzarato, 1997: 115).

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3.
Red Stack Attack! Algoritmos, capital y la automatización del común[1]

Tiziana Terranova, en Armen Avanessian, Mauro Reis *et al*.,
Aceleracionismo, Buenos Aires, Caja Negra, 2017.

Lo que está en juego en este texto es la relación entre "algoritmos" y "capital"; es decir, "la creciente centralidad de los algoritmos en las prácticas organizativas provocadas por la centralidad de las tecnologías de información y comunicación en todo lo que va de la producción a la circulación, de la logística industrial a la especulación financiera, de la planeación y el diseño urbanos a la comunicación social".[2] Estas estructuras matemáticas, en apariencia esotéricas, se han convertido en parte del cotidiano de los usuarios de los medios digitales y en red. La mayoría de los usuarios habituales de internet están sujetos al poder de algoritmos como el PageRank de Google (que clasifica los resultados de nuestras búsquedas) o el EdgeRank de Facebook (que automáticamente decide en qué orden recibimos las novedades en nuestro muro de noticias), sin mencionar los muchos otros algoritmos menos conocidos (Appinions, Klout, Hummingbird, PKC, Perlin noise, Cinematch, KDP Select y muchos más) que modulan nuestra relación con los datos y con los dispositivos digitales. La extendida presencia de algoritmos en la vida diaria de la cultura digital es, de cualquier modo, solo una de las expresiones de la ubicuidad de las técnicas computacionales, en coextensión creciente con los procesos de producción, consumo y distribución propios de la logística, las finanzas, la arquitectura, la medicina, la planeación urbana, la infografía, la publicidad, el dating, los videojuegos, la edición y todo tipo de expresiones creativas (música, gráfica, danza, etc.). La escenificación del

[1] Este ensayo es el resultado de un proceso de investigación que involucra a una serie de instituciones italianas de autoformación de inspiración postautonomista (universidades "libres" comprometidas en la organización comunitaria de seminarios públicos, conferencias, talleres, etc.) y redes sociales anglófonas de académicos e investigadores que trabajan con la teoría y la práctica de los medios digitales, oficialmente afiliados a universidades, periódicos y centros de investigación, además de artistas, activistas, trabajadores intelectuales precarios y similares. Se refiere particularmente a un taller que tuvo lugar en Londres en enero de 2014, auspiciado por la Digital Culture Unit en el Centre for Cultural Studies (Goldsmiths' College, University of London). El taller fue el resultado de un proceso de reflexión y organización que comenzó con el colectivo italiano de la universidad libre Uninomade 2.0 al inicio del 2013 y que se ha prolongado a través de listas de distribución y sitios web como Euronomade (http://www.euronomade.info/), Effemera, Commonware (http://www.commonware.org/), I quaderni di San Precario (http://quaderni.sanprecario.info/), entre otros. Por tanto, más que un ensayo tradicional, este intenta ser un documento sintético y, ojalá, inventivo que se involucre en una extendida "red social de investigación", y articule una serie de problemas, tesis y preocupaciones en los confines entre la teoría política y la investigación sobre la ciencia, la tecnología y el capitalismo.

[2] En palabras del programa del taller del que este ensayo se origina: http://effimera.org/workshop-algorithms/

encuentro entre "algoritmos" y "capital" como un problema político sugiere la posibilidad de romper con el hechizo del "realismo capitalista" –la idea de que el capitalismo constituye la única economía posible– mientras, simultáneamente, afirma que las nuevas formas de organizar la producción y la distribución de la riqueza deben incorporar los desarrollos científicos y tecnológicos.[3] El concepto del común, que va más allá de la oposición entre Estado y mercado, público y privado, es usado aquí como una forma de instigar el pensamiento y la práctica de un posible modo de existencia postcapitalista para los medios digitales en red.

Algoritmos, capital y automatización

Abordar los algoritmos desde una perspectiva que busca la constitución de una nueva racionalidad política en torno al concepto de lo "común" significa afrontar las formas en que estos están profundamente implicados en la naturaleza cambiante de la automatización. La automatización es descrita por Marx como un proceso de absorción en la máquina de "las fuerzas productivas generales del cerebro social" tales como "el saber y las destrezas",[4] que de esta manera aparecen como un atributo del capital más que como un producto del trabajo social. Al observar la historia de la implicación entre capital y tecnología, se hace evidente que la automatización ha evolucionado distanciándose del antiguo modelo termomecánico de la cadena de ensamblaje industrial hacia las redes electrocomputacionales diseminadas del capitalismo contemporáneo. Así, es posible considerar los algoritmos como parte de una línea genealógica que, como dice Marx en el "Fragmento sobre las máquinas", comienza cuando el capitalismo adopta la tecnología como capital fijo y la impulsa a través de varias metamorfosis, "la última de las cuales es la máquina o más bien un sistema automático de maquinaria […] puesto en movimiento por un autómata, por fuerza motriz que se mueve a sí misma".[5] El autómata industrial era claramente termodinámico y dio inicio a un sistema que "se compone de muchos órganos mecánicos e intelectuales, de tal modo que los obreros mismos sólo están determinados como miembros conscientes de tal sistema".[6] El autómata digital, por otro lado, es electrocomputacional, pone "el alma a trabajar" e implica en primer lugar al sistema nervioso y al cerebro y comprende "posibilidades de virtualidad, simulación, abstracción, retroalimentación y procesos autónomos".[7] El autómata digital se despliega en redes hechas de conexiones electrónicas y nerviosas, de modo que los usuarios mismos devienen transmisores cuasiautomáticos dentro de un incesante flujo de información. Es en este más amplio montaje, entonces, que los algoritmos deben ser situados cuando se discuten las nuevas formas de automatización.

[3] Mark Fisher, *Realismo capitalista: ¿No hay alternativa?*, Buenos Aires, Caja Negra, 2016; A. Williams y N. Smicek, "#Accelerate: manifiesto por una política aceleracionista".
[4] Karl Marx, "Fragmento sobre las máquinas", en *Elementos fundamentales para la crítica de la economía política (Grundrisse) 1857-1858*, vol, 2, México DF, Siglo XXI, 1972.
[5] Ibid., cursivas en el original.
[6] Ibid.
[7] Matthew Fuller (ed.), *Software Studies: A Lexicon*, Cambridge, MIT Press, 2008; Franco Berardi, *The Soul at Work: From Alienation to Autonomy*, Cambridge, MIT Press, 2009.

Citando un manual de informática, Andrew Goffey describe los algoritmos como "el concepto unificador de todas las actividades en las que se involucran los científicos informáticos [...] y la entidad fundamental con la que operan los científicos informáticos". [8] Un algoritmo puede ser definido provisionalmente como la "descripción del método mediante el cual se lleva a cabo una tarea" a través de secuencias de pasos o instrucciones, grupos de pasos ordenados que operan sobre datos y estructuras computacionales. Como tal, un algoritmo es una abstracción, "dotada de una existencia autónoma, independiente de lo que los científicos informáticos gustan de llamar 'detalles de implementación', es decir, su encarnación en un lenguaje de programación particular para una arquitectura de máquinas particular".[9] Puede variar en complejidad desde el más simple conjunto de reglas descrito en lenguaje natural (como las usadas para generar patrones coordinados de movimiento en las multitudes inteligentes [smart mobs]) hasta las más complejas fórmulas matemáticas, incluyendo todo tipo de variables (como el famoso algoritmo Monte Carlo usado para resolver problemas de física nuclear, más tarde aplicado a los mercados accionarios y ahora usado en el estudio de procesos de difusión tecnológica no-linear). Al mismo tiempo, para poder funcionar, los algoritmos deben existir como parte de ensamblajes que incluyen hardware, datos, estructuras de datos (como listas, bases de datos, memoria, etc.) y los comportamientos y acciones de los cuerpos. De hecho, para que el algoritmo llegue a ser software social, "debe obtener su poder como artefacto social o cultural y proceso por medio de una cada vez mejor adaptación a los comportamientos y a los cuerpos que acontecen en su exterior".[10]

Además, como los algoritmos contemporáneos son cada vez más expuestos a conjuntos de datos cada vez mayores (y a una creciente entropía en el flujo de datos, también conocido como Big Data), están, de acuerdo con Luciana Parisi, convirtiéndose en algo más que conjuntos de instrucciones a seguir: "cantidades infinitas de información interfieren con y reprograman procedimientos algorítmicos [...] y los datos producen reglas extrínsecas".[11] Por esta breve presentación, parece claro que los algoritmos no son ni un conjunto homogéneo de técnicas, ni una garantía de "la infalible ejecución de un orden y control automatizados".[12]

Con todo, desde el punto de vista del capitalismo, los algoritmos son principalmente una forma de "capital fijo", es decir, son simplemente medios de producción. Codifican una cierta cantidad de saber social (extraída de la que elaboran matemáticos, programadores, y también las actividades de los usuarios), pero no son valiosos por sí mismos. En la economía contemporánea, son valiosos solo en la medida en que permiten la conversión de tal saber en valor de cambio (monetización) y su (exponencialmente creciente) acumulación (los titánicos cuasimonopolios de la internet social). En la medida en que constituyen capital fijo, algoritmos como PageRank de Google o EdgeRank de Facebook aparecen "como supuesto frente al cual

[8] Andrew Goffey, "Algorithm", en Matthew Fuller (ed.), op. cit.
[9] Ibid.
[10] Matthew Fuller, "Introducción" en Fuller (ed.), op. cit.
[11] Luciana Parisi, Contagious Architecture: Computation. Aesthetics, Space, Cambridge, MIT Press, 2013.
[12] Ibid.

la fuerza valorizadora de la capacidad laboral individual desaparece como algo infinitamente pequeño", [13] y es por esto que las demandas de retribuciones individuales por el "trabajo gratuito" de los usuarios están mal conceptualizadas. Está claro que para Marx lo que necesita ser compensado no es el trabajo individual del usuario, sino los mucho más vastos poderes de la cooperación social que son así desencadenados, y que esta compensación implica una profunda transformación de la sujeción que la relación social que llamamos economía capitalista ejerce sobre la sociedad.

Desde el punto de vista del capital, no obstante, los algoritmos son simplemente capital fijo, medios de producción optimizados para la obtención de rendimiento económico. Lo cual, tal como ocurre con todas las técnicas y tecnologías, no significa que no sean más que eso. Marx afirma explícitamente que aunque el capital se apropie de la tecnología como la forma más efectiva de la subsunción del trabajo, eso no significa que no haya nada más que decir al respecto. Su existencia como maquinaria, insiste Marx, no es "idéntica a su existencia como capital [y] no se desprende, en modo alguno, que la subsunción en la relación social del capital sea la más adecuada y mejor relación social de producción para el empleo de la maquinaria". [14] Es esencial entonces recordar que el valor instrumental que los algoritmos tienen para el capital no agota el "valor" de la tecnología en general y de los algoritmos en particular, es decir, su capacidad para expresar no solo "valor de uso" como diría Marx, sino también valores estéticos, existenciales, sociales y éticos. ¿Acaso no fue la necesidad del capital de reducir el desarrollo del software a valor de cambio, marginalizando así los valores estéticos y éticos de la creación de software, lo que empujó a Richard Stallman y a innumerables hackers e ingenieros hacia los movimientos de software libre y de código abierto? ¿El entusiasmo que anima las hackmeetings y los hackerspaces no es acaso alimentado por la energía que se libera, con el fin de permanecer fiel a una estética y una ética personales de codificación, de las restricciones de "trabajar" en una compañía?

Contrariamente a algunas variantes del marxismo que tienden a identificar completamente a la tecnología con el "trabajo muerto", el "capital fijo" o la "racionalidad instrumental" y, por tanto, con el control y los dispositivos de captura, parece importante recordar que, para Marx, la evolución de la maquinaria indica también un nivel de desarrollo de los poderes productivos que son liberados pero nunca completamente contenidos por la economía capitalista. Lo que interesaba a Marx (y lo que hace su trabajo relevante todavía para aquellos que luchan por un modo de existencia postcapitalista) es la manera en que la tendencia del capital a invertir en tecnología para automatizar y, por tanto, para reducir los costos del trabajo al mínimo, potencialmente libera un "excedente" de tiempo y energía (trabajo) o un exceso de capacidad productiva en relación con el trabajo fundamental, importante y necesario de reproducción (una economía global, por ejemplo, debería primero que nada producir suficiente riqueza para que todos los miembros de la población planetaria fuesen adecuadamente alimentados, vestidos, curados y alojados). Sin embargo, lo que caracteriza a la economía capitalista es que este excedente de tiempo

[13] Karl Marx, op. cit.
[14] Ibid.

y energía no es simplemente liberado, sino que es reabsorbido constantemente en el ciclo de producción de valor de cambio, lo que conduce a la creciente acumulación de riqueza por parte de unos pocos (el capitalista colectivo) a expensas de muchos (las multitudes).

La automatización, desde el punto de vista del capital, debe siempre, por tanto, ser compensada con nuevos modos de controlar (o sea, de absorber y agotar) el tiempo y la energía así liberados. Debe producir pobreza y estrés donde debería existir riqueza y ocio. Debe hacer del trabajo directo la medida del valor aun cuando es evidente que la ciencia, la tecnología y la cooperación social constituyen la fuente de la riqueza producida. Esto conduce así inevitablemente a la destrucción periódica y generalizada de la riqueza acumulada, en las formas de agotamiento psíquico, catástrofe ambiental y destrucción física de la riqueza por medio de la guerra. Crea hambre donde debería haber saciedad, coloca bancos de alimentos a la vera de la opulencia de los súper ricos. Es por esto que la noción de un modo de existencia postcapitalista debe hacerse creíble, es decir, debe llegar a ser lo que Maurizio Lazzarato describe como un resistente foco de subjetivación autónomo. Un nuevo orden postcapitalista basado en el común puede apuntar no solo a una mejor distribución de la riqueza comparada con aquella insostenible que hoy existe, sino también a la recuperación del "tiempo disponible", esto es, tiempo y energía libres de trabajo para ser utilizados en desarrollar y profundizar la noción misma de lo que es "necesario".

La historia del capitalismo ha mostrado que la automatización en sí no ha reducido la cantidad ni la intensidad del trabajo exigido por gerentes y capitalistas. Por el contrario, en la medida en que la tecnología es para el capital solo un medio de producción, cuando el capital ha podido implementar otros medios, no ha innovado. Por ejemplo, las tecnologías industriales de automatización en la fábrica no parecen haber experimentado recientemente ningún avance importante. La mayor parte del trabajo industrial actual continúa siendo sustancialmente manual, automatizada únicamente por estar enlazada a la velocidad de las redes electrónicas de prototipado, marketing y distribución; y no deviene económicamente sostenible sino por medios políticos, es decir, explotando diferencias geopolíticas y económicas (arbitraje) a escala global y controlando los flujos migratorios a través de nuevas tecnologías en las fronteras. En la mayor parte de las industrias de hoy se verifica una explotación intensificada, que genera un modo de producción y consumo empobrecido, nocivo tanto para el cuerpo, la subjetividad y las relaciones sociales como para el ambiente. Como Marx afirma, el tiempo disponible liberado por la automatización debería permitir un cambio en la esencia misma de lo "humano", de manera que la nueva subjetividad pueda volver a desarrollar el trabajo necesario de tal modo que redefina lo que es preciso y lo que es necesario.

No se trata simplemente de abogar por un "retorno" a tiempos más simples, sino al contrario, se trata de reconocer que producir alimentos y alimentar poblaciones, construir refugio y vivienda, enseñar e investigar, cuidar de los niños, los enfermos y los ancianos requiere de la movilización de la invención y la cooperación sociales. Así, se pasa de un proceso de producción por los muchos (sumidos en el empobrecimiento y el estrés) para los pocos, a uno en el que los muchos redefinen el significado de lo

que es necesario y valioso, al tiempo que inventan nuevas maneras de alcanzarlo. En cierto sentido esto corresponde a la noción de "commonfare", elaborada recientemente por Andrea Fumagalli y Carlo Vercellone, que implica, en palabras de este último, "la socialización de la inversión y del dinero y la pregunta por las formas de administración y organización que permiten una auténtica reapropiación democrática de las instituciones del estado de bienestar [...] y la reestructuración ecológica de nuestros sistemas de producción".[15] Debemos preguntar entonces no solo cuál automatización algorítmica funciona hoy (principalmente en términos de control y monetización, alimentando la deuda económica) sino también qué clase de tiempo y energía esa automatización subsume y cómo podría funcionar una vez adoptada por agrupaciones sociales y políticas diversas y autónomas no subsumidas por, o sometidas a, el ímpetu capitalista de acumulación y explotación.

El *Red Stack*: dinero virtual, redes sociales, bio-hipermedia

En una intervención reciente, el teórico político y experto en medios digitales Benjamin H. Bratton ha argumentado que estamos asistiendo a la emergencia de un nuevo nomos de la Tierra, en el que las viejas divisiones sociopolíticas vinculadas a los poderes territoriales soberanos se intersectan con el nuevo nomos de internet y de las nuevas formas de soberanía que se extienden en el espacio electrónico.[16] Este nuevo y heterogéneo nomos supone la superposición de gobiernos nacionales (China, Estados Unidos, la Unión Europea, Brasil, Egipto y similares), instituciones transnacionales (el FMI, la OMC, los bancos europeos y ONG'S de varios tipos), y corporaciones como Google, Facebook, Apple, Amazon, etc., que producen patrones diferenciados de adaptación recíproca marcados por momentos de conflicto. Echando mano de la estructura organizativa de las redes informáticas o de "el modelo OSI, en el cual el conjunto de protocolos TCP/IP y la internet global misma están indirectamente basados", Bratton ha desarrollado el concepto y/o prototipo del "stack" para definir las características de "un posible nomos nuevo de la tierra que vincule a la tecnología, la naturaleza y el humano".[17] El stack soporta y modula una especie de "cibernética social" capaz de crear "tanto equilibrio como emergencia". Como "megaestructura", el stack implica la "confluencia de complejos sistemas de sistemas de material-información, interoperables y basados en estándares, organizados según un modelo topográfico de corte vertical, de capas y protocolos [...] compuesto en igual medida de capas sociales, humanas y 'analógicas' (fuentes de energía tectónica, gestos, afectos, usuarios actuantes, interfaces, ciudades y calles, habitaciones y edificios, envolturas orgánicas e inorgánicas) y estratos de información computacionales y 'digitales' no-humanos

[15] Carlo Vercellone, "From the crisis to the 'commonfare' as new mode of production", en especial la sección sobre la Eurocrisis, Giso Amendola, Sandro Mezzadra y Tiziana Terranova (ed.), *Theory, Culture and Society*, en curso de publicación; también Andrea Fumagalli, "Digital (Crypto) Money and Alternative Financial Circuits: Lead the attack to the heart of the State, sorry, of financial market", *Effimera*, 2014, effimera.org/digital-crypto-money-and-alternative-financial-circuits-lead-the-attack-to-the-heart-of-the-state-sorry-of-financial-market-by-andrea-fumagalli/.

[16] Benjamin Bratton, "On the Nomos of the Cloud" en *The Stack: On Software and Sovereignty*, Boston, MIT Press, 2016.

[17] Ibid.

(cables de fibra óptica multiplexados, centros de procesamiento de datos, bases de datos, estándares y protocolos de datos, redes a escala urbana, sistemas integrados, universal addressing tables)".[18]

En esta sección, utilizando el prototipo político de Bratton, quiero proponer el concepto de "red stack", es decir, un nuevo nomos para el común postcapitalista. Para materializar el red stack se requiere abordar tres niveles (por lo menos) de innovación sociotecnológica: el dinero virtual, las redes sociales, y los bio-hipermedia. Estos tres niveles, aunque "apilados" ["stacked"], interactúan simultáneamente de manera transversal y no-lineal. Constituyen, además, una vía posible para pensar una infraestructura de automatización que vincule tecnología y subjetivación.

Dinero virtual

Como lo afirman Christian Marazzi y otros, la economía contemporánea está fundada en una forma de dinero que ha sido transformada en una serie de signos, sin referente fijo para anclarlos (como lo fue el oro), explícitamente dependiente de la automatización computacional de los modelos de simulación, de los medios de exhibición automática de datos en pantalla (índices, gráficos, etc.) y del comercio algorítmico (transacciones de bot a bot) como su modo emergente de automatización.[19] Como también afirma Toni Negri, "el dinero ha adquirido hoy –en cuanto máquina abstracta– la función singular de medida suprema de los valores extraídos de la sociedad en la subsunción real de esta en el capital".[20] Dado que la propiedad y el control del capital-dinero (que, como nos recuerda Maurizio Lazzarato, es diferente del salario-dinero en su capacidad para ser usado no solo como medio de intercambio, sino como medio de inversión, empoderando ciertos futuros sobre otros) son cruciales para mantener poblaciones atadas a la actual relación de poder, ¿cómo podemos transformar el dinero financiero en dinero del común? Un experimento como bitcoin demuestra que de cierta forma "el tabú del dinero ha sido quebrado"[21] y que más allá de los límites de esta experiencia, hay bifurcaciones que se están ya desarrollando en distintas direcciones. ¿Qué clase de relación se puede establecer entre los algoritmos del dinero-creación y "una práctica constituyente que afirme otros criterios de medición de la riqueza, valorizando fuera de la lógica financiera viejas y nuevas necesidades colectivas"?[22] Las actuales tentativas para desarrollar nuevas formas de criptomoneda deben ser juzgadas, valoradas y repensadas con base en la pregunta planteada por Andrea Fumagalli: ¿la moneda creada se limita a ser solo

[18] Ibid.

[19] Christian Marazzi, "Money in the World Crisis: The New Basis of Capitalist Power", https://libcom.org/book /export/html/413.

[20] Antonio Negri, "Reflexiones sobre el 'Manifiesto por una Política Aceleracionista'", Armen Avanessian, Mauro Reis *et al*., *Aceleracionismo*, Buenos Aires, Caja Negra, 2017

[21] Denis Jaromil Rojo, "Bitcoin, la fine del tabù della moneta", *Effimera*, 2014, http://effimera.org/bitcoin-la- fine-del-tabu-della-moneta-di-denis-jaromil- roio/.

[22] Stefano Lucarelli, "Il principio della liquidità e la sua corruzione. Un contributo alla discussione su algoritmi e capitale", *Effimera*, 2014, http://effimera.org/il-principio-della-liquidita-e-la-sua-corruzione-un-contributo- alla-discussione-su-algoritmi-e-capitale-di-stefano-lucarelli/.

un medio de intercambio o puede también afectar al ciclo completo de la creación del dinero, desde las finanzas hasta el intercambio?[23] ¿Permite la especulación y el acaparamiento, o promueve la inversión en proyectos postcapitalistas y facilita la liberación de la explotación, la autonomía de la organización, etc.? Lo que es cada vez más claro es que los algoritmos son una parte esencial del proceso de creación del dinero del común, pero también que en los algoritmos hay política (por ejemplo, la política de género del mining individual y la política del conocimiento técnico y la maquinaria complejos implicados en el mining de las bitcoins). Además, el impulso de automatizar completamente la producción del dinero con la intención de evitar las falacias de factores subjetivos y relaciones sociales puede provocar la reaparición de esas mismas relaciones en la forma de comercio especulativo. De la misma manera en que el capital financiero está intrínsecamente vinculado a cierto tipo de subjetividad (el predador financiero retratado por Hollywood), una forma autónoma de dinero debe ser insertada en y ser productora de una nueva forma de subjetividad no limitada al ambiente hacker en cuanto tal, sino orientada al mismo tiempo, no hacia la monetización y la acumulación, sino hacia el empoderamiento de la cooperación social. Otras preguntas que el diseño del dinero del común puede implicar son: ¿es posible servirse de la actual financiarización de las corporaciones de internet como Google (con su programa Adsense/Adword) para sustraer dinero del circuito de acumulación capitalista y transformarlo en dinero capaz de financiar nuevas formas de commonfare (educación, investigación, salud, ambiente, etc.)? ¿Qué lecciones aprender de los modelos de financiación colectiva [crowdfunding] y de sus límites para pensar nuevas formas de financiamiento de proyectos autónomos de cooperación social? ¿Cómo podemos perfeccionar y extender experimentos como los efectuados por el movimiento InterOccupy durante el huracán Katrina, transformando las redes sociales en redes de financiación colectiva que pueden ser usadas como infraestructura logística capaz de movilizar no solo información, sino también bienes materiales?[24]

Redes sociales

En la última década, los medios digitales han sufrido un proceso de socialización que ha introducido innovación genuina respecto a formas previas de software social (listas de distribución, foros, dominios multiusuario, etc.). Si las listas de distribución, por ejemplo, se inspiraron en el lenguaje comunicativo de enviar y recibir, las redes sociales y la difusión de plugins sociales (propietarios) han convertido la relación social misma en el contenido de nuevos procedimientos computacionales. Cuando se manda y se recibe un mensaje, podemos decir que los algoritmos operan fuera de la relación social en sí, en el espacio de la transmisión y la distribución de mensajes; pero el software de la red social interviene directamente en la relación social. De hecho, las tecnologías digitales y las redes sociales "cortan al interior" de la relación social misma,

[23] Andrea Fumagalli, "Commonfare: Per la riappropriazione del libero accesso ai beni comuni", *Doppio Zero*, 2014, http://www.doppiozero.com/materiali/quinto-stato/commonfare.

[24] Common Ground Collective, "Common Ground Collective, Food, not Bombs and Occupy Movement form Coalition to help Isaac & Kathrina Victims", Interoccupy.net, 2012, http://interoccupy.net/blog/common-ground-collective-food-not-bombs-and-occupy-movement-form-coalition-to-help-isaac-katrina-victims/.

es decir, hacen de ella un objeto separado e introducen una nueva relación suplementaria.[25] Si entendemos, como hicieron Gabriel Tarde y Michel Foucault, la relación social como una relación asimétrica que comprende al menos dos polos (uno activo y el otro receptivo) y se caracteriza por un cierto grado de libertad, podemos pensar en acciones como agradar y ser agradado, escribir y leer, mirar y ser mirado, etiquetar y ser etiquetado, y hasta comprar y vender como tipos de conducta que transindividuan lo social (inducen el pasaje de lo preindividual a lo colectivo a través de lo individual). En las redes y los plugins sociales, estas acciones son convertidas en objetos técnicos separados (como botones, cajas de comentarios, etiquetas, etc.) que son entonces vinculados con estructuras de datos subyacentes (por ejemplo el grafo social) y sujetos al poder de clasificación de los algoritmos. Esto produce la modalidad espaciotemporal característica de la actual socialización digital: el feed, un flujo algorítmicamente personalizado de opiniones, creencias, afirmaciones, deseos expresados en palabras, imágenes, sonidos, etc. Frecuentemente despreciadas por la teoría crítica contemporánea por su efecto supuestamente homogeneizador, estas nuevas tecnologías de lo social, sin embargo, también abren la posibilidad de experimentar con la interacción "muchos-para-muchos" y, por tanto, con los procesos mismos de individuación. Los experimentos políticos (véanse los varios partidos centrados en internet como el Movimiento 5 Estrellas, el Partido Pirata, el Partido X) se sirven de estas nuevas estructuras sociotécnicas para producir procesos masivos de participación y deliberación; pero, como ocurre con bitcoin, también muestran los procesos de difícil resolución que vinculan la subjetivación política a la automatización algorítmica. No obstante, pueden funcionar porque se sirven de nuevos conocimientos y habilidades ampliamente socializadas (como construir un perfil, cultivar un público, compartir y comentar, hacer y subir fotos, videos, notas, publicitar eventos) y en "habilidades blandas" de expresión y relación (humor, argumentación, discusión) que no son intrínsecamente buenas o malas, pero que presentan una serie de posibilidades o grados de libertad de expresión para la acción política que no pueden ser abandonados a los monopolios capitalistas y que pueden migrar hacia nuevas plataformas, y nuevos usos y servicios.

Bio-hipermedia

El término bio-hipermedia, acuñado por Giorgio Griziotti, identifica la relación, todavía más íntima, entre cuerpos y dispositivos que es parte de la difusión de los smartphones, las tabletas y la computación ubicua. Mientras las redes digitales abandonan la centralidad de las máquinas de escritorio y las laptop en favor de dispositivos más pequeños y portables, emerge un nuevo paisaje social y técnico alrededor de las "aplicaciones móviles" ["apps"] y las "nubes" que directamente "influye en el modo en que sentimos, percibimos y entendemos el mundo".[26] Bratton

[25] Bernard Stiegler, "The Most Precious Good in the Era of Social Technologies", en Geert Lovink y Miriam Rasch (ed.), *Unlike Us Reader: Social Media Monopolies and Their Alternatives*, Amsterdam, Institute of Network Culture, 2013, http://networkcultures.org/blog/publication/unlike-us-reader-social-media- monopolies-and-their-alternatives/.

[26] Giorgio Griziotti, "Biorank: Algorithms and Transformations in the Bios of Cognitive Capitalism", *Effimera*, 2014,

define las aplicaciones móviles para plataformas como Android y Apple como interfaces o membranas que vinculan dispositivos individuales con una gran base de datos almacenada en una "nube" (centros masivos de almacenamiento y proceso, propiedad de grandes corporaciones).[27] Esta continuidad topológica ha permitido la difusión de aplicaciones descargables que modulan cada vez más la relación entre cuerpos y espacio. Tales tecnologías no solo "se adhieren a la piel y responden al tacto" (como ha escrito Bruce Sterling), sino que crean nuevas "zonas" alrededor de los cuerpos que ahora se mueven a través de "espacios codificados" entretejidos con información, capaces de localizar otros cuerpos y lugares al interior de mapas de información visuales e interactivos. Los nuevos ecosistemas espaciales que emergen en el cruce entre lo "natural" y lo artificial permiten la activación de un proceso de cocreación caosmótica de la vida urbana.[28] Podemos ver aquí de nuevo cómo las aplicaciones son, para el capital, un medio para "monetizar" y "acumular" datos sobre el movimiento del cuerpo mientras lo subsumen aún más hondamente en redes de consumo y vigilancia. De cualquier modo, esta subsunción del cuerpo móvil bajo el capital no implica necesariamente que este sea el único uso posible de estas nuevas posibilidades tecnológicas. Convertir los bio-hipermedia en componentes del red stack (la forma de reapropiación del capital fijo en la era de lo social en red) implica reunir la actual experimentación con el hardware (las tecnologías hacker de los teléfonos de Shenzhen, los movimientos de "hacedores") capaz de respaldar una nueva generación de "aplicaciones imaginarias" (piensen, por ejemplo, en las aplicaciones concebidas por el colectivo artístico Electronic Disturbance Theatre, que permiten a los migrantes superar los controles de frontera, o las aplicaciones capaces de rastrear el origen de una mercancía, los grados de explotación que contiene, etc.).

Conclusiones

Este breve ensayo, síntesis de un proceso de investigación más amplio, busca proponer una estrategia diferente para la construcción de una infraestructura maquínica de lo común. La idea básica es que las tecnologías de la información, en las que los algoritmos son un componente central, no constituyen simplemente una herramienta del capital, sino que simultáneamente construyen nuevas potencialidades para formas de gobierno postneoliberales y modos de producción postcapitalistas. Aquí se trata de abrir posibles líneas de contaminación entre los grandes movimientos de programadores, hackers y hacedores envueltos en un proceso de recodificación de las arquitecturas de red y las tecnologías de la información basado en valores diferentes a los del cambio y la especulación, pero también de reconocer el amplio proceso de alfabetización tecnosocial que recientemente ha alcanzado a grandes franjas de la

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http://effimera.org/biorank-algorithms-and-transformation-in-the-bios-of-cognitive-capitalism-di-giorgio-griziotti/; también Stamatia Portanova, *Moving without a Body*, Boston, MA, MIT Press, 2013.

[27] Benjamin Bratton, "On Apps and Elementary Forms of Interfacial Life: Object, Image, Superimposition", en Paul D. Miller y Svitlana Matviyenko (ed.), *The Imaginary App*, Boston, MA, MIT Press, 2014.

[28] Salvatore Iaconesi y Oriana Persico, "The Co-Creation of the City: Re-programming Cities Using Real-Time User-Generated Content", http://www.academia.edu/3013140/The_Co-Creation_ofthe_City.

población mundial. Se trata, entonces, de producir una convergencia capaz de extender el problema de la reprogramación de internet lejos de las recientes tendencias hacia la corporatización y la monetización a expensas de la libertad y el control de los usuarios. Vincular la comunicación bioinformacional con temas tales como la producción del dinero del común capaz de socializar la riqueza, contra la tendencia actual hacia la privatización, la acumulación y la concentración, y afirmar que las redes sociales y las competencias comunicacionales difusas pueden también funcionar como medios para organizar la cooperación y producir nuevos conocimientos y valores, significa buscar una nueva síntesis política que nos aparte del paradigma neoliberal de deuda, austeridad y acumulación. Esto no es una utopía, sino un programa de invención de algoritmos sociales constituyentes del común.