

The Political Economy of Peer Production*

Michel Bauwens (Payap University and Chiang Mai University, Thailand)

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Not since Marx identified the manufacturing plants of Manchester as the blueprint for the new capitalist society has there been a deeper transformation of the fundamentals of our social life. As political, economic, and social systems transform themselves into distributed networks, a new human dynamic is emerging: peer to peer (P2P). As P2P gives rise to the emergence of a third mode of production, a third mode of governance, and a third mode of property, it is poised to overhaul our political economy in unprecedented ways. This essay aims to develop a conceptual framework ('P2P theory') capable of explaining these new social processes.

Peer to Peer

P2P does not refer to all behavior or processes that takes place in distributed networks: P2P specifically designates those processes that aim to increase the most widespread participation by equipotential participants. We will define these terms when we examine the characteristics of P2P processes, but here are the most general and important characteristics.

P2P processes:

- produce use-value through the free cooperation of producers who have access to distributed capital: this is the P2P production mode, a 'third mode of production' different from for-profit or public production by state-owned enterprises. Its product is not exchange value for a market, but use-value for a community of users.
- are governed by the community of producers themselves, and not by market allocation or corporate hierarchy: this is the P2P governance mode, or 'third mode of governance.'
- 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.

The Infrastructure of P2P

What has been needed to facilitate the emergence of peer to peer processes? The first requirement is the existence of a technological infrastructure that operates on peer to peer processes and enables distributed access to 'fixed' capital. Individual computers that enable a universal machine capable of executing any logical task are a form of distributed 'fixed capital,' available at low cost to many producers. The internet, as a point to point network, was specifically designed for participation by the edges (computer users) without the use of obligatory hubs. Although it is not fully in the hands of its participants, the internet is controlled through distributed governance, and outside the complete hegemony of particular private or state actors. The internet's hierarchical elements (such as the stacked IP protocols, the decentralized Domain Name System, etc...) do not deter participation. Viral communicators, or meshworks, are a logical extension of the internet. With this methodology, devices create their own networks through the use of excess capacity, bypassing the need for a pre-existing infrastructure. The 'Community Wi-Fi' movement, Open Spectrum advocacy, file-serving television, and alternative meshwork-based telecommunication infrastructures are exemplary of this trend.

The second requirement is alternative information and communication systems which allow for autonomous communication between cooperating agents. The web (in particular the Writable Web

and the Web 2.0 that is in the process of being established) allows for the universal autonomous production, dissemination, and 'consumption' of written material while the associated podcasting and webcasting developments create an 'alternative information and communication infrastructure' for audio and audiovisual creation. The existence of such an infrastructure enables autonomous content production that may be distributed without the intermediary of the classic publishing and broadcasting media (though new forms of mediation may arise).

The third requirement is the existence of a 'software' infrastructure for autonomous global cooperation. A growing number of collaborative tools, such as blogs and wiki's, embedded in social networking software facilitate the creation of trust and social capital, making it possible to create global groups that can create use-value without the intermediary of manufacturing or distribution by for-profit enterprises.

The fourth requirement is a legal infrastructure that enables the creation of use-value and protects it from private appropriation. The General Public License (which prohibits the appropriation of software code), the related Open Source Initiative, and certain versions of the Creative Commons license fulfill this role. They enable the protection of common use-value and use viral characteristics to spread. GPL and related material can only be used in projects that in turn put their adapted source code in the public domain.

The fifth requirement is cultural. The diffusion of mass intellectuality, (i.e. the distribution of human intelligence) and associated changes in ways of feeling and being (ontology), ways of knowing (epistemology) and value constellations (axiology) have been instrumental in creating the type of cooperative individualism needed to sustain an ethos which can enable P2P projects.

The Characteristics of P2P

P2P processes occur in distributed networks. Distributed networks are networks in which autonomous agents can freely determine their behavior and linkages without the intermediary of obligatory hubs. As Alexander Galloway insists in his book on protocollary power, distributed networks are not the same as decentralized networks, for which hubs are obligatory. P2P is based on distributed power and distributed access to resources. In a decentralized network such as the U.S.-based airport system, planes have to go through determined hubs; however, in distributed systems such as the internet or highway systems, hubs may exist, but are not obligatory and agents may always route around them.

P2P projects are characterized by equipotentiality or 'anti-credentialism.' This means that there is no *a priori* selection to participation. The capacity to cooperate is verified in the process of cooperation itself. Thus, projects are open to all comers provided they have the necessary skills to contribute to a project. These skills are verified, and communally validated, in the process of production itself. This is apparent in open publishing projects such as citizen journalism: anyone can post and anyone can verify the veracity of the articles. Reputation systems are used for communal validation. The filtering is *a posteriori*, not *a priori*. Anti-credentialism is therefore to be contrasted to traditional peer review, where credentials are an essential prerequisite to participate.

P2P projects are characterized by holoptism. Holoptism is the implied capacity and design of peer to peer processes that allows participants free access to all the information about the other participants; not in terms of privacy, but in terms of their existence and contributions (i.e. horizontal information) and access to the aims, metrics and documentation of the project as a whole (i.e. the vertical dimension). This can be contrasted to the panoptism which is characteristic of hierarchical projects: processes are designed to reserve 'total' knowledge for an elite, while participants only have access on a 'need to know' basis. However, with P2P projects, communication is not top-down

and based on strictly defined reporting rules, but feedback is systemic, integrated in the protocol of the cooperative system.

The above does not exhaust the characteristics of peer production. Below, we will continue our investigation of these characteristics in the context of a comparison with other existing modes of production.

P2P and the Other Modes of Production

The framework of our comparison is the Relational Models theory of anthropologist Alan Page Fiske, discussed in his major work *The Structure of Social Life*. The fact that modes of production are embedded in inter-subjective relations -- that is, characterized by particular relational combinations -- provides the necessary framework to distinguish P2P. According to Fiske, there are four basic types of inter-subjective dynamics, valid across time and space, in his own words:

People use just four fundamental models for organizing most aspects of sociality most of the time in all cultures. These models are Communal Sharing, Authority Ranking, Equality Matching, and Market Pricing. Communal Sharing (CS) is a relationship in which people treat some dyad or group as equivalent and undifferentiated with respect to the social domain in question. Examples are people using a commons (CS with respect to utilization of the particular resource), people intensely in love (CS with respect to their social selves), people who "ask not for whom the bell tolls, for it tolls for thee" (CS with respect to shared suffering and common well-being), or people who kill any member of an enemy group indiscriminately in retaliation for an attack (CS with respect to collective responsibility). In Authority Ranking (AR) people have asymmetric positions in a linear hierarchy in which subordinates defer, respect, and (perhaps) obey, while superiors take precedence and take pastoral responsibility for subordinates. Examples are military hierarchies (AR in decisions, control, and many other matters), ancestor worship (AR in offerings of filial piety and expectations of protection and enforcement of norms), monotheistic religious moralities (AR for the definition of right and wrong by commandments or will of God), social status systems such as class or ethnic rankings (AR with respect to social value of identities), and rankings such as sports team standings (AR with respect to prestige). AR relationships are based on perceptions of legitimate asymmetries, not coercive power; they are not inherently exploitative (although they may involve power or cause harm).

In Equality Matching relationships people keep track of the balance or difference among participants and know what would be required to restore balance. Common manifestations are turn-taking, one-person one-vote elections, equal share distributions, and vengeance based on an-eye-for-an-eye, a-tooth-for-a-tooth. Examples include sports and games (EM with respect to the rules, procedures, equipment and terrain), baby-sitting co-ops (EM with respect to the exchange of child care), and restitution in-kind (EM with respect to righting a wrong). Market Pricing relationships are oriented to socially meaningful ratios or rates such as prices, wages, interest, rents, tithes, or cost-benefit analyses. Money need not be the medium, and MP relationships need not be selfish, competitive, maximizing, or materialistic -- any of the four models may exhibit any of these features. MP relationships are not necessarily individualistic; a family may be the CS or AR unit running a business that operates in an MP mode with respect to other enterprises. Examples are property that can be bought, sold, or treated as investment capital (land or objects as MP), marriages organized contractually or implicitly in terms of costs and benefits to the partners, prostitution (sex as MP), bureaucratic cost-effectiveness standards (resource allocation as MP), utilitarian judgments about the greatest good for the greatest number, or standards of equity in judging entitlements in proportion to contributions (two forms of morality as MP), considerations of "spending time" efficiently, and estimates of expected kill ratios (aggression as MP).¹

Every type of society or civilization is a mixture of these four modes, but it can plausibly be argued that one mode is always dominant and imprints the other subservient modes. Historically, the first dominant mode was kinship or lineage based reciprocity, the so-called tribal gift economies. The key relational aspect was 'belonging'. Gifts created obligations and relations beyond the next of kin, creating a wider field of exchange. Agricultural or feudal-type societies were dominated by authority ranking, that is, they were based on allegiance. Finally, it is clear that the capitalist economy is dominated by market pricing.

P2P and the Gift Economy

P2P is often described as a 'gift economy' (see [Richard Barbrook](#) for an example). However, it is our contention that this is somewhat misleading. The key reason is that peer to peer is not a form of equality matching; it is not based on reciprocity. P2P follows the adage: each contributes according to his capacities and willingness, and each takes according to his needs. There is no obligatory reciprocity involved. In the pure forms of peer production, producers are not paid. Thus, if there is 'gifting' it is entirely non-reciprocal gifting, the use of peer-produced use-value does not create a contrary obligation. The emergence of peer to peer is contemporaneous with new forms of the gift economy, such as the Local Exchange Trading Systems and the use of reciprocity-based complementary currencies; however, these do not qualify as peer production.

That is not to say that these forms are not complementary, since both equality matching and communal shareholding derive from the same spirit of gifting. Peer production can most easily operate in the sphere of immaterial goods, where the input is free time and the available surplus of computing resources. Equality matching, reciprocity-based schemes and cooperative production are necessary in the material sphere where the cost of capital intervenes. At present, peer production offers no solution to the material survival of its participants. Therefore, many people inspired by the egalitarian ethos will resort to cooperative production, the social economy, and other schemes from which they can derive an income, while at the same time honoring their values. In this sense, these schemes are complementary.

P2P and Hierarchy

P2P is not hierarchy-less, not structure-less, but usually characterized by flexible hierarchies and structures based on merit that are used to enable participation. Leadership is also 'distributed.' Most often, P2P projects are led by a core of founders, who embody the original aims of the project, and who coordinate the vast number of individuals and microteams working on specific patches. Their authority and leadership derives from their input into the constitution of the project, and on their continued engagement. It is true that peer projects are sometimes said to be 'benevolent dictatorships'; however, one must not forget that since the cooperation is entirely voluntary, the continued existence of such projects is based on the consent of the community of producers, and on 'forking' (that is, the creation of a new independent project, is always possible).

The relation between authority and participation, and its historical evolution, has been most usefully outlined by John Heron:

There seem to be at least four degrees of cultural development, rooted in degrees of moral insight:

1. autocratic cultures which define rights in a limited and oppressive way and there are no rights of political participation;
2. narrow democratic cultures which practice political participation through representation, but have no or very limited participation of people in decision-making in all other realms, such

as research, religion, education, industry etc.;

3. wider democratic cultures which practice both political participation and varying degree of wider kinds of participation;
4. commons p2p cultures in a libertarian and abundance-oriented global network with equipotential rights of participation of everyone in every field of human endeavor.

These four degrees could be stated in terms of the relations between hierarchy, co-operation and autonomy.

1. Hierarchy defines, controls and constrains co-operation and autonomy;
2. Hierarchy empowers a measure of co-operation and autonomy in the political sphere only;
3. Hierarchy empowers a measure of co-operation and autonomy in the political sphere and in varying degrees in other spheres;
4. The sole role of hierarchy is in its spontaneous emergence in the initiation and continuous flowering of autonomy-in-co-operation in all spheres of human endeavor.²

P2P and Communal Shareholding

With P2P, people voluntarily and cooperatively construct a commons according to the communist principle: "from each according to his abilities, to each according to his needs." The use-value created by P2P projects is generated through free cooperation, without coercion toward the producers, and users have free access to the resulting use value. The legal infrastructure that we have described above creates an 'Information Commons.' The new Commons is related to the older form of the commons (most notably the communal lands of the peasantry in the Middle Ages and of the original mutualities of the workers in the industrial age), but it also differs mostly through its largely immaterial characteristics. The older Commons were localized, used, and sometimes regulated by specific communities; the new Commons are universally available and regulated by global cyber-collectives, usually affinity groups. While the new Commons is centered around non-rival goods (that is, in a context of abundance) the older forms of physical Commons (air, water, etc.) increasingly function in the context of scarcity, thus becoming more regulated.

P2P and the Market: The Immanence vs. Transcendence of P2P

P2P and the Market

P2P exchange can be considered in market terms only in the sense that individuals are free to contribute, or take what they need, following their individual inclinations, with an invisible hand bringing it all together, but without any monetary mechanism. They are not true markets in any real sense: neither market pricing nor managerial command are required to make decisions regarding the allocation of resources. There are further differences:

- Markets do not function according to the criteria of collective intelligence and holoptism, but rather, in the form of insect-like swarming intelligence. Yes, there are autonomous agents in a distributed environment, but each individual only sees his own immediate benefit.
- Markets are based on 'neutral' cooperation, and not on synergistic cooperation: no reciprocity is created.
- Markets operate for the exchange value and profit, not directly for use value.

- Whereas P2P aims at full participation, markets only fulfill the needs of those with purchasing power.

The disadvantages of markets include:

- They do not function well for common needs that do not involve direct payment (national defense, general policing, education and public health). In addition, they fail to take into account negative externalities (the environment, social costs, future generations).
- Since open markets tend to lower profit and wages, they always give rise to anti-markets, where oligopolies and monopolies use their privileged position to have the state 'rig' the market to their benefit.

P2P and Capitalism

Despite significant differences, P2P and the capitalist market are highly interconnected. P2P is dependent on the market and the market is dependent on P2P.

Peer production is highly dependent on the market because peer production produces use-value through mostly immaterial production, without directly providing an income for its producers. Participants cannot live from peer production, though they derive meaning and value from it, and though it may out-compete, in efficiency and productivity terms, the market-based for-profit alternatives. Thus peer production covers only a section of production, while the market provides for nearly all sections; peer producers are dependent on the income provided by the market. So far, peer production has been created through the interstices of the market.

But the market and capitalism are also dependent on P2P. Capitalism has become a system relying on distributed networks, in particular on the P2P infrastructure in computing and communication. Productivity is highly reliant on cooperative teamwork, most often organized in ways that are derivative of peer production's governance. The support given by major IT companies to open-source development is a testimony to the use derived from even the new common property regimes. The general business model seems to be that business 'surfs' on the P2P infrastructure, and creates a surplus value through services, which can be packaged for exchange value. However, the support of free software and open sources by business poses an interesting problem. Is corporate-sponsored, and eventually corporate managed, FS/OS software still 'P2P': only partially. If it uses the GPL/OSI legal structures, it does result in common property regimes. If peer producers are made dependent on the income, and even more so, if the production becomes beholden to the corporate hierarchy, then it would no longer qualify as peer production. Thus, capitalist forces mostly use partial implementations of P2P. The tactical and instrumental use of P2P infrastructure, (collaborative practices) is only part of the story. In fact, contemporary capitalism's dependence on P2P is systemic. As the whole underlying infrastructure of capitalism becomes distributed, it generates P2P practices and becomes dependent on them. The French-Italian school of 'cognitive capitalism' stresses that value creation today is no longer confined to the enterprise, but beholden to the mass intellectuality of knowledge workers, who through their lifelong learning/experiencing and systemic connectivity, constantly innovate within and without the enterprise. This is an important argument, since it would justify what we see as the only solution for the expansion of the P2P sphere into society at large: the universal basic income. Only the independence of work and the salary structure can guarantee that peer producers can continue to create this sphere of highly productive use value.

Does all this mean that peer production is only immanent to the system, productive of capitalism, and not in any way transcendent to capitalism?

P2P and the Netarchists

More important than the generic relationship that we just described, is the fact that peer to peer processes also contribute to more specific forms of distributed capitalism. The massive use of open source software in business, enthusiastically supported by venture capital and large IT companies such as IBM, is creating a distributed software platform that will drastically undercut the monopolistic rents enjoyed by companies such as Microsoft and Oracle, while Skype and VoIP will drastically redistribute the telecom infrastructure. In addition, it also points to a new business model that is 'beyond' products, focusing instead on services associated with the nominally free FS/OS software model. Industries are gradually transforming themselves to incorporate user-generated innovation, and a new intermediation may occur around user-generated media. Many knowledge workers are choosing non-corporate paths and becoming mini-entrepreneurs, relying on an increasingly sophisticated participatory infrastructure, a kind of digital corporate commons.

The for-profit forces that are building and enabling these new platforms of participation represent a new subclass, which I call the netarchical class. If cognitive capitalism is to be defined by the primacy of intellectual assets over fixed capital industrial assets, and thus on the reliance of an extension of IP rights to establish monopolistic rents, (as the vectoral capitalists described by Mackenzie Wark derive their power from the control of the media vectors) then these new netarchical capitalists prosper from the enablement and exploitation of the participatory networks. It is significant that Amazon built itself around user reviews, eBay lives on a platform of worldwide distributed auctions, and Google is constituted by user-generated content. However, although these companies may rely on IP rights for the occasional extra buck, it is not in any sense the core of their power. Their power relies on their ownership of the platform.

More broadly, netarchical capitalism is a brand of capital that embraces the peer to peer revolution, all those ideological forces for whom capitalism is the ultimate horizon of human possibility. It is the force behind the immanence of peer to peer. Opposed to it, though linked to it in a temporary alliance, are the forces of Common-ism, those that put their faith in the transcendence of peer to peer, in a reform of the political economy beyond the domination of the market.

Transcendent Aspects of P2P

Indeed, our review of the immanent aspects of peer to peer, on how it is both dependent on and productive of capitalism, does not exhaust the subject. P2P has important transcendent aspects which go beyond the limitations set by the for-profit economy:

- peer production effectively enables the free cooperation of producers, who have access to their own means of production, and the resulting use-value of the projects supercedes for-profit alternatives.

Historically, though forces of higher productivity may be temporarily embedded in the old productive system, they ultimately lead to deep upheavals and reconstitutions of the political economy. The emergence of capitalist modes within the feudal system is a case in point. This is particularly significant because leading sectors of the for-profit economy are deliberately slowing down productive growth (in music; through patents) and trying to outlaw P2P production and sharing practices:

- peer governance transcends both the authority of the market and the state
- the new forms of universal common property, transcend the limitations of both private and public property models and are reconstituting a dynamic field of the Commons.

At a time when the very success of the capitalist mode of production endangers the biosphere and causes increasing psychic (and physical) damage to the population, the emergence of such an alternative is particularly appealing, and corresponds to the new cultural needs of large numbers of the population. The emergence and growth of P2P is therefore accompanied by a new work ethic (Pekka Himanen's *Hacker Ethic*), by new cultural practices such as peer circles in spiritual research (John Heron's cooperative inquiry), but most of all, by a new political and social movement which is intent on promoting its expansion. This still nascent P2P movement, (which includes the Free Software and Open Source movement, the open access movement, the free culture movement and others) which echoes the means of organization and aims of the alter-globalization movement, is fast becoming the equivalent of the socialist movement in the industrial age. It stands as a permanent alternative to the status quo, and the expression of the growth of a new social force: the knowledge workers.

In fact, the aim of peer to peer theory is to give a theoretical underpinning to the transformative practices of these movements. It is an attempt to create a radical understanding that a new kind of society, based on the centrality of the Commons, and within a reformed market and state, is in the realm of human possibility. Such a theory would have to explain not only the dynamic of peer to peer processes proper, but also their fit with other inter-subjective dynamics. For example, how P2P moulds reciprocity modes, market modes and hierarchy modes; on what ontological, epistemological and axiological transformations this evolution is resting; and what a possible positive P2P ethos can be. A crucial element of such a peer to peer theory would be the development of tactics and strategy for such transformative practice. The key question is: can peer to peer be expanded beyond the immaterial sphere in which it was born?

The Expansion of the P2P mode of production

Given the dependence of P2P on the existing market mode, what are its chances to expand beyond the existing sphere of non-rival immaterial goods?

Here are a number of theses about this potential:

- P2P can arise not only in the immaterial sphere of intellectual and software production, but wherever there is access to distributed technology: spare computing cycles, distributed telecommunications and any kind of viral communicator meshwork.
- P2P can arise wherever other forms of distributed fixed capital are available: such is the case for carpooling, which is the second most used mode of transportation in the U.S.
- P2P can arise wherever the process of design may be separated from the process of physical production. Huge capital outlines for production can co-exist with a reliance on P2P processes for design and conception.
- P2P can arise wherever financial capital can be distributed. Initiatives such as the ZOPA bank point in that direction. Cooperative purchase and use of large capital goods are a possibility. State support and funding of open source development is another example.
- P2P could be expanded and sustained through the introduction of universal basic income.

The latter, which creates an income independent of salaried work, has the potential to sustain a further development of P2P-generated use-value. Through the 'full activity' ethos (rather than full employment) of P2P, the basic income receives a powerful new argument: not only as efficacious in terms of poverty and unemployment, but as creating important new use-value for the human community.

However, as it is difficult to see how use-value production and exchange could be the only form of production, it is more realistic to see peer to peer as part of a process of change. In such a scenario,

peer to peer would both co-exist with and profoundly transform other intersubjective modes.

A Commons-based political economy would be centered around peer to peer, but it would co-exist with:

- A powerful and re-invigorated sphere of reciprocity (gift-economy) centered around the introduction of time-based complementary currencies.
- A reformed sphere for market exchange, the kind of 'natural capitalism' described by Paul Hawken, David Korten and Hazel Henderson, where the costs for natural and social reproduction are no longer externalized, and which abandons the growth imperative for a throughput economy as described by Herman Daly.
- A reformed state that operates within a context of multistakeholdership and which is no longer subsumed to corporate interests, but act as a fair arbiter between the Commons, the market and the gift economy.

Such a goal could be the inspiration for a powerful alternative to neoliberal dominance, and create a kaleidoscope of 'Common-ist' movements broadly inspired by such goals.

Resources

Pluralities/Integration monitors P2P developments and is archived at:

<http://integralvisioning.org/index.php?topic=p2p>

A longer manuscript and book-in-progress on the subject is available at: <http://integralvisioning.org/article.php?story=p2ptheory1>

The Foundation for P2P Alternatives has a website under construction at:

<http://p2pfoundation.net/index.php/Manifesto>

Notes

* This paper appeared on www.cttheory.com in December 2005.

1. Fiske website. <http://www.sscnet.ucla.edu/anthro/faculty/fiske/reimodov.htm>

2. Personal communication with the author

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Author contact: michelsub2004@gmail.com

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