CHAPTER 1

Introduction: Peer to Peer

Not since Marx identified the manufacturing plants of Manchester as the blueprint for the new capitalist society has there been a more profound transformation of the fundamentals of our social life. As capitalism faces a series of structural crises, a new social, political and economic dynamic is emerging: peer to peer.

What is peer to peer (P2P)? Why is it essential for building a commons-centric future? How could this happen? These are the questions we try to answer, by tying together four of its aspects:

1. P2P is a type of *social relations* in human networks, where participants have maximum freedom[1] to connect.
2. P2P is also a *technological infrastructure* that makes the generalization and scaling up of such relations possible.
3. P2P thus enables a new *mode of production and property*.
4. P2P creates the potential for a *transition* to an economy that can be generative towards people and nature.

We believe that these four aspects will profoundly change human society. P2P ideally describes systems in which any human being can contribute to the creation and maintenance of a shared resource while benefiting from it. There is an enormous variety of such systems: from the free encyclopedia Wikipedia to free and open-source software projects, to open design and hardware communities, to relocalization initiatives and community currencies.

Our narrative is structured as follows. This chapter explains what this book is about by introducing some basic concepts. Chapter 2 describes how a new ecosystem of value creation is developed by implementing P2P technologies and practices. Chapter 3 sheds light on how different interests can use P2P dynamics. Chapter 4 places P2P into the broader context of the world history.

Then, Chapter 5 proposes a generic strategy for a transition to a commons-oriented society. At the end of each chapter, the infographics visualize the central message of it.

1.1. What is P2P and How is it Related to the Commons?[2]

Consensual connections between 'peers' characterize P2P computing systems. The computers in the network can interact with each other without going through a separate server computer. It is in this context that the literature started to characterize the sharing of audio and video files as P2P file-sharing and that a part of the underlying infrastructure of the Internet, like its data transmission infrastructure, has been called P2P. So, in a P2P network, peers are equally privileged, equipotent participants in the application that the network performs.

Let us now assume that behind those computers are human users. A conceptual jump can be made to argue that users now have a technological affordance (a tool) that allows them to interact and engage with each other more efficiently and on a global scale. P2P is a social/relational dynamic through which peers can freely collaborate with each other and create value in the form of shared resources. It is this mutual dependence of the relational dynamic and the underlying technological infrastructure that facilitates it, which creates the linguistic confusion between P2P as a technological infrastructure and P2P as a human relational dynamic.

However, a technological infrastructure does not have to be fully P2P to facilitate P2P human relationships. For example, compare Facebook or Bitcoin with Wikipedia or free and open-source software projects. They all utilize P2P dynamics, but they do so in different ways and with different political orientations (Chapter 3 discusses this issue).

P2P is therefore primarily a mode of relationship that allows human beings to be connected and organized in networks, to collaborate, produce and share. The collaboration is often permissionless, meaning that one may not need the permission of another to contribute. The P2P system is, therefore, generally open to all contributors and contributions. The quality and inclusion of the work are usually determined 'post-hoc' by a layer of maintainers and editors, as in the case of Wikipedia.

P2P can also be a mode to allocate resources that do not involve any specific reciprocity between individuals but only between the individuals and the collective resource. For example, a developer is allowed to develop her software based on an existing piece of software distributed under the widely used GNU General Public License, only if her final product is available under the same kind of free and open-source license (in this case, GNU General Public License).

In the realm of information, which can be shared and copied at low marginal cost, the P2P networks of interconnected computers used by collaborating

people can provide shared functionalities for the creation and maintenance of collective resources. However, P2P does not only refer to the digital sphere and is not solely related to high technology. P2P can generally be synonymous with 'commoning,' in the sense that it describes the capacity to contribute to the creation and maintenance of any shared resource. As discussed in Chapter 4, P2P commoning has always existed, but without the scale that computing affords it.

There are multiple definitions of the 'commons.' We adhere to David Bollier's (2014a) characterization of the commons as a shared resource, co-governed by its user community according to the rules and norms of that community[3]. The sphere of the commons may contain either rivalrous goods and resources, which two individuals cannot both have at the same time or non-rival goods and resources, whose use does not deplete them. These types of goods or resources have been inherited, or they are human-made.

For example, a type of commons may include the gifts of nature, such as the water and land, but also shared assets or creative work such as cultural and knowledge artifacts. Our focus here is on the digital commons of knowledge, software, and design because they are the 'new commons' (Benkler, 2014). These commons represent the pooling of productive knowledge that is an integral part of the capacity for any production, including physical goods.

P2P is arguably moving from the periphery of the socio-economic system to its core, thereby also transforming other types of relationships, such as market dynamics, state dynamics, and reciprocity dynamics. These dynamics become more efficient and obtain advantages by utilizing the commons. P2P relations can effectively scale up, mainly because of the emergence of Internet-enabled P2P technologies: small-group dynamics can now apply at the global level.

1.2. Are P2P technologies Good or Bad?

We do not claim that a particular technology may lead to one inevitable social outcome. We recognize the critical role that technologies play in social evolution and the new possibilities they create if specific human groups successfully utilize them. Different social forces invest in this potential and use it to their advantage, struggling to benefit from its use. Technology is, therefore, best understood as a focus of social struggle, and not as a predetermined 'given' that creates just one technologically determined future.

Still, when social groups appropriate a particular technology for their purposes, then social, political and economic systems can change. An example is the role that the invention of the printing press, associated with other inventions, played in transforming European society (Eisenstein, 1983/2012).

The fast-growing availability of information and communication technology enables many-to-many communication and allows an increasing number of humans to communicate in ways that were not technically possible before. This, in turn, makes possible massive self-organization up to a global scale. It

also allows for the creation of a new mode of production and new types of social relations outside of the state-market nexus.

The Internet creates opportunities for social transformation. In the past, with pre-digital technologies, the costs of scaling regarding communication and coordination made hierarchies and markets necessary as forms of reducing these costs. Hence societies that scaled through their adoption 'outcompeted' their tribal rivals. Today, by contrast, it is also possible to scale projects through new coordination mechanisms, which can allow small group dynamics to apply at the global level. It is, thus, possible to combine 'flatter' structures and still operate efficiently on a planetary scale. This has never been the case before.

1.3. How does P2P Relate to Capitalism?

We are living through a historical moment in which networked and relatively horizontal forms of organization can produce complex and sophisticated products. The latter are often better than the artifacts produced through state-based or market-based mechanisms alone. Consider how the user-generated Wikipedia displaced the corporate-organized Encyclopedia Britannica, how the open-source Apache HTTP server outcompeted Microsoft server software, or how Wikileaks survived the assaults of some of the world's most powerful states.

The hybrid forms of organization within P2P projects do not primarily rely on either hierarchical decisions or market pricing signals, but on forms of mutual coordination mechanisms that are remarkably resilient. Peer production (often also 'P2P production') has been broadly portrayed as a generic form of self-organization among loosely-affiliated individuals that volunteer on equal footing to reach a common goal. When it comes to the production of information or culture, where the means of production are often more distributed, peer production presents a number of systemic advantages over managerial hierarchies and markets (Benkler, 2002). These advantages in turn entail an 'immanent', but also a 'transcendent' aspect in relation to the dominant economic system.

On one hand, these emerging mutual coordination mechanisms increasingly become an essential ingredient of capitalism. They are reinforced and enabled by capital investment to rejuvenate its circulation. This is the 'immanent' aspect of peer production that changes the current dominant forms. But on the other hand, such mechanisms can become the vehicle of new configurations of production and allocation, no longer dominated by capital and state. This is the 'transcendent' aspect of peer production, as it creates a new overall system that can subsume the other forms. In the first scenario, capital and state subsume the commons under their direction and domination, leading to a new type of commons-centric capitalism. In the second scenario, the commons, its

communities, and institutions become dominant and, thus, may adapt state and market modalities to their interests.

As we discuss in the following chapters, peer production is a prototype of a new mode of production, rather than a full mode of production today. This means that currently peer production is in a mutually dependent relationship with capital, which uses both the processes and virtue of peer production for its own gain. Moreover, as prominent cases of P2P projects have gradually delineated a winning strategy in the new economy, distorted forms of P2P-enabled production have surfaced. In name, they endorse the same values of community-driven initiatives, though substantially they merely approximate a community-related narrative to form a new locus for accumulation (O'Dwyer, 2013). The key, therefore, lies in strategies that aim to keep the surplus value within the cycle of peer production itself and allow genuine P2P projects to reverse this process. Elsewhere, we have expressed this as transitioning 'from the communism of capital to capital for the commons' (Bauwens and Kostakis, 2014). In Chapter 5 we discuss those strategies in more detail.

Yet, the new forms of collaborative production that rely on P2P mechanisms do have some hierarchies. Nevertheless, they generally lack a hierarchical command structure for the production process itself. Peer production has introduced the capacity to organize complex global projects through extensive mutual coordination. What market pricing is to capitalism and planning is to state-based production, mutual coordination is to peer production.

As a result, the emergence and scaling of these P2P dynamics point to a potential transition in the main modality by which humanity allocates resources: from a market-state system that uses hierarchical decision-making (in firms and the state) and pricing (amongst companies and consumers), towards a system that uses various mechanisms of mutual coordination. The market and the state will not disappear, but the configuration of different modalities – and the balance between them – will be radically reconfigured.

None of this implies that the P2P transition will lead to a utopia, nor that it will be easy. Indeed, if the history of previous socio-economic transitions is any guide, the transition will most likely be messy. Just as P2P is likely to solve some problems in our current society, it will create others in the new one. Nevertheless, this remains a worthwhile social progress to strive for, and even if P2P relations do not become the dominant social form, they will profoundly influence the future of humanity.

Summarizing the relationship between the relational and technological aspects, the P2P relational dynamic – strengthened by particular forms of technological capacities – may become the dominant way of allocating the necessary resources for human self-reproduction, and thus replace capitalism as the dominant form. This will require a stronger expansion of this P2P modality not just for the production of 'digital goods', but also for the production of physical goods.

1.4. How is P2P to be Implemented in Practice?

While P2P is emerging as a significant form of technological infrastructure for various social forces, the direction of its implementation makes all the difference. Not all P2P is equal in its effects. Different forms of P2P technological infrastructure are identified, each of which leads to different forms of social and political organization.

On the one side, for example, we can consider the capitalism of Facebook, Uber or Bitcoin. On the other, we can look at the commons-oriented models of Wikipedia, Enspiral, Farm Hack, WikiHouse or free and open-source software projects (discussed in Chapters 2 and 3). Adopting this or that form of P2P technological infrastructure is the locus of social conflict because the choice between them has consequences for what may or may not be possible.

P2P enables an emerging mode of production, named commons-based peer production, characterized by new relations of production. In commons-based peer production, contributors create shared value through open contributory systems, govern the work through participatory practices, and create shared resources that can, in turn, be used in new iterations. This cycle of open input, the participatory process, and commons-oriented output is a cycle of accumulation of the commons, which parallels the accumulation of capital.

At this stage, commons-based peer production is a prefigurative prototype of what could become an entirely new mode of production and a new form of society. It is currently a prototype since it cannot as yet fully reproduce itself outside of mutual dependence with capitalism. This emerging modality of peer production is not only productive and innovative 'within capitalism,' but also in its capacity to solve some of the structural problems that have been generated by the capitalist mode of production. In other words, it represents a potential transcendence of capitalism. That said, as long as peer producers or commoners cannot engage in their self-reproduction outside of capital accumulation, commons-based peer production remains a proto-mode of production, not a full one.

Peer production can be innovative within the context of capitalist competition because firms that can access the knowledge commons possess a competitive advantage over firms that use proprietary knowledge and can only rely on their research (Tapscott and Williams, 2005; Benkler 2006; von Hippel, 2016). For example, by mutualizing the development of software in an open network, firms obtain considerable savings in their infrastructural investments. In this context, peer production is a mutualization of productive knowledge by capitalist coalitions themselves, with IBM's investments in free and open-source software projects, a case in point (Tapscott and Williams, 2005).

This capitalist investment is not a negative thing in itself, but rather a condition that increases the societal investment needed for a P2P-based transition. Both productive and managerial classes move towards P2P because it solves some structural issues of the current system. Capital flows towards P2P

projects, and even though it distorts P2P to use it to prolong the dominance of the old economic models, it simultaneously creates new ways of thinking in society that undermine that dominance.

Nevertheless, the new class of commoners cannot rely on capitalist investment and practices. They must use skillful means to render commons-based peer production more autonomous from the dominant political economy. Eventually, we may arrive at a position where the balance of power is reversed: the commons and its social forces become the dominant modality in society, which allows them to force the state and market modalities to adapt to its requirements. So we should escape the situation in which capitalists co-opt the commons, and head towards a situation in which the commons capture the capital, and make it work for its development.

This proposed strategy of reverse co-optation has been called 'transvestment' by Dmytri Kleiner and Baruch Gottlieb (Kleiner, 2010; 2016). Transvestment describes the transfer of value from one modality to another. In our case, this would be from capitalism to the commons. Thus transvestment strategies aim to help commoners become financially sustainable and independent.[4] Such strategies are being developed and implemented by commons-oriented entrepreneurial coalitions such as the Enspiral network or Sensorica (see Chapter 2).

Digital commons of knowledge, software, and design are non-rival resources enriched through usage (thus they could even be considered 'anti-rival'). It is here that full sharing and the full ability for contributions must be preserved. However, we do engage with rival resources in the added value services and products built around these commons. Here the commons should be protected from capture by capital. It is in this cooperative sphere of physical and service production where reciprocity rules should be enforced. We propose to combine non-reciprocal sharing in the digital sphere, with reciprocal arrangements in the sphere of physical production. Thus, in our vision, commons-based peer production – as a full mode of production – combines commons and cooperativism (see Chapter 4).

1.5. Towards a Commons-centric Society?

At that point, if the move from microeconomic P2P communities to a new 'macroeconomic' dominant modality of value creation and distribution is successful, a transition phase towards a commons-centric economy and society can occur. This will be the revolution of our times, and a fundamental shift in the rules and norms that decide what value is and how it is produced and distributed in society. In short: a shift to a new post-capitalist value regime.

P2P is considered to be both a social relation and a mode of allocation, as a socio-technological infrastructure and as a mode of production, and all these aspects when combined contribute to the creation of a new post-capitalist model, a new phase in the evolution of the organization of human societies.

This will necessitate a discussion about economic and political transitions. At the microeconomic level of commons-based peer production, P2P dynamics are already creating the institutional seedlings prefiguring a new social model.

P2P could lead to a model where civil society becomes productive through the participation of citizens in the collaborative creation of value through commons. In this pluralistic commonwealth, multiple forms of value creation and distribution will co-exist, but most likely around the universal attractor that is the commons. We do not argue for a 'totalitarianism' of the commons, but to make the commons a core institution that 'guides' all other social forms – including the state and the market – towards achieving the greatest common good and the maximum autonomy.
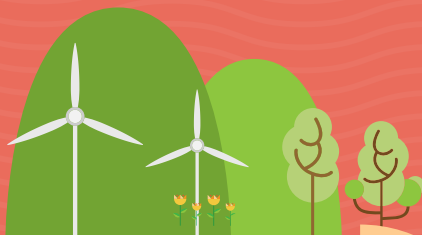
THE COMMONS ARE:

A social system for the long-term stewardship of resources that preserves shared values and community identity.

A self-organized system by which communities manage resources (both depletable and replenishable) with a balanced relationship with Market or State.

A sector of the economy (and life!) that generates value in ways that are often taken for granted – and often jeopardized by the Market-State.

The wealth that we inherit or create together and must pass on, undiminished or enhanced, to our children. Our collective wealth includes the gifts of nature, civic infrastructure, cultural works and traditions, and knowledge.

THERE IS NO COMMONS WITHOUT COMMONING!

A commons is characterized by:

a **resource**
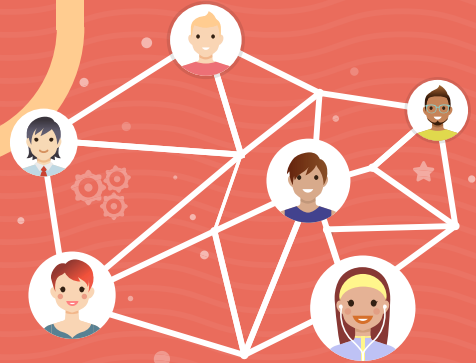
a **community** gathered around it

a **set of rules** to care for the resource (and community!)

P2P IS:

A type of **social relations**, non-hierarchical and non-coercive, taking place in human networks.

The **technological infrastructure** that makes the scaling up and widespread use of these relations possible.

P2P enables a new **mode of production** building on the first two aspects.

P2P creates the potential for a **transition** to an economy that can be generative towards people and nature.

HOW DO COMMONS AND P2P WORK TOGETHER?

The relation of P2P with the Commons is one of **enabling capacities for contributive actions**. P2P creates the conditions to optimize the specific **what** (resource), **who** (community) and **how** (rules) of commoning.