

# To the Finland Station, a 21<sup>st</sup> century update

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This essay consists of three parts. The first part is a general presentation of the nature of the present crisis, and how we can possibly/realistically expect a renewed period of growth. The second part explains the role of peer to peer dynamics in this re-orientation of our political economy, while the third part explains its political implications, and the possibilities for a phase transition towards a post-capitalist society, centered around peer production.

## Part One: Understanding the Present Crisis

### The Nature of the Present Crisis

My understanding of the present crisis is inspired by the works on long waves by Kondratieff, and how it has been updated in particular by Carlota Perez, in her work: Technological Revolutions and Financial Capital. This work has recently been updated and re-interpreted by Badalian and Krovorotov.

The essential understanding of these approaches that economic history can be understood as a series of long waves of technological development, embedded in a particular supportive institutional framework. These long waves inevitably end up in crisis, in a Sudden System Shock, a sign that the old framework is no longer operative.

### Why is that so?

These waves have a certain internal logic. They start with a period of gestation, in which the new technology is established, creating enthusiasm and bubbles, but cannot really emerge because the institutional framework still reflects older realities. This is followed by a period of maturation, marked by institutional adaptation, massive investment by the state, and productive investment by business, leading to a growth cycle. Finally, a period of decline and saturation, in which the state retreats, business investments become parasitic, leading to a contraction cycle with speculative financial bubbles, which ends in a Sudden Systemic Shock (1797, 1847, 1893, 1929 or 2008).

To understand the current period in this framework, some dates are important:

- 1929 as the Sudden Systemic Shock ending the previous long wave
- 1929-1945: gestation period of the new system

- 1945-1973: maturation period, the high days of the Fordist system based on cheap domestic oil in the US
- 1973: inflationary oil shock, leading to outward globalization but also speculative investment and the downward phase ending in the
- Sudden Systemic Shock of 1929

The important thing is this, every long wave of appr. 50-60 years has been based on a combination of different structural developments in production and distribution. Whilst modern economics is totally focusing on the monetary side of things, the crisis is only explainable if we also look on the physical side.

### **So each long wave cycle was an interplay of**

1) a new form of energy (f.e. the UK domination was based on coal, the US domination was based on oil); in the beginning of a new wave, the newly dominant power has particular privileged access to a cheap domestic supply, which funds its dominance; when that cheap supply dries up, a (inflationary) crisis ensues, which forces that power outwards, to look for new supplies in the rest of the world. This results in both dynamic globalization, but also in the awakening of a new periphery. Because the last phase is linked to globalization and the control of external energy supplies, it is also strongly correlated to military overstretch, which is a crucial factor in weakening the dominance of the main player.

2) some radical technological innovations (no more than 3 according to the authors); The 3 last ones: 1830: Steam and railways • 1870: Heavy engineering • 1920: Automotive and mass production

3) a new 'hyper-productive' way to 'exploit the territory'; This is where land use comes in. For the last period, though the overall benefits are contested industrial agriculture and the 'Green Revolution' did lead to a jump in agricultural production capacity. The last 'parasitic' phase of a long wave cycle is then also marked by hyper-exploitation of existing land base. The example of the dust bowl in the American mid-West is an example. This accumulation of problems in turn lead to the search for new methods of land-use that can be used to develop new types of land for the next up cycle.

4) an appropriate financial system: i.e. the new type of public companies, and New Deal type investments (such as the Marshall Plan) in the growth cycle phase, morphing into the parasitic investments of casino capitalism in the second phase. Importantly, Badalian and Krovorotov note that each new financial system was more socialized than the previous one, for example the joint stock company allowing a multitude of shareholders to invest.

In the growth phase, the newly expanded financial means fund the large infrastructural investments needed to create the new integrated accumulation engine; in the declining phase, the financial system overshoots the capabilities of the productive economy, becomes separated from it, and starts investing in parasitic investments.

5) a particular social contract. Here also, we can see waves of more intensive 'socialization'. For example, the Fordist social contract created the mass consumer in the first phase, based on social peace with labour, while in the second parasitic phase, the part going to worker's was drastically reduced, but replaced by a systemic indebtedness of consumers, leading to the current Sudden System Shock.

6) A particular way of conceiving of the organization of human institutions, in particular the conception of the types of businesses and the management-workers relations, but also internally, the types of collaboration amongst employees and between employees and management.

6) As we mentioned above, each wave has been dominated by a particular great political power as well, and in the second phase of expansion, a new periphery is awakened, creating the seeds for a future wave of dominance by new players. For example, the U.S. was peripheral for the long wave occupied by the British Empire, but became dominant in the next phase.

### **Roots of the current crisis**

It is important not to forget the essential characteristics of the contraction cycle: what enables growth in a first phase, becomes an unproductive burden in the second, declining phase of the wave.

If we review the 6 factors, it's easy to see where the problems are:

- 1) The era of abundant fossil fuels is coming to an end; after Peak Oil, oil is bound to become more and more expensive, making oil-based production uneconomical. Nuclear Power is no real replacement for this, as its own raw material is equally subject to depletion, and it poses many long-term problems through its waste products.
- 2) The era of mass production, based on the car, requires a too heavy environmental burden to be sustainable, and is/was heavily dependent on cheap energy for transportation.
- 3) Industrial agriculture destroys the very soils that it uses and is mainly based on depletable petroleum-derivates.

- 4) The financial system is broken and the \$10 trillion bailout drains productive investments towards unproductive parasitic investments.
- 5) The Fordist social contract, broken in the 80s, has led to the increased weakening of the Western middle class and a generalized precarity, which no longer functions after Sudden System Shock.
- 6) The old dominant power, the U.S. can no longer afford its dominance, and has awakened the periphery, most likely East Asia. The powers that see the opportunity to compete are looking for new societal structures that help them emerge. They cannot rely on the strategies of the dying long wave to achieve these goals, but must invent new ones.

### **Seeds of the new**

What are the innovations that we can expect if a new wave is to occur?

- 1) The technology for renewable energy has been developed, but needs at least \$150b annual investments in the U.S. alone, in order to become economical. A Green New Deal would jumpstart the new energy era. The wasteful heavy energy usage of the fossil fuel era will need to be replaced by smart precision-based energy usage. Solar energy will probably be the backbone of renewables but can be supplemented by other forms.
- 2) The era of mass production is ready to be replaced by more local production in small series, based on developments such as flexible and rapid prototyping based manufacturing, mass customization, personal fabrication and additive fabrication, multi-purpose machinery. This flexible system of manufacturing is faster, cheaper, more adaptive, more compatible with solar and renewable energy, can only thrive by deepening participative engagement, thus requiring the re-awakening of production intelligence and personal initiative that were discouraged by the various forms of the industrial system, including the systems based on central planning.
- 3) Post-industrial organic agriculture has already proven more productive than destructive industrial agriculture, but needs to be generalized; land use needs to be re-expanded within cities where vertical agriculture can be developed more intensively. This form of agriculture uses diversity as its backbone and works with the most sophisticated feedback cycles of nature. It saves also human labour time.
- 4) The seeds of the new financial system, based on increased socialization towards civil society, have been developed in the last few decades: 1) sovereign wealth funds re-insert the public good in investment decisions; 2) Islamic banking and similar mechanisms avoids the hyper-leveraging that destroyed the Wall Street system; 3) microfinance broadens entrepreneurship and financing to the 'base of the pyramid'; 4) crowdfunding mechanisms,

social lending and various credit commons approaches expand the availability of credit; 5) flow money approaches through a circulation charge to discourage parasitic investments

- 5) The periphery of newly emergent countries has been awakened and will in all likelihood lead to a dominance of the East-Asian region. However, opportunities for other emergent players are still open, providing they find the appropriate local integration of the productive resources of the new long wave. In this context, we can see the emerging success of Brazil, while Russia has its enormous landmass as immense and under-exploited productive resource.
- 6) Social media and the internet, now used primarily by civil society and networked individuals, will profoundly change the nature of businesses and other human organizations. Business and work organization needs to go to a profound redesign process to incorporate the hyperproductive benefits of social media.

### **Peer to peer and the new social contract**

A new long phase has been historically associated with an upsurge of the role of the state and the public sector, which alone can undertake the necessary investments which private investment cannot take up in the early phases.

However, we need to be aware of one of the fundamental characteristics of the new period, which is a revival of the role of civil society. The internet is enabling the self-aggregation of civil society forces in the creation of common value, i.e. through peer production. Global communities have shown themselves capable to be hyper-productive in the creation of complex knowledge products, free and open source software, and increasingly, open design associated with distributed manufacturing.

This means that a hybrid form of production has emerged that combines the existence of global self-managed open design communities, for-benefit associations in the form of Foundations which manage the infrastructure of cooperation, and an ecology of associated businesses which benefit and contribute from this commons-based peer production.

These companies, which enable and empower the social production of value, have become the seeds for the dominant companies of the future (Google, eBay, etc... ). Companies will need to open up to co-design and co-creation, while the distribution (miniaturization) of the means of physical production, liberates the possibilities for smaller more localized production units to play more essential roles. We believe that the role of solely profit driven multinational companies, without any roots in local communities, is reaching its historical end, and will be replaced increasingly by new models of entities combining profit with the realization of social and public goods. Socially-conscious investment, sovereign wealth funds, micro-finance, social

entrepreneurship, fair trade and the emergence of for-benefit entities point to this new institutional future of entrepreneurship. For the state form, this means morphing from the welfare or neoliberal state models, to that of the Partner State, which enables and empowers social production.

The new social contract therefore will mean:

- 1) Expanding entrepreneurship to civil society and the base of the pyramid
- 2) New institutions that do well by doing good
- 3) Social financing mechanisms based on peer to peer aggregation
- 4) Mechanisms that sustain social innovation (co-design, co-creation) and peer production by civil society
- 5) Participatory businesses and other human organizations
- 6) Focus on more localized precision-based physical production in small series, but linked to global open design communities

The new long wave that we are hypothesizing is of course speculative, and needs some caveats.

First of all, it cannot occur without a long period of disruption and adaptation, also needed for the deleveraging of debt of the previous period.

Second, though long waves have structurally occurred in the last 2 centuries, the severe crises related to the depletion of fossil fuels, but also the impact of climate change, could possibly derail such a scenario.

It may also be that, as the current infinite growth system is incompatible with the survival of the biosphere, that these cyclic tendencies may be overturned and interrupted by a more fundamental crises, involving the very survival of capitalism.

Nevertheless, I think that there is a real possibility of a next long wave, based on a new social contract, where netarchical capitalists and peer producing communities will play a larger role. This long wave may likely be interrupted half-way.

What we deem likely is the following: 1) a period of deleveraging and restructuration; 2) a new upturn cycle of the new wave.

However, it is when the upturn hits the first halfway crisis of a Kondratieff Wave, in the context of deepening resource and climate change related crises and challenges, that the crisis of the present system will become systemic, and open up the possibility of a further phase transition, to a form of post-capitalism which is compatible with the survival of the biosphere.

The new modality that has been emerging before the crisis as an emergent new social, political and economic practice is the peer to peer dynamic; it is at present an

emergent phenomenon. We believe that its uptake will speed up during the deleveraging and adaptation crises, in order to become a new part of the new social contract, during the new upturn of the Kondratieff cycle. At the end of this half-cycle, when peer to peer may achieve some form of parity, the systemic crises may then lead to the new system becoming the dominant meta-system, while the market system may be the new subsystem integrated in the new system.

With this context set, we can now explain the importance of the peer to peer dynamic itself.

## **Part Two: The Economics of P2P**

### ***General introduction***

Peer to peer social processes are bottom-up processes whereby agents in a distributed network can freely engage in common pursuits, without external coercion, i.e. permissionlessly undertake actions and relations. This requires not just 'decentralized' systems, but 'distributed' systems, through which individuals can cooperate. Distributed networks do have constraints, forms of internal coercion, that are the conditions for the group to operate, and they may be embedded in the technical infrastructure, the social norms, or legal rules. Despite these caveats, we have here a remarkable social dynamic, which is based both on voluntary participation in the creation of common goods, which are made universally available to all.

Peer to peer processes are emerging in literally every cranny of social life, and have been extensively documented in the 9,000+ pages of documentation at the Foundation for Peer to Peer Alternatives, and many other places on the Web.

P2P social processes more precisely engender:

- 1) **peer production:** wherever a group of peers decided to engage in the production of a common resource
- 2) **peer governance:** the means they choose to govern themselves while they engage in such pursuit
- 3) **peer property:** the institutional and legal framework they choose to guard against the private appropriation of this common work; this usually takes the form of non-exclusionary forms of universal common property, as defined through the General Public License, some forms of the Creative Commons licenses, or similar derivatives.

Peer governance combines the free self-aggregation between individual skills and universally broadcast tasks, processes for communal validation of excellence within the broader pool of input, and defense mechanisms against private appropriation and sabotage. Peer governance differs from hierarchical allocation of resources, from allocation through the market, and even from democracy, as these are all mechanisms for dealing with scarce resources. Peer governance essentially aims, and often succeeds, in making sure that no formal 'representative group' can take decisions separate from the community of peer producers.

These new property forms have at least 3 characteristics:

- 1) they are aimed against the private appropriation of the commonly created value
- 2) they are aimed at creating the widest possible usage, i.e. they are universal common property regimes
- 3) they keep the sovereignty with the individual

The third aspect is why peer property fundamentally differs both from private property and collective property.

Private property is individual but is exclusionary, it says, what is mine is not yours.

But state, that is collective property, is also exclusionary, but in another sense: it says, it is ours, but it means that you no longer have the sovereignty. It's from us, regulated by a bureaucracy or representative democracy, but it is not really yours. The collective has taken over from the individual, and more often than not, coercion is involved.

But the General Public License, or the Creative Commons licences are different. Common property is not collective property.

Using them, the individual gets full attribution, i.e. the recognition of his personal property. You are freely sharing your sovereignty with others. This is especially clear in the Creative Commons licensing schemes, where the individual gets a whole gamut of options for sharing. You remain fully in control, i.e. "sovereign", and there is no coercion involved.

It is important to note that peer production is a form of "generalized", on non-reciprocal, exchange. It is not a gift economy, based on direct exchange or obligation. So peer production is not to be equated by cooperative production for the market: participation has to be voluntary, there is no direct reward (but many indirect rewards) in the form of monetary compensation. The process itself is participative. And the outcome is similarly free, in the sense that anyone can access and use the common resource. In reality, most peer production projects are intertwined with a

smaller core of people who may get paid, and use finances to create an infrastructure so that the peer production may occur.

If we look at peer production as a mode of production, as a process involving a input, 'processing', and output phase, then we can say that it requires the following:

- Open and free raw material that can be used permissionlessly. Thus, peer production either requires the creation of such open and free raw material by the producers themselves, or materials that are in the public domain or in a commons format already
- The process is participatory with a design that is geared towards inclusion and a posteriori validation, not exclusion through a priori filtering of the participants
- The output is universally available and therefore, uses peer property formats or in other words: a Commons

As the Commons-oriented output creates a new layer of open and free input for further transformation and processing, we have here the requirements for social reproduction of the system, called the Circulation of the Common by Nick White-Dyerford.

Looking at these three inter-related paradigms of open and free, participation, and the Commons, we can then easily understand while movements striving for these conditions and social practices, are arising in almost every single field of human activity.

The conditions for peer production to emerge are essentially: abundance and distribution. Abundance refers to the abundance of intellect or surplus creativity, to the capacity to own means of production with similar excess capacity. Distribution is the accessibility of such abundant resources in fine-grained implements, what Yochai Benkler has called modularity or granularity. Again we could talk about the distribution of intellect, of the production infrastructure, of financial capital.

It is important to distinguish two spheres. In one sphere, our digitally-enabled cooperation, reproduction of non-rival knowledge goods, such as software, content, open designs, takes place at marginal costs, and there is only no loss by sharing, but actually a gain, through network effects. Such free cooperation can only be hindered 'artificially', through either legal means (intellectual property regimes) or through technical restrictions such as Digital Rights Management, which essentially hinder the social innovation that can take place. In this sphere, a non-reciprocal mode of production becomes dominant, since resources are not rival, and you're not losing, but gaining, through giving. In the sphere of material production, where the costs of production are higher, and we have rival goods, we still require regimes of exchange,

or regimes of reciprocity. Notice that in a sphere of virtual abundance, where copying is trivial, there is no tension between supply and demand, and hence no market.

### **Post-capitalist aspects of peer to peer**

Peer production, though embedded in the current political economy and essential for the survival of the cognitive forms of capitalism, is therefore essentially post-capitalist. Essentially because it is outside wage dependency, outside the control of a corporate hierarchy, and does not allocate resources according to any pricing or market mechanism.

Similarly, peer governance could be said to be post-democratic, because it is a form of governance that does not rely on representation, but where participants directly co-decide; and because it is not limited to the political field, but can be used in any social field. Peer governance is non-representational, and this is essentially so because what the networked communication affords us, is the global coordination of small groups, and therefore, the peer to peer logic of small groups can operate on a global scope. Hierarchies, the market, and even representative democracy, are all but means to allocate scarce resources, and do not apply in the context where abundant resources are allocated directly through the social process of cooperation. However, since the pure peer to peer logic only fully functions in the sphere of abundance, it will always have to insert itself in the forms that are responsible for the allocation of resources in the sphere of material scarcity. Peer governance based leadership seems a combination of invitational leadership, i.e. the capacity to inspire voluntary cooperation, and a posteriori arbitrage based on the reputational capital thus obtained. However, the process of production itself is an emergent property of the cooperating networks.

Finally, peer property is a post-capitalist form of property because it is non-exclusionary, and it creates a commons with marginal reproduction costs. There are two main forms of peer property. One is based on the individual sharing of creative expression, and is dominated by the Creative Commons option which allows an individual to determine the level of sharing. The other is applied to commons-based peer production, and takes the form of the General Public License or its derivatives or alternatives, and requires that any change to the common, also belongs to the common.

## **The hyper-productive nature of peer to peer**

Pre-capitalist class societies are based on coercive extraction of surplus value and hierarchical allocation of resources. Capitalism is based on the part real and part fictional process of equal exchange of value. In other words, we can say that coercive societies are based on the extrinsic motivation of fear, while capitalism is based on the extrinsic motivation of self-interest.

Peer production structurally eliminates extrinsic motivation and replaces it with intrinsic motivation, or in other words passion. It is psychologically the most potent and productive form of human motivation. In addition, the market only allows, at best, for win-win scenarios of mutual interest, but is structurally designed to ignore externalities. Corporate firms can only strive for relative quality in a competitive environment, but peer producing communities strive structurally for absolute quality. As an object-oriented sociality based on the construction of universally available common value, peer production inherently strives for positive externalities, and lacks much of the motivation to create negative externalities for the sake of profit.

The combination of all these characteristics create a hyper-productive mode of production, and a asymmetrical competition with pure for-profit firms relying on wage labour and closed intellectual property.

This allows us to formulate the bold hypothesis of the Law of asymmetrical competition, which states that:

- Any for-profit company based on closed IP, faced with the competition of a peer producing community, a for-benefit association managing the infrastructure of cooperation, and an ecology of businesses based on a commons, will lose that competitive race.

(This hypothesis would explain the gains of Linux over Microsoft, the rise of Wikipedia as compared to Britannica, as being models for many other examples of asymmetrical completion.)

An entity based on innovation-impeding intellectual property, appropriation of common social value which discourages free contributions, and striving for relative quality (hence consciously substandard products), cannot in the long run survive the challenge of an open competition based on peer production.

However there is an important corollary to this first law, which explains the necessity of hybrid forms, and why peer production can be embedded within an overall capitalist context.

The corollary law is this:

- Any peer production community, which creates a sustainable management for its infrastructure of cooperation and an ecology of businesses which can fund it, will be more competitive than a community which fails to do so.

Pure non-reciprocal production can only occur within a sphere of relative abundance, characterized by the free aggregation of human brains, ownership or easy access to computers, and socialized access to the networks, such as the internet. However, if peer production is collectively sustainable as long as it can maintain a similar level of volunteerism (offsetting departures with newcomers), it is not so for the individuals concerned. In addition it also requires a additional infrastructure of cooperation, which may have to operate on top of the internet. For example: it may need costly servers in case of success. Peer production cannot therefore fully escape the monetary sphere nor its requirements, demanding hybrid formats.

We will detail this below but in short, we can observe that successful peer projects combine:

1. The freely self-aggregating community
2. A for-benefit association, usually in the form of a nonprofit Foundation, which funds and manages the infrastructure of cooperation
3. An ecology of businesses that practice benefit-sharing, returning part of the profit obtained from selling added value to the market, back to the commons on which their value-creation is based. Such businesses therefore fund the infrastructure of cooperation, hire many of the participants, and thereby maintain the viability and sustainability of their respective Commons

### **Adaptation of cognitive capitalism to peer to peer**

So far, empirical evidence suggests three emerging forms of adaption between the sphere of peer to peer cooperation, and the institutional and market fields.

- The sphere of individual sharing, think YouTube, where sharers have relatively weak links to each other, creates the Web 2.0 business model. In this model, an ethical economy of sharing, co-exists with proprietary platforms which enable and empower such sharing, in exchange for the selling of the aggregated attention
- The sphere of commons-oriented peer production, based on stronger links between cooperators, think Linux or Wikipedia, usually combines a self-governing community, with for-benefit institutions (Apache Foundation, Wikimedia Foundation, etc...), which manage the infrastructure of collaboration, and a ecology of businesses which create scarcities around the

commons, and in return support the commons from which they derive their value.

- Finally, crowdsourcing occurs when it is the institutions themselves which attempt to create a framework, where participation can be integrated in their value chain, and this can take a wide variety of forms. This is generally the field of co-creation.

There is a mutual dependence of peer production and the market. Peer production is based on the achievements and surplus of the existing market-dominated society, and on the income that can be generated through participation in the market; on the other hand, market players are increasingly dependent and profiting from social innovation.

Because of the law of asymmetrical competition, i.e. the hyperproductive nature of peer production, corporations are driven to adapt substantially to the new practices and new players emerge that are based on an alliance with peer production. The companies that do so are more competitive than those who do not, creating a new sector of 'netarchical capitalism' which empowers and enables social innovation and peer production to occur.

Corporations have a dual role in this, because of their contradictory nature. They have to sustain cooperation and sharing, i.e. the openness that creates value, but also have to enclose part of the value, as they are competing with others in a scarcity-based marketplace.

We must note that monetary value that is being realized by the capital players, is – in many if not most of the cases, not of the same order as the value created by the social innovation processes. The user-producers-participants are creating direct use value, videos in YouTube, knowledge and software in the case of commons-oriented projects. This use value is put in common pool, freely usable, and therefore, does not consist of scarce products for which pricing can be demanded. The sharing platforms live from selling the derivative attention created, not the use value itself. In the commons model, the abundant commons can also not be directly marketed, without the creation of additional 'scarcities'.

### **What does all of this mean for the market sphere?**

It is now possible to create all kinds of use value without, or with only a minimal, or with only a posteriori, intervention of capital. We are dealing with post-monetary, post-capitalist modes of value creation and exchange, that are both immanent, i.e. embedded, to the market, but also transcendent to it, i.e. operating outside its

boundaries. Capital is increasingly dependent, and profiting in all kinds of ways, from the positive externalities of such social innovation.

So the challenge can be described as follows: 1) we have a process of social innovation which creates mostly non-monetary value for the participants; 2) we may have an increasingly huge gap between the possibility of creating post-monetary value, and the derivative exchange values that are realized by enterprise; 3) the participants engaged in such passionate production and innovation, mostly cannot find in such processes an answer to their own sustainability.

Hence, the impossibility to realize more than just a small partial monetary value, from the point of view of most commercial players. Increasing precarity for the participants of social innovation. In other words, the current market model does not have a reverse process of redistribution for the value that is being created.

This might of course be a temporary crisis, but we do not believe it is. The reason is that the market can only indirectly and partially provide monetary compensation for processes which are not motivated by such compensation. What we need therefore are more general redistributive processes that allow society and the market to give back part of the value that is being so created.

One possibility is the further development of transitional labour market measures (protect the worker, not the job), which recognize the flexibility and mobility of contemporary careers. But this needs an important add-on development: the realization that contemporary workers are moving not just from job to job, but also from jobs to non-jobs, and that in fact, what is most useful and meaningful for them (and the market, and society) are not the paid jobs for the market, but the episodes of passionate production. It seems to me therefore that a more general measure, not linked to the job, but conceived as a repayment for, and enabler of, social innovation, is needed. The name of that general measure is most probably some form of basic income.

### **Likely expansion of peer production principles to material production**

Peer production naturally occurs in the sphere of immaterial production. In this sphere, the access to distributed resources is relatively easy. Large sections of the population in the Western countries are educated, and can have a computer at their disposal. And the costs of reproduction are marginal.

The expansion of peer production is dependent on cultural/legal conditions. It requires open and free raw cultural material to use; participative structures to process

it; and commons-based property forms to protect the results from private appropriation. Hence is a circulation of the common obtained (the concept is from Nick Dyer-Whiteford), through which peer production virally expands.

**However, peer production is not limited to the sphere of immaterial production.**

First of all, any physical production process, needs to be immaterially designed, and open design is not fundamentally different, though it is more complex, than collaborative knowledge or free software production. So, peer production can work for the design phase of physical production, provided a good infrastructure is available for such co-design.

Physical resources can be shared, if they are available in a distributed format. For example: computers and their files and processing power. Cars can be pooled. Money can be pooled as in the P2P financial exchanges such as Zopa or through mutual credit systems. Wealth acknowledgement procedures can be the basis of the creation of complementary currencies.

Rapid tooling and prototyping, desktop manufacturing, personal fabricators and 3D printers, multi-purpose machinery and other similar developments may and will lower the threshold of participation, creating more modularity and granularity in new fields. In fact, we may observe that the same tendency to miniaturization, which led to the networked computer, is taking place in the domain of physical machinery. Given the decrease in the cost of physical capital, it becomes easy to imagine the combination of open design communities, with cooperative forms of relocalized physical production.

Such expansion is not just a natural extension of technical evolution, but has structural and therefore political impediments. The centralized capital formats of contemporary neoliberal anti-markets obviously impede such expansion. But even with such constraints, the scope for the expansion of peer production is significant.

Again, we will make the following caveat. In the immaterial sphere, non-reciprocal peer production is likely to become dominant. In the field of scarcity, we will see the rise of peer-informed modes of production. This means that market forms are starting to change, changing from a logic of pure capitalism (making commodities for exchange, so as to increase capital), to logics where the logic of exchange is subsumed to the logic of partnership. Think about fair trade (a market subjected to peer arbitrage), social entrepreneurship (profit used to sustain social goals), base of the pyramid inclusional capitalism, and the many political-social movements that aim to divorce market forms, from the infinite growth logic of capitalism, such as the natural capitalism movement in the U.S.

In the last two-three years, we have witnessed the renewed emergence and rapid growth of craft communities, a maker movement, distributed desktop manufacturing through commercial platforms, and a free and open hardware movement. Open hardware is growing very fast, with companies such as Arduino and Buglabs providing living exemplars and role models, and are inventing their own platforms and infrastructures such as the Open Source Hardware Bank.

The latter is particularly significant as it shows that open hardware producing communities, such as the ones around the Arduino electronic circuit boards, are creating their own business ecologies.

They are combining the existing triarchical commons model (community, foundation, business), with a solution to the cost recovery problem typical for physical production. Because of this, they are emerging as viable alternatives to the traditional corporate models, and thanks to the inherent hyperproductivity we have argued above, slated to play an increasingly dominant role.

To prosper, and expand beyond its current confines in the sphere of immaterial production, more distributed infrastructures will be necessary, complementing the already existing communication infrastructures:

- Distributed energy: this requires a move away from centralized energy production based on depletable fossil fuels, and towards a home and neighborhood based infrastructure producing renewable energy
- Distributed and multiple currency systems: meta-currency platforms will allow local and virtual (affinity-based) communities to produce exchange mechanisms that are not based on compound interest and fractional reserve banking and can both promote specialized in-community exchange, protect from globalized dislocation, and create an alternative infrastructure of inter-community and inter-individual exchange.
- Open and distributed manufacturing: distributed capital goods with radically lower thresholds such as the ones being developed today, need to be reconfigured and integrated in a vision of relocalized production, in the context of a global cooperation with open design communities

## **Part Three: The Politics of P2P**

### ***P2P theory as the emancipatory possibility of the age***

Our current political economy is based on a fundamental mistake. It is based on the assumption that natural resources are unlimited, and that it is an endless sink. And it creates artificial scarcity for potentially abundant cultural resources. This combination

of quasi-abundance and quasi-scarcity destroys the biosphere and hampers the expansion of social innovation and a free culture.

In a P2P-based society, this situation is reversed: the limits of natural resources are recognized, and the abundance of immaterial resources becomes the core operating principle.

The vision of P2P theory is the following:

- 1) the core intellectual, cultural and spiritual value will be produced through non-reciprocal peer production;
- 2) it is surrounded by a reformed, peer-inspired, sphere of material exchange;
- 3) it is globally managed by a peer-inspired and reformed state and governance system, a “partner state which enables and empowers the social production of value”.

Because of these characteristics, peer to peer can be said to be the core logic of the successor civilization, and is a answer and solution to the structural crisis of contemporary capitalism.

Indeed, because an infinite growth system is a logic and physical impossibility with a limited natural environment, the current world system is facing a structural crisis for its extensive growth. Currently consuming resources at the rate of ‘two planets’, it would need four planets if countries like China and India would obtain equity with the current Western levels of consumption. Because of the ecological and resource crisis that this causes, the system is ultimately limited in its extensive expansion.

However, its dream for intensive development in the immaterial sphere is equally blocked, since the sphere of abundance and direct social production of value through peer production, creates an exponential growth in use value, but only say a linear growth in the market opportunities in its margins.

The current world system is facing a similar crisis to that of the slave-based Roman Empire, which could no longer grow extensively (at some point the cost of expansion is greater than the benefits of added productivity), but could not grow intensively either, since that would demand autonomy for the slaves. Hence, the feudal system emerged, which refocused on the local, where it could become much more productive and grow ‘intensively’. Serfs, which were tied to the land but now had families, a fixed part of their produce, and a much lighter taxation load, were substantially more productive than slaves. The domain-based lords took a substantially lesser part of the surplus. Today, extensive growth is ultimately blocked,

but intensive growth in the immaterial sphere requires a substantial reconfiguration which largely transcends the current system logic.

Similarly, the current structural crisis causes a reconfiguration of the two main classes (just as the slave owners had to become feudal lords, and the slaves had to become serfs). At present, we see the emergence of a netarchical class of capital owners, who are renouncing their dependence on the present regime of immaterial accumulation through intellectual property, in favour of a role as enablers of social participation through proprietary platforms, which cleverly combine open and closed elements so as to ensure a measure of control and profit, while knowledge workers are reconfiguring from a class that was dissociated from the means of production, to one that is no longer dissociated from its means of production, as their brains and the networks are now their socialized means of production. (However, they are still largely dissociated from autonomous means of monetization.) It would be fair to say that currently, peer production communities are collectively sustainable, but not individually, leading to a crisis of value and widespread precarity amongst knowledge workers.

The solution would in my opinion point in the following direction:

1. the private sector recognizes its increasing dependence on the positive externalizations of social cooperation, and together with the public authorities, agrees to a new historical compromise in the form of a basic income; this allows the sphere of cooperation to thrive even more, creating market benefits
2. the sphere of the market is dissociated from infinite-growth capitalism (how this can be done would require a separate article, but the key would be a macro-monetary reform such as those proposed by Bernard Lietaer, associated with a new regime that extends the production of money from private banks to the social field, through open money systems)
3. the sphere of peer production creates appropriate 'wealth acknowledgement systems' to recognize those that sustain its existence, and systems exist which can translate that reputational wealth in income

### **Peer governance and democracy**

As peer to peer technical and social infrastructures such as sociable media and self-directed teams are emerging to become an important if not dominant format for the changes induced by cognitive capitalism, the peer to peer relational dynamic will increasingly have political effects.

As a reminder, the p2p relational dynamic arises wherever there are distributed networks, i.e. networks where agents are free to undertake actions and relationships,

and where there is an absence of overt coercion so that governance modes are emerging from the bottom-up. It creates processes such as peer production, the common production of value; peer governance, i.e. the self-governance of such projects; and peer property, the auto-immune system which prevents the private appropriation of the common.

It is important to distinguish the peer governance of a multitude of small but coordinated global groups, which choose non-representational processes in which participants co-decide on the projects, from representative democracy. The latter is a decentralized form of power-sharing based on elections and representatives. Since society is not a peer group with an a priori consensus, but rather a decentralized structure of competing groups, representative democracy cannot be replaced by peer governance.

However, both modes will influence and accommodate to each other. Peer projects which evolve beyond a certain scale and start facing issues of decisions about scarce resources, will probably adapt some representational mechanisms.

In fact, there are a few things we can already say about the emerging templates of peer governance. In the sharing mode, centered about the sharing of individual expression, where network ties are relatively weak, proprietary third party platforms are responsible for the setting of design rules which have to enable sharing and demand some form of openness that creates the value, but balanced by their need to capture that value, with the exist possibilities and mobilization power of the sharing communities acting as a counterweight. In the commons-oriented form of peer production as seen in free software for example, we see the emergence of a triarchical model, combining self-aggregating 'permission-less' and self-governed community; with a for-benefit association (usually a NGO in the form of Foundations) that manages the infrastructure of cooperation, and subjected to formal democratic rules; and an ecology of businesses creating market value on top of the commons, while returning some of its profit in the form of benefit sharing towards the Foundation or community, thereby insuring the continuation of the Commons on which they depend. These forms templates that will be increasingly used in the expanding field of social production, but are not as such applicable to the polis as a totality.

Representative and bureaucratic decision-making can and will in some places be replaced by global governance networks which may be self-governed to a large extent, but in any case, it will and should incorporate more and more multistakeholder models, which strives to include as participants in decision-making, all groups that could be affected by such actions. This group-based partnership

model is different, but related in spirit, to the individual-based peer governance, because they share an ethos of participation.

### **Towards a Partner State approach**

Partner state policy is an approach in which the state enables and empowers user communities to create value themselves, and which also focuses on the elimination of obstacles.

The fundamental change in approach is the following. In the modern view, individuals were seen as atomized. They were believed to be in need of a social contract that delegated authority to a sovereign in order to create society, and in need of socialization by institutions that addressed them as an indifferentiated mass. In the new view however, individuals are always-already connected with their peers, and looking at institutions in such a peer-informed way. Institutions therefore, will have to evolve to become support ecologies, devising ways to create infrastructures of support.

The politicians become interpreters and experts, which can guide the issues emerging out of civil society based networks into the institutional realm.

The state becomes a at least neutral (or better yet: commons-favorable) arbiter, i.e. the meta-regulator of the 3 realms, and retreats from the binary state/privatisation dilemma to the triarchical choice for an optimal mix between government regulation, private market freedom, and autonomous civil society projects.

A partner state recognizes that the law of asymmetric competition dictates that it has to support social innovation to its utmost ability.

An example I recently encountered was the work of the municipality of Brest, in French Brittany. There, the “Local Democracy” section of the city, under the leadership of Michel Briand, makes available online infrastructures, training modules, and physical infrastructure for sharing (cameras, sound equipment, etc...), so that local individuals and groups, can create cultural and social projects on their own. For example, the Territoires Sonores project allows for the creation by the public of audio and video files to enrich custom trails, which is therefore neither produced by a private company, nor by the city itself. In other words, the public authority in this case enables and empowers the direct social production of value.

The peer to peer dynamic, and the thinking and experimentation it inspires, does not just present a third form for the production of social value, it also produces also new

forms of institutionalization and regulation, which could be fruitfully explored and/or applied.

Indeed, from civil society emerges a new institutionalization, the commons, which is a distinct new form of regulation and property. Unlike private property, which is exclusionary, and unlike state property, in which the collective 'expropriates' the individual; by contrast in the form of the commons, the individual retains his sovereignty, but has voluntarily shared it. Only the commons-based property approach recognizes knowledge's propensity to flow everywhere, while the proprietary property regime requires a radical fight against that natural propensity. This makes it likely that the commons-format will be adopted as the more competitive solution.

In terms of the institutionalization of these new forms of common property, Peter Barnes, in his important book Capitalism 3.0, explains how national parks and environmental commons (such as a proposed Skytrust), could be run by trusts, who have the obligation to retain all (natural) capital intact, and through a one man/one vote/one they would be in charge of preserving common natural resources. This could become an accepted alternative to both nationalization and deregulation/privatization.

I would surmise that in a successor civilization, where the peer to peer logic is the core logic of value creation, the commons is the central institution that drives the meta-system, and the market is a peer-informed sub-system that deals with the production of rival physical products, along with a pluralist economy that is augmented with a variety of reciprocity-based schemes.

### **A set of concrete proposals**

Just as social innovation and peer production is hyperproductive and 'competitive' in the sphere of corporate competition, so they are also advantageous for any public authorities adopting them in their own territorial spheres.

This gives political leverage to a set of three inter-related proposals, that would sustain a further expansion of peer production:

Here's my proposal, of what we need as transitional measures to further stimulate social production: .i.e. **a set of 3 interlocking institutions, each with its own complementary mission and objectives:**

#### **1) Institute for the Protection and Development of the Commons**

This is an institution that effectively supports the creation and maintenance of the commons,

A) by diffusing knowledge about the legal and institutional means of creating and protecting them.

B) by creating a supportive infrastructure of cooperation that facilitates the creation of commons-oriented initiatives by those who have more difficulties accessing such necessary infrastructure

C) by maintaining relations with, and supporting the operation and maintenance of the for-benefits institutions that are most often associated with commons oriented initiatives

Example: the public support for social value creation in the French city of Brest

## **2) Institute for Open Business**

This institution supports the creation of market value in cooperation with the Commons, in ways that are compatible and do not deplete commons-based value creation. Typically, this is the kind of Institution that would support open source software businesses, open textbook publishers, etc.. and support young and starting entrepreneurs who want to engage in such.

Example: the OSBR.Ca initiative in Toronto, Canada

## **3) Institute for Benefit-Sharing and Commons Recognition**

This institution focuses on patronage and various forms of support that do not destroy the peer to peer logic of voluntary contributions.

A) It creates a priori prizes, awards, bounties to support individuals involved in commons-based value-creation

B) in cooperation with the companies (stimulated by previous open business institute), it stimulates benefit-sharing practices from companies that profit from commons created value. It acts as a meta-regular for such practices, identifying weak spots and stimulating solutions for them.

C) it creates a posteriori patronage arrangements for individuals with a proven record in commons-based value creation

D) it studies and proposes policies for the overall stimulation of commons-based value creation

## **A renewed progressive policy centered around the sustenance of the Commons**

What does it mean for the emancipatory traditions that emerged from the industrial era?

I believe it could have 2 positive effects:

1) a dissociation of the automatic link with bureaucratic government modalities (which does not mean that it is not appropriate in certain circumstances); proposals can be formulated which directly support the development of the Commons

2) a dissociation from its alternative: deregulation/privatization; support for the Commons and peer production means that there is an alternative from both neoliberal privatization, and the Blairite introduction of private logics in the public sphere.

The progressive movements can thereby become informational rather than a modality of industrial society. Instead of defending the industrial status quo, it becomes again an offensive force (say: striving for an equity-based information society), more closely allied with the open/free, participatory, commons-oriented forces and movements. These three social movements have arisen because of the need for an efficient social reproduction of peer production and the common.

Open and free movements want to insure that there is raw material for free cultural production and appropriation, and fight against the monopoly rents accorded to capital, as it now restricts innovation. They work on the input side of the equation. Participatory movements want to ensure that anybody can use his specific combination of skills to contribute to common projects, and work on lowering the technical, social and political thresholds; finally, the Commons movement works on preserving the common from private appropriation, so that its social reproduction is insured, and the circulation of the common can go on unimpeded, as it is the Commons which in turn creates new layers of open and free raw material.

These various movements come in the usual three flavours:

1. transgressive movements, such as young and old files sharers, which show that the legal regime has to be changed
2. constructive movements, which create a framework for new types of social relationships, such as the Creative Commons movement, the free software movement, etc...
3. reformist or radical attempts to change the institutional regime and adapt it to the new realities

I personally believe that these movements will not create new political parties, but that these networks of networks will indeed look for political liaison. While peer to peer is a regime that combines equality and liberty and therefore potentially combines elements from various sides of the political spectrum, I believe the left is particularly apt to forge an alliance with the new desires and demands of these movements. It remains to be seen whether new political and cultural expression of the emerging free culture, such as the Swedish Pirate Party, will change that expectation by creating a new kind of political force, more directly in tune with peer production communities.

There is also a connection with the environmental movement. On one side, the culturally-oriented movements fight against the artificial scarcities induced by the restrictive regimes of copyright law and patent law; on the other side, the environmental movement fights against the artificial abundance created by unrestricted market logics. The removal of pseudo-abundance and pseudo-scarcity are exactly what needs to happen to make our human civilization sustainable at this stage. As has been stressed by Richard Stallman and others, the copyright and patent regimes are explicitly intended to inhibit the free cooperation and cultural flow between creative humans, and are just as pernicious to the further development of humanity as the biospheric destruction.R

Finally, restoring the balance between a scarcity-recognizing material regime, and a abundance-recognizing immaterial regime, cannot be seen as separate from the efforts of social forces to obtain more social justice, thereby linking the new open/free, participatory and commons-oriented forces with emancipatory social movements.

There is therefore a huge potential for such a renewed movement for human emancipation to become aligned with the values of a new generation of youth, and achieve the long-term advantage that the Republicans had achieved since the 80s.

### **Conclusion: What needs to be done?**

Let's recall some of our points, and see how the movement against artificial scarcity and for sustainability intersect.

We live in a political economy that has it exactly backwards.

We believe that our natural world is infinite, and therefore that we can have an economic system based on infinite growth. But since the material world is finite, it is based on pseudo-abundance.

And then we believe that we should introduce artificial scarcities in the world of immaterial production, impeding the free flow of culture and social innovation, which is based on free cooperation, by creating the obstacle of permissions and intellectual property rents protected by the state.

What we need instead is a political economy based on a true notion of scarcity in the material realm, and a realization of abundance in the immaterial realm. Complex innovation needs creative and autonomous workers that are not impeded in their ability to share and learn from each other.

In the world of immaterial production, of software, text and design, the costs of reproduction are marginal and therefore we see emerging in it non-reciprocal peer production, where people voluntarily engage in the direct creation of use value, profiting from the resulting commons in a general way, but without specific reciprocity.

In the world of material production, where we have scarcity, and costs have to be recouped, such non-reciprocity is not possible, and therefore we need modes of neutral exchange such as the markets, or other modes of reciprocity.

In the sphere of immaterial production, humanity is learning the laws of abundance, because non-rival goods win in value through sharing. In this world, we are evolving towards non-proprietary licences, participatory modes of production, and commons-oriented property forms. Positive forms of affinity based retribalization are emerging.

But in the world of scarce material goods, a series of scarcity crises are brewing, global warming being just one of them, that is creating the emergence of negative forms of competitive tribalization.

The logic of abundance has the potential of leading us to a reorganization of our world to a level of higher complexity, moved principally by the peer to peer logic.

The logic of scarcity has the potential of leading us to generalized wars for resources, to a descent to a lower form of complexity, a new dark age as was the case after the disintegration of the Roman Empire.

So the challenge is to use the emergent logic of abundance, and inject it into the world of scarcity.

Is that a realistic possibility?

In the immaterial world of abundance, sharing is non-problematic, and the further emergence and expansion of non-reciprocal modes of production will be very likely. "Together we know everything", is a rather achievable ideal.

In the material world of scarcity, abundance is translated into three key concepts that can change human consciousness and therefore economic practices. The notion of 'together we have everything' seems not quite achievable, we therefore need transitional concepts.

The first concept is the distribution of everything. This means that instead of abundance, we have a slicing up of physical resources and the physical means of production, so that individuals can freely engage and act. This means an economy that moves towards a vision of peer-informed market modes such as fair trade (a market mechanism subjected to peer arbitrage of producers and consumers seen as partners), social entrepreneurship (using profit for conscious social progress). Objective tendencies towards miniaturization of the physical means of production makes this a distinct possibility: desktop manufacturing enables individual designers; rapid manufacturing and tooling are diminishing the advantages of scale of industrial production, and so do personal fabricators. Social lending creates a distribution of financial capital; and the direct social production of money through software is not far away from being realized in various parts of the world (see the work of Bernard Lietaer); If indeed scarcity will create more expensive energy and raw material, a re-localisation of production is likely, and peer-informed modes of production will be enabled to a much greater extent.

The second concept is sustainability. Since an infinite growth system cannot last indefinitely, we need to move to new market concepts as described by the thought schools of natural capitalism (David Korten, Paul Hawken, Hazel Henderson), capitalism 3.0 (Peter Barnes' proposal to use trust as property forms because they impose the preservation of capital), cradle to cradle design and production processes so that no waste is generated. We need to move to a steady-state economy (Herman Daly), which is not necessarily static, but where greater output from nature, is dependent on our ability to regenerate the same resources.

The third concept is that of sufficiency or 'plenty'. Abundance has not just an objective side, it has a subjective side as well. In the material economy, infinite growth needs to be replaced by sufficiency, a realization that status and human happiness can no longer be dependent on infinite material accumulation and overconsumption, but will become dependent on immaterial accumulation and growth. Having enough so that we can pursue meaning and status through our identity as creative and collaborative individuals, recognized in our various peer communities.

Only a rich experience economy can avoid a culture of frustration and sacrifice, and the repressions and unhappiness that such could entail. This experience economy however, will not just be created by commercial franchises, but there will also be the direct social production of cultural value. Businesses and peer communities, enabled and empowered by a partner state, will have to create a rich tapestry of immaterial

value, and the thicker the surrounding immaterial value of being, the lighter our attachment to mere having will be.

### **Scenarios for the current meltdown**

How does the current meltdown/slump, which started with the financial collapse in the fall of 2008, affect the above vision, elaborated before this non-linear emergence of crisis.

There are two ways to read the crisis. The first is, inspired by Carlota Perez work on long-term cycles, is to see the current crisis as the end of the cycle which started in 1945, first with a 30-year high-growth phase, then with a low-growth neoliberal phase, based on stagnating wages and debt-fueled consumption, financed by the new Asian powers. As this model, and the immense financial bubble it created fails irrevocably, we could expect, after a long slump that will last at least a decade, a new expansion phase of capitalism, based on green capitalism and the change of institutions by the internet revolution (a process which has only happened in civil society and at institutional margins, without resulting in a new equilibrium). In such a scenario, a new social compact would be struck with the new structure of social demands created by the emergence of peer to peer, allowing it to grow from its present seed phase, to a level of parity at the end of the next growth phase. If our interpretation of the impossibility of infinite growth in a finite natural system is correct, the ultimate failure of attempted green capitalism, would set the stage for a phase transition, in which the peer to peer system, would become the core of the new society, as explained in the body of our text. I have called this the high road towards peer to peer, because, despite the cyclical crisis moments, the transition could still be relatively smooth, replacing the former structures at a very high level of productivity, minimizing social pain.

There are two possible derailments with this scenario. The first is that the failure by the Obama administration to structurally reform the system and break the power of the predatory financial caste, so impoverishes the possibilities of the state, that no means are left for social policies, leading to global dislocation, and a turn by humanity towards resilient communities, using p2p-inspired models on a local scale. The second derailment refers to the combined effects of the structural problems of capitalism as a system, and not just to its long cycles. In this scenario, the accelerating issues around climate change, peak oil and resource depletion, become to severe and do not allow for the generation of a new expansion phase. This element alone, which can be combined with the first one, also leads to global dislocation, and to the resilient communities scenario, involving a 'low road' towards peer to peer, in the context of immense social pain.

## **Relation to the former Marxist scenarios of social change**

All of the above can be read as an argument with the previous Marxist theories of social change.

I would summarize the political attitude of the socialist movement as: workers need to take power, then change society towards a new economic and political social structure.

But this has never been how phase transitions from one form of civilization to another really happened.

Change from slavery to feudalism happened because some slave-owners, undoubtedly under pressure for example from slave revolts in the context of a collapsing state infrastructure, started to turn their slaves into coloni, and an increasing number of them did so, creating the conditions for a phase transition towards feudalism. The fundamental change could happen because of a congruent set of changes both between those that produced, and those that managed and profited from the production.

Change from feudalism to capitalism happened because, in the context of a crisis of feudalism after the 16<sup>th</sup> century, part of the nobility could see the superior productivity of capitalist enterprise, and funded and joined such projects, leaving behind their peers who stayed tied to the land. As the crisis intensified and the new hybrid capitalist class became dominant, political revolutions finalized the phase transition.

Socialism did not have a superior mode of production which could change capitalist society from within, and prepare for the phase transition.

In contrast, the hyperproductivity of peer production has already created a new class of netarchical capitalists, investing in social production, and already taking power through the Obama administration. By investing in hybrid forms of peer production, they paradoxically strengthen the post-capitalist logics within capitalist society. It is the congruence between peer producers and netarchical capitalists which is driving the change, eventually causing the seed form of peer production to rise to parity level, perhaps leading to the ultimate phase change.

Within a declining and crisis-ridden system which is destroying the biosphere, the congruent social forces of peer producers and netarchical capitalists is creating the conditions for a ulterior phase change.

The political struggle today is to help sharing communities defend and promote their interests with the platform owners; and to help autonomous commons-oriented peer

producing communities to maintain their autonomy as they cooperate with their business ecologies, thereby changing the very practices of the corporations.

So what is happening is that within the old, new successful patterns are being created, and that these patterns start synergistically interacting to form an integrated alternative set of social practices.

As this new sphere grows, it creates a living alternative within the declining global system, forming a real alternative that can inspire the social movements still rooted in the capitalist world of labour, creating the conditions for political and social transformations of the mainstream structure of society.

Such a change if it occurs would be congruent with what we know about phase transitions in the past.