Capital & Class

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The current crisis and the response of socialists

Editorial Board of Capital & Class

The crisis of global capitalism, which started as an apparently financial crisis from summer 2007, has since summer 2008 become a manifest crisis of 'the real economy', of productive and commercial capital. At the time of writing, November 2008, this is already taking a severe toll on the employment and incomes of working class people throughout the world. The crisis first manifested itself in the US and Britain, whose domestic economies are now in recession; but it is now hitting a number of medium-income countries (Eastern Europe, Turkey and the financial centres of the Post-Soviet States) and lower income countries (notably the melt down of Pakistan, and huge layoffs of labour in China).

Reductions in employment, including through redundancies, and downward pressure on wages, state transfer incomes and welfare service spending will become widespread. In this situation, Marxists have a particular responsibility: to analyse the causes of the crisis and its unfolding forms, and to debate strategies for protecting the living standards of working class people worldwide and for building their mutual solidarity.

As a result, the potential audience for Marxist ideas has, indeed, enormously increased. The efficiency of free markets in capital and commodities, and the idea that the market is the only feasible mechanism for regulating a complex economy, have been brought into question, particularly by the massive support to financial capital by the major states. Central ideas of Marxism have taken on a new credibility and urgency: the inevitability of crises; capital's undermining of itself even - and especially - in a period

of output expansion; and conflict between capital and labour over who should pay for crises.

At the same time, dominant political discourse and orthodox analysis portrays the crisis as a result of the exceptional 'greed' and 'excessive risk-taking' of the leaders of the financial system, and 'mistakes' in states' regulation of it. In our view this is an utterly superficial explanation: the crisis is not merely of finance but of the capitalist system as a whole; and it has arisen not from technical errors of governments but from contradictions of capital accumulation and associated class struggle.

Capital & Class aims to play a significant role in the analysis of the crisis and in developing alternative strategies for change. We welcome submission of articles for publication on these themes. To expedite more informal and timely contributions, our website is carrying interventions from CSE members: see the list of postings on http://bit.ly/cselist

Parallel visions of peer production

Phoebe Moore and Athina Karatzogianni

The 'parallel visions' proposed by the contributing authors to this issue are intended to challenge the dominant themes of capitalist organisation and production through an in-depth look at the peer-to-peer production and development of software and sharing – a movement which, the authors argue, is based on new visions for value systems, ethics and governance. We have organised their contributions into sections based on the relevant aspects of these economies in order to look into the politics of how these networks are governed, the likelihood of new avenues for worker organisation, and the possibilities for entirely new models of economies that can be classified outside the hegemony of contemporary neoliberal capitalism.

This special issue, therefore, engages with the work of academics and practitioners working in the areas of new media, politics, the global political economy, business, international copyright law, information technology and computer science, digital media, sociology and cybercultural movements, as well as with the new forms of organisations and discussions emerging in organisational-theory-related fields. The peer-to-peer politico–economic model is currently having a great impact on business, media and global politics, to the extent that social-democratic movements have taken notice of the potential of the new technoscape for societal change, just as governments are engaging more and more with the financial benefits, challenges and threats of these informal communities and skills-development environments.

Specifically, and relating to the title of this issue, peer-to-peer is about passionate production. One of the most relevant examples of peer-to-peer production is constituted by the open-

source (www.opensource.prg) and free software movements (www.fsf.org). These forms of egoless programming facilitate and enable communities to build on each other's code, software and applications with remarkable results that can be used freely and improved upon by anyone. The networked environment through which these communities operate enables the development of technology that competes with that of multinational corporations like Microsoft. Distributed using a powerful, simple organisational model, free software facilitates local economies, harnessing innovation and allocating scarce resources in a sustainable fashion.

New economies of production?

A range of new economies can be theorised through the lens of peer-to-peer production networks, which are becoming increasingly influential in their defiance of the status quo in market based economies. In his piece 'The ethical economy', Adam Arvidsson notes a new economy that has been taking an 'ethical' dimension, in particular in the realm of informational capitalism, and looks into the way in which resistance to capital emerges from new forms of cooperation within capitalist organisation, provocatively asking, who decides whether ethics can exist within capitalism? Arvidsson looks at Marx's concept of the 'general intellect', or the idea that as capitalism develops, cooperation expands simultaneously with the expansion of capitalism in the subsumption of everyday lives, and cooperation becomes a source of value in itself. This shared sense of value could lead to the re-politicisation of capitalism.

In the subsequent piece, 'The political economy of reciprocity and the partner state', Cosma Orsi looks at the new economy of reciprocity in his account of its alternative approach to production and distribution. Beyond merely accepting the logic of having to correct market failures, as a liberal egalitarian welfare model proposes, Orsi claims that the primary aim of the political economy of reciprocity is to bring the notions of mutual cooperation for the common good back into the very heart of economic rationality. Orsi calls for a model of development according to which a more fundamental role should be given to civil society, rather than its being geared around the market–state pair. Such a model entails the existence of a market economy within which profit-oriented enterprises operate; a non-market economy, within which governmental agencies have the mandate to

fairly redistribute both social power and material resources; and finally, an economic domain of reciprocal solidarity which is social and associative. Apparently, in order to implement such an approach to wealth creation, it will be necessary that political, social and economic institutions should not assign the prius logico to utilitarian economic rationality. Rather, they should endorse a model of development for which concepts such as economic efficiency, profit and competitiveness would cease to be the sole guiding stars of economic activity.

The final piece in this section, 'Germ form theory: Peer production in a historical perspective', by Stefan Merten and Stefan Meretz, asks the fundamental question of how development can be conceived. At what point does the quantitative become a qualitative process? This highly theoretical piece designs a 'five-step model' for understanding change and development, and demonstrates how peer-to-peer production provides the possibilities for the overcoming and transformation of capitalism.

Organisation and labour struggle?

This section looks at the people involved in peer-to-peer and open-source software. George Dafermos and Johan Soderberg, in their piece 'Hacking alienation: The hacker movement as a continuation of labour struggle', make an inquiry into peer production based on large free/open-source software projects such as GNU/Linux, Apache, Mozilla and FreeBSD. Not only are free software developers producing computer technology, but in the process they are also constructing an alternative model for labour organisation. The authors argue that this practice has the potential to abolish the theoretical as well as the historical basis of alienated work.

Steffen Boehm and Chris Land capture this argument in 'No accounting for culture? Value in the new economy' through an exploration of the articulation of the value of investment in culture and the arts, through a critical discourse analysis of policy documents, reports and commentary since 1997. They argue that, in this period, discourses around the value of culture have moved from a focus on the direct economic contributions of the culture industries to their indirect economic benefits. Indirect benefits are discussed under three main headings: creativity and innovation, employability, and social inclusion. These in turn are analysed in terms of three forms of capital: human, social and cultural. The paper concludes with an analysis of this discursive shift through the lens of an autonomist Marxist concern with the labour of social reproduction.

In the final article of the section, Phoebe Moore and Paul A. Taylor look at the potential for open source to become an alternative arena for production — one that overcomes values inherent in post-Fordist capitalism, in particular those that proselytise individual self-improvement as being linked to employability and learning. In their piece, 'Firm foundations or workers' freedoms? The political economy of open source', Moore and Taylor ask whether the specific ingredients of peer-to-peer production lead to worker organisation in ways that challenge dominant paradigms of capital. Using a series of interviews with programmers, they demonstrate that peer-to-peer production does not overcome the restrictive elements of capitalism, such as competition and exploitation of the surplus value of labour, since although many peer-to-peer programmers participate in peer-to-peer communities for no remuneration at all, they may do so for the sake of re-entry into the labour market as employed programmers, often within the mainstream monopoly, Microsoft.

Social change

In his paper 'Class and capital in peer production', Michael Bauwens engages with the meaning of peer-to-peer for social change, new life practices and post-capitalist/post-democratic politics in relation to the emerging ethical economy. Following a review of the basic concepts, Bauwens addresses the political implications of peer production, in particular in terms of class and what it means in terms of social change strategies. Can the forces associated with the new life and economic practices of peer production, governance and property be the motor of a change towards a post-capitalist, post-democratic and post-ownership-based form of political economy and human civilisation? The essay also examines how the emerging ethical economy of esteem is related to monetisation strategies, thereby creating a crisis of value.

In 'Cryptohierarchies, soft control and group polarisation in networked communities', Athina Karatzogianni and George Michaelides argue that open source and peer-to-peer technologies, by encouraging personalised free access and the production of news, information and more software for the user, citizen and consumer, are creating the impression that another direct, networked, empowered and democratic society is possible. Nevertheless, despite significant efforts and progress towards proprietary systems, the claims for the revolutionary potential of these practices that have been made in the broader global political landscape by political theorists and activists alike, ought to be

looked at more soberly. This paper examines open source and peer-to-peer environments, looking at issues of cryptohierarchies, conflict, control and group polarisation in an effort to understand whether equality, direct participation, decentralisation and autonomy are part of the actual everyday life of these communities, or just part of their organisational philosophies.

In the same vein, in 'A definition and critique of cybercommunism', Tere Vaden discusses the conditions of restraint and freedom in open-source communities and provides empirical examples to support his thesis that new ethics or modes of knowledge production have initiated but also reasserted the very old-fashioned trends of profit-making and the colonialisation of knowledge. Whether celebrators of flux or prophets of cybercommunism, hackers still need to eat, and they need electricity for their machines of immaterial labour. If we analyse the current trends in some of the crown jewels of the free/open-source movement, such as GNU/Linux development and Wikipedia, we quickly notice that not only is a new ethics or mode of knowledge production initiated but also very old-fashioned trends of profit-making and the colonialisation of knowledge are reasserted. Consequently, for a more full definition and a more precise critique of cybercommunism, we need to pay attention to the various levels of freedom with which self-organising knowledge is conditioned.

The ethical economy: Towards a post-capitalist theory of value

Adam Arvidsson

Abstract

Social production has risen on the agenda of the social sciences. Yet most observers have been reluctant to confront the question of the value of these practices. Instead they have mostly been characterised as 'free', 'common' or beyond value. This article argues that far from being free, social production abides to a particular value logic, an 'ethical economy' where value is related not to the input of labour time, but to the ability to give productive organisation to a diffuse connectivity or, which is the same thing, to transform weak ties into affectively significant strong ones. The article concludes that progressive politics should work with this new emerging value logic.

In recent years, what Yochlai Benkler (2006) and many others have called 'social production' has been established as a powerful social and economic fact. Although most material production follows the monetary logic of a still hegemonic capitalist economy, immaterial production, the strategically central production of knowledge, affect and social relations, is increasingly performed according to a different logic, and does not primarily move according to monetary incentives. Such social production of immaterial wealth is nothing new: the nineteenth-century industrial revolution, for example, was largely driven by a similar diffuse production of technological know-how (see Mokyr, 2002). However, it has become strategically central in new and powerful ways. There are two main reasons for this. One, the progressive mediatisation of the social (culminating in the diffusion of networked Information and

communication technologies) and accompanying new forms of social organisation (the existential centrality of what Alain Touraine [1969] called *auto-géstion*) have effectively socialised the means of immaterial production, putting them at the direct disposition of the computer-literate multitude. Social production has at the same time been greatly empowered, and liberated from direct capitalist command. Two, the mediatisation of capitalist production (beginning in the 1970s with the large-scale diffusion of computers and intranets) has brought about a number of crucial transformations, such as the automation of material production; the social and geographical extension of the value chain; the speeding up of circulation; and the growing financialisation of value (Barbrook, 2007). These trends have combined to make such user-generated immaterial wealth ever more central to both short-term profits and long-term strategy. There is, in other words, an emerging archipelago of social production that is affirming itself as an important social, political and economic reality both 'inside' and 'outside' the capitalist system: for instance, in the expanding area of self-organised autonomous production systems such as community based agriculture (McKibben, 1997). At the same time, it is seems that the capitalist economy as we know it is becoming less and less able to guarantee the satisfaction of basic needs — food and energy, for example — on which its legitimacy ultimately rests. This scenario of a declining social utility of the capitalist economy combined with a growing legitimacy crisis and, at the same time, the growth of an archipelago of self-organised forms of social production, has profound implication for the kinds of futures we can imagine for the twenty-first century. Are we in the midst of the transition from one economic system to another, post-capitalist one, or at the verge of a radical reform of capitalism as we know it? The most important question at this point is whether this archipelago of social production can be understood as a (however embryonic) manifestation of a new *economy*. That is, do these phenomena contain the possibility of a new, rational way of organising social and economic processes, making their outcome tradable on a world market and determining their relative value? Can social production work according to a new law of value?

With few exceptions (Albert, 2003; Siefkes, 2007) there has been a widespread reluctance to confront the question of the value of social production amongst academics, the many business consultants who have written on the subject, and the 'movement intellectuals' who have emerged from the realities of open-source, peer-to-peer or social movements alike. There are different reasons for this. One is that the question might be premature: social production is as yet in

its infancy, and other things seem to be in more urgent need of understanding and analysis. Indeed, for the many observers for whom the concerns of the business community form their main preoccupation (Tapscott & Williams, 2006; von Hippel, 2005), the question of whether the archipelago of social production contains a proper value logic or not is not of much interest. Their concern is rather to show how such new forms of production can be appropriated by business and subsumed under a traditional (if increasingly fragile) capitalist logic of value. In their accounts, social production appears almost as a natural resource to be freely appropriated, or, to use Alvin and Heidi Toffler's words, as a 'free lunch for business' (Toffler & Toffler, 2006). For liberal observers like Yochlai Benkler, who come from the established tradition of academic economics, the question of value is simply meaningless. Within this tradition, at least since the eighteenth-century writings of Jean-Baptiste Say, the only meaningful definition of value is that of market price. Benkler argues that the growth of social production — what he calls a 'networked information economy' — will mean that a growing amount of resources will change hands outside the market, and by definition thereby without there being any *value* attached to them. These resources will instead be open and free, *'subject to an increasingly robust ethic of open sharing, open for all others to build on, extend and make their own'* (Benkler, 2006: 7). Many Marxist (or post-Marxist) observers arrive at the same conclusion, and for similar reasons. For them, value must, per definition, be connected to (some form of) investment of labour time. Since this 'labour theory of value' hardly applies to social production, in which labour power is for all means and purposes abundant and hence without value, their conclusion is that such forms of production are 'beyond value' (Negri, 1999). Instead, this tradition imagines a 'circulation of commons' of non-proprietary resources that are freely and openly available for appropriation (Dyer-Witheford, 2006). Sometimes the idea is that the transition to such a value-free system of production and distribution will be accompanied by an overall transformation of consciousness: a *'humanity evolving from a civilization based on exchange to one based on "contribution"'* (Orsi, 2008; Bauwens, 2005), and that, in a somewhat utopian manner, this evolution in consciousness will annihilate any serious conflict or contradiction. This article will claim, however, that there is an emerging value logic proper to social production, and that it is different from the labour theory of value that governed industrial capitalism. Indeed, this new 'law of value' describes a situation in which, as Marx envisioned in the 'fragment on machinery' in the *Grundrisse*, 'The theft of alien labour time, on which the present wealth is based, appears a miserable foundation'

for the creation and measure of social wealth (Marx, 1973 (1939): 705). This text constitutes an attempt at a brief outline of the core features of such an emerging *ethical economy.*

First, however, let us spend a moment on the concept of 'value'. Value can be simplistically defined as a 'social importance': the weight that a society gives to an object or an issue.[1] Under ideal conditions — conditions of complete rationality, transparency and information — value should be reflected in market price or at least, in long-term market equilibrium: another utopia. However, value is different from price: it is more like the normative guideline for price, rather like Aristoteles's notion of 'just price'. Since value is a normative concept, it follows that standards of value are socially constructed: they are the result of political struggles and, consequently, they vary from one social formation to another. Industrial capitalism operated with a standard of value that was based on productive time, chiefly labour time (a standard resulting from and that was institutionalised through the Fordist compromise between capital and labour). Thus social redistribution could be normatively oriented around the productivity of labour time. The neoliberal reaction of the past twenty years has been organised around a systematic denial of any distinction between value and price. The result has been a 'market society' in which the only acceptable mechanism for social distribution is the market and its fluctuations. Today, we see a reaction against this. Outside the business world proper, this takes the form of the emergence of social production and the massive demand for products and processes that reflect values other than market price, such as 'ethical' or 'fair-trade' goods. Within the business world, it takes two forms: an emerging consciousness both of the basic inadequacy of monetary rewards as incentives, particularly for highly skilled knowledge-workers (Halal, 1996), and a growing awareness of the inability of market prices to reflect the real productive power and social value of an organisation and its resources. The latter issue is known as the problem of 'intangibles' (Blair & Wallman, 2001). There is an emerging consciousness that the absence of an adequate theory of value makes for poor management of these resources, poor business strategy and, at the societal level, poor governance. So the search for a theory of value is also a search for a political rationality.

Ethical capital

The best place to start our quest for a new value logic is with the actually existing new value forms that have crystallised around social production. Contemporary 'cognitive' (Vercellone, 2006) or

'informational' (Lash, 2002) capital is ever more dependent on social production to generate value and profits. Within its measurement systems, this dependency is accounted for as 'intangibles'. The relative weight of intangibles within the world economy has increased steadily since the 1950s, and some measures, like that of the World Bank (2006), estimate intangibles to make up a huge 70 per cent of the world's wealth. While there are many definitions of intangibles — almost as many as there are consultancy firms proposing ways to measure this asset — most of these definitions can be subsumed within three categories: 'knowledge', 'brand' and 'flexibility'. 'Knowledge' stands both for the codified and for the tacit knowledge at a firm's disposal. This can be a matter of codified patents or other intellectual property rights; and often it is a matter of the implicit know-how and tacit knowledge embodied in social processes. 'Brand' stands for the affectively significant relations that a company is able to install with its stakeholders, consumers, employees, sub-contractors and the public at large. This would include such things as reputation, goodwill and perceptions of social responsibility. 'Flexibility', finally, stands for the ability of a company to respond quickly to market changes, to 'breathe with the market' (Marazzi, 1999).

The production of these three kinds of intangible assets has two common traits. First, it is matter of putting to work commonly available, socialised competences — what Marx called 'general intellect' (Fumagalli, 2007). While some intellectual property might result from the salaried labour of engineers and scientists in corporate research and development (R&D) departments, the general trend is for R&D departments to become ever more dependent on social knowledge production through user-led innovation schemes, or through the clever utilisation of transversal communities of practice (as in the case of the Linux and other open-source products now receiving substantial corporate support). Even when this is not the case, corporate R&D has always depended heavily on public investments in research and education. As Peter Drucker put it long ago (1993: 176), no company or industry has any natural advantage in the knowledge economy: rather, competitive advantage tends to depend more and more on the ability to organise and capitalise on *universally available knowledge*. Flexibility builds on the ability of employees to quickly construct and reconstruct adequate relations of production, and to build functioning and complex networks of cooperation all along a value chain (producers, logistics, distribution, customer relations, call centres, and so on). These are processes that put to work the common affective, linguistic and

social skills employees possess as members of society or as 'social individuals', to use Marx's phrase. Increasingly, such value chains come to involve consumers and other members of the public as well. Indeed, the third category, brand, builds on a putting to work of the social and affective potentials of public communication (see Arvidsson, 2006).

Second, value is abstracted from these common competences by the ability to give them a distinct organisational form: by the ability to channel the flows of general intellect in a particular direction. Thus knowledge, innovation and intellectual capital management are about constructing corporate environments that are particularly conducive to creativity, or in which tacit knowledge connects and comes out in the open as 'collective intelligence'. Similarly, agility and flexibility are maximised by empowering employees to self-organise their productive processes and, importantly, to develop flexible yet robust forms of logistics and supply-chain management (the real advantage of companies like Zara or IKEA). Brand management can similarly be seen as a sort of logistics of meaning and affect: the ability to organise and give direction to largely autonomous flows of public opinion and sentiment. In all of these areas, 'knowledge workers' produce value by producing not so much knowledge as social organisation: by generating what Maurizio Lazzarato (1997) calls an 'ethical surplus' — a however temporary social organisation, set of norms and values or sense of community.

The project team quickly constitutes itself as a temporary community around a number of values and goals. The brand is a stable set of values that gives directionality to the continuous evolution of consumer tastes. The Google search generates a temporary value hierarchy — the page rank — in a condition of complexity and information overload, and hence the ability to say that something is better or more useful than something else. So 'knowledge workers' are really what Antonio Negri called *'operai sociali'*: workers who produce value by working with social relations. Indeed, in his 1959 work *Landmarks of Tomorrow*, in which the term 'knowledge worker' was first coined, Peter Drucker pointed to the same phenomenon: that while 'knowledge workers' might work with knowledge, their most important contribution is the ability to organise the appropriation of knowledge. Thus contemporary capitalism is *not really* a 'knowledge economy': value does not derive primarily from knowledge. It is an ethical economy, in which value derives from social organisation. And it is around social organisation, or better, around *ethics*, that its value logic must be conceptualised.

The link between value and social organisation is a general feature of social production, inside as well as outside the business world. While the basic resource on which social production builds may be an abundance of information and socialised general intellect, what creates value is an ability to organise this abundance and give direction, purpose and coherence to its productive flows. Within the open-source world, the radical nature of Linux — the fact that such a complex thing as an operating system could be created through social production (something nobody thought possible before) — depends not on the abundance of programming labour at Linux's disposal, nor on the unusual skill of its programmers per se, but on the managerial genius of Linux Thorvalds and his colleagues, who have built a social organisation able to channel these diffuse energies into the completion of such a complex task (Weber, 2004; Ingo, 2005). Most big cities possess an abundance of 'talent' in the form of people with an artistic bent, but only those cities that provide an environment in which this talent can organise itself with ease (essentially: many occasions for face-to-face encounters) are able to capitalise on this resource. And even there, most of what is produced is accomplished by a small number of entrepreneurs who distinguish themselves by the sizes of their networks and the respect and social capital they can command (Florida, 2002; Currid, 2007; Lloyd, 2006). While the viral diffusion of rumour and reputation puts the general communicative skills of the networked multitude to work, success is contingent on the collaboration of a small number of hyper-connected nodes that are able to influence the intensity and direction of such informational flows. If production in general is rendered valuable when a direction and productive organisation is imposed, this is even more true for social production where 'labour power' — or productive time — is abundant.

This abundance has another important consequence. Unlike in the case of industrial capitalism, the ability to give organisation or direction to social production cannot rest on discipline and sanctions. This is because the means of production have been socialised and cannot be controlled by anyone: the capitalist class no longer has a monopoly on the production of productive labour power. Instead, this organisation must rest on what Max Weber (1948: 247 ff.) called *charisma*: that is, the ability to constitute and give direction to community. For Weber, charismatic leaders exercise authority not through traditional power or monetary wealth, but through the power to attract affective investments,

esteem and confidence from the public. The basis of this power is the ability to create community: to make people feel that they belong to something greater, nobler and more powerful than themselves. The point is that the charismatic leader then lives freely off the generosity of the community she has created. Once she has accumulated sufficient affective status, people will volunteer to put their services at her disposal: vote for her, fight for her, work for her, offer her their hospitality. They do this not for personal gain, but because they believe in, feel for, or belong to a community around the charismatic person: because this gives meaning to their lives and contributes to their own self-realisation. This is precisely what happens in social production. People contribute code to Linux primarily because of the pleasure they derive from being part of that community. That pleasure is generally one of two kinds. It may be ideological: as a Linux programmer it is possible to take part actively in a strong and socially reinforced aversion to proprietary software models, in particular Microsoft, and it is possible to feel that one is doing something significant to further one's ideological principles by writing code. It can also be a matter of socially recognised self-realisation. While many coders state creativity, 'code that represents an elegant solution to a complex problem' as their main motivation for participating, such satisfactions are not possible outside a community of peers that can recognise and judge one's efforts and, more importantly, set the very standards for what does constitute 'an elegant solution to a problem': 'Open source lets you show the world just how creative you really are. It is the equivalent of putting your best work on display at the national gallery of art as compared to locking it in your basement' (Weber, 2004: 137). So the community thrives by providing a space for ideological expression and self-realisation. Like the social movements that preceded the present wave of social production, the attraction lies in the provision of a space for meaningful action and non-alienated production. The more attractive this possibility is, the more free 'labour power' the community can attract. This means that the value and attraction of a productive community or a charismatic entrepreneur is contingent on his or her ability to create such social spaces and to create the bonds of friendship, sharing, trust and mutual obligation that make this possible: on his or her ability to build spaces for productive self-realisation.

The currency of value is thus what we, with Aristotle in mind, could call *philía*: friendship, positive affective bonds. Your standing in the community and your experience of *philía* with the community are a reflection of your ability to create *philía*, or

community bonds. The status and hierarchy of an open-source programmer increases not only with his or her ability to produce what is communally recognised as 'beautiful code', but also with his or her ability to contribute to the maintenance of community ties and, eventually, once the person has crossed a certain threshold, the ability to organise and manage projects. In our study of urban creative scenes, it was also evident that the people who were most respected were also the people who were best able to make things happen: to organise events, installations, shows, clubs, etc. It is the promoter, not the DJ, who is the star of the creative scene today. Indeed, a particular ethos prevails in which participants would consistently avoid making monetary profits from the events they organised in order to instead spend as much as possible on the provision of an intense experience, knowing that this would eventually enhance their community standing. As one party organiser claimed, 'It's better to break even, because if there is a surplus then we have been too cheap, and we could have used the money for something extra, something more fun' (Arvidsson, 2007: 17). By giving one's time, energies and resources away, one can accumulate *philia* in the form of community standing. This standing can then be capitalised on, either in attracting the free labour of others for some project of one's own, or by 'selling out', i.e. by monetising one's standing in these productive communities in relation to the creative industries or other branches of capital.

Contrary to the moral economy of the European peasant village, social production is driven by a paradoxical combination of, on the one hand, community-oriented sharing and, on the other hand, the rational and reflexive pursuit of self-interest. Indeed, one gives to the community in order to increase one's own standing and charisma, or the size of one's networks. To use Weberian terms, it is a matter of a reflexive value rationality or, which amounts to the same thing, an 'ethical rationality': act in a way that maximises your charisma and community standing by maximising your productive contribution to the community. At the more extreme end, this tendency towards 'self-interested sharing' takes the form of 'networking' or 'personal branding' in which the very point of creating community ties and offering experiences is the cultivation of charisma and social capital. In our studies of DJs in the Copenhagen underground scene, we frequently encountered this particular orientation. While they would often stress the importance of freely offering events and experiences to the community of which they were part, they also stressed that the point of doing this was to increase one's own networks and charisma.

From the two cases of open-source and urban creative scenes, we can start to deduce a model of the logic of value that prevails in social production. First, production is matter of non-alienated labour: of authentic creative expression that is undertaken for the very joy of self-realisation. Second, such productive activities unfold without any pre-existing organisational forms: there are no given rules, no roles, no bureaucracy. Instead, such organisation is created as part of the very production process. Contrary to the organised realities of bureaucratic capitalism, such productive processes have no definite end. They are ongoing pursuits in which the ongoing production of community is as important an aim as the creation of tangible outcomes. Indeed, open-source programming goes on and on: there is always a new version to churn out, and there are always new features to add. In the same way, urban scenes continue and mutate: there are always new events to produce. Precisely because of this ongoing and self-organising nature of the process, value is primarily linked to the production of community: to the ability to foster and strengthen the relations that make up the scene. Actors invest in the accumulation of *philía* or charisma by freely putting their resources to work in the strengthening of community ties. However, behind this apparent altruism there is a reflexive and rational self-interest. Actors are sometimes altruistic because this increases their own standing. Indeed, hierarchy within the community reflects success in this pursuit. At the top of the hierarchies, some actors are able to monetise their community standing in relation to the capitalist economy. The monetary resources thus accumulated can be privately retained. But often they are reinvested in productive events that will in turn increase the charisma of an actor. So instead of Marx's classic formula for the accumulation of capital M-C-M' — money is invested in capital that in turn generates more money — we have an 'ethical' circuit of value: P-M-P', where philía or community standing is translated into money, which is in turn invested in efforts that generate more *philía*.

Ethical economy

Philía — affectively significant social relations — is emerging within social production as a new embodiment of value. It is because of *philía* — affective proximity — that the programmer decides to spend his evening hours coding away at the Linux kernel. It is the accumulation of *philía* in the form of charisma that enables the rock star to count on her loyal fans, or the brand to count on its loyal customers. *Philía* — goodwill, connections, positive expectations —

is, finally, what enables the entrepreneurial creative or knowledge worker to move from one project to another. In other words, *philía* circulates in social production as a currency for community standing or esteem and as a resource — as social capital that can be mobilised in order to achieve things and make things happen. If money is liquid capital, *philía* is liquid organisation: a dispensable embodiment of one's ability to create community. In many cases, *philía* is monetised: connections and goodwill are cultivated in order to achieve something that can be marketed for money. Often, however, *philía* is cultivated for its own sake, and monetary resources enter into the process as means to a different end. In those cases, we have an ethical economy proper in which production is guided by the desire to accumulate higher community standing, and the monetisation of p*hilía*, when it occurs, serves the purpose of generating more *philía* — P-M-P'. Sometimes, at the interfaces of capital and this ethical economy, the same social process can simultaneously be part of both economies and simultaneously serve two valorisation circuits. Party organisers involved in producing events for corporations use the resources thus at their disposition to 'create a memorable party' for their friends, and thus enhance their community status. At the same time, the very sociality thus produced is exactly what the events organising company sells on to its corporate clients and gets paid for.

However, it is important not to essentialise the ethical economy as something that only takes pace in the 'underground', in opposition to or outside capital. Indeed, capital itself is increasingly behaving according to this logic. Through the present quest for 'realism' in branding; the emerging understanding that corporate social responsibility must be more than just philanthropy and that corporate values must also be lived values; and above all, through the growing realisation that public opinion is both too great a force to be controlled by public relations departments and also, through its impact on brand values, a significant economic factor, corporate capital is beginning to realise that a systematic cultivation of *philía,* of affectively positive relations with its various stakeholders, is necessary to long-term survival. While this realisation is triggered by a new information environment, its root causes are deeper, resting with the structural transformation of capitalism itself that has occurred in the post-war years. To put it simply, this development has entailed a massive extension, both 'vertical' and 'horizontal', of the production process and its socialisation within the lived realities of everyday life. Production chains span the globe, and so do globally branded consumption processes. The everyday life of consumers produces immaterial

wealth by paying attention and being creative. This massive socialisation of production and the accompanying elimination of any clear boundaries between work and life, between 'system' and 'lifeworld', to use Habermas's terms, means that the complexity of the capitalist economy has increased enormously. And, again, the higher the complexity the more valuable *philía*, networks, trust and other 'mechanisms for the reduction of social complexity' (Luhmann, 1979) become. Loyal customers will stick with the brand despite hard times, as will loyal employees. Even more importantly, perhaps, a strong brand gives direction and hence foresight into the likely direction of the development of consumer tastes. As argued in the first section of this paper, this is precisely what knowledge workers produce when they produce value.

The valorisation of *phlía* is an ethical economy in the classical sense of this term. Value is produced by the reduction of social complexity, by the ability to generate bonds of proximity in the absence of tradition or established norms, by creating common values, thus resolving the question that was central to the whole ethical problematic for Aristotle: how can free men live together and build a *polis*? But it is also an ethical economy in a more common-sense way. The accumulation of relationships marked by affective proximity is also an accumulation of responsibilities. And sustainable configurations of *philía* — let us call it 'ethical capital' — are built by acting as a responsible community member, taking responsibility, giving something back, contributing to the common cause. The need to act ethically is becoming more pressing in many different ways, and is made more complex by a new information environment. First, one's actions become public knowledge very quickly, and it is difficult to control information flows and maintain a 'backstage' presence. This is true for corporations, which are constantly monitored by an army of dedicated bloggers; and it will become increasingly true for private individuals too, as new forms of surveillance and media mash-ups, whereby the lines between different forms of media become blurred, impose new conditions of transparency on our lives. Second, the global extension of value chains and of media publics means that one's (or more likely, a company's) charisma or 'ethical standing' will be evaluated against the standards of a number of different communities with very diverse value horizons. This development will further intensify as mobile internet includes people all along today's global assembly lines into the new public sphere, and not only consumers in the West. This means that different evaluations of one's ethical standing (or more likely, a company's ethical standing) need to be compatible with each other and able to be synthesised into a single

measure of its value: there needs to be one (or a few) globally common embodiments of ethical standing, otherwise rational evaluation of social impact, of the value of individuals and companies, and a subsequent rational allocation of global resources will be too difficult. It is not impossible to imagine such systems. Indeed, a number of contemporary institutions such as the *brand* point towards a redefinition of personality as a global medium of value (Lury, 2004). In many non-capitalist societies, value has always been embodied in personality. Such societies generally use what Turner and Fajans (1988, as cited in Graeber, 2001) call 'concrete media of circulation' (as opposed to money as an abstract medium of circulation such as public rituals to communicate and embody value. Most such value-conferring rituals unfold in societies that have elaborate and relatively static social structures. This is clearly not the case for the information society, in which structure is dissolving into flexible networks. On the other hand, there are examples, such as that of the Baining people of Papua New Guinea, which have little in terms of an elaborate social structure, but still largely envision value as ethically embodied. Amongst the Baining, the embodiment of value occurs through a continuous giving of gifts, a practice so common that it is part of virtually every social encounter.

Social media could work as platforms for such a continuous embodiment of ethical value, enabling some sort of ranking (the conferral of esteem in a quantifiable way) mechanism to become an integral part of most social interactions — or at least, most interactions between individuals and corporations or other kinds of organisations. (The Actics.com platform — an online tool for managing ethical capital and stakeholder relations auditing and analysis — is one of many attempts in this direction.) These developments are rendered even more likely through the diffusion of radio frequency identity tags (RFIDs), microtransmitters present in objects of everyday use — livestock and logistics containers today, consumer goods tomorrow — which give constant information on the geographical location of objects, and through mobile internet, both already well under way. Rating in some form or another is already becoming an intrinsic part of many e-commerce transactions — buy a ticket online and you may receive an email asking you to rate the performance — and one can easily envision media platforms in which users and other stakeholders could rate the performance of a brand, company or another entity according to particular criteria. These ratings could then be agglomerated into a quantitative index easily available on your mobile phone. As you sweep your phone over a sweater in the

store, you might get immediate ratings of its environmental sustainability, the extent to which its production process has respected worker rights or unfolded according to particular religious concerns, generated by people positioned all along its global production chain. The emergence of such global public spheres following the 'global assembly lines' that most brands now employ will significantly shift the power balance back from capital over to consumers, workers and other stakeholders. It will be very difficult for brands to claim the moral high-ground (global sustainability, fair trade, helping the poor) without this being reflected in reality, if every such claim can be rated by virtually everybody concerned in ways that are easily accessible and immediately visible. (As the digital divide narrows, principally through the diffusion of mobile internet, the Thai seamstresses who make Nike shoes can be part of this public sphere, rating the extent to which the brand respects its emancipating promise to 'Just do it'.) What this might very well amount to is a radical de-fetishisation of commodities and brands, and a new visibility of their actual production processes and their real social impact.

This is not the place to elaborate on the potential of social media in embodying new and more realistic standards of value (see Arvidsson & Peitersen, forthcoming); but it is nevertheless worth noting that the ability of social media to transform a multitude of minute rankings into a common quantitative index seems to be a likely embodiment of the value form of ethical economy. Such a measure would mirror the emergent nature of ethical (that is, contingent and negotiated) value by not departing from some universal standard. The value of the currency would no longer be determined by a central actor or a restricted group of actors: it would entail, rather, a further democratisation of the economy by socialising not just the means of production but also the means of circulation. Many such developments are already underway in the form of alternative currencies. It would thus be highly suited to a society of productive multitudes in which a multiplicity of changing value systems prevailed, and where concrete values tended to be, in most empirical situations, situated and negotiated. At the same time, it would avoid both the cynical relativism of postmodernist approaches, and the naive utopianism of many contemporary post-Marxist or anarchist visions of a future society of 'commons', by clinging to and developing an Enlightenment commitment to rationality and measurement. A globally connected society needs a globally valid embodiment of value: that is the only way it can begin to materialise its emerging planetary consciousness in rational actions.

The value crisis of contemporary capitalism probably does not entail the 'end of value' and the miraculous transition to cyber-communism. More likely, it opens up the possibility for alternative standards of value. This is not a new situation in history. The transition to capitalism was accompanied by a similar transformation: the capillary diffusion of money as the measure of everything (see Simmel, 1990 (1907)). The definition of a new value standard could add an evolutionary boost to the ethical economy by making its values tradable between different communities and, of equal importance, inscribe a rationally calculated valuation of the social impact of companies and individuals within the Weberian iron cage in which they operate. Only in this way might the global growth of post-materialist values and the accompanying dissatisfaction (within the managerial class, not least) lead to something other than psychological frustration and individual misery. Should it succeed, the establishment of such a global ethical value standard might lead either to a growing autonomy and decoupling of the ethical economy or, more likely in the short run perhaps, push a reform of capitalism in a more ethical, 'blended value' direction: a sort of global New Deal organised around sustainability and social responsibility. Whatever the result, working in this direction is an important political responsibility. The multitude does not need new programmes or ideologies (see Hardt & Negri, 2004): it needs mechanisms that can institutionalise and objectify what today remains individual concerns. Politics is increasingly a matter of design (Latour & Weibel, 2005; and see Galloway & Thacker, 2007). In working towards this aim, it is better to depart from the value forms that are actually emerging today within and outside global capitalism, such as the brand and the ethical economy of *philía* and charisma, rather than proposing fully rational, but so far entirely utopian schemes. We must work with the present, however messy and irrational it might be.

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Knowledge-based society, peer production and the common good

Cosma Orsi

Abstract

This article investigates the societal conditions that might help the establishment of peer-to-peer modes of production. First, the context within which such a new model is emerging — the neoliberal knowledge-based-societies — is described, and its shortcomings unveiled; and second, a robust argument is provided for the moral legitimation of an alternative societal vision, including two structural policies that are likely to facilitate the establishment and further development of peer-to-peer practices.

The emergence of peer-to-peer production

One of the main proponents of the peer-to-peer mode of production, Michel Bauwens, describes it as

> a form of human network-based organization, or more precisely, a distributed network that rests upon the free participation of equipotent partners, who are engaged in the production of common resources without recourse to monetary compensation as a key motivating factor. It creates a Commons, rather than a market or a state and, to allocate resources, relies on social relations (eventually expressed through software algorithms) rather than pricing mechanisms or managerial commands.

Bauwens argues that this emerging 'third mode of production' is aimed at producing use rather than exchange values. Its allocation of resources is not dependent 'on market pricing nor on managerial

command, but on peer governance models implicit or explicit in such projects'. Finally, it is not motivated by a for-profit ethos, but by 'a for-benefit ethos and it enables production without manufacturer' (Bauwens, 2007). It is his belief that peer production may develop exponentially to become the predominant form of production, eventually replacing the capitalist system.

But although peer-to-peer production is gaining momentum, in order for it to flourish and for Bauwens's expectations to become reality, a far more cohesive and fair social environment then the one that characterises contemporary European societies will be necessary. It seems unlikely that Bauwens's vision can be fulfilled given the time and resources required to ensure the success of common projects, and given the endemic lack of resources that compels most ordinary people to devote the majority of their time and efforts to market rather than non-market activities. Indeed in the real world, most people are constrained by the necessity to create a livelihood with which to support themselves and their family, and it is only the wealthy who are unshackled from such financial constraints. If the latter can dedicate their time to profitable and/or creative activities, the former must dedicate most of their time to productive work within the formal labour market (Degnbol-Martinussen, 1999: 311; Jordan, 1989: 197–212).

Accordingly, the purpose of this article is to investigate what societal conditions might help the establishment of such an emerging mode of production. In doing so, first the context within which such a new model is emerging — namely, the neoliberal knowledge-based-societies — is described and its shortcomings unveiled; and second, arguments are provided for the moral legitimation of an alternative societal vision, including two structural policies likely to facilitate its establishment and further development.

The neoliberal knowledge-based society

The information-technology revolution (ITR) has expanded well beyond the high-tech sector. It has shaken the very foundations of the previous industrial and occupational structures, redefining the rules of entrepreneurship and competition. Although knowledge and its diffusion has for centuries been the key driver of economic development, today knowledge-based firms gain competitive advantages through their ability to use, process, analyse and share powerful information and communication technologies at an unprecedented scale and speed.

In order to establish an economy that relies primarily on the use of ideas rather than on physical abilities, and on the application of technology rather than on the transformation of raw materials, neoliberals have promoted a formidable re-engineering process of the previously established productive paradigm (Offe, 1985; Lash & Urry, 1994; Harvey, 1989). In order to meet the needs of the post-Fordist accumulation regime, organisational changes such as forms of subcontracting and/or outsourcing, 'just-in-time' production and the like have been introduced (Lash & Urry, 1994: 56). These changes have dramatically reduced both stock inventories and turnover times. In turn, the entire labour process 'has become subject to increasing intensification as well as to acceleration in the transformation of required skills' (Smart, 2003: 153).

Beginning at the Lisbon summit, the European Commission has put forward the model of the knowledge-based economy and society. In the eyes of its supporters, it is seen as the scaffold for synchronising the EU effort to meet the challenges posed by the new economy, whilst maintaining the inclusive character of the European social model (ESM). According to the Lisbon strategy, the objective for the first decade of the twenty-first century is to become 'the most dynamic and competitive knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and social cohesion, and respect for the environment' (EC, 2004: 6).

In spite of the lofty rhetoric, one has only to look at the most recent data offered by international organisations such as EuroSat, ILO or OECD to see that the promise of a better life for a large number of European citizens has gone unmet, illustrating how far from the truth is the assumption that growth and competitiveness generate societal wellbeing and stability. In fact, although the promise of social justice and security is the most important inducement for the European population to support an economically competitive EU, a policy orientation overly geared towards improving the competitive position of the European economy by privileging labour market flexibility, deregulation and the privatisation of public welfare leaves vast sectors of society struggling with the dynamism of contemporary knowledge-based societies. Those sectors include, in particular, precarious low- and mid-skilled workers, migrants, the disabled and women (Capecchi & Gallina, 2006). It is no surprise that in the face of well documented unfair income distribution, labour market precariousness and the dismantling of previously established systems of social protection, some of the most careful economic analysts have argued that the goals set by the Lisbon Strategy,

namely those of achieving a society based on social justice and solidarity, where economic and social advancement take equal priority, and where decent work and social protection combat poverty and social exclusion, are becoming just an empty promise.

Unfair income distribution and labour market precariousness

According to the neoliberal creed, human needs and expectations are best served within a well functioning market mechanism. In the eyes of its advocates, such a mechanism would guarantee an increasing economic growth whose benefit would eventually affect the lower strata of society (the much prized 'trickle-down' effect). However, unfailingly positive claims about the market ability to redistribute the social product become particularly disenchanting when income and wealth distribution are examined (Stiglitz, 2002). The patterns of economic globalisation in recent decades show that, far from having narrowed, the gap between rich and poor countries has widened.

Since the early 1980s, there has been mounting evidence to show that the rise in inequality has become a permanent feature, not only in underdeveloped and developing countries, but also within the most developed ones. The seriousness of the EU situation can be observed in the relative positions of the top and bottom groups in Europe in 2003, which is illustrated by the S80/S20 ratio.[1] As Eurosat researcher Ann-Cathrine Guio explained in 2003:

> the wealthiest quintile had 4.6 times more income than the poorest. Ratios range from 3.0 in Hungary to 7.4 in Portugal. The S80/S20 ratio is only responsive to changes in top and bottom quintiles. The Gini coefficient allows one to take into account the full distribution of income. If there was perfect equality (i.e. each person receives the same income), the Gini coefficient would be 0%; if the entire national income were in the hands of only one person it would be 100%. In 2003, the calculated coefficient for the EU25 was 29%. National Gini coefficients vary between 22% (Slovenia) and 35% (UK, Greece). (Guio, 2005)

Guio's conclusions speak for themselves. In the EU25, 72 million European citizens — an average 16 per cent of the population — were at risk of poverty.

Within existing technologically advanced societies, unfair income distribution can be traced back mainly to reduced access to decent and meaningful work activity for large sectors of society. In

today's highly technologised labour market, there is little room for low and middle-skilled workers. The emphasis placed by labour market analysts on the fact that enterprises that dismiss workers may not be in crisis, but rather in healthy pursuit of an increase in competitiveness, suggests that unemployment has become one of the instruments for achieving economic prosperity. In this context, unemployment should not be seen as the symptom or effect of a situation of crisis, 'but rather as a strategy in order to compete successfully in the global market' (Zamagni, 2003).

Although the thesis of the end of work has been repeatedly, albeit erroneously, advanced, it is true that for those who can keep a job in the post-Fordist labour market, decent and meaningful work opportunities are reducing at a phenomenal pace in the sense that, for a high proportion of low- and middle-skilled workers, full-time, lifelong employment is unlikely. This claim rests on the simple observation that the introduction of new labour-saving technologies and electronic devices within the productive processes not only drastically reduces the demand for low-skilled workers, but also endangers the security of those workers engaged in more qualified jobs. The precariousness of their position obliges many workers to accept wages so low they barely breach the threshold of (relative) poverty, contracts for fewer hours than they want or need — in the case of, for example, involuntary part-time workers — and jobs that disregard their intellectual or physical capacities.

The dismantling of welfare systems

In the face of the insecurity and uncertainty generated during the transition phase from the Fordist model to a highly-techologised society based on a flexible accumulation paradigm, neoliberals uphold the establishment of the so-called 'nightwatch' or minimal state. Following their successful battle aimed at dismantling the Keynesian macroeconomic architecture, social policies have inexorably been subjected to the needs of an increasingly flexible labour market and global competition. (Brenner, 2002: 2–32; Jessop, 1982, 1993: 4–40) Born of Keynes's idea that the market could not be the sole regulatory mechanism of our societies, the mission of welfare systems has been to redistribute more equitably the fruits of economic growth. Until the 1980s, government activity was characterised by the extension of fully developed welfare schemes such as retirement pensions, housing benefits and health insurance plans for trade union members, financed from taxes and by employer and state contributions. At the same time, other social

policies such as education and public health were financed by general taxation. In promoting these policies, central governments created a sufficient — albeit fragmented and stratified — level of social cohesion.[2]

However, from the mid-1970s the political climate changed dramatically. The rationale behind neoliberalism's formidable attack on the system of social protection is that the welfare architecture thought up and developed in the aftermath of the Second World War, when the economic trend was for constant growth while the rate of unemployment was low, had become too generous and was, therefore, no longer competitive (Alesina & Perotti, 1997: 921–939). According to Bob Jessop, what is emerging

> hesitatingly and unevenly … is a new regime which could be termed, albeit rather inelegantly, the Schumpeterian Workfare State. Its distinctive economic and social objectives can be summarized in abstract terms as: to promote product, process, organizational and market innovation and enhance the structural competitiveness of open economies mainly through supply-side intervention; and to subordinate social policy to the demands of labour market flexibility and structural competitiveness. (Jessop, 1993: 4)

In light of the increased number of beneficiaries of welfare provisions in Europe during the 1980s and 1990s, a principle has been introduced whereby, in order to have full access to welfare benefits, unemployed citizens must accept any work that is offered. Failure to do so can result in a drastic curtailing of benefits that grants only limited access to services — generally of a low quality — tailored to bare subsistence. In addition, beneficiaries are subject to a temporal limit, which restricts the length of time for which they can use the service. The workfare model is also compatible with a variety of policy initiatives including 'the sale of nationalized industries and contracting out of public service provision to private agencies', which have also been heavily implemented (Smart, 2003: 45). And beyond the provision of welfare services by large corporations rather than the state, another important aspect of the intrusion of market mechanisms into the social protection system is the privatisation of pension funds.

On the above grounds, it might well be said that the implementation of neoliberal re-engineering processes, in asserting the centrality, if not the dominance of the needs of capital accumulation, has left those struggling with the dynamism of contemporary society in an awkward socioeconomic position. As a

result of the successful promotion of market forces and labour market flexibility, coupled with a drastic reduction in the role played by the welfare system in the maintenance of equality and cohesion, European societies are enduring a socioeconomic polarisation in which, on the one hand, having lost much of its social and economic power, the multitude has become powerless; and on the other, a tiny, over-privileged minority enjoying virtually unlimited power is allowed to establish social, economic and political rules in a way that takes into consideration only its economic appetites.

In search of the good society

a) Power and knowledge-based societies

If this is the framework of reference, then the purpose of our analysis cannot merely rest at the level of understanding, explaining or describing the operation of the current economic system (the scientific discourse). Rather, critical investigation of the economic system should provide both the rationale and the impetus for structural reforms aimed at changing the status quo in the name of social progress. In this sense, the purpose of what follows will be to highlight a feasible strategy that, if enacted, 'would subject historically contingent conditions of existence to pressures for change' (Watson, 2005: 77). However, before policy prescriptions — the practical discourse — are addressed, it is important to realise that in order to deal with and possibly to overcome the ill effects attached to the establishment of contemporary societies, it will be necessary to start from a broader reflection concerning the kind of society in which we would like to live, including the principles that ought to inspire the organising of economic activities within such an ideal form of social organisation (the normative discourse).[3]

It is possible that the enterprise comprised by this paper might be taken as a mere description of a post-capitalist future system, and as such be considered solely as a utopian exercise. However, as Zigmunt Bauman has pointed out, utopia relates both to 'a place which does not exist' and 'a place to be desired' (Bauman, 1976); and according to Hodgson (1999), utopia should be understood as 'a socio-economic reality that is both non-existent and alleged by some to be desirable'. Indeed, it is this understanding of utopia that inspires the approach to political economy contained here, which goes further than the scientific aspects of the discipline, expanding to encompass its normative character — namely that relating to the 'ideal form of social organization'. In this sense, the endeavour

becomes irreducibly ethical because, before any policy prescriptions are advanced, a notion of justice sufficiently robust to inform social institutions that allow the individual to flourish should be identified.

b) Person-in-community and the contract of reciprocal solidarity

Recognising the extent to which contemporary societies are ill balanced, the reasoning in this paper starts from the assumption that a richer model of economic development cannot but derive from the way in which we conceive society. This, in turn, is derived from the way in which we understand human beings and how they relate one another. Their relationships depend upon the values (freedom, equality, reciprocity, and mutual solidarity) that they believe to be fundamental. Within this framework, economic theory ceases to be the study of optimal allocation of scarce resources, and instead becomes an inquiry concerning the process of wealth creation (surplus).

Framing the issue in this way, we are obliged to address a preliminary question: namely, what is a good society? Drawing on the analysis given above, it is fairly easy to recognise what it is not. A good society cannot be a society in which the process of wealth creation is based on economic arrangements according to which the large majority of people is obliged to sell its labour power — the only good it owns — to a minority that shapes and controls productive and technological processes. This is especially true in a phase in which work is becoming increasingly immaterial, intermittent and flexible, so that the idea of a system of social cooperation where the opportunity to participate on equal terms in the active life of society is given to all is difficult to contemplate; or one in which redistributive strategies might be grounded in an explicit theory of justice aimed at redressing the imbalance of power, and where social solidarity is triggered by a sense of recognition and belonging.

In order to reflect on the kind of society in which we would be pleased to live, it is necessary to scrutinise the idea of human nature (*homo oeconomicus*) that underpins orthodox economic doctrine, and to see to what extent this account of human nature is correct. To put it simply, in orthodox economic theory, human beings are viewed as individuals unable to take part in social relationships, devoid of any form of social reflexivity, incapable of comprehending others' situation or the consequences of their actions (Udehn, 1996: 363). Following this train of thought, economic actors exist autonomously and independently from each

other and are related only via external relations. It follows that the only possible interaction between them must assume the feature of impersonal exchanges between free and equal independent producers who know perfectly what they want. In such a social context, economic activity does not take place according to the social requirements established by the broader society. Rather, it is regulated by economic contracts, the sole bond that links otherwise independent producers.

Since the above characteristics pertain to all human beings at any time and place, then they should be universally applied. However, many scholars warn us against applying such a conception of human nature when trying to explain human action in the economic field (Hodgson, 1999; Daly & Cobb, 1989; Taylor, 1989), since according to them, such characteristics, although undeniably present, are not universal. The idea of the solipsistic individual as maximiser of his/her utility can be applied only to a restricted group of people who are subjected to particular forms of socialisation via their exposure to a set of institutionalised social norms (Watson, 2005). Since neoliberal political economists fail to see the extent to which economic activity is shaped by and relies upon the social relationships in which any real person is constantly embedded (Grannovetter, 1991: 76), the first task will be to identify a richer understanding of human nature able to address the shortcomings inherent in neoliberal ontological assumptions.

We move on from the sociological evidence that real people are constantly interrelated by virtue of their living and dwelling together to the idea that people become who they are via the social relations they establish within their communities. Beautifully encapsulated by Daly and Cobb (1989: 161–5), this understanding of human nature is embodied by their notion of person-in-community. According to these authors, since relatedness is the natural condition of human existence, it follows that the idea of a separated and solipsistic individual becomes simply a myth. If the community is made of and shaped by the relationships occurring among its members, it cannot be conceptualised as being merely composed of separate individuals living together, as orthodox economic doctrine depicts it. Rather, it becomes the place in which those practical and moral relations between persons occur.

Hence social relations are the means to enhancing the primary human experience of coexistence that is constitutive of each human being. Since persons-in-community are inherently part of a web of moral and practical relations that enable them to form and express their potential as human beings, it is correct to claim that they are moral agents constantly and inextricably affected by the

fate of others. As we shall see below, only by embracing such a wider perspective might we come to explain why, instead of trying to evade anything more than the minimal demands of social life, people could be motivated to discharge their obligations towards the community as wholeheartedly as possible (Skinner, 1990: 308).

At this stage, it is appropriate to ask what kind of social contract would be the most suitable for binding together persons inextricably affected by the fate of others. As partners of equal dignity constantly interrelated with and affected by others, it is reasonable to imagine that persons-in-community might favour a model of communal living intended as a cooperative enterprise for the achievement of the common good.

Such a tall order calls for a social architecture designed to ensure that all members of society were enabled to benefit from the system of social cooperation according to their needs, while making voluntary contributions according to their ability, which I have elsewhere called a 'contract of reciprocal solidarity' (Orsi, 2006). So conceived, the socioeconomic order entails a very high level of social cohesion, intended as the capability of socioeconomic institutions to maintain a harmonious coexistence and cooperation between the social strata so as to allow all members to contribute to the prosperity and management of the system itself.

Because the societal architecture mentioned earlier rests on the double assumption that each person owes something to the wider society as well as that society owes something to each of its members, the notion of justice that underpins it can be rightly defined as 'justice as reciprocity'. This claim is sustained by the fact that individuals live together with others in the wider social context, performing their activities within institutions (such as communities, families, associations, political parties, trade unions, circles of friends, schools, universities, clubs, etc.) within which they constantly establish social relationships. Without these relations which bond and affect their lives, it is difficult to imagine that they could lead meaningful lives. Individuals can exist and flourish only if we postulate a vital society, and within it, communities and social groups forming and nurturing the historical memor upon which the web of social relationships is constructed (Scheman, 1983). It might be further added that people depend on the community for things like protection, education, nurture, comfort, equipment, opportunities, and for a variety of services and goods. Hence the claim that each person owes something to the wider society resides in the fact that each of them depends on it for both social heritage and wellbeing.

This said, it becomes clear why the successful functioning of the community as a whole might be recognised as being the common good, to be pursued through the mutual cooperation of all actors involved — in production for use rather than for exchange, and in distribution according to need, rather than according to productive input. The latter claim is supported by the fact that members of a given community are central to both its productive processes (as producers and consumers), and to the process of social reproduction. If so, it follows that if the main institutions of society do not take responsibility for providing, to the greatest possible extent, the objective conditions for retaining that centrality of its members in both productive and reproductive processes, society would collapse. This is even truer within knowledge-based societies. In fact, if the process of wealth creation rests on the valorisation of knowledge, and if knowledge is, by definition, a social (common) resource — it is the result of past and present social cooperation (or as Marx would have put it, the general intellect) — then it becomes apparent why society as a whole owes something to each of its members.[4]

c) The political economy of reciprocity

As we have noted, the wage-based conception of society impedes the understanding that many of the problems pervading contemporary societies, be they individual or territorial inequalities, growth without employment or increased GDP with no improvement of the quality of life for the many, have much to do with social rather than economic scarcity. Accordingly, the contribution towards the legitimation of a just socioeconomic order contained in this paper will necessarily consist of the identification of a way of organising the economic activity that best matches the requirements of justice as reciprocity; namely, one designed not only to seriously take into account the needs and the expectations attached to capital, but also those attached to labour and the wider society.

A more balanced socioeconomic order should be informed by economic arrangements, which, without denying the importance of the profit-seeking rationale, will leave enough room for mutual cooperation for the common good. Following this train of thought, the model of economic development informing the society envisaged here — a society other than either a market economy within which profit-oriented enterprises operate, or a non-market economy within which governmental agencies have the mandate to fairly redistribute both social power and material resources —

ought to contemplate a fully developed economic domain made of networks, membership associations, social enterprises, co-ops, etc., which were 'open and egalitarian enough to permit voluntary participation' (Barber, 1998: 34–5). Since the variety of practices and forms of mobilising economic resources enacted by these economic agents would be aimed at producing use rather than exchange value, they would serve as a means of combating poverty, generating social solidarity and cohesion, and satisfying human needs (Moulaert & Ailenei, 2005). For this very reason, equal dignity and status should be granted to this latter domain as that enjoyed by the former two.

It is apparent that within such a domain, peer-to-peer practice will play a fundamental role. By creating new forms of connectivity and aggregation between disconnected people, covering the need for creativity and social engagement and mobilising citizen awareness, peer-to-peer activities might indeed reduce social marginalisation by offering a fairer distribution of cultural and technological resources. So conceived, peer-to-peer would became a pivotal player in the creation, reconstruction or maintenance of social relationships.

The starting assumption for such a way of organising economic activity, which might well be referred to as the political economy of reciprocity, is that, being geared around active and widespread participation in both market and non-market activities, the socioeconomic order envisaged is likely to foster greater socioeconomic equality, including the achievement of an equitable distribution of income, wealth, and work opportunities, so as to meet to the maximum possible extent people's needs and expectations (Orsi, 2006). In this sense, it rests upon a definition of human progress not just in terms of ever increased economic growth, but as a process by which all citizens would be enabled to develop their potential as active agents, so as to achieve sustainable improvements in their quality of life using the resources available to them.

At the heart of the political economy of reciprocity is the belief that the theory of value informing orthodox economic doctrine is fairly inaccurate, since it explains the process of wealth creation without taking into consideration the extent to which non-economic factors influence economic activity. In doing so, prevailing economic theory tends to empty economic relations of their social content to the degree that important aspects of interpersonal relations cannot be accommodated within the framework offered by the market mechanism. In recognising that the process of wealth creation is fundamentally constrained and

shaped by the myriad human interactions occurring within the system of social cooperation, the advocate of the political economy of reciprocity will depart from the dominant idea which holds that supply and demand under conditions of free competition determine the value of goods and services, and maintains that the creation of value depends on the degree to which the system of social cooperation favours or restrains a kind of social interaction that allows each person to fully express their potentialities.

The partner state

The promotion of an empowering and enabling system of social cooperation calls for a substantial reduction, if not the eradication, of social inequalities. Their maintenance, in fact, would inevitably reproduce a dystopic society built along a hierarchical line, within which a few members of a privileged elite would enjoy a sufficient amount of power to perpetrate domination and oppression over a vast sector of the population (Young, 1990, 2000). In a nutshell, the establishment of a system of social cooperation able to generate a virtuous socioeconomic circle specifically designed to facilitate the inclusion (active participation) of all its members in both market and non-market activities requires that the role of the state should no longer be restrained to that of countering market failure, but rather should be expanded to the transformation of actually existing unbalanced social relations. (Panitch & Gindin, 1999). This rests on the recognition that a model of economic development based solely on market-oriented processes, with the state — whose intervention in the economic sphere has been restrained only to cases of market failure — relegated to mere firefighting instead of seeking to bring about the desired emancipation for all, has ended up by imposing unbearable sacrifices and a very high degree of subjection upon the vast majority of people.

The reasoning begs a major question: what sort of state architecture is the most appropriate for dealing with the outcomes of the maintenance and perpetration of unbalanced social relations within contemporary societies? The achievement of a socioeconomic order able to generate virtuous mechanisms aimed at facilitating the inclusion of all of its members in the social, political, and economic life of their respective communities calls for a substantial transformation of the state into what can be defined as a 'partner state'. The idea of the partner state advanced here closely resembles Veca's *stato sociale minimo* (minimal social state), to which the Italian philosopher refers as being a state

engaged in the maximisation of individuals' options, autonomy and well-being (Veca, 1998: 10). The approach to power that characterises the partner state is responsiveness: not only should it be accountable to all citizens, but it should strengthen social forces that are not directly subordinate to the profit-oriented, market-mediated logic of capital accumulation.

Obviously, such an attitude towards power cannot be merely reduced to an executive or procedural role. Rather, beyond taking decisions in cases of conflicting interests, also among the duties of the partner state will be that of enabling its members to be better equipped in facing the risks attached to the dynamism of contemporary knowledge-based societies. Thus, rather than being concerned to secure the conditions for international competitiveness and innovation in relatively open economies, its primary concern would be to put in place mechanisms and policies aimed at bringing about a societal context within which social and economic power were distributed in a way enabling all its members to participate on equal grounds in the active life of the wider society. But, we might ask, what structural policies could trigger the shift from actually existing polarised societies into fairer and just ones?

It is obvious that in order to establish a system of social cooperation in which participation is open to all, and where cooperation for the wellbeing of the wider society is voluntarily enacted by all, the reversal of the redistributive patterns informing the existing accumulation paradigm will be needed, amongst other macroeconomic changes. In spite of the ill redistribution of wealth and the spread of social insecurity created by the precariousness of work, coupled with drastic cuts in public spending, neoliberals uphold a redistributive pattern according to which those who have more than enough power and resources to satisfy their wants and desires have no positive duties or obligations to use their additional resources in order to sustain those who are struggling with the dynamics of contemporary knowledge-based societies. Conversely, they have the right to utilise their additional resources in order to lead a luxurious lifestyle if they wish to do so.

However, there is widespread agreement among scholars that one's position within the former or the latter social category is a fundamental factor that dictates access to or enjoyment of the opportunities and privileges that shape the rest of a person's life. Thus the implementation of conceptions of justice that entail the reduction, if not the elimination, of transfers of basic resources from the well-off to those who cannot even meet their basic needs, implies the domination and oppression of vast sectors of society. As we have seen, those at greatest risk are poor, ill, disabled, female,

elderly, migrant, unemployed, underemployed or precarious workers who, living in an inferior socioeconomic condition, marginalised and excluded from the main body of society, cannot be said to be free at all. In the attempt not to exacerbate their already precarious living conditions, they are obliged to act in a submissive manner, even if no form of direct coercion is at work. Moreover, and perhaps more importantly, they are rendered unable to contribute to the system of social cooperation. Thus we cannot hope that an ex-post approach alone, although obviously necessary, would be sufficient to reverse such an unbalanced societal situation. Rather, what is needed is a precautionary, ex-ante approach that places the emphasis on the flourishing of people (human and social capital) via the implementation of structural policies that would have as their primary objective the combating of social heredity of disadvantage (Esping Andersen, 2003).

Such a long-term strategy is needed particularly within European societies, as it is fairly evident that short-term policies aimed at implementing safety nets for the worst-off would be insufficient to bring about an inclusive and enabling model of communal living. This is because short-term policies are generally designed to protect vulnerable people from shocks that are temporary, but are inadequate for dealing with problems such as permanent poverty, long-term unemployment or work precariousness (Ravenga, 2003: 337–43). Thus, as a first step towards a society within which the social heredity of disadvantage would be drastically reduced, one possible option might be to introduce structural policies aimed at providing an appropriate degree of socioeconomic independence to all its members, intended as 'the wherewithal to operate normally and properly in … society without having to beg or borrow from others, and without having to depend on their beneficence' (Pettit, 1997: 158). The rationale for ensuring the highest possible degree of socioeconomic independence to all (from both public and private charity and from the potential arbitrariness of employers) derives from the awareness that there are legitimate doubts as to whether it is socially acceptable that the redistribution of both opportunity and resources should be left to the charity of the better-off (Pettit, 1997; Haslett, 1994; Barry, 1975).

If we really want the ideal of providing the maximum possible degree of socioeconomic independence to all to descend from the sphere of dreams into reality, then further than guaranteeing access to fundamental public services, it will be necessary for the partner state to introduce two structural policies, namely a universal basic income fixed at a level sufficient to guarantee

material subsistence (Gorz, 1989, 1999; van Parjis, 1995; Offe, 1996), along with the reduction of working time within the formal labour market (Laville, 1999; Mazetti, 1997; Aznar, 1994).

a) Universal basic income

Universal basic income (UBI) should be understood as the allocation of a regular and perpetual monetary sum to all the members of a given community. It should have the following fundamental characteristics: a) it must be universal, that is, non-discriminatory — it must be given to all human beings regardless of their sex, race, social, economic and marital status, religion or age; b) it should be unconditional, that is, paid irrespective of one's income or one's willingness to accept a job if offered; c) it should be in addition to other forms of income already existing or yet to come; d) it should be paid on an individual basis and not to households.

By at least partly resolving the problems relating to material subsistence, a UBI would noticeably increase people's degree of autonomy. In the formal labour market, workers, not being forced by hardship into precarious, meaningless, unpleasant or hazardous work, would be able to better negotiate their wages, working conditions and contracts with an increased bargaining power. In addition, since the UBI would be provided regardless of the recipient's willingness to undertake any effective employment, it would allow the full enjoyment of economic citizenship without forcing recipients to enter into the hierarchised process of material/immaterial production. Thus, it is fair to say that if a UBI were to be institutionalised, all beneficiaries would see their self-determination (namely, the freedom to choose the course of their lives) dramatically increased

The idea that a UBI should be paid to all raises the question of whether or not minors should also be entitled to it. Within the envisaged socioeconomic order, the UBI cannot be understood merely as a poverty or unemployment-related policy. Rather, it should be seen as an inclusive policy whose primary aim is to reduce the social risks of exclusion and marginalisation to the largest possible extent. In order to be successful, any structural policy aimed at fighting social exclusion should be informed by the richest notion of membership possible — one that includes minors. Thus the UBI should be provided regardless of age. The normative basis on which this claim rests derives from the need to provide an adequate response to the exigencies of minors in an equitable way, at least comparable with the way in which the wider society responds to the exigencies of all other adult members. This

argument, in turn, is grounded in the belief that the younger generation represents a fundamental resource for the future wellbeing of the community. Hence, since the pact of solidarity between different generations on which most of the social fabric rests would be strengthened, it would be in the general interest to preserve minors' substantial equality of treatment. Conversely, any infringement of this pact would risk weakening the ability of the community as a whole to deal with its future tasks.

b) Reduction of working time

However, if people were provided with a UBI set at an appropriate level but were without effective opportunities to participate both in market and non-market activities, they would become too heavily dependent on it. Given the self-evident need for individual self-respect and the fact that dependency, in all its variants, heavily undermines ones' freedom and self-respect, it would certainly be advisable to create effective conditions to allow as many people as possible to meet their needs through meaningful work. Obviously, any shift from today's mass unemployment and underemployment to a system of social cooperation organised so as to guarantee effective opportunities to contribute to both market and non-market activities, entails a profound rethinking of the way in which work activities are distributed. Given this, it will be necessary to develop, alongside the introduction of the UBI, a medium- and long-term policy leading to the achievement of the twofold goal of assuring equal paid employment opportunities in the formal labour market for all, while allowing those who want to undertake non-market activities the time to do so. This twofold goal will require the implementation of a drastic reduction in working time (RWT).

To those who are sceptical about the introduction of this policy, it is possible to counter that it has already been inscribed in an 'unavoidable historical perspective' (Rifkin, 1995: 322). For example, economic historians maintain that productive processes tend to decrease the length of the working day. Their analyses show that, throughout the nineteenth century, any increase in productivity was followed by a reduction in working hours, which decreased from 80 to 60 hours per week during the nineteenth century. The same trend characterised the twentieth century, when the productive system began to utilise oil and electricity. The dramatic increase in productivity generated by the adoption of these two technologies led to a further reduction in working hours, which reached an average of forty hours per week (Marchand & Thelot, 1990) by the mid-twentieth century.

The crucial issue around which much of the debate turns is whether or not the RWT should be accompanied by a reduction in wages. In the eyes of those who argue against the RWT, this proposal is not viewed as a structural policy. Rather, it is viewed as an isolated measure aimed at redistributing a given quantity of work and money among a larger number of persons. In other words, if it is perceived as a policy for 'sharing out among a greater number of a fixed volume of work and resources' in their eyes (Gorz, 1989: 2000), wage cuts seem inevitable. However, conceived as a structural policy, the introduction of RWT must be seen not as a way of redistributing jobs and resources among a larger number of subjects, but rather as a way to 'manage an ongoing dynamic process which demands less and less work but creates more and more wealth' (ibid.).

Although it is apparent that RWT necessarily implies some costs, it would be unreasonable to ask the workers to bear them in full. An economic system which, because it uses less and less labour, distributes lower and lower wages, would inexorably descend the 'slippery slope of pauperisation' (Gorz, 1989). Furthermore, an excessive loss of purchasing power as a result of wage-cutting would have negative macroeconomic effects. Indeed, it would significantly reduce internal demand for a large number of goods and services, so weakening the whole productive mechanism. If so, the present level of remuneration should not decrease.

Both UBI and RWT can be rightly conceived of as powerful tools for the realisation of the potentialities of each member of society, contributing significantly to the creation of their positive liberty.

In this sense, both overcome the negative definition of human liberty as simple absence of coercion. In light of what we have said, it is not difficult to understand why these two structural policies have been perceived as dangerous by those who control and shape current economic processes — and who consequently dismiss it as undesirable. In their eyes, UBI and RWT represent counterpower measures to the rules imposed by market-oriented processes and the derived social polarisation. Having more time and bargaining power, ordinary people would enjoy the possibility of opting out of the imbalanced power relations pervading contemporary knowledge-based societies. If this happened, not only would one of the main disciplinary tools of social control vanish, with the result that people would be allowed to join common projects outside the market, but the creativity necessary for peer-to-peer initiatives would also suddenly become abundant.

1   For each country, this ratio compares the total equivalised income received by the top income quintile (the 20% of the population with the highest equivalised income) to that received by the bottom income quintile (the 20% with the lowest equivalised income).

2   This suggests that, from the aftermath of the Second World War to the mid-1970s, social cohesion and security was maintained thanks to a political regulation resting on the strategic idea of a social contract between the fundamental subjects of modern production, namely labour and capital. In this context, 'the function of labour, fully recognised in its explicit social character as the bedrock of citizenship, was incorporated in the public sphere via an articulated system of normative guarantees … and a variety of public institutions aimed at safeguarding social rights' (Revelli, 1997).

3   In using this terminology — that of scientific, practical, and normative discourses — we refer to Gamble's article 'New political economy', published in 1995, where the author points out the legitimacy of all three forms of discourse within the classical tradition of political economy (Gamble, 1995).

4   This also leads to the conclusion that the current model of economic development, which tends to reduce overall societal wellbeing via forms of economic domination and oppression, is doomed to impoverish its main resource, running the risk of endangering the entire socioeconomic system.

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The hacker movement as a continuation of labour struggle

George Dafermos and Johan Söderberg

Abstract

This text dwells on the continuity between free software developers and labour struggle. Hackers produce software that is universally free to use, modify and redistribute. Consequently, from the perspective of capital, the hacker community presents itself as a pool of gratis labour. Concurrently, the production of free software is indicative of a mode of production based on the common ownership of the means of production. The struggles in the computer underground over code and software licences centre on the tension between the employment of free software to bring about an intensified exploitation of workers, and its potential to tear away the fetters of wage labour.

Introduction

In this article, we propose that the history of labour struggle is continued in the hacker movement — for example, in the case of employees who crash their employers' computer equipment. Framing the discussion in this way highlights the kinship between the tradition of machine breaking in labour conflicts and hackers who break into corporate servers or write viruses.[1] But this connection is also valid for the hackers engaged in developing free software and open source software (FOSS) — and indeed, we are mainly concerned with the activity of the latter group.

Advocates of 'open source' tend to portray its development model as a neutral advancement of the method for developing software that leads to better technologies.[2] In support of their

claim, they can point to the wide adoption of FOSS applications by the computer industry. For instance, the dominant server software and scripting language on the worldwide web are the Apache HTTP server (Netcraft, 2008) and the PHP programming language (Hughes, 2002). Linux runs on more architectures and devices than any other operating system today (Kroah-Hartman, 2006); Sendmail is responsible for routing the majority of email messages; BIND is indisputably the most widely used DNS server; and even the world wide web itself[3] is free software. Due to the terms under which these products are distributed, they are available for everyone to use, modify, redistribute and sell — that is, redistribute for a price.

The motivation of hackers for writing software and giving it away for free is one of the most widely debated topics among academics studying the hacker movement. Economists try to square this behaviour of hackers with the assumption of the rational economic man. They assume that hackers hand out software for free in order to improve their reputation and thus employability in the future: that the monetary reward has just been postponed (Lerner & Tirole, 2002). But while this statement may describe a current trend in the computer underground, it fails to explain the motivation of hackers prior to the establishment of a market in FOSS products. Neither does the opportunity–cost model take into account hackers who spend their time on illegal activities such as writing viruses and cracking encryptions. When hackers are asked about their motives, they play down the economic incentives and point to the fun of writing software, often comparing the joy of writing free software with the toil of waged labour.[4]

In our view, the joy of participating in FOSS projects should be seen against the backdrop of alienated work relations. Hackers gear their labour power towards the use value of the software as opposed to its exchange value: free software is produced to be used, not to be sold. In FOSS projects, work is an end in itself rather than a means for something else. That is the deeper meaning of the common expression among hackers that they write code just to 'scratch their itch' (Raymond, 1999). In attempting to escape from alienated existence, the hacker movement has invented an alternative model for organising labour founded on the common ownership of the means of production, on volunteer participation and the principle of self-expression in work. It is this promise that lies at the heart of the politics of the hacker movement. The practice of 'hacking' indicates the distance between doing and wage labour — a claim that can be substantiated using concrete political gains. One example is that of strong encryption

programmes like Pretty Good Privacy, which are made publicly available to prevent governments from eavesdropping on citizens. Another case is the surge of anonymous file-sharing networks that have encouraged mass defection from the intellectual property regime.[5] These systems would not have been possible had decisions over technology still been confined to market incentives, corporate hierarchies and government regulation.

It is true that from the perspective of capital, the hacker community presents an opportunity to tap into a well of gratis labour. Enterprises take FOSS, customise it for their clients, package it under a brand and sell services on top of it, thus lowering the cost of in-house product development and putting a downward pressure on wages and working conditions in the computer sector. In the second half of this article, we elaborate on Karl Marx's theory about 'surplus profit' and the 'equalisation of social surplus value' in order to conceptualise the way business models based on FOSS operate. Even so, we do not conclude that the hacker movement has ceased to be a potential source of resistance against capital. Whether hackers pose a challenge to capital or if they will be more of a threat to organised labour is a question that has to be decided in struggle.

Programming and labour struggle

In our use of the term *hacking*, we mean the act of taking a pre-existing system and bending it to serve a different end from that for which it was originally intended, and hence it is implicit in hacking that its significance cannot be known simply from knowing its point of departure. We emphasise this because the political pretensions of hackers can easily be dismissed. The majority of hackers are white, male and belong to the western middle class. Likewise, the profession of programming is descended from white-collar engineers. Historically speaking, those engineers and the mainframe computers over which they presided were instrumental in imposing management control over factory workers. As for the internet, most people are familiar with its origin in the military-industrial complex. Without doubt, something of that heritage is reflected in the worldview of the hacker movement. A common point of departure when hackers position themselves in the world is the notion of the information age. The concept was cooked up during the Cold War by US social scientists wishing to replace Marxism with a less subversive master narrative. The ideological load of the 'end-to-ideology' argument that underpins notions about the information age has been vividly demonstrated before

(Webster, 2002; Barbrook, 2007). Thus it is understandable that a chorus of left-leaning scholars over the years has decried 'cyber-politics' for being individualistic, consumerist and entrepreneurial (Siegel & Markoff, 1985; Kroker, 1994; Liu, 2004). Many hackers are aware of the paradoxical blend between libertarianism and socialism that underpins their philosophy and indeed, have often pointed it out to scholars.

The politics of hacking is hard to pin down because it is a synthesis of many irreconcilable things. To use a fashionable term, it is a hybrid. On the one hand, there is the line running from the white-collar engineers of the 1950s to present-day hackers; and on the other, another line connects hacking to the resistance of the machine operators working under those engineers. In order to prevent accidents and malfunctions, machine operators have often by themselves and against the wish of managers made efforts to become familiar with the instructions relating to their machinery. In addition, once operators understand how the technology works, they know how to reconfigure the apparatus and lower its work pace, which may have been previously set at a higher speed by managers and engineers. Managers have responded to this practice by hiding the mechanics from the operators (Noble, 1986), and thus the conflict of interest between labour and capital over the exploitation of surplus value is played out in a struggle over who has access to the technology. It is the same concern that informs hackers' demand for free access to information and free software tools. What workers and hackers have in common is their rejection of Taylorism.[6] This bond is made evident the more routinised the programming profession becomes (Kraft, 1977).

Routinisation was given a strong impetus in the 1950s, when computers began to be used by businesses. A labour market for programmers was created together with educational organisations that trained and certified programmers. The goal of ensuring a smooth supply of computer professionals, however, turned out to be elusive. For as long as a market for programmers has existed, it seems to have been plagued by a supposed labour shortage (Chabrow, 2008). It is not a shortage of trained programmers in absolute numbers that has troubled corporate recruiters, though. Rather, once managers discovered that some programmers were several times more productive than others, they recognised a problem in identifying the right programmer for the job.[7] Given that living labour accounts for two-thirds of total costs in software development projects (Lakha, 1994), and that 'the cost of software has always been development cost, not replication cost' (Brooks, 1987), the question of how to increase the productivity of labour

has been a looming issue (Kim, 2006). Over the years, managers grew increasingly disconcerted by the absence of 'a universally accepted classification scheme for programmers' based on 'accepted norms with regard to biographical, educational and job experience data' (Sackman et al., 1969).

The difficulty of employers in deciding whether a potential programmer will perform poorly or exceptionally can be attributed to a failure of capital in measuring this kind of labour. Such a failure is also suggested by the diversity of backgrounds within the software community, as has been often commented by insiders: 'In what other field are you likely to find a Ph.D and a person whose education stopped at the high school level working as equals on the same difficult technical problem, e.g., the development of a compiler?' (Orden, 1967: 147). The inability of capital to measure the labour of programmers is a result of their resistance against Taylorism. In the words of a manager, 'the technologists more closely identified with the digital computer have been the most arrogant in their wilful disregard of the nature of the manager's job. These technicians have clothed themselves in the garb of the arcane wherever they could do so, thus alienating those whom they would serve' (*Datamation*, 1966). The nascent discipline of software engineering grew, to a certain extent, out of managers' compulsion to rationalise the work process of programmers.[8] In contrast to the 'black arts' of code writing, software engineering was heralded in trade magazines as 'the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software'.[9] This is not to say that the academic field of software engineering was a managerial plot; but merely that the innovations that sprang from its bosom were systematically deployed by managers in order to extend their control over the labour process. A case in point is that of the assemblers, compilers and technologies that come under the rubric of 'automatic programming', designed to perform a function formerly carried out by a human programmer (Kraft, 1979; Parnas, 1985). Another set of innovations that descends from software engineering is the use of methodologies. Methodologies (i.e. structured approaches or object orientation) provide frameworks within which programmers are constrained from doing things incorrectly. In the hands of managers, however, these techniques have often turned into instruments of control (Glass, 2005; Keggler, 1989; Kraft, 1979), since they increase managers' ability to break the programming process down into functions consisting of a definite number of tasks. Thus specific tasks can be assigned to programmers while managers reserve for themselves the decision-making authority. There is

nothing inherently stifling in these methodologies, styles, and techniques — were it not the case that they have been used to turn programmers into fragment labourers and deny them knowledge of the whole of the labour process (Hannemyr, 1999).

Karl Marx's analysis of how capital incorporates the labour process provides a lens through which the historical transformation of the programming profession from the 1950s till today can be viewed. The subsumption of labour under capital unfolds in two stages: in the first stage, due to the concentration of ownership over the means of production, formerly independent producers and artisans become wage earners. Thus they pass into the *formal* control of capital. 'From the technological point of view', however, 'the labour process continues exactly as it did before, except that now it is a labour process subordinated to capital'. The subsumption of labour under capital is consummated, becomes *real*, only when the labour process itself is transformed in accordance with capital's needs. The second stage is marked by the standardisation of work procedures, the parcelling-out and deskilling of labour, and the absorption of human skills into fixed capital (Marx, 1990 (1864)). These observations of Marx's were expanded upon by Harry Braverman, who foresaw that the factory despotism of his day would soon metamorphose into office despotism. He rightly pinpointed the computer as playing a crucial role in this transition. In hindsight, computerisation has confirmed many of Braverman's suspicions, but it has also made apparent a countervailing tendency. Although capital wrests control over the labour process through the mediation of technology, it has to concede to the workers some leeway in operating this technology.[10] Critics of Braverman quickly responded that he had over-stressed the punitive side of capital, forgetting that capital also extends its influence over workers by giving them a certain degree of 'responsible autonomy' (Friedman, 1977). A case in point are the much-discussed table-tennis facilities put at the disposal of programmers at Googleplex and other high-tech firms. If we choose to see computer firms investing in FOSS development as cases in which research and development costs have been outsourced to volunteer communities, then it becomes clear that 'responsible autonomy' enjoys pride of place among capital's strategies for managing labour. The same thing, however, could also be understood as being the subsumption not only of work but of the whole of society under monopoly capital. In describing the unfolding of such a trend, Harry Braverman made a comment that squarely places FOSS development in the context of labour theory: 'So enterprising is capital that even where the effort is made

by one or another section of the population to find a way to nature, sport, or art through personal activity and amateur or "underground" innovation, these activities are rapidly incorporated into the market so far as is possible' (Braverman, 1974: 279).

The practice of hacking: Free software and open source development

The rise of a consumer market in personal computers in the 1970s coincided with a hacker community spawned outside elite academic institutions. Though mutually dependent, the two spheres soon clashed, since the hacker practice of freely sharing software code obstructed the establishment of a market in software (Gates, 1976). This conflict has intensified over time, as the industry has shifted its focus from selling hardware to selling information and software products. The hacker community was politicised in response to the attempts by capital to enclose computer programmes under intellectual property law.

The struggle of hackers against proprietary software has been championed by the Free Software Foundation (FSF). The organisation was founded in 1985 by Richard Stallman, and its goal is the development of a computer standard consisting entirely of free software (Stallman, 1999). In order to ensure that software made available for free could not be expropriated by individual rights-holders, Stallman devised the GNU General Public Licence (GPL), commonly referred to as 'copyleft'. The free licence makes use of the privilege that copyright law gives authors to specify the conditions for using their creations. With the GPL, conditions are added that increase rather than restrict the rights of the user to run, modify, and re-distribute software. Ironically, it is copyright law that gives the free licence teeth, rendering it possible to enforce violations. But instead of backing individual rights-holders, copyleft installs a regime of common ownership. Proof of the continued relevance of the licence is that tens of thousands of software programmes have been released under the GPL, and the common pool of free software grows bigger by the day.[11]

The existence of this free software suggests that the production of computer applications can be organised without intellectual property relations and, by extension, without the mediation of capital.[12] The making of the Linux operating system kernel gives some hints. Linus Torvalds initiated the project in October 1991. He described it as a tool 'for hackers by a hacker', to which each contributed on a purely voluntary basis (Torvalds, 1991). The development of an operating system is a huge undertaking

involving a gigantic programming effort and the expenditure of thousands of man-hours. Coinciding with the diffusion of the internet in the early 1990s, Linux was the first project that leveraged the computer network for large-scale, geographically distributed collaboration, and the size of the joint effort behind it is positively correlated to its rapid pace of releases. In the first month after Linus Torvalds's announcement, there were three releases. Prior to the release of version 1.0 in March 1994, there were ten releases in December 1993, fourteen releases in January 1994 and eleven in February 1994. This practice of releasing 'early and often' runs counter to typical commercial software development, where users come into contact with the product only in its final stages. Early versions are 'buggy' or flawed, and companies do not want to wear out the patience of their customers. In the Linux project, by contrast, this practice proved decisive in motivating participants, giving them credit for their recent contributions and spurring them to new efforts. Community etiquette prescribes that all contributions are mentioned in the credits file included in each version. In this way, contributors more readily recognise themselves in the product of their collective labour and recognise it as their own.

In the early years, the process by which Linux was developed was rather straightforward: diagrammatically, it followed a straight line from Torvalds who distributed the official version to the individual programmers who downloaded the software, made changes to fix bugs or augment its functionality, and then fed them back to Torvalds to review and decide whether or not to integrate them in the next official version. Traditional yardsticks of software engineering were shunned: there were no deadlines, release dates or system-level design. In the absence of a centrally planned division of labour by which programmers might be assigned specific tasks, developers took on tasks as their own interests best dictated. However, in order to alleviate the strain forced upon the project's coordination by the expansion of the contributing group, an organisational structure gradually took shape: about a dozen hackers who had done extensive work on a domain of the system took on the task of reviewing patches[13] submitted by the wider bug-fixing group. These 'trusted lieutenants' are each responsible for maintaining a part of the kernel, and contributors send their patches directly to them.

Only a handful of FOSS projects have adopted a formal voting procedure for electing project leaders and settling disputes. In most cases, the administration of projects appears as informal, opaque and hierarchical. Upon closer examination, however, there turns

out to be a different kind of check against power asymmetries. The position of lieutenants is granted by means of recognition by the community, and this authority is constantly subject to withdrawal (Moody, 2001: 81, 84). Hence, the role of the lieutenant is not that of a leader in the customary sense of the word. Even Linus Torvalds, in spite of his high prestige, has been forced to back down from decisions when developers threatened to sideline him. Essentially, the direction of the Linux project derives from the cumulative synthesis of modifications contributed by individual programmers (van Wendel de Joode, 2005; Ingo, 2006). When two different solutions compete for the same problem, both are tried out (Torvalds, 2004). Thus conflicts over technical issues are 'resolved' in parallel development lines. In a community that 'rejects kings, presidents and voting, but believes in rough consensus and running code' (Clark, 1992), decisions are made by those who do the work (McCormick, 2003), and the freedom of developers to vote with their feet is key. Basically, it is this right to 'fork'[14] a development project that is protected by the General Public Licence. Project leaders are thus kept on their toes, because the relevance of a fork depends on the commitment of its developers and users.

The same philosophy can also be read out from the modular architecture of the Linux kernel. Described in technical terms, modularity is a form of task decomposition. It is used to separate the work of different groups of developers, creating, in effect, related yet separate sub-projects. Because a modular system 'can be built piecemeal, and others can help by working independently on some of the various components' (Moody, 2001), a modular design decreases the total need for coordination and enables parallel development. Torvalds explains, 'With the Linux kernel it became clear very quickly that we want to have a system which is as modular as possible. The open-source development model really requires this, because otherwise you can't easily have people working in parallel. It's too painful when you have people working on the same part of the kernel and they clash' (Torvalds, 1999). The parallel development structure of the Linux kernel is consummated in *parallel releases* of the product. The parallel release structure for Linux was initiated with version 1.1 in April 1994, when Linux was split into two trees: the stable and the development branch. In retrospect, the phenomenal growth of Linux can be traced back to this decision. Contrary to the expectation that as Linux grew in size and complexity its rate of development would inevitably slow down, an analysis of Linux for the years 1994 to 2004 shows that the development branch keeps growing at a super-linear rate (Robles, 2005; Godfrey & Tu, 2000). The important point

to note here is that modularity is not just a choice of design that has proven technically superior in managing a decentralised and collaborative software project.[15] This particular design choice reflects the development process in which it was made, and as such, modularity helps to reinforce the social relations and the values of the hacker community.

A labour theory approach to FOSS development raises the question of how work is distributed in the hacker community. In the fourteen versions of Linux (from version 2.6.11 to 2.6.24) released in the space of nearly three years (from March 2, 2005 to January 24, 2008), 83,432 changes were contributed by 3,678 distinct individuals. Averaging 5,000 changes per (stable) release and 2.7 months between (stable) releases, Linux grows by a phenomenal 10 per cent per year.[16] Volunteers account for approximately 27% of changes, followed by Red Hat (11.2%), Novell (8.9%), IBM (8.3%), Intel (4.1%), Linux Foundation (2.6%), Consultant (2.5%), SGI (2.0%), MIPS Technologies (1.6%), Oracle (1.3%), MontaVista (1.2%), Google (1.1%), Linutronix (1.0%), HP (0.9%), NetApp (0.9%), SWsoft (0.9%), Renesas Technology (*0.9%*), Freescale (0.9%), Astaro (0.9%), Academia (0.8%), Cisco (0.5%), Simtec (0.5%), Linux Networx (0.5%), Q Logic (0.5%), Fujitsu (0.5%), Broadcom (0.5%)

Table 1: Number of individual developers and employers

Kernel version	Number of developers	Number of companies
2.6.11	483	71
2.6.12	701	90
2.6.13	637	91
2.6.14	625	89
2.6.15	679	96
2.6.16	775	100
2.6.17	784	106
2.6.18	897	121
2.6.19	878	126
2.6.20	728	130
2.6.21	834	132
2.6.22	957	176
2.6.23	991	178
2.6.24	1,057	186
All	3,678	271

and others. The overall participation by firms has been steadily increasing, as has the number of contributing developers (*see Table 1 on page 62*).[17]

Despite the large number of contributors, however, the majority of work is still done by a relatively small group of core developers. The top ten contributors account for 15 per cent of changes, and the top thirty for 30 per cent (Kroah-Hartman, Corbet & McPherson, 2008). Similar distributions of work across the development community have been observed in other big free software projects such as Apache, Mozilla and FreeBSD (Mockus et al., 2002; Dinh-Trong & Bieman, 2005). The numbers suggest an asymmetry in workload — but that does not necessarily translate into a concealed, centrally planned division of labour. Rather, the division of labour in FOSS development is the immediate result of the usual procedure by which one joins a project and advances from peripheral (yet necessary) activities such as problem-reporting and problem-fixing to the development of new functionality. Since the right to commit changes to a project's central repository (i.e. version-control system)[18] is conferred only to those contributors with a long history of accepted patches, one typically joins a project by reporting problems and submitting fixes to problems already reported. In this way, FOSS projects have found a mechanism for the selection of programmers to the core development group that resonates with the strong meritocratic ethos in the hacker community.[19]

How capital is enrolling user communities in the valorisation process

The development model of hackers has won widespread acceptance in the business community in the last ten years. An open invitation to big business was sent in 1998 after the Freeware Summit in Palo Alto, at which many of the movers and shakers in the hacker subculture had gathered with the goal of getting corporations involved. Crucial to their plan was the choosing of a label that sounded less threatening to the computer programming status quo than did the term 'free software'. The meeting decided to use the label 'open source' instead. It quickly spread, and has become the term by which most outsiders know hacker software today. Shortly after the summit, IBM announced its commitment to open source. The company has since invested heavily in Apache and GNU/Linux, parading its support for open source with the old hippie slogan 'Peace, Love, Linux'.[20] Oracle, Compaq, Dell, Hewlett Packard, Intel and many others quickly followed suit, while the influx of multinationals spurred the growth of medium-sized

companies such as Red Hat, Novell and MySQL, which specialised in FOSS products and services. Nowadays, almost every major computer company, with the notable exception of Microsoft, is going out of its way to befriend the hacker community (Weber, 2004). It is reasonable to assume that the composition of the hacker community has been transformed by the recent inflow of corporate capital. A study of 287 FOSS projects came up with the estimate that approximately 40 per cent of all contributors were either directly paid to perform the task in question, or encouraged by their employers to partake in free software projects during office time. Further, roughly 58 per cent of the survey respondents had day-jobs in the IT sector, while another 20 per cent were computer science students. In consideration of this, it is not unjustified to look upon the FOSS community as a basin for the provision of 'lifelong learning' to employees. While these observations are consistent with other studies that report a sizeable involvement of hired employees in volunteer development communities, this survey is additionally interesting because it registers traces of workers' discontent. About 17 per cent of the respondents said they were working on FOSS projects without their supervisors being aware of it. This finding should caution us from jumping to the conclusion that the extensive representation of firms in the hacker community translates into corporate control over those activities (Lakhani & Wolf, 2005).

The corporate embrace of the FOSS development model should be seen against the background of a restructured labour market. A feature of this restructuring is the effacement of the border between consumers and producers. Such a trend was already being proposed by futurists in the 1980s under the label 'the rise of the prosumer' (Toffler, 1981). Nowadays, it is part of the canon of intellectual property critique to situate the conflicts surrounding copyright law in the context of active consumers and fandom. Both futurists and critics expect that fans will bring about a more democratic, participatory form of media consumption. They cherish the altruism of communities working together. Barely masked under the fanfare is the bottom line of profit. Business gurus are more upfront: with them, the opportunity to get rich quickly by enrolling the community is directly spelled out (Hagel & Armstrong, 1997; Libert, Spector & Tapscott, 2007; Silver, 2007). It thus becomes evident that this trend borders on more familiar experiments in laissez-faire capitalism and old-hat marketing schemes such as viral marketing, Tupperware parties and pyramid schemes. What they have in common is the involvement of the customer as the chief promoter and developer

of the product. As critical voices have pointed out before, work assignments are being self-sourced and crowd-sourced in an economy that increasingly depends on the unpaid labour of volunteers and users (Terranova, 2004; Gimenez, 2007).

FOSS firms provide a good point of departure for theorising about a situation that has variously been described as 'the real subsumption of society' and 'the social factory'. We do not believe that as a result the economy has been rendered immeasurable.[21] On the contrary, the profitability of FOSS firms can be harboured within Marx's theory of value. Red Hat is an example of what might, borrowing from Marxist terminology, be called a 'surplus profit' business model. A cornerstone in Karl Marx's economic theory is that labour is the source of surplus value. Furthermore, the amount of surplus value that a capitalist can accumulate depends on the number of labourers he sets in motion. Marx acknowledged a possibility, however, for the individual capitalist to acquire more surplus value: sometimes the capitalist manages to position his venture so favourably that the surplus value of labourers hired by competitors flows into his pockets instead. The textbook example is the capitalist who invents a superior technique for producing goods. The cost of producing an item falls below the social average, i.e. the average cost competitors pay when they produce the item. The units are produced at different costs, but since they are identical, all the items are sold on the same market for the same price. Hence the most cost-efficient capitalist — the one who produces the unit at the lowest cost — earns his efficiency gain as a bonus from the other capitalists. This boon is known as 'surplus profit'. The advantage is ephemeral, since every other capitalist will try to catch up with the inventor. When the majority has adopted the superior way of doing things, the average production cost will even out at the new equilibrium. The surplus profit vanishes for the individual capitalist. It is not efficiency gains in 'absolute terms' that provide the sought-for benchmark. It is efficiency gains vis-à-vis other comparable producers. The crucial point here is that surplus profit exists per definition as a deviation from the norm.

The existence of the FOSS business models can be understood as a variation on this theme. Companies such as Red Hat hire labourers to customise free software and provide support services in addition to it. These activities generate a modest amount of surplus value. The input of waged labour is marginal in comparison to the vast amount of volunteer labour involved in writing the main body of code. Gratis labour is not, though, automatically voided of value. It has value if it duplicates waged labour performed elsewhere in the economy. In other words, the value of unwaged labour by FOSS

developers stands in relation to the waged labour of in-house programmers. Both are working towards equivalent code solutions. For as long as the social average cost of solving a computer problem is determined by waged labour and intellectual property relations, volunteer labour (hackers) and free licences cut costs below this social average. In this case, surplus profit does not emanate from the reduction of staff due to a technological innovation, but is created when work migrates from paid labourers to unpaid users due to an organisational innovation, i.e. *crowdsourcing*.

It remains an open question as to whether the copyright-dependent fraction of the capitalist class (Microsoft, Hollywood, record companies) can follow suit and close the gap in production costs. Microsoft's 'shared source' policy, where selected customers are given restricted access to Microsoft's source code, could be seen as an attempt to close in on the distance between proprietary software and FOSS. However, going by what historical experience has taught us, the managerial preoccupation with control will probably spoil the efforts. It might be that these companies are unable to imitate the FOSS model and still sustain their high profitability. If our statement is correct, the surplus-profit business model of Red Hat will continue to prosper in the margins of society, leeching off the differential level in the cost of production.

From this we can draw two important conclusions. First, that hackers and campaigners against intellectual property law are wrong in thinking that FOSS enterprises, powered with free markets and free technology, are destined to supersede and replace intellectual property monopolies. Red Hat can only be profitable in relation to the inflated social average production cost of Microsoft. Both depend in different ways on the existence of intellectual property rights. Hence, abolishing intellectual property is incompatible with capitalism, and this statement is not falsified by the existence of enterprises that profit from FOSS products and services. Second, if we are to follow our reasoning to its logical conclusion, Red Hat's shareholders are not freeriding on the community of volunteer developers but, through the 'equalisation of social surplus value', they are intensifying the exploitation of programmers employed by Microsoft. That claim is counter-intuitive and should perhaps not be pushed too far. It is worth mentioning, nonetheless, since it highlights what corporate enthusiasm over open source boils down to. Namely, the expectation of managers that free and open-source licences will impose an overall downward pressure on the wages and working conditions of in-house computer programmers.

Having said this, we are still a long way from delivering a final verdict on FOSS. While companies certainly hope to pitch user communities against waged labour, crowdsourcing is but one possible outcome from the current situation. When confronted with such concerns, hackers usually point to the growing employment opportunities within FOSS businesses. It could well be that professional FOSS developers end up in a stronger position compared to programmers working with proprietary software, since free and open-source licences remove the edge that firms otherwise have over employees due to their ownership of the means of coding. When software tools are made publicly available under a free licence, the main scarcity left on the market consists of the skill to write software code, which gives the advantage to living labour. In order to determine which is the most plausible scenario, more research into the emerging labour market of FOSS developers is required. Additionally, we have to take into consideration the unique position of the computer sector within capitalism today. This creates a 'chicken-in-every-pot' situation for programmers, irrespective of whether they are working with FOSS solutions or with proprietary software. That favourable position is at the expense of every other worker, since computer technology is pivotal in the neoliberal reformation of capitalism that most people have encountered as weaker unions, flexible labour markets and deskilling. Thus, while some computer programmers are confident that they will ride out the crowdsourced mode of capitalism, other workers may not be so fortunate (Ross, 2006).

An assessment of the surplus-profit model of FOSS firms must also be weighed against the subjective side of this story and the political claims made by hackers, and it is worth keeping in mind that the computer underground was forked out of the New Left and the movement surrounding 'appropriate technology' (Markoff, 2005). Strong voices within the computer underground continue to stress social and ethical concerns about free software, and many hackers choose free licences for political reasons. Hence, capital was not the mastermind behind FOSS development, though the computer industry is a fast learner and tries hard to recuperate the disturbance. A sign of this is that companies are making millions out of the volunteer efforts of hackers. Simply to state this fact closes the matter for sceptical commentators. They believe that the subversive potential of FOSS development, if there ever was one, has by now been exhausted. But by analogy, the same critics should also say that there is nothing subversive in workers' struggle, since companies profit from them. In our opinion, the situation is exactly the opposite. It is the fact that FOSS communities have been made

sources of surplus value for capital that provides the spark that might radicalise the hacker movement even further, throwing parts of it into direct struggle; and it is for the same reason that their challenge to capital's domination is congruent with the resistance of waged workers.

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1   Ross (1991) made the parallel between labour conflicts and hacking in order to disprove the public image of hackers as merely apolitical, juvenile pranksters.

2   For example, according to Tim O'Reilly (2001), open source is 'about making better software through source sharing and network-enabled collaboration'. See also <http://www.openp2p.com/p2p/2000/12/05/images/800-opensource.jpg>.

3   We are referring to the core components of the software, i.e. HTTP, HTML and URI. See the website of the World Wide Web Consortium at <http://w3c.org>, or see T. Berners-Lee (1999).

4   After drawing this conclusion from her interview material, Sonali Shah (2006) adds that many hackers claim to have become FOSS entrepreneurs not to make a profit but to avoid having to work (as waged labour) in a company.

5   These and other examples are described in the anthology by DiBona, Ockman & Stone (1999). For a detailed account of how hackers made encryption schemes available to the public, see Levy (2001).

6   Also referred to as scientific management, Taylorism is a managerial credo rooted in the time-and-motion studies conducted by Frederick Taylor (1911). Its practice is synonymous with the fragmentation of the labour process that ensues from the parceling-out and deskilling of the labour of execution.

7   An influential early study by the System Development Corporation for the Advanced Research Projects Agency of the Department of Defence of the United States showed great individual differences in programmer performance. The report underlined the significance of finding a mechanism 'to detect and weed out these poor performers [as this] could result in vast savings in time, effort, and cost'. See Sackman, Erikson & Grant (1968).

8   The field of software engineering was defined in 1968 at the NATO Software Engineering Conference, which stressed that 'backward techniques' were at the heart of the problem facing software as a professional field (Naur & Randell, 1969: 10), thus reflecting the concerns about the management of programmers that weighed heavily on managers' minds.

9   This is the definition of software engineering given in the 'IEEE Standard Glossary of Software Engineering Terminology', *IEEE* std 610.12-1990 (1990).

10 Cornelius Castoriadis (1976: 75) has followed this thought to its logical conclusion: 'What shows the critical importance of the distance between the official organisation of production and the reality of the labour process is the effectiveness of the form of struggle called 'working to rule' ... no sooner do the workers start to apply with the utmost precision and to excruciating detail the rules and the instructions they are supposed to apply than the factory is thrown into full chaos'.

11 As of June 16, 2008, Sourceforge.net (the largest application service provider for free software projects) hosts 83,731 projects licensed under the GNU GPL, at <http://sourceforge.net>.

12 On a more general note, this presupposition is consistent with what some theorists have referred to as *the communism of capital*. See, for example, Virno (2004).

13 A *patch* is a small piece of software designed to fix problems or update a computer programme.

14 A project *forks* when, as a result of their discontent with the official branch, (a subset of its) developers make a copy of the code base and start independent development, thus creating an alternative project.

On account of the rights granted to its users, FOSS can be forked without the permission of its original creator(s).

15 Recent empirical research shows that modular design is characteristic not just of Linux but of the FOSS development model in general. Indicatively, MacComack, Rusnak & Baldwin (2006) demonstrate that the code structure of Mozilla became increasingly modular after its release under an open-source license.

16 The size of the Linux kernel code-base is 8.8 million lines in version 2.6.24.

17 These statistics are taken from Kroah-Hartman, Corbet & McPherson (2008).

18 A *version-control system* is a software tool commonly used in large-scale software development to track and provide control over changes to the software product under development.

19 On the hacker ethic, see Levy (1994).

20 See <http://www-03.ibm.com/servers/eserver/linux/passport.swf>.

21 We are here adressing one of the claims made by Hardt and Negri (2000, 2004)

No measure for culture?
Value in the new economy

Steffen Böhm and Chris Land

Abstract

This paper explores articulations of the value of investment in culture and the arts through a critical discourse analysis of policy documents, reports and academic commentary since 1997. It argues that in this period, discourses around the value of culture have moved from a focus on the direct economic contributions of the culture industries to their indirect economic benefits. These indirect benefits are discussed here under three main headings: creativity and innovation, employability, and social inclusion. These are in turn analysed in terms of three forms of capital: human, social and cultural. The paper concludes with an analysis of this discursive shift through the lens of autonomist Marxist concerns with the labour of social reproduction. It is our argument that, in contemporary policy discourses on culture and the arts, the government in the UK is increasingly concerned with the use of culture to form the social in the image of capital. As such, we must turn our attention beyond the walls of the factory in order to understand the contemporary capitalist production of value and resistance to it.

Introduction

D ue to their use of semi- or non-industrial modes of symbol production, the visual arts have a formally 'peripheral' position within the cultural industries (Hesmondhalgh, 2006: 13). Nevertheless, when it comes to autonomy, the arts and artists are often granted privileged positions within the creative industries thanks to the exemplarity of unalienated artistic work (Shorthose & Strange, 2004; Wittel, 2004) — an exemplarity due, in part, to the apparent irreconcilability of high culture and the

economy. As Bourdieu (1993) characterised it, the field of cultural production is 'the economic world reversed' in that economic success is often a sign of artistic failure. If an artist reaches a mass audience or enters into standardised, industrialised production, then his or her status as artist becomes questionable. Rather, artists offer an example of 'unalienated' work by seemingly remaining free from the pressures of both the market and hierarchical control of their labour process (Wittel, 2004). In idealised artistic production, both product and process are independently determined within autonomous 'communities' of cultural production (Shorthose & Strange, 2004).

This apparent autonomy means that the visual arts can be held up as a benchmark for other creative processes that seem to challenge the logics of industrial-capitalist organisation. In much of the commentary on peer-to-peer and open-source software production, there is an emphasis on the way those involved in coding are recognised by their virtuosity and skill in crafting 'good' code (Raymond, 2001; Sennett, 2008). The standard for what is 'good' code is not determined by an external market or by a line manager, as would be the case in a commercial software company, but rather by peer evaluation that can reflect factors and judgements quite specific to the actors involved: for example, the ingenuity or quality of 'the hack' (Jordan & Taylor, 2004). As with artists, the value of such work is autonomously determined by informal peer evaluation in accordance with a collectively determined set of values, and pays off in terms of cultural prestige rather than in conventional, monetary terms (Rehn, 2001).

Within these 'creative communities', or 'creative ecologies' (Shorthose & Strange, 2004), productive activity is conducted according to autonomously determined social values, decided through the ongoing and repeated social interactions of the community members. This renders such relations distinct from both the formal hierarchies of the employment relationship and the impersonal fetishism of the market. Removed from both of capitalism's main structures for evaluating and controlling labour, the work of the artist lies 'beyond measure' (Negri, 1999; Hardt & Negri, 2000):

> the value of artistic labour is difficult to quantify or measure because of its collective, intangible nature and its independence from formal market exchange, where prices provide an index (however misleading and distorted) of social value. However, clearly the artistic and cultural labour of the creative ecology makes a substantial contribution to the general

welfare of society and its communities. (Shorthose & Strange, 2004: 49)

This simultaneous recognition of the value of culture and the difficulty of measuring that value has become one of the central problematics of creative capitalism. If, as Negri (1999) suggests, the labour theory of value is now redundant, then how is the value of creative labour to be measured? Rather than rehearsing the various conceptual debates over immeasurability and affective or immaterial labour (see Harvie, 2006 for a recent summary of and contribution to this debate), in this paper we empirically examine some of the strategies that organisations have developed in addressing the difficulty of articulating and measuring the value of artistic labour. Insofar as artists are held up as exemplary of autonomous activity, the strategies developed to articulate, evaluate and manage the production of cultural value by artists indicate some of the broader strategies being developed by capital in order to subsume autonomous, *values-driven production* into its structures of *value production* and accumulation.

Working with the results of a critical discourse analysis of governmental policy documents, academic and think-tank publications, consultancy reports and industry analyses, this paper suggests that far from supporting a strategy of autonomous production, the state, in the UK at least, has been active in seeking to overcome the difficulty of measuring artistic labour by developing new metrics and understandings of cultural and artistic value. Central to these discursive formations is the strategy of recoding the product of artistic and cultural activity as capital: human capital, social capital and cultural capital. In all three areas, participation in cultural and artistic activities is seen as valuable insofar as it facilitates accumulation. While for most of the 1990s, the focus was on directly economic benefits deriving from cultural investment such as increased tourism and job creation, in the late-1990s the discourse started to move toward less tangible benefits, sometimes articulated alongside a claim that art and culture should be valued as intrinsically good. The discourse shifted from focusing on economic benefits for regions towards a focus on social impacts on communities and individuals — the arts and culture could increase social inclusion and community cohesion, reduce crime and deviance, and increase health and mental wellbeing. As the value of art and culture has shifted onto this socioeconomic terrain and become a tool of governance, the production of 'affect' and the reproduction of the social in the image of capital have become central concerns in the evaluation and management of the arts. If

the artist is the benchmark for unalienated, autonomous, immeasurable production, this has not prevented a proliferation of attempts at measurement.

In conclusion, however, we sound a note of methodological caution. Since the analysis in this paper is based on an analysis of governmental policy documents and think-tank publications, it can only explore one side of artistic 'value subjects' (Dyer-Witheford, 2002). While it is crucial to recognise and understand the strategies of evaluation and measurement being imposed upon artistic and cultural production, it is also necessary to recognise and appreciate the strategies that artists, as active subjects, develop and mobilise in resisting subsumption and developing autonomous counter-strategies of value production. Further research into this aspect of cultural value production would, we suggest, be fruitful for deepening our understanding of contemporary anti-capitalist struggle.

Evolving discourses of evaluation and measurement in the arts

A broad picture has been painted in the policy studies literature (e.g. Matarasso, 1997; Mizra, 2006) in which, during the 1980s under a Conservative government, the arts in the UK were seen as a business like any other, subject to the rule of the market and supply/demand economics. In this period, galleries and museums had to fight hard for a share of the limited subsidies available. Within the Thatcher government's neoliberal emphasis on efficiency through markets, the idea of 'subsidy', like that of unemployment benefits and other forms of social welfare, were seen as both an unnecessary tax burden hampering the growth of the national economy and an unjustified intervention in the market that would support parasitic and weak organisations. Through the 1980s and early 1990s, subsidies to the arts were cut. Theatres, galleries and museums were supposed to compete alongside other forms of entertainment for customers' attention and money. In such a climate, subsidised culture had to justify itself on relatively narrow economic grounds, for example: increased tourism, urban regeneration and benefits to local business (Holden, 2004: 15). Where subsidies were not available, organisations were dependent on ticket and admissions charges, pushing up prices and reinforcing the notion that the arts were only for a small elite. Nevertheless, within the constraints of reduced funding and the imperatives of the market, the management of the arts was more or less left alone. The principle of self-determination and the ability of those in the

arts to decide how to spend their resources and how to account for this expenditure, was similar to the freedom any other manager or entrepreneur might expect in this time of hands-off government.

With the change of government to New Labour in 1997, this discourse also changed. Culture was a centrepiece of Blair's vision for Britain, captured in the media-friendly idea of a 'Cool Britannia'. While much of the discourse focused on the music industry and popular culture, there was also a place in this policy orientation for the arts and what had traditionally been seen as 'high culture'. Galleries and museums had their admission costs removed in order to democratise access, and the total spend on culture increased by 73 per cent in real terms over the next ten years (DCMS, 2007: 5). This was not, however, framed as an increase in 'subsidy', but as an increase in 'investment' (Gray, 2002: 84). Of course, as with any investment, there has to be a pay-back; but this was not necessarily in the form of direct financial returns. Promises were made that investment in the arts would pay off in other ways, for example through indirect economic benefits and by helping to deliver on other areas of policy concern.

The kind of indirect economic benefits promised and sometimes reported included increased tourism, local regeneration and the development of cultural quarters to attract the 'creative class' that has been constructed as the key value producer in the new economy (Matarasso, 1997; Florida, 2002). As well as these indirect economic pay-offs, the last ten years have seen a range of other social and policy-relevant benefits being promised. Participation in the arts, it is contended, benefits individuals and communities by improving health, reducing crime, increasing social inclusion and community cohesion, and generally contributing to a sense of wellbeing. Although not strictly financial benefits, these social benefits are economic in the broader sense of contributing to the economic health of the region and nation (Matarasso, 1997). It is to a discussion of these that we now turn.

The social impacts of culture and the arts: A critical discourse analysis

Creativity and innovation

Much of the discourse on the 'social impacts' of the arts is suffused with the idea that, in the UK at least, we are living in a knowledge economy where creativity and innovation are the engines of productivity and economic growth. This framework is often so taken for granted that it is not even explicitly articulated. Rather, words like 'creativity' and 'innovation' are scattered through the

relevant documents without direct reference to specific economic benefits. The assumption seems to be that 'creativity' is a transferable skill, and that developing the population's artistic creativity will deliver creativity and innovation in other sectors. In some documents, however, the link is explicit. On the first page of 'Values and visions: The contribution of culture', a document produced by a consortium of organisations involved in funding and administering the arts, the bold claim is made that:

> In the future, Britain's economic prosperity and well-being will not depend on industrial prowess, natural resources or cheap labour but on developing, attracting, retaining and mobilising creativity. In this 21st century, goods, services and industries driven by knowledge and creativity will define Britain's competitive edge. This can only happen if its economic strategy is fed by social changes that make culture and creativity part of everyone's life. (ACE et al., 2006: 1)

In the same document, the signatory organisations advocate 'promoting a society that values knowledge', and 'encouraging creativity and innovation' (ACE et al., 2006: 3).

This innovation is both technical and organisational. Playing heavily on the economic benefits of organisational and technical innovation in the arts, Matarasso notes that many of the projects his report reviewed

> used non-hierarchical and co-operative structures to promote a creative work environment. This was especially evident among the digital technology projects where, although there was often a central figure, there was also a high level of delegation and autonomy, with minimal reporting required … Structures were fluid, with people taking on roles according to need, and moving easily between employment, contract work and volunteering. As a result, the projects were adaptable, and willing to give people their head, allowing them to follow an idea in the knowledge that it might fail. The results are not only a series of innovative projects like person-centred profiling, or Internet radio, but new organisational models which allow creativity to thrive. (Matarasso, 1997: 59)

Although the education and training aspects of these last examples spills over into our second category (below), it is worth noting here the links between organisational form and creativity. Participation

in an autonomous creative milieu like the arts enables people to develop their creativity and learn how to labour in the decentralised, delayered, anti-bureaucratic workplaces supposed to dominate the contemporary organisational landscape (Boltanksi & Chiapello, 2005). For Matarasso (e.g. 1997: 59–62), this is also one of the sources of innovation and productivity in the delivery of culture and the arts. Since participation is rarely formalised but takes place within a shifting and flexible constellation of participants, volunteers, contractors and employees, it not only prepares participants for the realities of a precarious workplace, but is economically efficient and mobilises a significant amount of free labour (Terranova, 2004) to realise its benefits and deliver value (cf. Leadbeater, 2008).

By articulating the benefits of investment in the arts in terms of increasing participants' creativity, the assumption in such documents is that 'creativity' is a generic, transferable skill that will benefit other areas of economic activity once participants move into the sphere of paid employment. The return on investment in the arts is framed in terms of increased human capital or, to put it another way, developing participants' labour power in accordance with the requirements of a post-Fordist economy. Crucially, though, there remains a tension. For creativity to be authentic, it needs to be free from restraint and autonomous; but to legitimate the investment of public monies into the arts and culture, the autonomous expression of free creativity must be constrained by the interests of economic accumulation, and its value measured. The result is similar to discussions within the field of organisational studies regarding the distinction between strategic and operational autonomy (Bailyn, 1985). Artists and other participants in the arts should be given a kind of operational autonomy in order to facilitate creativity, but the strategic objective of this creative expression is constrained by the recoding of creativity within a discourse of employability, transferable skills and human capital. This raises questions over the extent to which such discursive articulations of 'creativity' offer an authentic expression of creativity, or whether it is merely a faux, 'managed creativity' that serves pre-established economic and political interests and stands in the way of a truly autonomous self-valorisation. As Shorthose and Strange put it, 'Artistic labour is inherently linked to autonomy and self-determination, if it is to be a real and genuine expression of creative labour power' (2004: 47). By these criteria, it has to be said that the discursive articulations of creativity we studied fall short of the mark, since self-determination is constrained within bounds set by its articulation in terms of developing human and social capital.

Education, training, skills and employability

As already mentioned in relation to innovation and creativity, several of the documents in the corpus make links between participation in the arts, the development of transferable skills, and employability. This is particularly prominent in relation to projects using new media. For example, Matarasso reports on the success of Finnish projects in which young people work with digital technologies, where the skills learned on the projects could be directly utilised in employment:

> The digital technology projects were often important routes to employment, enabling and encouraging the acquisition of high level and relatively rare skills. As a result, many of those involved — who also tended to be young, and not to have previous success in education or employment — found themselves in possession of highly marketable skills … trainees had found employment in areas ranging from word processing to graphic design and desktop publishing; in the last year, five teenagers had left the project to take up programming. (Matarasso, 1997: 23)

Matarasso also points to the use of participative arts projects in schools, noting that their value goes beyond that of the arts as a subject area: 'Whatever value the arts have in their own right in the curriculum (and they have much), their potential for supporting broad educational goals should be recognised' (Matarasso, 1997: 19). For example, he found that participation in the arts could have a positive impact on the development of language skills, physical coordination, observation skills, social skills and, most notably, creativity and imagination, linking back to the previous category.

Although there is much reference to broad, life-long learning and skills development in the documents, there is also a strong focus on the importance of art galleries and museums for formal education. The House of Commons report on free admissions from 2002 even goes so far as to suggest that the arts should be cross-subsidised from education budgets (HoC, 2002: 7). In its newsletter, Firstsite, an Essex-based arts organisation, states that 'One in 10 children from the north Essex area has taken part in our educational activities' (Firstsite, 2007: 5), and includes a number of pictures of children engaged in art projects (2007: 5, 2). In 'Values and vision', the Arts Council of England and its collaborators make much of the use of museums by school children, and of the contribution to knowledge and learning that arts and cultural institutions make: '83% of visitors say that the museum or gallery

visited was an exciting place to visit, with 80% also saying that they had gained new knowledge and understanding as a result of their visit' (ACE et al., 2006: 11).

This conjunction of education and excitement was not unusual. The House of Commons report noted that, although museums in particular were of great scientific and educational importance, 'Perhaps most importantly these institutions are also fun and fascinating places to visit' (HoC, 2002: 9). By relating fun and learning, these reports fit well with contemporary discourses on the value of lifelong learning and the need for education, like work, to be both enjoyable and to extend beyond the classroom or workplace (Edwards, 1997). Of central importance here is the potential to engage students who may otherwise be failing in the classroom. As Matarasso notes, 'Teachers were often surprised at the level of concentration and effort their pupils were prepared to give to art activities and at the engagement of unexpected children. They spoke at length about the new self-confidence which some of the quieter members of the class had acquired as a result of shining in the art sessions' (1997: 20).

Matarasso continues to suggest that the arts can be a way of engaging children in education outside the classroom, catering for otherwise neglected groups with specific educational needs, such as disabled children (1997: 20), and for adults, for whom participation in the arts could provide a route into more formalised learning, for example through full-time further education or an Open University degree (1997: 21). A local government association (LGA) report into value in the arts in Essex found that participants 'reported a positive contribution to their confidence, modes of thinking and personal well-being' (2003: 40) following the activities. Often this increased confidence led to a more conventional development of individual human capital, as 75 per cent of participants reported that they had 'decided to start some further training or a college course' (2003: 41).

In combination, these first two categories suggest that the arts generate positive social impacts by indirectly contributing to the economy. Through training, education, developing creativity and creating a space for experimentation and risk-taking, the arts contribute to the development of forms of human capital that can subsequently be deployed in the workplace or through less formalised economic activities as part of a shifting, post-Fordist, flexible, networked form of organisation that includes volunteers and unpaid labour (Terranova, 2000; Ross, 2000; Arvidsson, 2007). The emphasis on otherwise marginalised groups, however, brings us on to our third category of analysis.

Social inclusion and community cohesion

Social inclusion is a significant theme in the literature on the social impacts of the arts, and is often linked with the concept of community cohesion. The main argument is that the arts can facilitate social inclusion by bringing in the disengaged, socially excluded or marginalised: those who, for whatever reason, find themselves outside of mainstream society. Although this aspect of the discourse carries an implicit critique of multi-culturalism, here we want to focus on aspects that refer more to poverty and youth. In this strand, the discourses find the causes of poverty, deviance and crime in social, or rather cultural, marginalisation. Perhaps the starkest example of this argument is presented by Tessa Jowell (2004: 3), then minister for the Department of Media, Culture and Sport (DCMS), who claims that Beveridge's goal of ending 'physical poverty' has been thwarted because it failed to address 'the poverty of aspiration which compromises all our attempts to lift people out of physical poverty'. For Jowell, the social function of culture is precisely to 'alleviate this poverty of aspiration' (2004: 3).

Jowell's essay is a complicated and contradictory document. In places, she appears to be arguing against the instrumentalisation of the arts and advocating an 'arts-for-art's sake' argument (Jowell, 2004: 8; cf. Belfiore, 2006: 34). This argument for an autonomous, 'bottom-up' (Jowell, 2004: 9) development of culture is, however, consistently undercut by her concern with alleviating the 'poverty of aspiration' she has identified at the heart of physical poverty and social exclusion. Although in places she discusses the need to offer 'improved access to *culture for what it does in itself* … to understand it and speak up for it on its own terms' (2004: 8), her conception of what culture 'does in itself' is subsumed under a more general idea of personal development and self-actualisation, where the consumption of culture enables everyone to realise their potential and engage more fully with society:

> Culture alone can give people the means better to understand and engage with life, and as such is a key part in reducing the inequality of opportunity and which can help us slay the … poverty of aspiration. This must be the next priority in the mission at the core of this Government: to transform our society into a place of justice, talent and ambition where individuals can fulfil their true potential. (Jowell, 2004: 17–18)

Of course, this assumes that everyone's ambition will, once realised through cultural engagement, be fulfilled within the confines of contemporary society. Without this assumption, social exclusion

cannot be remedied by culture. Indeed, if engagement with political art might lead people to reject parliamentary democracy and capitalism *tout court*, then social disengagement could potentially increase as a result of cultural participation. Rather, for Jowell, culture fulfils an inherently conservative and socially integrating function, socialising deviant individuals back into mainstream (or at least government sanctioned) society, and aligning their individual aspirations and desires with those of 'the nation' as a whole, or at least with its self-proclaimed spokespeople. In this model, culture appears as a tool of government for controlling the population and ensuring that its interests are allied with the dominant socioeconomic formation.

The second assumption made by the argument that culture can reduce social exclusion is that the problem is, at root, a question of individual attitude, perception and 'aspiration', rather than more systemic or structural factors. From a policy perspective, this leads to politicians abrogating responsibility for addressing social justice directly. Indeed, it would seem that New Labour has taken on board the Thatcherite idea that there is 'no such thing as society' and opted instead to focus on the community as the most appropriate level for governmental intervention (cf. Rose, 1996). This neglect of 'society' figures prominently in the literature on the social impact of the arts. As Paolo Merli puts it, referring to Matarasso's suggestions that the arts can resolve social exclusion:

> Many intellectuals have started looking at society as a mere *fact*: they do not venture questions, hard criticism and struggle any more; they increasingly behave like 'new missionaries', who play guitar with marginalised youth, the disabled and the unemployed, aiming at mitigating the perception which they have of their own exclusion. Indeed, it does not seem that 'feeling differently' (Matarasso, 1997: 101) about the place where one lives will transform slums into wonderful places, nor that … having 'a positive impact on how people feel' (Matarasso, 1997: x) will change people's daily conditions of existence — it will only 'help' people to accept them. However, making deprivation more acceptable is a tool to endlessly reproduce it. (Merli, 2002: 112–113)

As Merli notes here, these models of remedying social exclusion without changing the material conditions of exclusion are profoundly conservative. With very few exceptions, and then only in academic publications, such issues of profound social change are completely ignored within the discourses on the social impacts of

the arts. Instead, the combination of 'social exclusion' and 'community' pushes the responsibility for marginalisation back onto the marginalised, assuming that they simply need their attitudes, rather than their material conditions, readjusting — perhaps through the judicious consumption of 'culture' — simultaneously concealing and maintaining the wider social power relations that produce and reproduce inequality and exclusion in the first place.

Discussion: Capitalising on culture

So how can we make sense of these articulations of the 'value' of culture and the arts? One key is given by an LGA report from Essex, which refers to a tripartite form of capital — 'cultural, social and human' — that is, 'the fundamental resource base for any sustainable cultural economy and the crucial link between cultural capacity, social cohesion and economic development' (LGA, 2003: 11). This combined form of capital is conceived as a resource base and subject to a specific regime of accumulation that requires new forms of measurement and accounting. To be sure, the terms *cultural*, *social* and *human capital* are not by any means clear cut, and they often overlap, are used interchangeably in the literature, or are left ill-defined and vague. Hence their relationship is not one of a clear mapping of one aspect of capital onto each category; but there is a general tendency to relate employability to an individualised human capital, and community cohesion and social integration to social capital. 'Cultural capital' is a term less often used, perhaps because of its association with the more critical writings of Bourdieu (1984, 1993) and the analysis of class. Even the distinction between human and social capital is not entirely clear, with both often referring to skills and employability.

Nevertheless, there is a degree of consistency in the articulation of 'social impacts' as productive of 'capital'. Hence, this tripartite articulation of capital provides a lens through which the theoretical and political significance of the discursive articulations outlined above can be considered. In this section, we examine this significance through three related themes picked from contemporary writings in autonomist Marxist social theory and political economy. These themes are reproductive labour, affective labour and cooperative networks, which will be linked to the aforementioned articulations of human, cultural and social capital in order to better understand the 'value' of culture and the arts in contemporary capitalism.

Human capital and reproductive labour in the arts

There is a longstanding debate in Marxist political economy over the significance of the distinction between productive and unproductive labour (Harvie, 2006; Cámara Izquierdo, 2006; Mohun, 1996), with many theorists suggesting that this dichotomy is increasingly untenable because of changes in the production and circulation of value (Dyer-Witheford, 1999; Harvie, 2006; Arvidsson, 2007; De Angelis, 2006). The basic contours of this argument suggest that classical Marxist theory draws a clear line between productive and unproductive labour, with the former focusing specifically on waged labour that directly produces commodities and the latter encompassing everything from the labour of superintendence and circulation to 'reproductive labour' (Harvie, 2006). Reproductive labour is a crucial category in these debates as, in Marx's original formulation, the labour involved in reproducing the commodity labour power was not deemed to be productive labour (Harvie, 2006: 135) — an assertion that has been contested by autonomist Marxists (Dyer-Witheford, 1999; Dalla-Costa & James, 1975) as well as by those concerned with the wider economic relations between work in the home and in formal employment (e.g., Oakley, 1974; Glucksmann, 1995, 2005).

As Harvie (2006), for example, shows, teachers — normally regarded as unproductive labour within classical Marxist categories — should be seen as producers of 'new labour power' (2006: 12). In his view, 'Within the capitalist mode of production, the education system performs a key function for the (re)production of that special commodity, labour power' (2006: 26). Teaching and education in general are clearly part of the reproduction of capitalist value, and should therefore not simply be regarded as 'unproductive labour'. In a similar way, feminist writers have pointed to the usually unwaged reproductive labour of women doing housework and care work (e.g. Dalla Costa & James, 1975). Equally, we would suggest that artists and cultural workers contribute to the production of capitalist value while falling outside traditional Marxist categories of 'labour' (Terranova, 2004; Ross, 2000; Lazzarato, 1996).

As our analysis has shown, investment in culture and the arts is justified through a discourse of the development of employability and transferable skills not only among artists and cultural workers, but also among participants in cultural events and artistic productions. As the LGA report states, participants 'reported a positive contribution to their confidence, modes of thinking and personal well-being' (2003: 40). This then led to the positive development of individual human capital, as 75 per cent of

participants reported that they had 'decided to start some further training or a college course' (2003: 41). Similar to the role of teaching in schools and universities, culture and the arts are seen as instrumental for the development of individual yet transferable skills and employability and, more generally, for the improvement of the skills base of UK plc. In this way, the value of culture and the arts can be seen as the reproduction of the social itself. Participants, in the roles cast for them by policy documents and impact analyses, are exhorted to work on themselves and to invest in their 'human capital'. As the focus on training, transferable skills, creativity, innovation and (lifelong) learning all suggest, participants are being encouraged to develop the productivity of their labour power in accordance with hegemonic discourses around the knowledge or creative economy, so as to command a higher price for it in the labour market.

For Hardt and Negri (2000), this ontological process of putting the whole human to work for capital to produce 'human capital' is one of the most significant developments in what they call the 'postmodernisation of production'. In their view, there has been a 'real subsumption' of the social by capitalist production, whereby all those forms of labour traditionally excluded from the sphere of 'productive labour', such as social cooperation, culture and the arts, are now 'immediately recuperated and mobilized within the regime of (globalized) capitalist control' (Negri, 1999: 82). Negri (1991) also connects this new ontological character of today's global capitalism to what Marx (1992: 425ff) calls 'total social capital', which, for Marx, alludes to the increasing circulation of capital into all spheres of society. In his *Grundrisse*, Marx (1973: 517) even claims that capital aims to be the 'blood' of life itself. In other words, what Negri reads in Marx is his interest to understand the drive of capital to dominate not only the factory and other production places, but humanity and social relations themselves. Capital seeks to appropriate all social relations and place them into its system of accumulation and valorisation (Negri, 1991: 112). Thus, for Negri, it is increasingly difficult to distinguish between life, labour and capital: 'capital is the totality of labor and life' (1991: 122).

Within a Negrian perspective, then, investment in culture and the arts, as increasingly practiced by New Labour since 1997, becomes an ontological force that is part of the aim of capital to become the social as such. For Negri, the point is not so much that culture and the arts become yet another commodity that can be brought to 'the market' — this was already part of the Thatcherite discourse of the 1980s and 1990s. What is at stake for Negri is the value of life as such. Artistic/cultural work is thus a bio-political

force that is as productive as work within the gates of a factory. The purpose of that work is the production of human capital and the social itself.

Human/cultural capital and the measurement of affective labour

Part of the discussion of this bio-political shift to human capital and a 'real subsumption' of the social has centred on the concept of 'affect' in autonomist studies of social reproduction, where 'affect' is conceived, following Spinoza, as 'the capacity to act' (Negri, 1999: 79). It is crucial, then, to understand the management of artistic production in terms of the production of affect, both in relation to the labour of artists themselves and in relation to the value of culture and the arts for capitalism — cultural capital — more generally.

The first aspect of this 'affective labour' — valorised to some extent by the autonomous 'enterprise' of Shorthose and Strange's (2004) 'creative communities' — has to do with the social reproduction of the 'creative communities' of artists themselves. While we acknowledge the importance of this side of affectivity for any artistic and cultural work, in this paper we rather focus on the second aspect, whereby artistic and cultural work is seen as valuable precisely insofar as it affects productive capacity within wider society. Our discourse analysis shows that government sees culture and the arts as contributing to the development of this productive capacity in two ways. First, as shown above, it is conducive to the growth of human capital, specifically to the development of individual creativity, transferable skills and employability. More important, perhaps, is the second aspect, highlighted by Tessa Jowell, the former minister for the Department of Media, Culture and Sport (DCMS), when she talked about the social function of culture being the alleviation of the widespread 'poverty of aspiration' (2004: 3). While aspiration can mean a lot of things, she clearly connects the term to the economic bettering of individuals and the wider economic development of the nation. The affective capacity of culture and the arts is thus, in Jowell's view, to ignite individual's aspiration to move up the social ladder, to get off benefits and get a job, and generally better oneself economically and socially.

In this we see a possible resolution to some of the confusion in policy that David Hesmondhalgh recognises when he writes that arts institutions have 'increasingly sought to legitimise their funding on the basis of its contribution to a somewhat uncomfortable and potentially contradictory mixture of economic

and social goals' (Hesmondhalgh, 2006: 140–141). As we suggest in our analysis, there is nothing necessarily contradictory in such approaches. Rather, they recognise, albeit partially and with some confusion, the centrality of 'affect' to contemporary economic production, and the impossibility of clearly separating the social from the economic. Insofar as we understand Negri (1999) to be suggesting this primacy of social (re)production to postmodern production, and therefore the impossibility of clearly separating economic value from social values, when he claims that value is now 'beyond' and 'outside' measure, we agree with him.

The question of *measure* has become a hotly debated topic amongst autonomist Marxists in recent years (see, for example, Hardt & Negri, 2000, 2004; Caffentzis, 2005; De Angelis, 2005, 2006; Harvie, 2006; Dowling, 2007). As already indicated, the source of the controversy is the claim, based on the 'real subsumption' thesis discussed earlier, that today's labour is 'beyond measure' or 'immeasurable' (Hardt & Negri, 2000: 294; 2004: 145). The argument is that work is not only that which produces value in the limited realm of the labour process. Instead, work is limitless today as it involves a whole range of communicative, immaterial and affective aspects that produce the social and life directly (Lazzarato, 1996). It is for this reason that Hardt and Negri (2000, 2004) argue that labour has become 'immeasurable'.

Following this logic, artistic and cultural work can be seen as the labour that reproduces cultural capital and hence 'total social capital' in two senses. First, capital is inserted into the interstices of the reproduction of 'culture' itself and culture becomes a commodity. This is the traditional 'culture industry' thesis, which suggests a continuous commodification and 'sell out' of culture to capital (Adorno & Horkheimer, 1979). While this process of commodification is, no doubt, ongoing, the second sense of the 'total social capital' thesis points to the role culture plays in the reproduction of the social and life as such. Hence cultural capital is a term that goes beyond the view of culture as commodity. Instead, culture becomes a bio-political force to reproduce the social itself. While we agree with the basic contours of this argument by autonomist Marxists, we share the views of commentators, such as Wittel (2004), Dowling (2007) and De Angelis (2006), who doubt the claim that this totality of social capital is automatically 'beyond measure'.

Wittel (2004), for example, states that the post-Fordist economies, however unstable and contingent, still work functionally and effectively, for which measure is needed. This constant need to measure immaterial and affective work, which is

supposedly 'beyond measure', is empirically shown by Dowling (2007) in her critical, autobiographical assessment of work in a restaurant. In some detail she discusses the mechanisms through which she was subjected to forms of control, showing how her work was intensely measured and hence its nature altered. This need for measuring labour and life in the post-Fordist society is also explained by De Angelis, for whom 'measure' is a necessary part of any social body: 'A measure is always a discursive device that acts as a point of reference, a benchmark, a typical norm, a standard. It is thus a relational reference point that guides action of a singular body subject, yet it carries the weight of the habits, traditions and cultures of the social body' (De Angelis, 2006: 176, emphasis in original). Based on Marx's work, De Angelis distinguishes between external and immanent measures of value. The external measure is the normal price tag that capital puts onto commodities, such as labour. For example, the city worker earns ten times more than the nurse, which is a way of saying that we, as a society, value stockbrokers much more than we do nurses caring for the sick and elderly (cf. Elson, 1979). De Angelis agrees with Hardt and Negri that we cannot stop there; that is, that this external measure does not tell us the whole story about how value is produced today. In addition, we need to recognise the immanent forms of work today, which reproduce the social and life as such. In contrast to Hardt and Negri, however, De Angelis argues that this immanence is also very much part of a measurement regime, which 'corresponds to that labour which is socially necessary for the production of a commodity' (2006: 180). Hence it is not only the external measure of commodity value that disciplines the worker, but also the immanent measures of value, which aims at disciplining all aspects of life of the social body. Culture and the arts are subjected to both external and immanent measures of value. Externally, it is part of a general commodification process that turns cultural and artistic materials into commodities. However, in addition, the immanent role of culture and the arts is to govern and discipline the social body in order to guarantee a continuous reproduction of capital. It is this important immanent role that makes it necessary for the state to evaluate and govern the social impacts of culture and the arts.

Social capital and networks of productive community cooperation

A similar argument can be made concerning the concept of social capital mobilised in these discourses. It has been argued that production is increasingly dependent upon networks of social cooperation as evinced by the popularity, across the sectors, of

discourses on teamwork, corporate culture management and communities of practice (Brown, 1998; Wenger et al., 2003). Of course, from the outset, capitalism was dependent upon the collectivisation of labour to increase productivity simply through the efficiency gains of natural cooperation (Marx, 1976; Negri, 1989). With the division of labour, productivity increases even further, but it does so at the cost of natural cooperation. The Fordist model of organisation takes this perhaps the furthest by insisting on the complete subordination of the individual worker to the socio-technical system of the factory; but as Dyer-Witheford (1999) notes, this system also created problems by making the bifurcation between capital and labour all too obvious. The age of mass production was also the age of the mass worker, a recalcitrant workforce all too aware of its common fate at the hands of industrial capital.

The balance of power was shifting in the 1960s and 1970s, with strong unions, hostile labour relations and increasing industrial unrest in many western countries. In response to this, capital disaggregated, breaking up the vertically integrated factories of the early twentieth century in favour of more distributed networks of production, with workers reorganised in these networks as customers and suppliers, team workers or subcontractors (Boltanski & Chiapello, 2005). This also shifted the focus on communication. In the era of the mass worker, communication was prohibited. On Ford's production line, workers could not talk to one another. With the new systems, as Lazzarato (1996) recognises in his first aspect of immaterial labour, communication is essential to both organisation and production. Through actively working to produce, reproduce and innovate within networks of social cooperation, labour itself takes on the principal function of the reproduction of these cooperative networks (Negri, 1989: 51). From this perspective, the age of the mass worker has passed over into the age of the social worker, whose main function is the reproduction of the social itself, but who is also increasingly subject to control through socialisation (Dyer-Witheford, 1999; Poulter & Land, 2008).

Whether this line of argument is empirically accurate or speaks to the workplace realities of the majority of the population even in 'advanced' western economies is a moot point (cf. Thompson, 2005). Nevertheless, it seems to us that the argument does point toward a historical tendency. Changes in the organisation of the capitalist enterprise have taken place and, at least for certain segments of the labour forces, collaboration, communities and teams are increasingly the norm. Even if there is a gap between the rhetoric and the reality,

managerial discourses on the importance of cooperation, eliciting full participation through teamworking or leveraging collective knowledge and creativity through communities of practice abound (Newell et al., 2003; Wenger et al., 2003).

At the very least, these ideas have had an impact on the kinds of policy documents on the arts and culture that we have been concerned with in this paper. Read from this perspective, the invocation of 'social capital' and community building in policy documents relates both to a new mode of government for such populations — one that had moved decisively from mass society and the Fordist compromise of Keynesian economics and a welfare state to ameliorate the working class, to one in which the class has itself been fragmented and recomposed at the level of the community (Hardt & Negri, 1994; Rose, 1996). Within this new framework, however, communities are being encouraged to self-govern in similar ways to self-organising workplace teams. The imperative is clear that such communities must contribute to the functioning of the overall whole, the nation, which becomes the focal point of integration for individuals and communities (Hyland, 2006).

As the LGA report defines it, social capital is 'The application of skills and experiences by the individual that facilitate co-ordination for mutual benefit' (2003: 39). Here, the big promise is to address social exclusion and create 'social capital' as strong bonds of collective identity, mutual support and networks of cooperation at the local level. For example, the LGA report claimed that '81 per cent of participants reported that they have become involved in other community projects' (2003: 41), referring to this as 'active citizenship'. Here, then, the arts are seen as central to the development of social entrepreneurs whose creative energies will revitalise both the local culture and economy. Here the concept of 'social capital', particularly in the light of the popularity of the term since Putnam's (2000) Bowling Alone, chimes well with the focus in these documents on 'community'. As several commentators have noted in recent years, the rise of the discourse of 'community' has served to marginalise discussions of 'society' and actively conceal social–structural inequalities and factors in favour of community and individual empowerment (Merli, 2002; Rose, 1996). In such a framework of understanding, social inequality is the result of inadequate assimilation into the 'community'. By strengthening the collective identity of the community, investing in 'culture' can strengthen 'social capital', which people can then leverage for further acts of social entrepreneurship.

Conclusions

The aim of this paper has been to explore the ways in which culture and the arts have been articulated in relation to wider society and the economy in recent years. Our analysis of policy documents has suggested that under New Labour, a discourse has emerged that highlights the important role of culture and the arts for the general welfare of society. Our analysis has shown that this discursive shift has foregrounded a need to evaluate and measure the arts in relation to policy interests that are external to the immediate concerns of the field of cultural production. While policies that seek to make culture and the arts directly economically productive have not disappeared, the discourse represented by New Labour involves more complex articulations of the value of culture and the arts for wider social measures such as 'wellbeing', 'health', 'education', 'creativity', 'innovation', 'social inclusion', 'human capital' and 'social capital', which are concerned with social reproduction rather than with direct commodity production.

Our argument has been mainly inspired by autonomist Marxist authors who have argued that today, capital should be understood as 'total social capital', i.e. capital that has completely subsumed the social. While writers such as Hardt and Negri (2000, 2004) argue that this totality implies that contemporary work and labour are 'beyond measure', our analysis of cultural policy discourse has shown that measurement and evaluation is still very much part of the way the capital–state regime reproduces itself. Following De Angelis (2006), we have argued that capital and the state have an instrumental interest in applying both 'external' and 'immanent' measures of value to culture and the arts in order to, first, capitalise on the cultural industries for continuous economic growth, and, second, use culture and the arts as instruments for social reproduction. We have argued that in both of these ways, cultural and artistic labour needs to be understood as productive labour.

In terms of taking this research further, we think it is important to move beyond the level of discourse and the articulation of how value might be conceptualised. There is now a need to carry out detailed analyses of the metrics developed and deployed to measure value within the cultural and artistic sector. Furthermore, we see a need to study the impact of these discourses, metrics and control systems on the actual labour process of artists and cultural workers. In what way, one might ask, is their work really influenced by the new discourses and measures of value that have emerged over the past decade? One possibility is that their work has not been influenced significantly at all, as artists and cultural workers have

learned to subvert and resist these attempts at governing them. Instead, perhaps, culture and the arts are, after all, fairly autonomous zones that will always exist in an ambiguous relationship to society and capital.

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Exploitation of the self in community-based software production: Workers' freedoms or firm foundations?

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Abstract

Free and open-source software (FS/OS) communities constitute an arena in which thousands of users voluntarily explore design codes, spot bugs in codes, and make contributions to the code in a fashion at odds with the otherwise hugely competitive software market. This computerisation movement emerged as a challenge to the domination of such behemoth firms as Microsoft and IBM, and is portrayed as having a revolutionary ultimate goal: 'to provide free software to do all of the jobs computer users want to do' (Free Software Foundation, 2008). We ask to what extent FS/OS actually challenges the orthodoxy: does ego-less programming of the information bazaar really free participants from the stuffy pews of the cathedral, and challenge the essence of capitalism?

Introduction

Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry men pursue in the world, with the world and with each other.
Pedagogy of the Oppressed, Paolo Freire

Emblematic of the way in which information society rhetoric often occludes more basic, underlying political questions, the intrusive bio-politics of informational capitalism is frequently and tautologically celebrated as an end in itself. For example, the writings of such theorists as Hardt and Negri, Poster, Lash and Jenkins, etc. are all rich with novelty-based aspirations, but are rather

more penurious when asked to supply examples of how more abstract, globally-fluid informational environments actually empower in practice. Hardt and Negri, for example, rely upon the eponymously vague formulations of both *Empire* (2000) and *Multitude* (2005); *Poster* (2006) is excessively dependent on dramatic (albeit clumsy) neologisms like *humachines*; while Lash (2002) and Jenkins (2006) overprivilege *immanence* (see Taylor, 2006 and Lash, 2006 for an extended debate on this theme) and *convergence*, respectively.

An under-acknowledged issue in these works is the small number of workers who, even in the more developed West, prove to be well-placed to profit from new mobilities when set against the much greater number of workers more typically on the receiving end of capitalism's fleetness of informational foot. Even if it is granted that informationalised jobs are growing steadily, in this paper we explore the naivety of the assumption that such jobs represent significant gains for the individual's quality of life when compared to industrial jobs or work done in a more obviously measurable and less 'flexibilised' way (Moore, 2006). We show how this assumption fails to acknowledge the extent to which such re-skilling is subsidised by the personal initiative and self-training of a whole new generation of workers, for whom an overtly felt ideological conflict with capital risks becoming replaced by a bio-political, naturalised sense that self-obtained skills smooth one's entry to the only game in town: the information society.

Braverman and other Marxist analysts revealed inequalities and power relations based on labour regulation within the industrial capitalist production model. However, it can generally be agreed by those on the left and right of the political spectrum alike that such contemporary community-based models of production of software as are found within FS/OS represent dramatically different production techniques to those devised by Ford and Taylor in the industrial age. In the Taylorist industrial model, scientific management's conceptualisation of the worker demanded that 'brain work' should be 'removed from the shop and centred in the planning or laying-out department' (Taylor, 1998 [1903]: 30). By contrast, in the sexy new informational-community-based models of production, *only* 'brain work' matters. Despite Foucault's insistence on the link between knowledge and power within 'concrete practices', scholars have not adequately considered issues relating to the precise nature of power relations and agency as knowledge is produced in the new accumulation regime of the post-Fordist information economy. Contemporary social science literature frequently makes the assumption that knowledge has become a product in a qualitatively

new manner, but tends not to *critically* examine some of the negative consequences of *how* lucrative knowledge is formed.

Braverman also notes that 'as human labour becomes a social rather than an individual phenomenon, it is possible—unlike in the instance of animals where the motive force is inseparable from action—to divorce conception from execution' (1974: 113). While 'conception' historically relied on management's exclusive power to define and manage work, this responsibility is now left up to workers themselves in unprecedented open and flexible production environments predominantly based on the manipulation of abstract information. Mere workplaces are now increasingly interpreted as 'cultures'. A new light is thrown on the management of business and organisations that constitutes a shift from the bureaucratic, mechanistic, rationalistic systems that traditionally constituted the notion of the firm. As an illustration of this 'cultural turn', terms such as *cultural/creative industries* and *cultural economy* have become unproblematically associated with naturalised rhetorical claims about the *sign economy*, *network society*, and the *knowledge economy*. To the extent that this cultural turn has become naturalised, we risk overlooking the significance of such terms due to their glib familiarity.

In *Mythologies* (1973 [1957]), Barthes describes this type of process as a taming of semantic richness, an ideological production of an excessively naturalised sense of 'what goes without saying'; and in *Difference and Repetition* (2004 [1968]), Deleuze uses the notion of 'the image of thought' to describe what is presupposed in unconscious, uncritical silence. Hence, it increasingly and unproblematically goes without saying that we now live in a knowledge economy; but how such a concept might be an essential contradiction in terms from various critical perspectives is persistently overlooked. Adorno deliberately chose the oxymoronic couplet, 'culture industry', in order to emphasise the self-contradictory notion of a culture that had become pathologically industrialised. In stark contrast to Adorno's innately critical juxtaposition, the simple use of the plural in the now common phrases *cultural/creative industries* has led to an uncritical acceptance of the commodifying effects of the information society that we now seek to re-problematise.

Community-based models of software production: FS/OS — the new informational order?

Before the 1990s, software was mass produced within firm-based production environments and relied on restricted codes as a competitive tool for market capture. Users and developers of

software responded by organising new communities of software production, and the OS model emerged as a response to the increasing dominance that Microsoft held over the market. Richard Stallman, a researcher at Massachusetts Institute of Technology (MIT) led the way to a kind of uprising against proprietary software with a Unix–clone project he developed, GNU. Linus Torvalds later completed this project with the development of Linux. So free software was an antagonistic movement aimed at challenging copyright licence agreements, which were seen as restrictive and a hindrance to innovation. Participants in this movement protested that consumers pay for software but usually cannot study it in order to learn how it works or work to improve its function, because they do not have the source code.

The term 'open source' was coined on 3 February 1998 in Palo Alto, California, at a meeting that aimed to create a new name for the flexibilisation of software development that was not as threatening as the descriptor 'free', used originally to describe the communities of production freely sharing code (free software, or 'FS'). People in the business world negatively associated the word 'free' with cheap, problematic, non-professional, and so on. As a result of this meeting, a non-profit organisation with the name Open Source Initiative was created alongside the trademarking of the term 'open source' (OS). This organisation published a formal definition of OS so that purportedly OS copyright licenses could be measured against it, and software published under one of the OS approved licenses could then begin to use the term 'open source'. While Microsoft has a 'shared source' that is compatible with the definition of FS/OS, which represents a concerted attempt to free the market for users so as to allow a more inclusive sphere for the production of knowledge tools, authors who have responded to this chain of events often overlook an important question that must be resolved before we can resign ourselves to the supposed emancipatory elements of this movement, and this is to do with individuals' *reasons* for participation. Furthermore, naive tales of FS/OS do not look closely enough at the formation of hierarchies and conflicts within communities, or at the actual everyday lives of those involved in the communities of production.

The cultural and macro-structural properties of community-based models of work need to be contrasted to those of the firms in order to discern their relevance and implications for broader ethico-political changes within and across societies. The culture of community-based models does differ significantly, indeed almost diametrically, from the traditional versions of firm-based exchanges. However, participants within both organisational forms

are involved in constructing and reconstructing realities which are ultimately, objects of economic calculations. Participants' actions and their management and governance need to be critically examined in order to understand whether community based models such as the OS community, which challenges traditional understanding of property rights, ownership, motivation and complexity; or the 'human firm', which challenges rational actor models, can become sites of contestation that fundamentally challenge the ideologies of market norms within which the conventional firm is a traditionally accepted actor. Does the community-based movement successfully realign economic identities, and can it produce an economic 'truth' regime?

In order to assess whether FS/OS offers a realistic chance of producing a new informational social order, a critical re-evaluation is needed of both the commercial constraints that may still underlie its superficially liberating nature, and the degree to which participants themselves may mis/interpret that nature, since on closer inspection, some of the apparent incentives for knowledge production within FS/OS are potentially negative and, ultimately, may be less than empowering from a non-capitalist perspective. For example, workers in a culturalised knowledge economy are exposed to, and perhaps are obliged to acquire certain learning processes that define work according to problem-solving strategies within production 'communities' of software developers. Arguably, authentic 'community' values are honoured more in the breach than in the observance, as capital merely finds more imaginatively intrusive ways by which it can interpolate its workers. Thus, the presentation of work as more of an intellectual game than as traditional economic production is reinforced by such practices as Microsoft's 'campus' work environment, in which the hacker-slacker generation moves seamlessly from college to workplace with scarcely a noticeable change in the carefully constructed informality of their surroundings (see Coupland, 1995; Taylor, 1998).

A transformation of skills is considered crucial for companies' knowledge production and workers' employability, despite the widespread absences of training programmes within organisations. Nonetheless, several unprecedented learning and performance indicators are emerging, such as a requirement for creativity, flexibility, and andragogical competence. These shifts represent a transformation of hegemonies for knowledge production both within models for business interaction and within the concept of workers' employability in knowledge-based economies (KBEs). Jessop refers to the KBE as a 'provisional, partial and unstable semiotic-material solution to the crisis of Atlantic Fordism' (2004).

Mysteriously, international political economy (IPE) theorists largely overlook the role of workers in this transition to a globalised KBE, yet the paradox is that workers within community-based models of production are so often income-less themselves, which calls into question the incentive for participation. If the incentive is reliant on participants' re-absorption into the mainstream, such as to gain employment with established, firm-based giants of software production such as Microsoft, does this eradicate the claims to free market defiance advocated by OS and FS users?

Economies today battle to capture the best talent for the most profitable production and accumulation of knowledge, but people are expected to compete for less defined outcomes, while measures such as reputational capital become increasingly competitive. The measures for skill are technologically mediated, leaving the intellectual process for production in a state of unprecedented ambiguity that is now in danger of escaping normative or critical analysis. KBE work environments differ materially and symbolically from those found within the traditional firm, and they require substantially different skills and intersubjectivities from participants. In this context, this paper looks at incentives as well as emerging norms for participation within FS/OS models, linking these to recent transformations in employability expectations in terms of learning abilities and worker performance. Since 'companies have emphasised employability in an attempt to shift the social and moral responsibility for jobs, training and careers onto the individual' (Brown et al., 2003: 114), we have to ask whether participation in FS/OS is a kind of self-chosen training ground in the absence of training at the company level.

The care of self

This 'cultivation of the self' can be briefly characterized by the fact that one must 'take care of oneself.' It is this principle of the care of the self that establishes its necessity, presides over its development, and organizes its practice. (Foucault, 1986, p. 43)

Foucault's notion of *care of the self* opens up more interesting theoretical angles than does the more narrowly economistic focus that tends to dominate discussions of FS/OS. It was developed by Foucault towards the end of his career as part of his theoretical search for constructive alternatives to the inhibiting and enframing qualities of the disciplinary discourse networks explored in his influential earlier works. Drawing on the classical model of self-

development, it suggests ways in which individuals might take responsibility and autonomy back from the powerful social frameworks that surround them. Against the grain of the predominantly optimistic values underlying the care of the self, however, the critical perspective adopted in this paper sees it as not only an essentially reactive concept formulated as a response to the over-arching power of dominant social systems, but also as a reactive concept that is then additionally susceptible to co-optation by that dominant system. Put in the particular context of FS/OS, while it might nominally appear that developing software skills in one's own time represents an empowering, technologised form of care of the self, when those skills are pre-emptively suited to the needs of capitalism, any empowerment is essentially pyrrhic. This basic criticism can be extended to a range of overly Panglossian interpretations of the allegedly beneficial aspects of the information society. These cyber-optimistic works either celebrate the informationalised impetus of new communications technologies as innately positive (Lash, 2002; Jenkins, 2006; Poster, 2006), or propose a profound recalibration of traditional socialist thought (Hardt & Negri, 2000, 2005). Following a brief account of Foucault's particularly socio-technical understanding of technology, we go on to explore in detail how, contra such theoretical optimism, the FS/OS phenomenon may in fact represent merely a more subtly invasive form of disempowerment. Although Foucault still hoped for empowering potential in his notion of care for the self, our more critical account suggests that this optimism was perhaps misplaced.

For Foucault, there are four key types of technologies:
1. technologies of production
2. technologies of sign systems
3. technologies of power
4. technologies of the self.

Foucault describes how technologies of the self: 'permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality' (Foucault, in Blaikie 2003: 109). He goes on to argue that:

> These four types of technologies hardly ever function sepa-
> rately, although each one of them is associated with a certain
> type of domination. Each implies certain modes of training

and modification of individuals, not only in the obvious sense
of acquiring certain skills but also in the sense of acquiring
certain attitudes. I wanted to show both their specific nature
and their constant interaction. For instance, one sees the rela-
tion between manipulating things and domination in Karl
Marx's *Capital*, where every technique of production requires
modification of individual conduct, not only skills, but also
attitudes. (ibid.)

FS/OS discussions tend to focus on the specific skills being gained,
but not on their interaction with their wider social context. If
Foucault's use of Marx is taken further, we can see how the
traditional interaction of production/domination within
capitalism has given way with the advent of FS/OS to a more
complex ideological sleight of hand. Creativity as a skill is subtly
blended with community values to produce a self that still works
for capital by manipulation, but less obviously so, since the
domination aspects that were formerly part of this productive
relationship are now obscured by the ideological role played by the
new nominally 'sexy' creativity/community dyad.

While Foucault argues that the above four types of technology
rarely operate separately, it can be argued that it is the rise of the
information society that makes any relative distinctions between
the orders much more difficult to observe. For example, the
attitude of domination that Marx identified as a result of the
pervasive power of capitalism's materially productive techniques is
much more obviously discernible than are the more opaque ways in
which the four technological orders become imbricated in the
im/material world of the digital.

Hardt and Negri (2000), also citing Marx and drawing on
Deleuze, suggest that Marx's evocative image of the subterranean
revolutionary mole needs, in an informational age, to be altered to
that of an undulating snake that traverses the surface of our newly
informationalised society (whilst Lefebvre [1991] similarly
formulates a conception of new, innovative spider-like interactions
with space). From a critical perspective, the various zoological
innovations to Marx's humble mole of which Hardt and Negri's
serpent is but one example represent an intellectual version of the
proverbial attempt to make a silk purse out of a sow's ear. As is
common in neo-Marxist applications of the Deleuzian rhizome,
they purport to see a root and branch (so to speak) virtue in new
connective possibilities in the conflict between capital and its
workers. Unfortunately, these possibilities remain defined in
frustratingly vague terms.

We argue that the novelty of information technologies and the qualitatively different environments they engender should not distract theorists from the ultimately disempowering nature of the information society's carefully cultured immateriality. It is not Luddite, but rather more politically responsible, to oppose the currently widespread embracing of immateriality in order to promote closer attention to the precise nature of the interrelationship of the material and the immaterial — the im/material. Concentrating on the essential tension of the im/material avoids the common tendency to fetishise information technology as innately liberating, and lends a more theoretical sensitivity to the suspicion that erstwhile anti-capitalist and predominantly positive interpretations of the information society's possibilities for empowerment are in fact misguidedly still reinforcing the capitalist project. As Žižek puts it, 'The target of critique here involves those aspects of Deleuzianism that, while masquerading as radical chic, effectively transform Deleuze into an ideologist of today's "digital capitalism" ' (Žižek, 2004: xii). Likewise, the more critical elements of Foucault's technology of the self risk a possible passing over in favour of unjustifiably optimistic interpretations.

Foucault himself speculated, 'Perhaps I've insisted too much in the technology of domination and power. I am more and more interested in the interaction between oneself and others and in the technologies of individual domination, the history of how an individual acts upon himself, in the technology of self' (Foucault, in Blaikie 2003: 110). However, we extract more critical implications from this theoretical distinction between a general technological environment of domination and the notion of individual self-domination, than does Foucault. In his technologies of the self, subjects create/produce themselves as they interact with the various systems of power and discourses within society, but despite acknowledging (via Marx) the causal interrelationship between the two realms of domination, the immediately preceding quotation involves a degree of what might be termed 'verbal slippage' between individual domination understood as a negative phenomenon arising from predominantly external sources (that may then be internalised), and domination of the self as a positive development now subordinated under the term 'care of the self'. This raises an important ideological question as to the extent to which the traditional Marxian notion of domination still exists, but is increasingly obscured within the information society by an emphasis on individual domination — unjustifiably reframed as an empowering phenomenon.

Overtly oppressive systems readily appear as imposed from the top. A danger of Foucault's care of the self applied to FS/OS is the creation of the worst of all possible scenarios, whereby the oppression of the individual is essentially privatised as responsibility for economic viability becomes one's own, ongoing life problem. In this context, FS/OS becomes a structuring technology of the individual that seamlessly reproduces capitalist values in the subject, while simultaneously creating the misapprehension that a non- or even an anti-capitalist agenda is being sought. Capitalist values are thus generated from within as individuals naturally interact in a new discursive environment of OS production that is only superficially open, when in fact the true discursive realm is innately framed and preordained with commodified values. A critical analysis of this naturalising process can be conceptualised using Foucault's own theoretical frameworks: the construction of culture-defining epistemes. It is also reminiscent of Barthes's previously cited notion of mythology as a realm of bourgeois meaning that misleadingly 'goes without saying', and Deleuze's 'image of thought' as a set of unquestioned philosophical presuppositions. We suggest that, while originally conceived as a mode of thinking with which conventional social power structures might be avoided, Foucault's technologies of the self require added reinforcement from more critical notions in order to maintain a strong focus on the relationship between an individual's tendency to self-regulate/dominate and an overarching capitalist environment of technological domination that creates this tendency in the first place.

The production of self in the knowledge based economy

… the future of humankind will become more dependent on the equitable production, distribution, and use of knowledge than ever before. (UNESCO, 1999)

The above assertion was made by UNESCO experts at the World Conference on Science in 1999. From the previously explored Foucauldian perspective, both this and Rose's related conception of the production or invention of self (1990, 1996) are highly significant. They refer to the tendency within knowledge economies for workers to have increasing responsibility not just for contributing to the organisational output of profitable commodities, but to also ensure and improve their own place in the capitalist system through sustainable self-trained employability

and subordination to this system. In this situation, both Marx's *commodity fetishism*, whereby objects assume social relations while people assume objectified relations, and Lukács's (1968 [1922]) related notion of *reification*, in which the commodity becomes a society-defining entity, become extended to their (il)logical conclusion: people are now their own commodities, and they are responsible for their own training, marketing and subsequent saleability. Consequently, vexed questions about agency and power relations within knowledge production still occur even in what purport to be radical, 'non-profit' production environments.

It is therefore important to emphasise how FS/OS as a new mode of production does not escape the pressures for conformity of international norms toward what are now seen to be 'employable' skills. One irony is that, within the FS/OS community, a large percentage of participants are not employed but in fact, aim to become employable through this informal training ground for knowledge production. Several developers state that their participation in these communities is a 'privilege'. This situation is reminiscent of Gorz's comments that in the post-Fordist world, we are expected to feel fortunate and even lucky to find paid employment, and the job interview becomes a type of audition wherein the subject is expected to perform or entertain (Gorz, 1999). It is also reminiscent of the description in *Neuromancer*, the William Gibson novel responsible for popularising the concept of cyberspace, of an urban environment known as 'Night City' — an exciting but Darwinian site of social struggle, which the fictional uber-capitalist powers-that-be had created as 'a deliberately unsupervised playground for technology itself' (1984: 11). Similarly and more prosaically, despite its radical rhetoric, FS/OS also risks becoming merely a training and/or playground fostered by capitalism for the unemployed or those who aim to remain employable — a site serving to prepare the intellectual labour power needed for the existing monopolies of the software market. Employable 'knowledge' and skills have been reassessed during nations' skills revolutions. But production lies at the core of any economic system, and the role of knowledge in hegemonic struggles within the workplace has become particularly relevant within what the management literature has come to call the 'global knowledge based economy'.

For some, the burgeoning information economy has 'furthered significant trends in the international division of labour, rather than redirected them' (May, 2002: 326). But here, we look at the changing understanding of knowledge in a relatively new production model — the community-based model — as well as the impact this

transformation has had on workers' survival and workers' very employability within the global economy. A key argument is that while the KBE undoubtedly creates flux-ridden, rapidly changing environments, the full impact on individuals tends to be glossed over in favour of celebrations of abstract conceptualisations of information-induced change as an end in itself. Factors that need to be considered more closely include the potential of these new sites to become the focal points of newly contested interpretations of what knowledge is and how it should be produced, with much fuller consideration given to new inter-subjectivities between workers and between workers and capital. Although workers' activity is specifically linked to the production of knowledge, much of the organisational psychology and education literature applauds very specific types of activities as being the most rewarding. However, uncritical assumptions are frequently made that this set of skills benefits the software industry at large beyond any direct contribution to the Microsoft empire, with a further uncritical commitment to the innately ideological idea that individuals no longer benefit from lifetime employment, but the opportunity to enjoy improved *employability.* Tensions emerge from these assumptions that must be understood if we are to support the idea that participation in community-based models such as FS/OS does, in fact, liberate workers who have been subordinated to capital and through exploitative class relations throughout history.

Class relations are decisive in defining societies as 'capitalist', but there is a need for a better understanding of the exact relations involved in the struggles between owners of the means of production and workers in contemporary global politics at an intensified level of abstraction, and at a time when owners may appear to have become the workers themselves in such environments as FS/OS. Perelman (1998) and Kletke, Ammons and Ellis (1996) show how it is increasingly problematic to rely on traditional images of class in the information age, because roles are blurred and salaries do not always match skills or status in the same manner as they did within industrial capitalism. We need to reconceptualise social relations in order to understand the reformation of connections between knowledge, production processes and value. In particular, the value of labour is increasingly difficult to measure quantitatively with the developments of technology and with the transformation of employer-employee relations within firms, when workers are thrown onto a completely new playing field. Demands on labour and conditions of production have a tendency to change rapidly and unpredictably, and thus become more difficult to contest.

Workers are cast from the labour process in economic crises, to later find themselves in the situation of re-entering the labour market and having to accommodate new structures of production, having being told that their redundancies were inevitable. The instability of the market in the information age 'dispels all fixity and security in the situation of the labourer … it constantly threatens, by taking away the instruments of labour, to snatch from his hands his means of subsistence, and by suppressing his detail function, to make him superfluous' (Marx 1999 [1887]: 292). Though Marx was writing about the 'modern industry', and the 'social character inherent in its capitalistic form', these ideas can be transposed onto a contemporary moment in production. Markets do not operate independently of people's behaviour, and the management of institutions that operate within and determine the conditions of the market need to be clarified and understood for a better understanding of changes to the lives of both workers and the unemployed in the new economy.

Perfect rationality or perfect accidents? Participation within the open-source communities

A primary commodity in agricultural economies was land. This was to some extent replaced by capital and labour during the industrialisation of economies. Within the KBE, knowledge has become the primary sought commodity, but its tradeable characteristics are not as clear as were previous objects for trade, and thus its production becomes a contested arena. Perhaps this is why 'control' has become an increasing dilemma in the context of studies of the workplace. 'Control by machine' was proposed with the development of information technology and service-sector occupations, but ideas for workplace discipline have since expanded. Skills, knowledge and innovation have become competitive markers for employability. In order to remain employable in a knowledge economy, workers need to adapt to an entirely new set of codes involved in the production, mediation and application of knowledge. Work in the KBE appears to offers several unprecedented promises for life fulfilment and self governance, and appeals to human nature are common in the KBE employment literature, to the extent that autonomy is now seamlessly integrated into profit-making and what is presented as perfect economic rationality. The word 'autonomy' comes from two Greek words for 'self' and 'rule', and the ideology of self-rule suffuses knowledge-producing work environments. Recently,

strategies for management control have increasingly emphasised the 'mind-power and subjectivities of employees' which, if managed correctly, will result in corporate 'excellence' as well as personal fulfilment. In this fashion, appeals to self-improvement and fulfilment no longer fundamentally contradict the tenets of surplus-value-extracting capitalism.

The ownership of intangible goods and services and the knowledge involved in their production drives competition in the 'new capitalism'. Workplace requirements have become less directly 'trainable' because the outcome is less obviously measured, so the OS community becomes an attractive arena for self-development and preparation for re-entry into the market. While this is heralded as a triumphant moment in history for the emancipation of the worker, since the production of intangible goods within these industries requires new learning capabilities and skills without an obvious source of training for these within the private sector, workers are being forced to take a new level of responsibility for their individual welfare that was historically part of the responsibility of the state. Demands on workers' skills were traditionally materially identified around what were considered immutably formed market structures, but in the KBE, the means of production include less measurable, intangible requirements for participation. Workers are increasingly expected to take ownership of their own employability, or of their 'ability' to gain, maintain, and obtain employment within post-industrial conditions. The question is whether this shift will cultivate an arena within which workers can take control of the labour process, and whether it will eliminate discrimination and power relations within the workforce. Politicians across the globe, the management literature and employers preach what sounds almost revolutionary, like a kind of promise implying that this shift will indeed offer workers a new dimension to work freedoms and ownership.

To shed light on the motivations of software developers for joining the OS community, a report from Ghosh (et al.) in 2002, from the International Institute of Infonomics at the University of Maastrich, shows that participants tend to be young and predominantly male, well educated and single. FS/OS developers earn a significantly lower wage than those working for the hegemonic companies such as Microsoft and IBM. 7 per cent earn nothing, and 45 per cent earn no more than €2000 per month (Ghosh et al., 2002: 14). From an online survey of 2,784 OS and free software developers, the study found that this type of software production is treated as more of a hobby than a salaried occupation, but that almost 8 out of 10 developers, or 78.9 per cent,

join OS communities with the intention of learning and practicing new skills, and 29.8 per cent stay in OS specifically in order to improve their job opportunities. But 52 per cent of participants develop proprietary software as well as OS products, and 65 per cent are employed full time anyway, so it seems that this originally ideologically driven 'political movement' has not established a clearly defined contestation of capitalist models of production. Participants are still faced with the fundamental question of income, but even this is becoming less of an issue for OS developers, because 'a lot of money can be earned by the development or application of OS/FS, like is illustrated by the example of LINUX' (ibid., pp. 44–5).

Participants vary in their reasons for participating, but incentives to participate typically turn on the opportunity for human creativity and innovation, also defined as 'skills' in today's climate of employability. Behavioural psychologists have historically led the way in analyses of creative knowledge creation, but more recently, sociologists and management specialists have begun to consider creativity and membership of the 'creative class' (Florida, 2002, 2004) as important elements in workers' knowledge production capabilities and thus for their employability, but still limit the creative thinking expected of these 'creative classes' to a symbolic assessment within what remains an unwritten curricula regarding the way in which these skills can be acquired. Furthermore, organisational theorists have analysed management and workers' learning processes with the implicit intention of improving production by way of the theory of communities of practice (Lave & Wenger, 1991) — a specific interpretation of social learning theory which suggests that learning takes place in social contexts beyond formal schooling and training, particularly within occupational communities and the workplace. Within management studies from around the 1980s, andragogy often takes the place of pedagogy (Fox, 2000), save examples such as the removal of the metaphorical instructor from production sites altogether; but critics show that workers' creative output seldom becomes self beneficial, except in the context of the retention of employment or in *the acquisition of employability*.

Drucker believes that knowledge workers have become owners of the means of production and the tools of production likewise, and will thus find personal fulfilment. But in community-based models for production, the basic incentive of wages does not exist. Learning-oriented microsocieties such as OS are portrayed within the apologist management literature as a kind of utopia, or an 'edutopia' within which individuals are free to find individual

satisfaction and empowerment. When juxtaposed with Marx's critiques of the exploitation of the value of labour power in the material sense, it becomes unclear as to how the power relations that have historically occurred between capitalists and workers can be identified within what are now knowledge-based models of production. The new composition of creative gurus are a type of organic intellectual in the Gramscian sense. They are in control of the design and perpetuation of hegemonic knowledge through a particular ideological consent that appears to be emancipatory, but becomes gradually a part of everyday life and consciousness that is as restrictive as any previous power relation necessary for the perpetuation of competitive capitalism.

Employers have begun to look for talent, individuality, innovation, entrepreneurship and, overall, for 'knowledge, skills and commitment of employees as a source of efficiency, innovation and productivity' (Brown et al., 2003: 110). While workers have always been expected to become socialised into their environments, this process has become a learning process without a material curriculum or even a promise for human sustenance. The most 'potent' knowledge is meant to come from tacit learning, which is differentiated from explicit knowledge. The formation of knowledge and innovation is the basis for communities with undefined parameters for production, but the human liberties this pursuit apparently offers somehow overlook a guarantee for participants' gain in any way except that of becoming employable in the world that free software advocates claim can be transcended. But perhaps most importantly, knowledge production in OS communities requires creativity.

Scientific analyses of creative processes stem from the 1960s, and from psychologists who referenced late-nineteenth-century authors to explore the idea of creative thought in comparison to other knowledge processes. Donald Campbell (1960) noted the conditions for general inductive gain, which involves a process of the evolution of mechanisms for introducing variation, added to consistent selection processes, which finally was expected to reveal a mechanism for reproducing and preserving selected variants emerging from the former conditions. Thus the general plan of knowledge production is blind variation and selective retention. Creative thought, on the other hand, requires 'substitute exploration of a substitute representation of the environment' (1960: 384) by way of a substituted exploratory thought process. This author cites Bain in his discussion of trials and errors for theorisation of the accurate and successful process termination, or the '*aha-erlebnis*' of a final idea. Bain condones originality, emotion,

adventurism and energetic character traits as key to the success of creative thinking. The action of creativity is understood generally as the creation of an idea, whereas innovation is a more complex concept. A group of researchers at the Institute of Work Psychology, University of Sheffield, critique their own discipline for advancing the generation of ideas without examining their implementation, which requires an extended range of skills and most importantly, innovation (Axtell et al., 2000). Employee role orientation and self-efficacy are linked to innovation (Farr & Ford, 1990; Bandura, 1982; Anderson & West, 1998), which itself requires the 'approval, support and resources of others', although assumptions of individualism and rationality lie at the core of skills and production capacities (Axtell et al., 2000: 269).

But this line of reasoning still relies on unwritten curricula and on the epistemological 'truths' of positivism that determine and design measures for success. Workplace expectations for knowledge production are becoming normalised within the KBE, and rely on the employability of workers, revealing contradictions within this transformation. If employability is dependent on the accidental circumstances that must be instigated by workers' energetic trial and error, how can potential employees possibly defend themselves and their abilities in a meaningful sense, or in a way that protects jobs and job security, and much less the unpaid participants in OS? Furthermore, these authors rely on the assumption that the process as a whole externally provides 'foresight' for overt behaviour; otherwise, the results could not be measured for success as the production of truly 'new' thought. It is thus appropriate to look at the production of knowledge regarding what makes employees employable, and to investigate the value ascribed to knowledge produced in the workplace from a critical political economy perspective, which allows for a critique rather than a reification of understandings. If OS is a site for the attainment of employability, then does it succeed in creating an alternative economic imaginary? Or is it a reinvention, indeed a redemption of the capitalist mode of production?

Towards a conclusion

Hesketh and Brown (2004: 1–13) discuss the 'war for talent' within the knowledge-based economy, showing that companies are battling for employees who can offer the kinds of skills and learning abilities that workers acquire through participation in community-based models of production such as that discussed

here. This talent war, however, reveals a considerable paradox, because recruitment has become less dependent on the actual 'knowledge' of candidates and instead depends on a range of factors that do not even reflect the learning acquisition in the pool of potentially employable workers. In fact, this paradox is not due to the lessening importance of knowledge, but has occurred because the candidate pool is becoming increasingly educated to the university level. Students at higher levels of education have increased fourfold in the West since the 1960s, making selection for employment a rapidly changing playing field. So employability has become dependent on a managerial 'science of gut feeling', combined with applicants' reputational and social capital, and within the IT sector, OS is an ideal location in which to develop this capital. This is an important claim, since job markets across the world are become increasingly unstable, and flexibility is becoming increasingly accepted as the norm.

Wheeler (2007) discusses the superiority of OS models by comparing them to models within which proprietary software is produced. First, when OS community members come across bugs or defects in software, they actively root them out rather than simply reporting them. The second advantage is that of peer review within communities, which would not be available within closed circuits of development. Third, meritocracy, which is related to peer review, appears to be a necessary element in the success of projects. Fourth, projects in the community-based model are not restricted to timelines to the extent that a firm would impose them, allowing for ongoing beta testing. But Wheeler's praise ignores the new pressures on developers themselves to become and remain core contributors, who are predicted to 'have market opportunities that conventional software developers would not have. If you've contributed to a software system used by millions of people, you've demonstrated something that most software developers have not done' (Festa, 2004), leading to participants' further employability. Volunteering for OS projects 'can be an effective way to get a job', and can serve as a recruiting ground for potential employers as well.

Outside the ethical considerations for participation in OS, Raymond (1999) predicts a positive future for OS, because the closed-source 'world' cannot win against OS communities in an 'evolutionary arms race' since OS produces knowledge, skill and human capital, providing the time and space to develop a personal vocational portfolio. It is a form of self-funded training that demonstrates our original claim that FS/OS appears to fulfil a role that perhaps should be played by this sector's organic intellectuals

and management with appropriate remuneration, rather than through the use of unpaid labour power. Even the leaders in the software market have begun to pay earnest attention to FS/OS, such as IBM, which hired Apache's FS/OS developers to produce and sell its software because it became clear that, in many cases, FS/OS was producing better software than were its Goliath competitors. The ascendancy of FS/OS in a market that was once impenetrable shows the power of critical social movements, but rather than conceding to an economic imaginary of the emancipated, we encourage FS/OS advocates to think about whether it provides a revolutionary model for production. The danger is that it in fact acts as a consortium for pre-existing capitalist models organised during industrialisation by the way in which it substitutes skills development sites for welfare state provision for the promotion of employability rather than employment. Further research should look at the spatio–temporal link between this historical post-dot.com bubble period and the introduction of unpaid production circles in the emerging scenario of surplus skilled labour.

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Class and capital in peer production

Michel Bauwens

Abstract

The aim of this paper is to make the case that peer production offers a unique chance to transcend capitalism, and that peer-to-peer movements represent the succession of industrial-society based socialisms. It describes the salient characteristics of peer production before going on to explore whether it is 'transcendent' or 'immanent' to the market system, concluding that it is both in that it creates a new form of capitalism and also points out how it may be overcome. Following a review of the hybrid economic forms emerging today, I formulate the hypothesis that peer production is actually a hyperproductive mode, forcing for-profit entities to adapt to its characteristics, thereby further integrating it into the existing political economy, but not without the transformative effects of its market transcending aspects. After examining the possible expansion of peer-production modalities to physical manufacturing, I also examine the class aspects of commons and sharing-based platforms and hypothesise the emergence of a new section of capital, netarchical capitalists, *who enable and empower participation, but also monetise it and attempt to control it.*

Introduction

The emergence of commons-based peer production was originally described by Yochai Benkler, and many authors have pointed to the increased participatory nature of current production (see bibliography). However, most of these authors see it as an adjunct to the market. This contrasts with the view of those observers we might call 'digital utopians', because they ignore the constraints of the current political economy; and it also contrasts

with the views of radical left analysts, who stress that peer production is already adapted and co-opted into the capitalist system. In this contribution, I take an integrative position, arguing that peer production is both immanent, i.e. part and parcel of a new type of capitalism, and also transcendent: i.e. it has sufficient post-capitalist aspects that can strengthen autonomous production communities in building an alternative logic of life and production that may, under certain conditions, overtake the current system.

Definition

I define[1] 'peer to peer' as a relational dynamic that emerges through distributed networks. Distributed[2] networks are networks in which the structure is such that agents and nodes can take independent action and maintain relationships 'on their own', i.e. through voluntary self-aggregation and 'without prior permission'. It is important to look at such a network from the point of view of the human: what matters is not the purity of the structure of the distributed network,[3] but whether or not, 'in the last analysis', such self-aggregation is made possible.

Self-aggregation then naturally gives rise to the emergence of peer 'production' — the ability to create common value. In such a process, 'peer producers' can 1) voluntary assemble capital assets, which may be material or immaterial; 2) design, through mutual adaptation, participatory governance processes ('peer governance'); and 3) simultaneously make sure that the commonly created value indeed stays 'common'. This is done using new forms of 'common' property (i.e. neither private exclusionary nor public-collective), for which I use the term 'peer property'.

Peer production is therefore defined by the following three interlocking characteristics: 1) the 'open and free' availability of the raw material; 2) participatory 'processing'; and 3) commons-oriented output. Because the latter re-creates open and free raw material for the next cycle of peer production, it can be considered as a process of social reproduction, which has been called the 'circulation of the common' by Nick Dyer-Witheford (2006).

Immanent and transcendent aspects of peer production

Just as serfdom arose within the slave-based mode of production of antiquity, and capitalism within dominant feudal structures, so does peer production arise and emerge within capitalism — but

not without 'transcendent' aspects that hold an emancipatory promise and form the seed of a possible new mode of production that may emerge as the dominant logic of a new type of political economy.

Let us first review the transcendent aspects of peer production. Peer production is based on voluntary self-aggregation, and is not based on the dependent wage relationship. It is only made possible because peer producers control their own productive assets. These assets are both immaterial — i.e. the assembling of brain power through unpaid effort sharing — and 'material', in the sense that peer producers must own or have access to computers, and must have access to the digital networks.

This transcendence is tempered by the reality that full-time volunteering, though it can take place through the interstices of the system, is in the final analysis dependent on forms of indirect income, and as the evolution of Linux shows, successful peer production efforts end up creating an ecology of businesses, which in turn start supporting a core of paid programmers. What is crucial is whether the income is associated with command and control or dependencies that destroy the voluntary contribution and other aspects. In practice, peer production projects have shown that they can keep sustaining the practices of voluntary contribution, non-directive production, and commons-oriented output.

Peer governance creates interdependencies between the hierarchy (which is usually meritocratic, with many ad hoc aspects) and the community that are fundamentally different from corporate structures based on wage dependency. Peer production processes are based on inclusionary rather than exclusionary design features, the distribution of tasks rather than the division of labour, and they allow anybody with the required skills to produce value without prior agreement. This probabilistic input is then matched with distributed forms of quality control. While traditional division of labour is based on fixed roles, peer production is based on self-assigned tasks. Above all, peer governance is designed to avoid the creation of a collective individual that could detach from the community and take over or control the productive assets.

The transcendent aspect of peer governance is tempered by the fact that such governance, though different from bureaucracy or representation, is not unproblematic by itself. Most communities seem to combine a core leadership whose forms of power do not correspond to the command and control paradigm but are nevertheless influential, and which are often termed 'benevolent

dictatorships'. This power is tempered by 'exit-based empowerment or the right to fork' (Malcolm, 2008 — see Chapter 4 for a good overview of the governance of open-source projects). However, such leadership does not control the 'asset' because of the third aspect of peer property: commons-oriented output. Indeed, license regimes such as the general public license (GPL) protect the universal availability of the assets.

Peer production does not create commodities. Peer production produces immaterial information goods that are not rival, and which can be downloaded from the internet. Objectively, these information goods can be reproduced at marginal cost, are therefore in 'abundant supply', and do not create a tension between supply and demand. They operate, therefore, outside the pricing mechanisms. This aspect is legally enforced through the new mechanisms of peer property, such as the use of the GPL in free software, which makes the resulting common value 'universally available'. In other words, peer production creates directly accessible 'use value', created by passionate, 'unalienated' workers, and does not create exchange value.

Again, this transcendent aspect is tempered by the fact that an economy arises around such commons, with companies creating added-value services or products around it. The key point here is to verify whether the commons is actively protected against 'poaching', which diminishes it — an outcome dependent on the precise kind of licence chosen. In conclusion, peer production has at least three fundamental aspects that are not in any way 'capitalist', yet are embedded in the overall capitalist system. Even given the reality of adaptation and co-optation by for-profit entities, it is possible for these three aspects to survive.

When the three aspects of peer production are indeed present, it is therefore nothing other than a form of 'cybernetic communism', operating within capitalist society in the form of each person contributing what he or she wants and can, and taking what he or she needs. The irony is that if it is indeed coherent with itself, such a true 'communism', 'communal shareholding' (Fiske, 1991) or 'commonism' also allows unlimited use of the created use value by market players. This is what the GNU general public licence of the Free Software Foundation allows, for example, while paradoxically, the 'partially common' approaches such as the main forms of the creative commons regime do not allow such unrestricted commercial usage.

Commonist licences allow capitalism in the periphery, while private-oriented licences, which allow individuals to modulate 'sharing', often forbid free usage by other for-profit entities.

Consequently, it is obvious that peer production emerges within a dominant political economy that is capitalist, and that capitalist market players can do many things to indirectly capture the value created by peer-producing communities. Peer production creates a permanent process of social innovation and use value that is also freely available for market players. These positive externalities of social innovation can be used as a general infrastructure for business operations. For example, using Linux brings down IT infrastructure costs for businesses that use it. There are many opportunities to create 'relative scarcities' around the commons, and these secondary commodities can be sold on the market. Software companies can create dual licensing strategies with added value software that is not free, for instance, and all kinds of service strategies.[4]

In fact, we can see at least three emergent forms of the 'market adaptation' of peer-to-peer dynamics. (For a more extensive treatment of this topic, see Bauwens, 2008a.) The first model, commons-oriented peer production, creates the possibility of creating secondary market value around that commons, and this is the model we can see at work with Linux. These dynamics involve three institutional players: 1) the community of peer producers producing value through self-aggregation, assisted by the 'private' creation of commons-oriented value when companies agree to contribute free software to the common pools; 2) organisations, usually not-for-profit, which manage the infrastructure of cooperation and collective capital needs (server farms, etc.), such as the Apache Foundation and the Mozilla Foundation; and 3) the companies creating added value around the commons, which ideally adapt 'benefit-sharing' mechanisms which plough back support to the infrastructure of cooperation. In commons-based peer production, benefit sharing[5] replaces profit sharing since the profit motive is antithetical to the 'non-reciprocal' dynamic of voluntary contribution, and 'crowds out'[6] such participation. The failure to practice benefit sharing, or unilateral profiteering on the other hand, can damage the relationship with the volunteer community as well. Most businesses that use a commons as their basis of value, therefore, participate in adding to the common pool, creating mixed forms of practice, for example by paying programmers to produce software that will be put under the GPL. Such practices, while reinforcing the commons, are of course not necessarily peer production themselves.

The second form is the Web 2.0 model of the sharing economy. In this model, a proprietary platform enables and empowers

participation, usually in the form of sharing, i.e. no common object is being created apart from the platform of exchange itself. This means that individuals and groups are enabled to share their creative expressions without creating a true common project. They therefore have weaker links with each other and rely on the third-party platform. This reliance comes at a price: the acceptance of a business model based primarily on the aggregation of users' attention, which is offered for sale to advertisers. Google is, of course, the prime example of such an approach; others are YouTube and Flickr. The difference between a commons-oriented logic and the individual expression logic goes some way to explaining the difference between true commons licences and those that do not create a true commons, such as the creative commons. In addition, proprietary platform owners often use very restrictive clauses that effectively enclose the creative property under their ownership and/or control.

The third form is the *crowdsourcing* model, whereby existing corporate structures attempt to integrate partial peer-to-peer dynamics in their own value chains. In Lego's 'Lego Factory' model, for example, users can generate designs and other users can order the new kits, but it is Lego that makes and delivers the packages, and Lego that gives commissions to the designers. Crowdsourcing can also lead to the creation of many new marketplaces, where producers (but not peer producers) voluntarily aggregate creative material which is then offered for sale on a platform, with the platform owners making a profit through the commissions. This has the great advantage, from the point of view of the for-profit companies and platforms, of moving the risk to the producers, and of creating a tremendous amount of free labour from which they can benefit. It can dramatically slash the pricing structures where it is being applied, such as, for example, in stock photography. But on the workers' side, it nevertheless creates forms of autonomy in work that are chosen voluntarily. There is an ongoing debate on when exactly legitimate crowdsourcing, which may benefit both creators and platform owners, becomes illegitimate exploitation (see Hyde, 2008).

Each of these three models, only the first of which is true 'peer production' under our definition, has different social dynamics and underlying social contracts, creating different types of social conflict. The third model, in particular, may lead to confusion between market-based self-aggregation and peer-to-peer self-aggregation.

Essentially, markets are a form of swarming, lacking any 'larger social awareness' since parties interact starting from their own self-interest, with no consciousness of the whole and no extended circle

of care. Activities have no objects that transcend the interested parties. Market dynamics are therefore like insect dynamics, with prices acting as stigmergic⁷ signalling that guide behaviour, but the individual has no intentionality beyond his own self-interest. Moreover, 'really existing capitalist markets', dominated as they are by large multinational companies, have a decentralised but not distributed dynamic. Participants are always already constrained in their freedom to act and self-assemble. And of course, the very pricing mechanism works in an exclusionary fashion against those who do not have money, so there is no universal availability.

In contrast, true peer-to-peer dynamics take place in distributed systems and are permission-less, not dependent on powerful obligatory hubs (in peer-to-peer logic, hubs are chosen/created through cumulative individual action, not a priori imposed by power centres). Participants have the intentionality and awareness that they are either participating in a sharing mechanism or in a commons mechanism, and therefore human intentionality is integrated in peer-to-peer dynamics, having social objects that transcend the individual. Those objects of sociality are in fact the glue that holds peer-to-peer producing communities together, providing the meritocratic logic that will define community norms around shared notions of quality.

Peer-to-peer systems are designed to converge individual and collective interests, unlike markets, which are based on the hope that individual interests will converge into a collective interest — a mechanism that does not, we know, function without regulation and external control from the state or civil society. Historically speaking, unregulated markets have always resulted in a strengthening of the domination of the already powerful, and this can be observed to an unprecedented extent in the last thirty years of neoliberalism.

In the best of times, or rather, theoretically speaking, the market operates on a win-win dynamic, i.e. the mutual exchange of equal value between the participants in the exchange. In peer-to-peer, the two 'wins' of the participants are augmented by the win of the group project, and the benefit of the group work for the whole society through the distribution mechanism, which guarantees universal availability through sharing or a commons. The results of peer production are not distributed to those with purchasing power, but to all those who may want it.

Motivation for peer-to-peer is intrinsically positive, i.e. deriving from passion rather than from 'extrinsic positives' (self-interest or greed, motivated by the external monetary mechanism). Finally, in terms of the cooperation mechanism it is not neutral as capitalism

is, but is synergistic in its very design. This makes peer production a 'hyper-productive' mode of production. For-profit production is geared towards profit, has to pay labour, and only strives for the relative quality of being better than the competition. The closed nature of its intellectual property precludes it from being ameliorated by voluntary cooperation, and in case of failure, means it is often lost for further use and improvement. In contrast, a community effort, aided by a for-benefit institution managing its infrastructure of cooperation and an ecology of businesses, will naturally strive for absolute quality in a process of permanent innovation that is only restrained by the capability of the project to generate voluntary mobilisations.

Three tendential laws of asymmetric competition can be derived from this dynamic. The first of these laws holds that any 'closed', non-participatory for-profit endeavour will tend to lose in the long term against a for-benefit competitor. Evidence for this includes the classic cases of Linux vs. Microsoft, Firefox vs. Internet Explorer, and Wikipedia vs. the Encyclopaedia Britanica. In general, the consensus today is that exclusive proprietary software approaches are no longer viable once an open-source competitor appears on the scene. Indeed, a pure for-profit endeavour cannot count on voluntary participation, has to pay all its employees, and cannot understand the drive for absolute quality that is characteristic of peer production communities.

The second law is that for-profit companies that adapt and integrate peer-to-peer aspects, practicing 'open business models', will tend to out-compete their closed rivals. Companies that can profit from social innovation, co-creation and co-design and crowdsourcing mechanisms will tend to out-innovate those that don't. Companies that 'open up' create communities of developers and ecologies of innovation that closed companies cannot achieve.

Finally, those peer producing communities that successfully surround themselves with a dynamic business ecology practicing benefit sharing will tend to out-compete peer production projects that remain isolated. Peer production projects depend on a core of volunteers which is generally unsustainable in the long term; this core will tend to find solutions in order to perpetuate its engagement, creating institutions supported by an ecology of businesses practicing benefit sharing. Such institutionalised projects will tend to outperform those that do not achieve it.

These three combined principles create a powerful pressure for the integration of peer production within the capitalist economy.

The problem of physical production

A key issue is that of how a mode of production that is successful in the creation of 'immaterial value' is co-dependent and can coexist with the sphere of material value creation. The problem can be described as follows: immaterial production deals with non-rival or even anti-rival goods[8] that can be produced through the self-assemblage of interconnected brains, the result of which can then be made 'universally available'. This works well in the production of software and what is generally called 'content'. The general condition, of course, is the existence of an infrastructure of cooperation that is accessible.

1) But what about immaterial value that is intrinsically connected to physical products, which are often 'rival' and in any case need systematic cost-recovery mechanisms? Any physical production has design aspects that can be produced through peer production, i.e. through open design communities that make their innovations universally accessible, just as software or content is. A practical difference is that such designs are not immediately executable, and need much more stringent feedback loops with locally 'embodied' production facilities. As the already existing open design communities[9] can attest, this is a difficulty but not an insurmountable problem. But whereas non-rival production is compatible with the non-reciprocal mode of peer production (i.e. voluntary participation), this will usually not be the case for physical production, and therefore, at this stage, reciprocal or market-based mechanisms are needed. We therefore need to imagine mechanisms that combine the non-reciprocal peer production of designs for immaterial production with a separate system for physical production that relies on, cooperates and supports open design communities.

Eric von Hippel has already described the emergence of such processes of 'built-only' capitalism in his book, *Democratizing Innovation*, and the P2P Foundation monitors this emergence closely as well.[10] Von Hippel's research shows the increasingly important role of user-innovation communities, and especially of lead users, in a new model in which networked innovation precedes commercial uptake by a company, and where the latter no longer necessarily owns the intellectual property on which its products are based. The relation between such corporate (or cooperative) entities and the open design communities could be ideally modelled on the benefit-sharing practices characteristic of businesses operating around the Linux commons. Better yet, we

can imagine different formal governance models for such entities, such as cooperatives.

Even though peer-production and open-design communities are at present just emerging, we can clearly identify them as harbingers of social transformation. Any transformation to the dominance of a dual format that combines open design communities with a more just and equitable format for physical production will depend not only on political and social struggles and the social balance of power, but also on a number of objective trends. These trends, which have led to the distribution of computer technology and access to it, are starting to manifest themselves as a general characteristic of the means of production. Economies of scale will be replaced by economies of scope through the hyper-productivity of the collective learning that is derivative of open design communities. Just as the cost of energy and raw materials may be expected to rise, so may the cost of ever more miniaturised capital goods be expected to diminish dramatically in the coming decades, giving rise to the development of cheaper and modular production machinery that can coexist with both globalised coordination and relocalised production. This will mean that the self-assemblage of immaterial resources can be matched, eventually, by self-assemblage of physical production resources; but at this stage, a dual regime is inevitable because of the issue of cost recovery in the physical sphere.

It is important to consider the mutual interdependence of the immaterial and material spheres of production, not only in a hypothetical future in which the mode of production has been reorganised but also today, through the already existing interplay between peer production and capitalism. Peer production is a mode of voluntary contribution that is dependent on the existing surplus of the current political economy. It is only viable because the current system has created sufficient interstices in which people can operate outside of the commodity and wage logic, but only as an 'aspect of their lives'.

But the opposite is just as true: innovation is becoming increasingly social, a function of the general intellect — an emergent property of the networks of cooperation in which most of us, and not only in western countries, are increasingly inserted. This means that capitalism is increasingly dependent on the value creation and innovation that are the positive externalities of social cooperation. Moreover, there is an objective trend for businesses to adapt to the emergence of open commons, and for open commons to seek to be in synergy with ecologies of businesses.

The key issue for labour is that peer production is currently sustainable collectively, but not individually. A peer-to-peer project can sustain itself through the renewal of its volunteer labour force, but at the individual level, volunteering cannot be a permanent state. This means that the 'class features' of peer production necessarily coexist with the class features of capitalism, since it is at present codependent with it.

A peer producer voluntarily contributes his or her creative brainpower to a common project, also contributing physical productive resources to create the user-generated capital base that will enable the infrastructure of cooperation to endure. However, the same peer producer also needs to make a living. If the peer production project is successfully inserted into a larger business ecology then all kinds of hybrid modes become possible, with a flexible membrane existing between the sphere of the market and the sphere of peer production. A way to imagine this model is to compare it to the relationship of the Christian or Buddhist religious economies to the overall 'feudal' or agricultural economies in which they found themselves, whereby the core mode of production allowed and enabled a different productive logic to coexist with the main system. Nevertheless, it is fair to assume that for most peer producers, voluntary peer production will appear as central to the identity and meaning-making aspects of their lives, as the place in which passion, community and creativity can be applied in a way almost impossible to achieve within the corporate context.

Compared to the material and hierarchical dependencies and frustrations of productive life in capitalism, it is peer production aspects that increasingly appear as the ideal. This leads to a change in the structure of desire towards activities that will support the expansion of peer production. Social movements that attempt to create open/free, participatory and commons-oriented social forms are emerging on a global scale in every field of human activity, and a deep drive to create the conditions for a transformation towards the generalisation of peer production is in plain view. Just as socialism was the social ideal of the nineteenth- and early-twentieth-century factory worker, so peer-to-peer production is emerging as the social ideal of contemporary knowledge workers. Indeed, peer-to-peer production is the socialism of the twenty-first century. It is becoming the social imaginary, the new structure of desire, centred on the general concept and demand for 'participation'. It is also a new language

that corresponds to the life experiences of contemporary youth, and which is very usefully divorced from the totalitarian baggage of socialist language.

Peer production and capital

Peer production creates manifold problems for for-profit players as well. Adaptation to participatory modes of innovation, to open models of intellectual property (IP), is antithetical to both the industrial and cognitive modes of capitalism. While the former relies on strict control of the workforce, the latter has historically relied on state-protected IP rents and the surplus profits deriving from them.

Nevertheless, as far as class is concerned, various levels of adaptation are inevitable due to the hyperproductive nature of peer production. Thus we witness the emergence of a new layer of capital, which I call 'netarchical capitalism'. Netarchical capitalists no longer rely on closed intellectual property strategies, but enable and empower the direct creation of value by sharing communities, or cooperate with a commons. In order to understand this thesis, it could be usefully seen as a response to the limitations of two different interpretations: the analysis of cognitive capitalism and the hacker/vectoral class hypothesis of McKenzie Wark, both of which I find to be incomplete explanations of the current transformation.

Cognitive capitalism theorists such as Yann-Moulier Boutang amd Carlo Vercellone argue that this third phase of capitalism is based on the general intellect, but also insist that its new mode of accumulation is based on intellectual assets. In other words, the surplus is not coming from the labour-created surplus value in physical production, but is essentially the result of the rents derived from state-protected intellectual property and from the valuation of immaterial cooperation value through the financial markets. These are acceptable theses, but they cannot explain the emergence of a group of capitalists who forego income on intellectual assets.

McKenzie Wark, in his book *The Hacker Manifesto*, adds a twist, insisting that a new class is now in power.[11] Unlike capitalists, who based their control on capital assets, a 'vectoral class'[12] has arisen that owes its power to the control of information (which it owns through patents and copyrights), the stocks (archives) through which it is accessible, and the control of the vectors through which the information must flow (media). Vectoral capitalists' ownership of the media gives them control not just over distribution, but also over the possibilities of realising the monetary value of creative

content by the creators of that content themselves. It is now no longer a matter of making profits through material industry production, but of making margins in the trading of stocks, and of the development of new monopolistic rents based on the ownership of information.

Furthermore, the mirror image of the vector class is the 'hacker class', which 'produces difference' i.e. new value expressed through innovation. A crucial distinction between the more general concept of 'knowledge workers' and the more specific class concept of the hacker class is that the latter produces new means of production, i.e. hardware, software and *wetware* (human brainpower), and they are correspondingly stronger than farmers or workers could ever have been. Therefore, what McKenzie Wark explains perhaps more cogently and starkly than do creative-commons theorists is the new nature of the class struggle, centred on the ownership of information and the ownership of the vectors. Thus the key issue is the property form, which is responsible for creating the scarcity that sustains a marketplace. Another advantage is the clear distinction between the hacker class, which produces use value, and the vectoral value, i.e. the entrepreneurs, who transform it into exchange value. The predominance of financial capital is explained by the ownership of stocks, which replaces ownership of capital, a less abstract form. Unlike industrial capitalists, who were happy to leave a common and socialised culture, education, and science to the state, vectoral capitalists differ in that they want to turn everything into a commodity. The latter is a cogent explanation of the logic behind neoliberal 'hypercapitalism'.

Nevertheless, it fails to explain the transformative nature of netarchical capitalism. The reason McKenzie Wark's explanation is no longer adequate is that the internet clearly undermines the vectoral class's control of both the means of production and of distribution, while also weakening strategies that rely on monopolistic rents derived from intellectual property. Rather, the netarchical platforms enable and empower participation and sharing to occur, but they are able to convert part of the created use value into exchange value through the sale of user attention. Privatising the creation, though it is sometimes attempted, in fact undermines the willingness of participants to share their creations and is therefore not a sustainable strategy. Thus intellectual property strategies have to be abandoned as core elements of such corporate strategies. There are many contradictions involved in such a path. One is that participation requires openness, but profit requires enclosure. While the collective capitalist benefits from open standards and an open commons, individual players would

prefer to partially enclose their sharing networks and platforms. But the main contradiction is systemic and very problematic for the survival of current capitalist and state formats. It is the issue that Adam Arvidsson and I have called the 'crisis of value' (Arvidsson et al., 2008).

In essence, peer production and participation creates a system that allows for the exponential[13] rise of the direct creation of use value. Nonetheless, the potential to monetise such use value only rises linearly, so to speak; and although Google makes a lot of money this way, it is one of only very few websites that can do so. The core of immaterial value creation now lies outside the sphere of the market. The commons creates use value, and the market operates only at its margins. That use value is wealth, but because our current political economy requires money with which to buy physical goods, it is a kind of wealth that cannot be directly transformed for the physical reproduction of the workers and the system as a whole. This creates, amongst other things, a huge imbalance whereby the private market generates profit from the positive externalisation of social innovation and peer production, but there are only scant mechanisms of return towards the peer communities that created the value in the first place.

Class struggle in peer production

Peer production also has objective 'class' aspects that are centred on the dynamic relationship between community and platform owner, or between the peer producing community and the business ecology that surrounds it. Peer communities strive towards openness and freedom while participating companies are subject to a tension between the openness of the platform, necessary to enable the participatory value creation, and the need to enclose aspects of value so that they can become commodities in the market place in which they necessarily compete.

However, even the non-profit institutions that manage the infrastructure of cooperation have different interests from those of the peer governing community, and can be linked to the private business interests of its participants (the Mozilla Foundation vs. Mozilla Corporation; the Wikipedia Foundation and the business interests of Jimmy Wales and colleagues). Each business and social model (commons, sharing, crowdsourcing) has different dynamics and different interests between the self-aggregating peer production community, the for-benefit institution in charge of the infrastructure of cooperation, and the ecology of businesses

practicing (or not practicing) benefit sharing. Tension and problematic power relations can arise between the different spheres, and also within them. This will also be the case for the emerging open design communities — between the community of designers contributing to the design commons and the entities producing the designs physically, even though those producers can be 'social entreprises' or cooperatives. The key here is the development of community-interest literacy and a literacy of participation that supports user-producer community rights, and leads to a further expansion of the sphere of peer production.

There are a number of common interests between peer producing communities and netarchical capitalists as well. The latter have an objective interest in promoting the infrastructures of cooperation that make participation and peer production possible; and these new companies often support open standards and open infrastructures to some degree. They have common interests with the capitalist class in general but differential interests as a faction, and they have common interests in the use and promotion of hybrid peer production in a potential alliance with peer producing communities. They are allies of peer producers in so far as there are struggles against closed modalities, and they represent a reconfiguration of the dominant system that is in ways congruent with the peer producing communities. Nonetheless, these interests never fully coincide.

There is an analogy, therefore, between the labour movement's relations with the owners of capital and the various accommodations and adaptations that have occurred between them; and the relations between peer producing communities and platform owners. The interest of peer producers is to enhance the social potential for the creation of use value through peer production, and the creation of an overall system of support that makes it possible to do so while ensuring material reproduction. The natural priority is to increase the sphere of free cooperation within existing society, in the context of access to the necessary material goods. This squaring of the circle will determine the logic of social struggles in the future.

Peer-to-peer and social change

If we look at systemic change from one mode of production to another or from one type of political economy to another, we can observe two different types of change. One view, posited by socialist revolutionary theory, stresses the political taking of power

by a new class, and has been seen as a model for the transition from feudalism to capitalism, and from the potential revolution towards a socialist model. On the other hand, another model stresses the mutual reconfiguration of owner and producing classes.

For example, we could argue that there was no clear political revolution marking the transition from slavery to feudalism but rather a long, five-century transition in which slavery became increasingly untenable, and former slave owners started transforming themselves, therefore, into re-localised domain holders with serfs producing local use value. From the point of view of the latter, the condition of serfdom would seem to be a social advance even though it was also in the interest of the new ruling class, while for formerly free farmers, it may be seen as a regression.

Similarly, in the transition from feudalism to capitalism we could argue that the new practices emerged within feudalism, that because of its hyperproductivity it was taken up by players within the feudal model, leading to both a reconfiguration of parts of the feudal ruling classes into capitalists, combined with the transformation of serfs into workers. In this scenario, a new hyperproductive form may first emerge as a germ form practice and move to a state of parity before eventually becoming the dominant format. The eighteenth-century absolutisms are often seen as precisely this point of parity between declining nobility and emergent bourgeoisie, with the king as arbiter. In this scenario, applied to the current situation, we have peer production emerging as a germ form, being applied by knowledge workers but also by netarchical and other capitalists because of its hyperproductivity, which may lead to a situation of parity.

There are in fact many similarities between the shift from slavery to feudalism and the current transformation. Both systems face a crisis of extensive growth, i.e. limits to Roman expansion vs. environmental and resource crises for the current world system; and both transitions see a move away from exchange value to use value, i.e. the collapse of the Roman market and the move to production for the local domain vs. the resource crisis of today's globalised neoliberal system, which may similarly lead to pressures for relocalisation.

One of the possible 'positive' scenarios for the near future is a shift towards some form of global compact involving green-capitalist strategies, as proposed by Gore, Soros and others, necessary for the ecological survival of the planet. Such a shift towards sustainability only seems possible with a reliance on much more social participation. If such a global reform were to be achieved, the sphere of participation, social innovation and peer production would be

significantly enhanced, leading to an accelerated growth of the sphere of peer production, up to a potential parity. If one indeed believes that infinite growth capitalism is impossible in a natural environment, the inevitable crisis of green capitalism could then possibly lead to a potential system transition, making peer-to-peer production the dominant logic.

In conclusion, one can imagine many possible negative scenarios involving social dislocation and war for scarce resources, but even in these scenarios there is room to envisage the continued growth of peer production communities in more local, 'survival' oriented formats. In any case, the hyperproductivity of peer production necessarily entails a shift in business practices towards more open and participatory models. The positive scenario suggests interesting political strategies — for example, alliances between the forces representing netarchical capitalism and the green/sustainability oriented reform movements — based on a common interest that would expand the sphere of participation and peer production. At the same time, as peer production becomes ever more visible, influencing new subjectivities and relationalities, the interconnected growth of open/free, participatory, and commons-oriented social movements and practices may create the conditions for new political identities centred around the peer-to-peer paradigm. We are only at the beginning of this massive shift towards a new political economy and civilisational format based on the non-reciprocal logic of peer production, but the signs of it are everywhere.

Bibliographical notice: Useful books

On peer production

Yochai Benkler's *The Wealth of Nations* makes the case for the emergence and strength of commons-based peer production, focusing on its role in the overall economy. Axel Bruns's book on 'produsage' is a comprehensive examination of the characteristics of peer production as a process, and Eric von Hippel's *Democratization of Innovation* focuses on the role of user innovation communities and lead users in contemporary innovation. Don Tapskott's *Wikinomics* is written from the point of view of corporations that wish to profit from integrating user participation into their own practices, while Charles Leadbeater focuses on social innovation in the larger society.

On peer governance

Steven Weber's *Success of Open Source* is the landmark treatment on the governance of open source communities, while Alexander Galloway's

Protocol focuses on the invisible architectures that constrain freedom in distributed systems.

On peer property

There is no important monographical treatment of peer property, but *Code*, a collection of papers edited by Rishab Ayer Gosh, comes closest with an early treatment of the new forms of property.

On political implications

Decoding Liberation by Samir Chopra and Scott Dexter analyses the liberatory potential of free software. Johan Soderbergh's *Hacking Capitalism* is an in-depth treatment of the political implications of the hacker movement and its struggles and strategies. In *Two Bits,* Christopher Kelty treats free software communities as recursive publics that can create and modify their own infrastructures.

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Notes

1   Peer-to-peer was originally defined in a technical manner, as a communications network in which both parties have the same capabilities. However, its usage has evolved to give the looser, popular meaning of 'equal to equal'. In common parlance it is most often used as synonym for internet-based filesharing, in which music or video files can be shared regardless of their location on a particular individual computer. Our definition is therefore more strictly relational and is intended to render the popular 'egalitarian' significance more operative. For a sample of technical definitions, see <http://searchnetworking.techtarget.com>.

2   Following Alexander Galloway's suggestion in *Protocol* (2004), we make a sharp distinction between decentralised networks, in which hubs are obligatory and individual agents are dependent on the permissions of the different power hubs; and distributed networks, in which the hubs arise a posteriori from the free choices of these agents. There is an excerpt from the book's introduction at <http://p2pfoundation.net/Protocol>, accessed 20 July 2008.

3   The importance of this point is as follows. It is often correctly asserted that few networks are fully distributed and that they often contain hybrid centralised and decentralised elements. Examples that can be cited are the centralised naming system of the internet, the middleware that compromises its end-to-end functionality, the client-server structure of the web, etc. Though such technical structures may constrain human freedom, it is important to see whether in the last analysis, they enable free human communication or do not. I would contend that it is, more often than not, possible to undertake peer-to-peer communications and self-aggregation despite those constraints. A more interesting approach is to look into the ways invisible protocols may stimulate certain behaviours above others.

4   Business models based on free software or open source are summarised and referenced at <http://p2pfoundation.net/Open_Source_Business_Models> and <http://p2pfoundation.net/Free_Software_Business_Models>, both accessed 21 July 2008.

5 For details on benefit sharing, see <http://p2pfoundation.net/ Benefit_Sharing>; and for details on for-benefit institutions, see <http://p2pfoundation.net/For_Benefit>, both accessed 21 July 2008.

6 'Crowding out' refers to the phenomena in which, within peer production projects in particular and in volunteering in general, paying volunteers actually diminishes their motivation and might destroy the very dynamic of peer production projects. It leads to the conclusion that peer production projects are not price-incentivised systems, and that revenue sharing may be counterproductive. For treatment of the topic, see <http://p2pfoundation.net/Crowding_ Out>, accessed 21 July 2008.

7 'Stigmergy' is a term used in biology (from the work of French biologist Pierre-Paul Grasse) to describe environmental mechanisms for coordinating the work of independent actors. For example, ants use pheromones to create trails and people use weblog links to establish information paths for others to follow.

8 Non-rival goods do not lose value when they are shared; anti-rival goods gain value by sharing because of the network effect.

9 See the directory of projects at <http://p2pfoundation.net/Product_ Hacking>, accessed 21 July 2008.

10 Open design communities, <http://p2pfoundation.net/Category: Design>, accessed 21 July 2008.

11 From an interview with McKenzie Wark at <http://frontwheel drive.com>, accessed 22 July 2008.

12 See the definition of and comment on the vectoral and hacker class by McKenzie Wark at <http://subsol.c3.hu>, accessed 22 July 2008.

13 I compare exponential with linear here in a 'manner of speaking', not claiming that this relationship has a scientific validity, but only indicating the huge discrepancy between the two realms. However, the 'attention economist' Michael Goldhaber has made an attempt to create a metric for this: the TPI coefficient. See <http://p2p foundation.net/TPI_Coefficient> for details, accessed 22 July 2008.

Cyberconflict at the edge of chaos: Cryptohierarchies and self-organisation in the open-source movement

Athina Karatzogianni and George Michaelides

Abstract

This paper differentiates between different levels of conflict in the open-source movement and discusses the role conflict and self-organisation play in the emergence of structures of leadership emergence and the bifurcation into core and peripheral groups and soft control by cryptohierarchies; in the different levels of group polarisation and conflict between communities negotiating their identity, strategy, coordination and complexity; and lastly, in the dynamic relationships between hierarchies and networks. These dynamics are forcing open-source communities to exist at the edge of chaos, and to constantly engage in lines of flight and resistance from the system of global control, while ignoring current capitalist practices and 'growing their own' models of self-organising knowledge creation and exchange.

Introduction

In communities that exist at the interface between order and randomness (at the edge of chaos), conflict and crisis can act as a catalyst or a defence mechanism towards establishing governance structures or, failing that, disintegration. Conflict is a catalyst in the sense of enabling the morphosis of cryptohierarchies, and a defence mechanism in the sense of forcing communities to separate.

Conflict and crisis can result in different outcomes. For example, through negotiation and soft control, communities such as peer-to-peer networks can develop new structures in order to cope with conflict, creating core and periphery groups and cryptohierarchies. In another scenario, due to extreme group polarisation, the

community is unable to create new structures, but branches out and uses conflict as a defence mechanism to avoid centralisation. Or in the worst-case scenario, the community separates into two (forking the code), and there is no collaboration between original and fork, in which case conflict can be constructive or destructive depending on the evolution of the communities and groups involved.

From another angle, in this paper we differentiate between different levels of conflict and discuss the role conflict and self-organisation play in the emergence of structures, focusing on leadership emergence, the bifurcation into core and peripheral groups and soft control by cryptohierarchies (intra-communal cyberconflict); different levels of group polarisation and conflict between communities negotiating their identity, strategy, coordination and complexity (inter-communal cyberconflict); and lastly, the dynamic relationships between hierarchies and networks. These dynamics are forcing open-source communities and, more often than not, networked communities to exist at the edge of chaos, and to constantly engage in lines of flight and resistance from the system of global control, while ignoring current capitalist practices and 'growing their own' models of self-organising knowledge creation and exchange (meta-cyberconflict).

The other main purpose of this paper is to suggest, through examining issues of cryptohierarchies and the effects of self-organisation, that the open-source and/or free software movement is mistakenly romanticised as the ultimate democratic, egalitarian and horizontal system of governance, although a version of it might well replace democracy itself in the future, as the worst form of government except for the other ones that have been tried:

> People often see in the open source software movement the politics that they would like to see — a libertarian reverie, a perfect meritocracy, a utopian gift culture that celebrates an economics of abundance instead of scarcity, a virtual or electronic existence proof of communitarian ideals, a political movement aimed at replacing obsolete nineteenth-century capitalist structures with 'new relations of production' more suited to the Information Age … It is almost too easy to criticize some of the more lavish claims … The hype should be partly forgiven … Unlike the shooting star that was Napster, the roots of open source go back to the beginning of modern computing; it is a productive movement ultimately linked to the mainstream economy; and its developing and growing an increasingly self-conscious identification as a community that specifies its own norms and values. (Weber, 2004: 7)

Stefan Merten of Oekonux (the name is drawn from a combination of the words *oekonomie* [economics] and 'Linux'), a German mailing list discussing the revolutionary possibilities of free software, reassures us that 'conflict would no longer be built into the social system as it is today' (Merten, 2004, version 4). Similarly optimistic, Michel Bauwens (2007) of the P2P Foundation talks of peer-to-peer processes as bottom-up processes in which agents in a distributed network can freely and voluntarily engage in common pursuits without external coercion, which anyone can access, anyone can use, and any change to the commons belongs to the commons. Peer-governance-based leadership on reputational capital is the order of the day: 'Within the teams, decision making is participative and consensual, and the global coordination is voluntarily accepted and today technically feasible. Small tribes, the victims of civilizational hierarchies, are re-enabled in the new format of affinity-based cyber-collectives' (ibid. 2007). Post-monetary, post-democratic, post-capitalist modes of value and exchange embedded or not in the system are the answer and the solution to the structural crisis of contemporary capitalism (ibid., 2007). How is this system to come about? Bauwens proposes the following:

- Basic income in the private sector
- Open money systems in the sphere of the market
- Wealth acknowledgement systems (translating reputational wealth in income)
- Multi-stakeholderism (the inclusion in decision-making of participants who might be affected)
- A state retreat from the binary state/privatisation model in favour of a more neutral meta-regulatory system — a mix of government regulation, private market freedom, and autonomous civil society projects
- 'a political economy based on a true notion of scarcity in the material realm, and a realization of abundance in the immaterial realm' … 'moving towards non-proprietary licenses, participatory modes of production, and commons-oriented property forms'.

These ideas raise many questions. What are the conditions like under peer-to-peer production? (See Dafermos and Soderbergh, this issue). What kind of subject exists and communicates under these conditions? What complexes of subjects, bodies and machines are required to accommodate the 'complex innovation and the subsequent need for creative and autonomous workers?' (See Moore and Taylor, this issue). Communities are evolving continuously, and new members cause depolarisation. On the down side,

structurelessness masks power within these communities. The equivalent in the open-source sphere could be the spectacularly skewed distribution of knowledge — the huge gap between core and peripheral developers' contributions. Is soft control by cryptohierarchies necessary in order to provide the social glue and facilitate the creation of technical infrastructures and decision-making mechanisms? If, in reality, all the ideals of the peer-to-peer movement remain unachieved, is that necessarily a bad thing? For example, unequal participation is natural in face-to-face interactions, and creates diversity in arguments and beliefs. Further, what are the acceptable levels of explicit coordination, power asymmetry and hierarchy? More and more, subsidiarity, multi-stakeholderism, expertise and reputation management are being discussed as components of the post-democratic, post-capitalist politics (see Orsi's and Arvidsson's distributions in this issue) that are emerging through the revolution underway in the governance and political economy of global communications. Is peer-to-peer revolutionary because it is sustainable and constantly self-organising?

Main conflict plateaus

Weber argues that the open-source movement poses three interesting questions for political economy, and these can be summarised as follows:

- the *motivation* of individuals: why do talented programmers chose to spend time on a project for which they will not be compensated?
- *coordination*: 'how does the open source sustain coordinated cooperation among large numbers of contributors, outside the bounds of hierarchical or market mechanisms?'
- *complexity*: 'what is the nature of governance within the open source process that enables this community to manage the implications of Brooks's Law' — this states that when manpower is added to a software project, the project falls even further behind — 'and perform successfully with such complex systems?' (2004: 11–12).

Incorporating Weber's foci of analysis, the open-source community/ies and the socioeconomic and politico-economic cyberconflicts[1] (conflicts in computer-mediated environments) that arise therein can be categorised in the following way. First, as ultra creative, *intra-communal* conflicts between individuals in an open-source community. This can lead to much more diverse knowledge

creation or, in the worst-case scenario, to code forking. Forking, where the code is replicated and continued by another team of developers, is different to code branching. For instance, in the proprietary software Unix, different projects incompatible to each other exist (forking). In OSS Linux, official and experimental versions of software exist (branching). And next-generation software develops forking from the original one, such as Samba TNG. In most cases, technical and licence disagreements seem to cause the forks. OpenBSD forked from NetBSD 1.0; OpenSSH from SSH; and DragonFly BSD was forked from FreeBSD 4.8 by long-time FreeBSD developer Matt Dillon due to disagreements over FreeBSD 5's technical direction. Adempiere, a community-maintained fork of Compiere 2.5.3b, forked due to disagreements over the commercial and technical direction of Compiere Inc. NeoOffice is a fork of OpenOffice.org, with an incompatible license (GPL rather than LGPL) due to disagreements about licensing and about the best method with which to port OpenOffice.org to Mac OS X. On the matter of forking, the Jargon File hackers' glossary says:

> Forking is considered a Bad Thing—not merely because it implies a lot of wasted effort in the future, but because forks tend to be accompanied by a great deal of strife and acrimony between the successor groups over issues of legitimacy, succession, and design direction. There is serious social pressure against forking. As a result, major forks (such as the Gnu-Emacs/XEmacs split, the fissioning of the 386BSD group into three daughter projects, and the short-lived GCC/EGCS split) are rare enough that they are remembered individually in hacker folklore. [from the Jargon File hacker glossary, cited on Wikipedia's 'Fork (software development)' page at <en.wikipedia.org/wiki/Fork_(software_ development)>]

The Wikipedia entry goes on,

> It is easy to declare a fork, but it can require considerable effort to continue independent development and support. As such, forks without adequate resources can soon become inactive, e.g., GoneME, a fork of GNOME by a former developer, which was soon discontinued despite attracting some publicity. Some well-known forks have enjoyed great success, however, such as the X.Org X11 server, a fork from XFree86 which gained widespread support from developers

and users and notably sped up X development. [en.wikipedia.org/wiki/Fork_(software_development]

What is interesting in the intra-communal conflicts are issues of personal freedom, the right to fork, ownership, leadership direction (e.g. BSD forks), competitive technical visions/ideologies, the reputational risk to the original project, and fork leader recruitment. For the purpose of this discussion, it is also interesting in respect of intra-communal conflicts to explore group polarisation, cryptohierarchies, and what Weber terms the 'winner-takes-all dynamic within certain kinds of open source projects' (2004: 160).

Secondly, *inter-communal* conflicts between different open-source communities raise questions of coordination (too much and too little), complexity (how much the community can handle), and ideology (different political visions for the open source, expressing inclinations ranging from anarcho-syndicalism to libertarianism and even to right-wing ideologies, for instance Free Software, which emphasises the freedom aspect, and Open Source Initiative, which establishes links with business. 'The relationship between the different communities can be cordial (e.g., Ubuntu and Debian), very bitter (X.Org Server and XFree86, or cdrtools and cdrkit) or none to speak of (most Linux distributions)' [en.wikipedia.org/wiki/Fork_(software_development)].

In the bigger picture, there is a general conflict between the open-source community and aligned proprietary software companies supporting open-source initiatives against the Microsoft monopoly and its allies. Here, macro-organisational structures and the dynamics of the IT industry are important, as are questions of identity, strategy (framing) and structure (hierarchy vs. network or hybrid, such as in the Linux case, when Torvalds started rerouting submissions to lieutenants). Within this bigger picture, a meta-conflict occurs synchronously bringing all these different levels together and posing them in direct and intense contact and contrast to the current global system of capitalist accumulation.

Cryptohierarchies, self-organisation and the edge of chaos

The 'edge of chaos' is defined as being the state of a system in which the system is undergoing a phase transition: i.e. its behaviour is shifting from one state to another. In social systems, 'edge of chaos' refers to the conceptual region between order and chaos, and refers to a system which is at a 'self organised' state. In open-source communities and possibly in other network structures, the edge of

chaos is captured in two ways in which the system can self organise. First, open-source communities exhibit power law[2] distribution (see e.g. Healy & Schussman, 2003; Madey, Freeh & Tyran, 2005); and second, every successful community tends to be organised into a two-tier structure with a core and a periphery group (see Lee & Cole, 2003; Michaelides, 2006). The significance of these two forms of self-organisation in this discussion is that this is not only unavoidable, but also a necessary component to the success of the community. First, networks that follow power law distributions tend to be more robust and are more adaptable to environmental disturbances (see e.g. Barabasi, 2002). Second, the fact that communities tend to separate into core and periphery groups enables them to effectively exploit and integrate knowledge from diverse sources (Michaelides, 2006).

Power law distributions

'Power law distributions' refers to distributions where the frequency of an event is inversely proportional to the magnitude of the event, so that $freq(\chi) = \alpha + \beta\chi^2$ where α, β, and γ are constants and χ is the magnitude of an event. This includes phenomena such as stock market crashes, natural disasters, or the frequency of words in any text. A power law distribution of such events is typically considered to be evidence of self-organisation (Sprott, 2003).

In social networks such as open-source communities, power law distributions can be conceptualised in terms of the links and nodes of a network. In effect, the number of nodes with the same number of links is inversely proportional to the actual number of links each node has. With open source as a concrete example, the number of communities with any given number of developers is inversely proportional to that number: the majority of open-source projects have less than ten members, and only a handful have more than 100. A similar pattern exists for the connections between individuals, their contribution to mailing lists, and their contributions in terms of code (see Healy & Schussman, 2003; Madey, Freeh & Tyran, 2005; Michaelides, 2006).

In order to understand what this pattern signifies, we need to examine why there is a power law distribution to begin with. Two mechanisms are relevant here: the emergence of 'scale free networks' and self-organised criticality. The process of emergence of scale free networks (i.e. networks with power law distributions) is considered to be the result of two interlinked factors: a) that the network is constantly evolving and thus new nodes are added to the network; and b) that these nodes are added through preferential

attachment (Barabasi, 2002). In effect, this means that if newly added nodes follow a rule whereby they tend to link to nodes that are better connected, a scale free network will emerge. However, in the social network context this signifies nothing more than group polarisation. Individuals tend to preferentially attach to either the best or more knowledgeable developers, thus reinforcing the power law dynamics of the community. Unless there is some form of group polarisation to guide preferential attachment, then the community is less likely to be a scale free network.

The second mechanism through which power law distributions may emerge in open-source communities is what is known as 'self-organised criticality'. The term was coined by Bak (1996) to explain the way order in nature manifests itself through cascades of structures. This can be easily explained using the example of pouring sand onto a sand-pile. At some point the structure will collapse, creating a smaller pile of sand next to it. What is interesting is that the distribution of avalanches as a function of the size of each avalanche is a power law. In an open-source community, it is knowledge that is 'poured' onto a pile of ideas. At some point these ideas may create such an avalanche, spawning a new project. Conflict is integral to this process. Often it is conflict between ideas or individuals that triggers an avalanche. This may manifest as code forking, or as the creation of sub-communities and different branches of code. Consider, for instance, the KDE community. It started out with the purpose of creating a desktop environment for Unix operating systems, then evolved through this process into a constellation of sub-communities creating a very large number of applications that are not necessarily part of a desktop environment — they range from a web-browser to an office suite and to scientific applications. This process effectively enables the community to coordinate itself and the large number of ideas that emerge as a result of the large participation. Had participation not being a power law distribution, and had the sub-projects and involvement in those project not been a power law distribution, the community would have collapsed under its own weight.

The emergence of core and periphery

Every successful open-source community is organised into a two-tier structure of core and periphery. To this effect, it is important to examine how it emerges and why. From a simplistic point of view, a two-tier structure can be considered to be a reflection of the underlying power law distributions. Nevertheless, Michaelides (2006) found that the self-organising process that governs the

emergence of two-tier structures can be described in Kauffman's (1993, 1995) conceptualisation of a rugged landscape process. In effect, as the community evolves it reaches a point where it is no longer manageable as a single tier. Because of interconnectivity among developers, the coordination overheads scale exponentially, necessitating the creation of a second governing tier. By modelling this process as a cusp catastrophe model (see Thom, 1975), Michaelides showed that two parameters govern the question of who becomes a core developer: social interconnectivity and knowledge sharing. The amount of knowledge shared governs the asymmetry between core and periphery, while the level of social interconnectivity governs the rate of change through which a developer progresses from being a peripheral to a core member.

To this effect, Michaelides (2006) suggests that the community separates into core and periphery in order to reduce the coordination overheads; but more importantly, it separates into two different roles: those of exploration and exploitation. While there is a need to reduce the overheads that result from increased connections in the network, there is still a need for knowledge sharing. To this extent, the role of the periphery is to explore knowledge while the role of the group is to exploit it by selecting the best ideas and code (see also Lee and Cole, 2003).

Group polarisation, leadership and soft control

Issues of leadership and soft control have been discussed so far in relation to self-organisation and the emergence of structure. Nevertheless, they are equally relevant to the different types of conflict occurring on the intra-communal, inter-communal and meta-conflict levels, when conflict becomes a catalyst for self-organisation or a defence mechanism against the emergence of cryptohierarchies in the form of core and periphery.

Group polarisation occurs when 'members of a deliberating group move toward a more extreme point in whatever direction is indicated by the members' predeliberation tendency' (Sunstein, 1999). Online communities tend to be more polarised: the bazaar empowers the louder and more aggressive individuals (Raymond, 1998), often exacerbating online conflicts and leaving out people who disagree while empowering people with a common cause. Having reached a critical mass, the opinion of the mediocrity gets adopted. This is directly linked to social cascades and cryptohierarchies both informational and reputational. Familiar and long-debated issues do not depolarise easily (and so in open-

source software, political/ideological issues do not depolarise easily, but technical issues do). Polarisation increases when the group defines itself by contrast to another group: when there is some sense of identity reinforcing group consensus, rather than complicating things, e.g. in the XFree86 fork X.org. On the other hand, depolarisation can occur due to external shock: new members, new arguments, new information. The lesson from group polarisation is that social homogeneity can be damaging to good deliberation, something proven by better knowledge exchange in communities in which conflict actually occurs.

Inter-communal conflicts occur, for instance with the free software vs. open-source software communities, simply because not all peer communities are the same and they do not have the same collective identities or strategies. More importantly, they certainly do not understand their ideological position (if they have one) in relation to other communities — that of the FLOSS movement as a whole, or the latter's role in the IT industry or in the global justice movement discourse — in the same way. This is also true because the FLOSS movement, or the peer revolution if you will, is a hybrid, a mosaic. It is partly a social movement, partly a formal organisation, partly a volunteer and virtual organisation, and partly a virtual community of practice (Healy & Schussman 2003; Michaelides, 2006). The stylised image of this movement is of an egalitarian network of developers free of hierarchical organisation and centralised control. However, adhering to power law distributions, participation is spectacularly stratified. Soft control, flaming and file-killing in the guise of quality control can be observed, sometimes in the guise of a 'We won't wait for your code'. Meanwhile, the distribution of projects can be skewed, and huge diversity exists even among successful projects.

Another parameter in relation to conflict in these communities and the constant threat of the fundamental right to fork is leadership. In fact, all three types of issues identified by Weber — who makes the final decision, who gets credit, and who can legitimately fork (2004: 89) — are ultimately connected to leadership (visible structure) and the core developers/cryptohierarchies (invisible decision-making) issue. Due to his excessive workload, in 1998 Linus Torvalds found himself unable to cope and to incorporate patches to the code in time. Programmers at Linux became frustrated and even started to doubt the capacity of Torvalds, their leader, to respond to them, which almost resulted in a major fork of the Linux code. A particular mirror site called VGER, set up by Dave Miller at Rudgers University, was incorporating patches that Torvalds was not, and an

argument erupted between the two, which was described by Raymond (the unofficial anthropologist of open source) as a test of the open-source movement under stress rather than as a personal battle between Torvalds and Miller or anyone else (Weber, 2004: 118). Subsequently, Bitkeeper commercial source-management software was adopted in order to resolve the workflow and organisational problems and take some pressure off Torvalds. When the main protagonists met in Silicon Valley in 1998, they agreed on what Weber calls a somewhat more formal pyramidal structure for the flow of patches and software submissions:

> The key players had in effect, looked straight into the eye of a major fork and turned back from it. The heated conflict took place out in the open, on emailing lists accessible to the entire community. The resulting bargains and most of the negotiations were public. The vehemence of the conflict was de-escalated by a common language around technology. And the fight did not drag on forever; in fact the acute phase lasted less than a week. The conflict management system of then open source process was becoming more defined. (Weber, 2004: 119)

In other words, the number of patches submitted to Linus Torvalds reached a critical level in the self-organising criticality sense. As a consequence, the community had to restructure itself in order for Linus to be able to cope with the increasing number of patches being submitted. The result of this is a real hierarchy of decision-making, where Torvalds relies on 'lieutenants' who in turn rely on maintainers. It is not clear at any given time who is in which group. In BSD (Berkeley Software Distribution), governance is organised around concentric circles, while 'a small core group controls final access to the code base. This group grants (or revokes) the rights to the concentric circle, who can modify code or commit new mode to the core base. These are the committers for evaluation. The boundaries of the circles are generally more definite: FreeBSD, for example, has a core of 16 and about 180 committers in the second circle' (Weber, 2004: 92).

Evidently, a strong hierarchical component is vital to successful OSS (see Jordan Hubbard & FreeBSD; Lee & Cole, 2003; Mockus, Fielding & Herbsled, 2002, 2005). Core developers are very well organised: 'not a formal organizational chart, but rather a status-based pecking order which is known to project participants and serves as a way of policing members'. OSS 'as virtual organizations' rely on mechanisms of social control and self-control, not on trust per se (Gallivan, 2001). Large-scale OSS projects are most often

staffed by professional software developers (though not always: see Netscape). Still, questions remain. How will the increased participation of commercial players influence the ideological issue of cryptohierarchies? The answer might be in the symbiosis of competitors, or in further forking and disintegration. For open-source communities to succeed, commercial players need to play with the same rules as everyone else. Only then can there be symbiotic relationships between individuals and/or organisations with different or competing interests. Lastly, is it the case that the closer a successful project is to the core of the OSS community, the more hierarchy will be found in its management style? Or is it rather a case of the larger the community, the more hierarchical? Professionalism, clear leadership and hierarchy are antithetical to the projected external image of the community, which brings us back to the hot political issue of the political romanticism related to the whole movement and the meta-conflicts this creates.

Conclusion: Networks and hierarchies at the edge of chaos

What is really inspiring inside the political romanticism of cybercommunism, anarchism, libertarianism and ethical capitalism etc. is that these ideas play on the interface between hierarchies and networks, and on the increasingly dense relationships between the two. States are becoming more networked in order to deal with the current networked resistances, be they socio-political or ethno-religious, and within open source, politico-economic. These networked resistances are now more conscious of their hosting environment, reversing from networks towards cryptohierarchies in order to establish a better interface with established hierarchies ('The reversal argument', Karatzogianni, 2006).

What is also inspiring is the potential contained in network forms of social organisation as a basis for constructing resistances to repressive apparatuses and to the world system as a system of global control, yet not blind to the struggles and conflicts communities will necessarily experience when situated in the transition phase at the interface of order and randomness — when hanging at the edge of chaos (see Karatzogianni & Robinson, forthcoming 2009; Chesters, 2006). Weber (2004: 261) proposes the theorisation and comparison of instances of the current political and economic space: of the war on terror, the relationship between open-source and proprietary models of software production, and the politics between transnational NGO networks and international organisations. Both hierarchies and networks coexist,

and the interface between them makes for a fascinating study. Open-source, amongst other networked communities, has provided an empirical window onto the way the global system and its subsystems resolve problems of structural complexity, and how networks evolve, connect and create complex dynamics within diverse nodes and rhizomes. The self-organisation dynamic, sustaining this movement and creating order out of chaos, can help and is helping us to analyse networked movements, communities and resistances around the world and the dialogue between diverse systems of knowledge management, organisation, mobilisation, and leadership/decision-making structures. More importantly, despite the immaturity of its nascent modes of governance, the influence of this stubborn example of self-organisation upon the global justice movement looks likely to prove immense.

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1 For the cyberconflict model, and examples of ethno-religious, socio-political and cultural cyberconflicts, see Karatzogianni, 2006 and Karatzogianni (ed.), 2008.

2 Power law distribution in the internet literature comes up in the study of links on the internet, which is relatively new, and as Benkler points out 'if a tiny minority of sites gets a large number of links, then the vast majority gets few or no links, it will be very difficult to be seen unless you are on the highly visible site'. Not only that, but that emergent new hierarchy is becoming 'a more intractable challenge to the claim that the networked information economy will democratize the public sphere' (Benkler, 200

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A definition and criticism of cybercommunism

Tere Vadén and Juha Suoranta

Abstract

When Žižek (2002b) defines his idea of cybercommunism using an adaptation of the Leninist formula 'Socialism = free access to internet + the power of the soviets', he omit the crucial part about electricity. The cybercommunist idea that the information society is more 'spectral' and 'malleable' than were the previous 'crudely' economical societies conceals the question of what types of communities it favours. The political economy of cybercommunism also demands an analysis of the material conditions of cyber-freedom that can be conceptualised, for instance, in terms of levels of decreasing alienation.

Cybercommunism and capitalism

If we accept the notion of *égaliberté* (the demand for equality–freedom that transcends any existing order) proposed by the French philosopher Étienne Balibar in the context of digital technology, it can be claimed that digital information has tremendous revolutionary potential. As noted by US president Ronald Reagan as long ago as 1989 (quoted in Kalathil & Boas, 2003), 'Technology will make it increasingly difficult for the state to control the information its people receive. … The Goliath of totalitarianism will be brought down by the David of the microchip'. Anything that can be presented as digital code can be copied with very little cost and no loss to the original. Once the necessary infrastructure is in place, digital information is not a scarce resource. Consequently, the cornucopian digital sphere supposedly transcends the physical limitations of traditional economies.

Correspondingly, on the social level the digital world has been seen as containing the first germs of new forms of organisation that will have radical political effects. Volunteer hacker communities and the various civil society activities organised with the help of the internet have been seen as completely new forms of self-management (for theories of hacker communities, see Levy, 1984; Castells, 1996; Himanen, 2000). For instance, while looking for examples of the new multitudes they advocate as the basic models of future politics, Michael Hardt and Antonio Negri (2004, 301ff) turn to free and open-source software (FOSS) communities. When the self-organisationed nature of hacker communities is combined with the abundance of digital code, some theorists detect a cybercommunist utopia in which volunteer communities of non-alienated labour manage themselves in a post-scarcity economy (see, e.g. Žižek, 2002b, 2006a; Merten, 2000). Slavoj Žižek delivers the idea with characteristic poignancy:

> However, does capitalism really provide the 'natural' frame of the relations of production for the digital universe? Is there not also an explosive potential for capitalism itself in the world wide web? Is not the lesson of the Microsoft monopoly precisely the Leninist one: instead of fighting its monopoly through the state apparatus (recall the court-ordered split of the Microsoft corporation), would it not be more 'logical' just to socialise it, rendering it freely accessible? Today one is thus tempted to paraphrase Lenin's well-known motto, 'Socialism = electrification + the power of the soviets': 'Socialism = free access to internet + the power of the soviets.' (Žižek 2002b)

More modestly, a whole school of writers (for an overview, see Lessig, 2004) has argued that in addition to the 'first' commercial economy, there exists another economy, variously called, for example, the amateur economy, sharing economy, social production economy, non-commercial economy, p2p economy, or gift economy. Even if a cybercommunist utopia is still far away – what will the hackers eat? Will everyone be a hacker? – inside the first economy, a change is already happening. By adopting aspects of the second economy, the first tries to present itself as having 'a human face'. The imitation can be observed on many fronts: schools and universities provide access to informal learning using social media tools and present themselves as hubs of social interaction rather than as formal institutions of power; nation states shift policy from traditional industry to favour competition in terms of design and high-quality experiences; and companies invite their

customers to co-create their future products in a process in which innovation itself is supposedly dispersed and equalised (for innovation, see Thrift, 2006).

Again, Žižek (2006b) has his finger on the pulse when he discusses a new form of business in which 'no one has to be vile'. One step removed from the utopia of cybercommunism, Žižek calls this new ideal 'liberal communism', and these are its rules:

1. You shall give everything away free (free access, no copyright); just charge for the additional services, which will make you rich.
2. You shall change the world, not just sell things.
3. You shall be sharing, aware of social responsibility.
4. You shall be creative: focus on design, new technologies and science.
5. You shall tell all: have no secrets, endorse and practise the cult of transparency and the free flow of information; all humanity should collaborate and interact.
6. You shall not work: have no fixed 9 to 5 job, but engage in smart, dynamic, flexible communication.
7. You shall return to school: engage in permanent education.
8. You shall act as an enzyme: work not only for the market, but trigger new forms of social collaboration.
9. You shall die poor: return your wealth to those who need it, since you have more than you can ever spend.
10. You shall be the state: companies should be in partnership with the state. (Žižek, 2006b, citing O. Malnuit in the French magazine *Technikart*)

This is all well and good as far as it goes. But like many other forms in which the first economy simulates or appropriates features of the second, liberal communism conveniently forgets the essential structural conditions of its own existence. For Bill Gates to give away huge sums of his fortune in charity, he had first to collect it by ruthless monopolistic practises. More generally,

Developed countries are constantly 'helping' undeveloped ones (with aid, credits etc.), and so avoiding the key issue: their complicity in and responsibility for the miserable situation of the Third World. … [O]utsourcing is the key notion. You export the (necessary) dark side of production — disciplined, hierarchical labour, ecological pollution — to 'non-smart' Third World locations (or invisible ones in the First World). (Žižek 2006b)

The qualification 'non-smart' reveals a crucial structure to which all cyber-utopias should pay attention: education as such, with no reference to the content and consequences, is not necessarily a good thing. Due to self-reinforcing processes of economic growth, population growth, technological expansion, arms races and growing income inequality, standardised and commodified education functions as a stop-gap. It is shocking to realise that people with higher degrees do the greatest harm when it comes to the above-mentioned problems: 'This realisation arises from the observation that the vast majority of people in crucial decision-making positions have tertiary qualifications' (Lautensach & Lautensach, 2008). And it is they who make the most ill-advised, short-sighted and self-serving decisions: 'An empirical correlation appears evident between higher education and inadequate decision-making' (ibid.).

The hunger for knowledge driven by the needs of a competitive global market is so great that it eclipses almost all other considerations. The developed world is using its information and education supremacy as a weapon in upholding and increasing economic inequality. In a recent article on the US Army's recruiting trends, Michael Massing notes how the education promised in the military service has been a great incentive for young people wanting to achieve middle-class standards of living. He offers these haunting words: 'In today's America, the hunger for a college degree is so great that many young men and women are willing to kill — and risk being killed — to get one' (2008: 36). There can hardly be a more poignant characterisation of both the local and global injustices built in to the western education system.

Information society 'for all' promises a lot: freedom and servitude at the same time. 'We' will be freed from fixed identities locked into the structures of the old bureaucracies of nation states; from the old models of one-way broadcasting; from the supremacy of the power centres. But simultaneously, freedom becomes a constraint: 'there is no alternative' to economic globalisation, perpetual networking or interactivity. This form of freedom has very little to do with actual freedom: often it is a mere facade for formal freedom; that is, the freedom to choose from ready-made alternatives. Participation in a never-ending chain of short-term projects is the name of the game.

The same holds true for information society theories and analysis: researchers need to move in a rapidly changing field almost without any firm conceptual positions, without a rigidity of authenticity and fundamental objectivity, always ready to change their viewpoints. The information society lets all the

flowers bloom, as long as they are information society flowers. Thus the dilemma of these theories is in their concurrent unity and diversity: the net of information theories as well as the information society itself allows plurality, but in reality it acts as a totality.

Isn't it, however, possible that this dilemma is badly defined? Globalised liberal capitalism needs both the pluralistic markets in which anything can be sold and a universal medium: it needs the apparently smooth market regime governed by state legislation and its structural power. Isn't it precisely this dilemmatic dualism that catapults global capitalism to new heights and new victories — while destroying pluralism (cf. Klein, 2002), it displays itself as a catalyst and a protector of all cultural forms (cf. Žižek 2004a, Hardt & Negri 2000)?

As Žižek (2006b) points out, liberal communism can work only by masking the structural violence on which its outsourced practices are based. Against this, he insists on a true universalism that overcomes all local (ethnic, national, gendered, etc.) identities. The local identities are not, for Žižek, a force against global capitalism, as it is only too happy to manipulate, create and commodify such identities. However, we might ask whether the utopia of cybercommunism itself does not contain a quantity of structural violence — a violence that is familiar from earlier stages of cultural change.

Since the FOSS movement is often presented as the paradigm of the new forms of intellectual labour, let us consider for a moment the crown jewel of that movement, the GNU/Linux operating system. Linux is available free for anyone to use, modify and redistribute on the net. In 2002, it was estimated that Debian, a typical GNU/Linux distribution, contained more than 55 million lines of source code and that if it were to be created using traditional proprietary methods, the cost would be US$1.9 billion (Gonzáles-Barahona et al., 2002). That was in 2002; by now, the value has been multiplied. It is easy to see that this kind of use value created and distributed freely is indeed something not previously experienced. Nevertheless, the structures of inequality quickly kick in. Most Debian developers are male and relatively young. Moreover, most of them come from North America or Europe. They have typically received some academic education, and the proportion of Ph.D holders in the group is quite high — more than 10 percent (see Mikkonen & al., 2007). This geopolitical bias is not just a historical fact, a fossil created by the initiation of these projects in the North. During the fifteen years or so that the projects have been running, only minor changes have occurred, with individual programmers from Brazil, India and other southern

countries getting involved. If we consider the fact that during the year from summer 2005 to summer 2006, the Linux kernel took in more code from the .mil domain (US military) than it did from most third world countries (see Aaltonen & Jokinen, 2006), we instantly get a sense of the old colonialism continuing in new guises.

Or let us look at Wikipedia. Though the English Wikipedia with its roughly 2,275 million articles (11 March 2008) is a real boon of pluralistic knowledge construction, old structures and habits persist. Wikipedia's 'No original research' and 'Verifiability' rules (http://en.wikipedia.org/wiki/-Wikipedia:No_original_research) are particularly paradoxical: if Wikipedia is to contain only already published notable information, it collapses into a copy of the existing information order. Furthermore, for a wikipedia to work, it needs a certain critical mass (in order to resist vandalism, to promote increased content, the diversification of contributor roles, etc.). The smaller the (linguistic) community or the group with a common rationality, the slighter the chances of a vibrant wikipedia. Critical mass means normalisation, which in itself works against certain types of communal identities. From the user's point of view, the fact that the English Wikipedia is so much better than, say, the Finnish one provides an additional pull towards the hegemonic language and its values.

These two small examples should serve to indicate that the liberal communist utopia is by no means neutral with regard to local identities. Indeed, we might suspect that the power structures of the first economy are visible in the digital sphere. If this is the case, the drive towards culture as the playground of global commerce reveals a new side. The possibilities for small linguistic areas like Finland to make successful businesses out of the creative industries look bleak, notwithstanding the digital opportunities. What, after all, is the 'Finnish culture' in, say, Nokia mobile phones? Precious little. Even the design of the phones is a recycled global style with minor tweaks, and production is outsourced to the point that nobody wants to know about the toxic trail leading to illegal mines in Nigeria. Indeed, globalisation is reinforcing, for instance, both class distinctions — mobile phone assemblers in Finland and China face similar problems — and ethnic identities, as environmental crises threaten local nature.

As Žižek (2004a: 185) has put it: 'More than ever, capital is the "concrete universal" of our historical epoch. What this means is that, while it remains a particular formation, it overdetermines all alternative formations, as well as all noneconomic strata of social life'. Žižek is right: the rhizome described by Deleuze is the logic of digital capitalism: 'diversify, devolve power, try to mobilize local

creativity and self-organisation' (2004a: 185). But we need a sharper analysis: Žižek is right in criticising the naive belief in revolutionary diversity, but wrong in believing that any and all diversity can be digested by capitalism. Is not the plurality of the information society the familiar plurality of brands of cereal: there is a brand for all tastes and identities, but all boxes contain the same merchandise — and, post-genetic modification, quite literally the same. For instance, the network logic of information societies makes handicraft or subsistence-based local communities impossible, as Finnish independent researcher Olli Tammilehto (2003: 44–45) points out:

> Local communities and poor sub-communities are integrated into the national and global economy. The prices of the products of craftsmen and small farmers drop to the world market level, which is often low simply because of the subsidies in rich countries. At the same time, the prices of raw material and farm inputs may rise because in other countries there are richer and better paying customers. This makes it impossible for the small producers to continue.

Terrorism can be commodified as McTerrorism, but still the chances of non-western local communities are gone. The choice between a western technological lifestyle and a traditional local lifestyle is another formally free choice: you may choose freely, as long as you pick the western choice.

The cybercommunist idea that the information society is somehow more 'spectral', 'malleable' or 'virtual' than the previous 'crudely' economical societies conceals the question of what types of pluralities and local communities it favours. There is little or no evidence, for instance, that the information society would not speed up the death of languages or cultures. At the same time, the virtual-spectral level of the networks forgets the question of people: the wall separating those under the umbrella of human rights from those not so protected is at the same time the wall separating relative economic welfare from poverty. As Ted Honderich (2003: 6) points out, when we look at average life expectancy figures around the globe, 'the average lifetimes of seventy-eight and forty could suggest to someone overhearing this talk of life-times, but not knowing exactly our subject, that we are concerned with two different species'. The group of people whose human rights are 'virtual' can expect roughly a 'half-life' compared to rich western people. Conversely, the 'virtual' freedom that the rich western netocracy enjoys does not extend to the freedom to abandon cooperation with capitalism. This is why 'information

society' is simply not a concept in the same category as 'feudalism' or 'capitalism' (Žižek, 2004a: 193). As long as the cybercommunists and workers of immaterial production are not wholly spectral, they have to eat food and die a death.

Social, socialised, socialist media

'Social media' can be taken to mean the online platforms and software people use in order to collaborate, share experiences, views and so on, and to create their social identities. Correspondingly, 'socialised media' would refer to such tools when they are owned, maintained and managed by the community of users itself. Examples of this kind of self-management are many inside FOSS. There are even cases of the active socialisation of previously private tools. For instance, hackers have collected money to purchase the source code of computer programmes in order to develop them freely and to release them from the commodified world. Likewise, Wikipedia and other similar projects have collected the money they needed through donations from users.

But are these means enough to facilitate peoples' participation in the digitalised world, to foster dialogue? And more importantly, are these means themselves digital? It is not hard to believe Žižek's contention (2002a: 544) that dialogue both in its traditional forms and in the form of social media takes us only to the gates of authentic and substantial democracy. Is the sometimes violent process of socialisation the answer? Would it not be better if we could take another logical step forward from hacker ideology, and begin from the outset to talk about socialist media? What would the world be like if there were examples of socialist media? Can Wikipedia be considered an example of socialist media? Do we have other examples? In order to answer these questions, we need to confront the following one: what are the definitive presumptions and characteristics of socialist media?

Technical and political conditions

Besides the obvious technological infrastructure needed for using social media, basic energy — electricity, food — is fundamental. But the crucial question is, who owns and provides energy? The sad fact is that a majority of energy resources are owned by private corporations. Energy companies are in many ways key players in the arena of international politics, directing policies and making

decisions about war and peace. Unfortunately or not, energy is the definitive precondition for social media to become a truly revolutionary force. In this sense, the 'social' and the 'political' still rule the 'digital' for, to return to Žižek's 'Leninist' formula, free access to the internet requires an electrical supply.

This condition assumes quite straightforwardly that people should take back their common wealth from the global players. Without this logical step, efforts and activity towards open access and collaboration are freedom without freedom. For without this ultimate step — that of overcoming the private ownership of material resources — the ideology of FOSS remains another one-issue social movement. Lenin understood electricity and oil as being key aspects of global capitalism, and tried to make a case against the imperial powers of cartels and monopolies and their bourgeois defenders. In his *Imperialism, the Highest Stage of Capitalism* (1916), Lenin stated that certain reactionary writers

> have expressed the opinion that international cartels, being one of the most striking expressions of the internationalisation of capital, give the hope of peace among nations under capitalism. Theoretically, this opinion is absolutely absurd, while in practice it is sophistry and a dishonest defense of the worst opportunism. International cartels show to what point capitalist monopolies have developed, and the object of the struggle between the various capitalist associations. This last circumstance is the most important; it alone shows us the historico-economic meaning of what is taking place; for the forms of the struggle may and do constantly change in accordance with varying, relatively specific and temporary causes, but the substance of the struggle, its class content, positively cannot change while classes exist.

That said, we must emphasise the contradiction between a Leninist point of view — the role of a vanguard party leading the masses — and the obvious fact that in the networked social media, there is no centre controlling digital development. This contradiction includes another one: that of the ownership of natural resources by states or corporations. Quite contrary to the Leninist idea, the key to emancipation in the sphere of social media and its sociopolitical consequences could be 'oscillation … in the plurality and complexity of "voices": an emancipation consisting in disorientation which is, at the same time, a liberation of dialect, local differences, and rationalities, each with its own distinctive grammar and syntax' (Peters & Lankshear, 1996: 60).

Social and individual conditions

The physical energy required for running social media sites is one condition. Another is the less tangible energy and free time needed in order for individuals to contribute. As noted above, GNU/Linux receives more contributions from the USA and Europe than it does from anywhere else. This bias in many major open collaboration projects, including Wikipedia, should direct our attention to the different possibilities that present themselves to individuals in different geopolitical and socioeconomic settings.

Linus Torvalds was, at the time he started the Linux kernel project, a student at the University of Helsinki, Finland, and consequently enjoyed the common benefits of the Finnish welfare state, including tuition-free access to the university and its resources. The Linux code was initially hosted by the Finnish University Network (FUNET). All of this points to the fact that non-alienated knowledge work in the internet does seem to need a certain basis of affluence and educational and social infrastructure before it can take off. Often, though, competences that have been built in the public educational system are primarily put to use by corporations. What is needed is a counter-move to free people's minds and intellectual resources from the wage slavery of the corporation, as well as from the slavery of the state and its marketised educational system.

In the Nordic countries, there already exist many cultural and social structures that allow counter-moves and actual freedoms. These include a progressive-taxation-supported schooling system ranging from kindergarten to higher education, libraries, cultural institutions such as museums and so forth. Indeed, the step from a media constrained by liberal communism to socialist media needs not only basic welfare but also actual control of life goals and non-physical needs. Paradoxically or not, the road to the latter runs through the collective or common control of the production of basic welfare (including things like electricity). Welfare strategies such as an unconditional basic income would pave the way. As Hardt and Negri put it in *Empire* (2000: 403):

> The demand for a social wage extends to the entire population the demand that all activity necessary for the production of capital be recognized with an equal compensation such that a social wage is really a guaranteed income. Once citizenship is extended to all, we could call this guaranteed income a citizenship income, due each as a member of society.

There are several expressions of different forms of socialism, as Peters reminds us. They 'revolve around the international labour movement and invoke new imperialism struggles based on the movements of indigenous and racialised peoples' (Peters, 2004). A starting point for the social condition of socialist media could be built around the concept of 'knowledge socialism'. This refers to the politics of knowledge: on one hand to the question of information domination and its means, and on the other, to issues pertaining to intellectual property rights and intellectual resources in general, including questions of expert knowledge versus amateur knowledge as explained by Peters (2004):

> In these discussions, issues of freedom and control reassert themselves at all levels: at those of content, code and information. This issue of freedom/control concerns the ideation and codification of knowledge and the new 'soft' technologies that take the notion of 'practice' as the new desideratum: practitioner knowledge, communities of practice, and different forms of organisational learning adopted and adapted as part of corporate practice. Indeed, now we face the politics of the learning economy and the economics of forgetting that insists new ideas have only a short shelf life. … Informal knowledge and education based on free exchange is still a good model for civil society in the age of knowledge capitalism.

The presumption that the mode of production shapes the context in which psychological and social processes take place should be taken into account (Youngman, 1986: 101). In the first place, Wikipedia (like any other form of wiki) is not a technology but a praxis, a collective activity. It involves purpose and intention, and in this sense 'knowledge arises and deepens within a continuous process of activity, conceptualisation, and renewed activity' (ibid: 96). Since knowledge can be defined as a social product, it always involves hegemonic battles over power to rule and regulate.

The world of open and free collaboration on the net is not only a counter-hegemonic move but a serious, hard-to-stop mass activity. Wikis such as Wikipedia are lived, educationally-laden social situations, and if 'hegemony is the result of lived social relationships and not simply the dominance of ideas, then the experiences inherent in educational situations (i.e. the totality of knowledge, attitudes, values and relationships) is as significant as the purely intellectual content' (ibid: 105). In other words, the mere process of being in and part of the development of Wikipedia and the like is a critical learning experience towards the birth of

socialist media and the enfleshment of Marx's (1858) concept of general intellect:

> The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, and to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect and been transformed in accordance with it. To what degree the powers of social production have been produced, not only in the form of knowledge, but also as immediate organs of social practice, of the real life process.

Based on a close textual reading — a 'short-circuiting' — of Lenin, Žižek refers to the idea of general intellect as a huge 'accounting apparatus' without which, says Lenin, socialism is impossible. In the words of Lenin, to make socialism happen is to make this massive apparatus 'even bigger, even more democratic, even more comprehensive. … This will be country-wide book-keeping, country-wide accounting of the production and distribution of goods, this will be, so to speak, something in the nature of the skeleton of socialist society' (Žižek, 2006a.) For Žižek, this marks 'the most radical expression of Marx's notion of the general intellect regulating all social life in a transparent way, of the post-political world in which "administration of people is supplanted by the administration of things"'. Žižek further notes that it is easy to criticise Lenin by referring to the horrors of the real socialist experiment in the Soviet Union, especially during Stalin's era, and the apparatus of social administrations which grows 'even bigger'. But as Žižek asks, 'Are, however, things really so unambiguous? What if one replaces the (obviously dated) example of the central bank with the World Wide Web, today's perfect candidate for the General Intellect?' (ibid.) What, indeed, if one replaces the example of World Wide Web with the world of open and free collaboration, including the servers and the power plants?

The usurpation of free collaboration is always already happening: in the world of FOSS, idealistic volunteer hackers are being replaced by salaried developers working for companies that see the software as a critical asset (see Fitzgerald, 2006; Mikkonen & al., 2007), and ministries of education around the world are launching programmes that integrate social media into formal curricula. Therefore, as Kellner and Kahn (2006) have stated in their critique of technoliteracy ruled from above, there must be another way:

We cannot stress it enough: the project of reconstructing technoliteracy must take different forms in different contexts. In almost every cultural and social situation, however, a literacy of critique should be enhanced so that citizens can name the technological system, describe and grasp the technological changes occurring as defining features of the new global order, and learn to experimentally engage in critical and oppositional practices in the interests of democratization and progressive transformation. As part of a truly multicultural order, we need to encourage the growth and flourishing of numerous standpoints … on technoliteracy, looking out for and legitimizing counter-hegemonic needs, values, and understandings. Such would be to propound multiple technoliteracies 'from below' as opposed to the largely functional, economistic, and technocratic technoliteracy 'from above' that is favored by many industries and states.

This emphasis on the 'from below' perspective reminds one of Marx's anecdote, at the end of Volume I of *Capital*, about a Mr. Peel who moved from England to Australia along with £50,000 in currency and 3,000 workers, but who didn't take into account the fact that what he could carry with him to the colonies was money, machines and other means of production but not, as their correlative, the wage worker who is ready to sell him- or herself of his or her own free will. In Marx's words, Mr. Peel didn't understand that 'capital is not a thing, but a social relation between persons' (Marx, 1867). Thus, writes Marx, 'Unhappy Mr. Peel who provided for everything except the export of English modes of production to Swan River!' (ibid.). Just as the wage workers discovered in the seemingly boundless land of Western Australia the freedom to build their own lives and economies, we are now witnessing more and more people discovering their freedom in the borderlands of information technologies, providing they do not fall into a corporate trap; that is, that they not only acknowledge business interests and new modes in capitalist commodification around social media, but that they are also able to detach capitalist tendencies from voluntary work, work for fun or work just for the sake of it.

Let us summarise here the necessary principles for a socialist media, drawing on Project Oekonux's ideals (see <http://en.wiki .oekonux.org/Oekonux/Introduction>). These are the absence of alienation that results from the direct needs of those involved; self-organisation; and voluntary participation, including the voluntary taking on of responsibility or *Selbstentfaltung* (as responsibility and autonomy-in-interdependence). In addition, Oekonux maintains

that freedom has a triple meaning: freedom is both a result and a pre-condition of the process, and it enables the freedom of others.

Besides the growing use of FOSS-based information and communication technologies, there are at least two tendencies that give hope. One is the now evident fact of climate change, which forces us to re-evaluate consumption. The other is what Andre Gorz calls the lost magic of work- or wage-based society (Gorz, 1999). In modern times, Taylorian work never offered enough social coherence, but instead created abstract and weak social bonds. The basic idea behind the construction of socialist media is people's need for a personal and mutually shared narrative, for a mental and emotional anchor that helps them gain respect and a sense of solidarity in a situation in whichworking life deprives people of experiencing a narrative continuum and long-term planning. In short, what we need is a culture (Sennett, 2006: 183).

New conditions for the use of energy and habits of consumption along with the use of social media in its socialist form can at their best make a great change not only in people's minds and behaviour, but also in the very forms of production. So, in sum, we get the equation 'socialist media = basic welfare + common servers + the power of the soviets'. Of course, the order of the components in the formula can be different. In other words, there can be different orders of the free and open world without scarcity (i.e. basic welfare = electricity + the power of the soviets + socialist media).

Freedom, more freedom!

An alternative way of conceptualising the transition from social to socialist media is to think about the freedoms involved. The read-only culture proposed by ultra-commoditised and mechanised lifestyles can be seen from the perspectives of both media and education. In one extreme, a totalitarian state like Plato's utopia in *The Republic* will want to control education, reserving true knowledge for the philosopher kings and telling a 'royal lie' to the working classes in order to keep them at bay. Plato would have known exactly why the party and movement calling for the abolition of copyright is called the Pirate Party (for instance, in Sweden: <www.piratpartiet.se>). The Platonist closed-source approach is strictly correlative with media as a private profit-making business in which information first and foremost has an exchange value.

As we move toward more free modes of media and education, we first encounter social media and education as entrepreneurship, where the subjects are 'empowered' by active participation in

economically constrained activities. This is the first order of freedom, in which free speech exists inside the confines of formal freedom. Strangely enough, the road to more freedom comes through realising that the economic constraints of liberal, multicultural capitalism are not nearly strict enough. Only when the ghost of exchange value is stripped off is the persistent and non-symbolic use value revealed. In terms of media, this means GNU/Linux or Wikipedia, which do not have any exchange value but do have a tremendous utility. But even that is not enough in terms of taking economics seriously: the oikos humanity is facing is the planet and its resources. Native skills and indigenous information need sustainable material lifestyles, which is something the West has not been able to devise so far.

Thus the last two modes of freedom are linked to changes in the modes of production, governance and property. These changes will occur through the following three processes described by Michel Bauwens (2005): use value will be produced 'through the free cooperation of producers who have access to distributed capital' — this is called 'the P2P [peer-to-peer] production mode', which differs from a capitalist 'anything for-profit standard' and from public production by state-owned enterprises. The purpose of the P2P production mode is not to produce useless commodities or 'exchange value for a market, but use-value for a community of users' (ibid.). The changes will also be 'governed by the community of producers themselves, and not by market allocation or corporate hierarchy: this is the P2P governance mode' (ibid.). In addition, they 'make use-value freely accessible on a universal basis, through new common property regimes. This is its distribution or "peer property mode": a "third mode of ownership", different from private property or public (state) property' (ibid.).

A third mode of ownership demands that we who are working, generally speaking, in the fields of education and public pedagogy should, as Peter McLaren (2008, 477) points out, try to transform the social relations of everyday life to a new social logic 'in terms of criteria that are not already steeped in the logic of commodification. Students can — and should — become resolute and intransigent adversaries of the values that lie at the heart of commodity capitalism. This implies building a new social culture, control of work by the associated producers and also the very transformation of the nature of work itself'.

Table 1: Levels of freedom

	Characteristics	Media	Education
Closed	Exchange value	Media as corporate business	Education as an ideological state apparatus
	Vehicle and content controlled	Economic utility, control of content (business logic)	Economic utility, control of content (educational policy)
	Commoditisation 'Crowdsourcing'		Learning as having Prolonged exchange value of well-educated citizens
First stage of freedom	Economical utility, limited collaboration	Web 2.0	Educational content business
	Market sphere, entrepreneurship, multicultural capitalism, liberal communism Limited autonomy of content	YouTube, Google, CitizenTV, Adbusters, etc.	Teachers and students as commodified semi-objects (knowledge creators, consumers)
	'Sharing'	'Produsers'	
Double-Free	Use value/value in itself	Media as collaboration	Education as collaboration
	Full autonomy of content, limited autonomy of vehicle	Wikis, Linux, P2P	Freire, Selbstentfaltung
	'Commonist'	'Access to the Internet + power of the soviets'	Learning as being Reflective uncertainty
Triple-Free	Value inseparable from the world, Aristotelian finalities	Immediate media practices	'Deschooling Society' (Illich)
	Full autonomy of content and vehicle	Wikipedia + ecological autonomy + control of resources	Learning by doing, native skills
	Promoting other than materially-driven life forms		Students and teachers as human beings, 'lifelong learners' in an existential sense
	'Communist'	'Electricity + access to the internet + power of the soviets'	Education as commons

The economical shift is accompanied by an epistemological one. The ability to edit, discuss and follow the genealogy of knowledge in a project like Wikipedia leads to a world in which people begin to take for granted that many areas of human conduct and knowledge are based on processes of negotiations. And perhaps more than that, they will eventually decide to become ever more responsible for the world, as agents of history, by abolishing the division between those who know and do, and those who consume and obey. They will question the pedagogical myth that claims 'that there is an inferior intelligence and a superior one' (Ranciére, 1991: 7).

In this respect, a special characteristic of open and free collaboration on the net is its radical openness and anti-Cartesian uncertainty. Wikipedia's reliability is dependent on us; that is, it is not only dependent on you or me as individuals, but on us as the community comprising the various skills and literacies that we share as members of the community. Respectively, the idea of reflective uncertainty has a family resemblance with the 'learning as participation' metaphor that emphasises participation in various cultural practices and shared learning activities (in kindergarten, at school, in university and various informal learning sites, workplaces and organisational activities). In this metaphor, knowledge and learning are situated and created in people's everyday life as part of their socio-cultural context, which existentially includes the material means of subsistence or production.

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