

CHAPTER I

Introducing the Commons

The last decades have witnessed the rise of peer production driven by three main interdependent and mutually reinforcing factors: 1) the sustainability crisis; 2) neoliberalism, and 3) low-cost information and communication technologies (ICTs). Peer production is a type of social relations, a technological infrastructure and a new mode of production and property, whereby participants have maximum freedom to cooperate and connect (Bauwens et al. 2019, 1). Peer production disrupts centralised capitalist production through the decentralised use of the Internet and open source technologies. It is a relational dynamic playing out in terms of sharing, openness, co-creation, self-governance and bottom-up eco-techno-social innovation (Bauwens et al. 2019, 2). ‘Peer production (often also “P2P Production”) has been broadly portrayed as a generic form of self-organisation among loosely-affiliated individuals that volunteer on equal footing to reach a common goal’ (Bauwens et al. 2019, 4).

Peer production is often referred to in the literature as the collaborative economy, comprising various sorts of economic models (Morell et al. 2017). This book, however, will stick to the term ‘peer production’, since, as will become evident later on, the term ‘collaborative economy’ is often attached to models that are rather extractive than collaborative, that is, they centrally coordinate online decentralised peer production downstream to disproportionately reap the benefits upstream.

The literature (Bauwens et al. 2019; Benkler 2006; Morell et al. 2017; Kostakis and Bauwens 2014; Scholz 2016a; 2016b; Troxler and Wolf 2016) has documented thus far three main streams of peer production: 1) firm-hosted peer production or platform capitalism (user-centric open innovation business models, the so-called sharing and gig economy); 2) the commons (local and digital commons, the solidarity economy); and 3) a hybrid commons-based peer production operating on the models of platform and open cooperativism.

The commons consist of distributed or common property resources/infrastructures (natural resources, technology, knowledge, capital, culture),

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self-managed by their user communities in accordance with collectively established rules or norms (Bollier and Helfrich 2012; Ostrom 1990). While platform capitalism solely focuses on creating company value and maximising profits from leveraged user knowledge, commons-based peer production introduces new and radical forms of ownership, governance, entrepreneurship and financialisation in a mission to promote sustainability and empower individuals and communities against the pervasive economic inequalities and power asymmetries generated by neoliberalism.

This book focuses on commons-based peer production, or briefly the commons, which is facilitated today by the architectural design of the Internet and free/open source software/hardware, supporting various grassroots initiatives operating in terms of sustainability, decentralisation, openness, self-governance and equitable distribution of value (Benkler 2006; Scholz 2016a). Whereas plenty of diverse theoretical approaches to the commons have been developed over the last decades, only two comprehensive critical accounts of the commons are currently available in the literature. Alexandros Kioupiolis (2019) and Pierre Dardot and Christian Laval (2014) have recently offered two illuminating critical studies on contemporary theories of the commons. This book deviates from these two influential works in at least one major respect: it takes into account a number of techno-economic factors, the cross-examination of which is deemed appropriate to introducing a multidisciplinary approach to the commons.

This work attempts to contribute to the contemporary discussion over the commons, which revolves around three main axes: a liberal (Benkler 2006; Lessig 2001; Ostrom 1990), a reformist (Arvidsson and Peitersen 2013; Bollier 2003; Kostakis and Bauwens 2014; Rifkin 2014; Rushkoff 2016; Scholz 2016a; 2016b; Wright 2009) and an anti-capitalist (Caffentzis 2013; Dardot and Laval 2014; Dean 2009; 2012; De Angelis 2017; Dyer-Witheford 1999; 2015; Federici 2012; Fuchs 2008; 2011; Gibson-Graham 1996; 2006; Hardt and Negri 2000; 2004; 2009; Harvey 2003; 2010; Kioupiolis 2019; Laclau and Mouffe 1985; Mason 2015; Söderberg 2008; Žižek 2008; 2010).

This book is not all-inclusive. It covers only authors who do not rest on a piecemeal approach to the commons that singles out one dimension over others – collaborative consumption (Botsman and Rogers 2010), free/libre and open source software (Raymond 1999; Weber 2004), open culture (Leadbeater 2010; Stalder 2005), firm-hosted peer production and open innovation business models (Tapscott and Williams 2006; Benyayer 2016), networking (Castells 2000; 2009; 2010), intellectual communal property (Wark 2004), produsage (Bruns 2008), access (Belk 2014; Bardhi and Eckhardt 2012), decentralisation (Crowston and Howison 2004) or stigmergy (Siefkes 2010). This book, instead, grapples with the work of authors who intend to make or extend a more or less systematic theory out of the commons in terms of an alternative socio-economic paradigm that opposes neoliberalism.

The classification of liberal, reformist and anti-capitalist authors is but a schematic one since arguments often intersect. It does not, therefore, seek to

produce any sort of dualities. The classification criterion corresponds to the position where each argument situates the commons in relation to market and state operation. Advocates of the liberal argument take a stand in favour of the coexistence of the commons with market and state operation. The reformists argue for the gradual adjustment of the state and capitalism to the commons, while the anti-capitalists differ from both liberals and reformists by placing the commons against capitalism and the state.

The core thread that penetrates both the reformist and the radical argument dates back to Karl Marx's claim that the technological evolution of the means of production will force capitalism to transform into communism in the long run. Marx was of course a humanist and not a techno-determinist theorist. This conviction, however, does not detract from the fact that technology assumes a central role in his political economy. Today, the presumed advent of communism is projected through the prism of a post-capitalist transition powered by the Internet of Things (IoT), free software/hardware (FOSS), the digital commons and Blockchain. The commons literature portrays multiple variants of this potential transition.

A similar reading of the politics of the commons has been recently undertaken by Antonios Broumas (2017; 2018), though to a limited extent. Broumas classifies theories of the commons into two basic strands: social democratic and critical, with the social democratic diversifying into liberal and reformist versions, and the critical into poststructuralist and anti-capitalist ones. However, Broumas's work focuses on the intellectual commons, that is commons referring to the production, distribution and consumption of information, communication, knowledge and culture, whereas this book examines all types of commons, whether material or immaterial, local or global. This book purports to cover the overall political landscape of the commons, while elaborating a unique critical perspective on the commons.

Drawing on the work of Kioupiolis and Dardot and Laval, the main thesis of this book is that there is a significant lack of the political in the post-capitalist argument. The political is understood in the theoretical framework of Cornelius Castoriadis's (1988; 1993) concept of the commons as the self-instituting power of the people, exercised against capitalism and the state. The political embraces democracy as the core moral value of society, promoting individual and collective autonomy. Real democracy is based on the equality of all people participating in the creation of the law governing society (Papadimitropoulos 2016).

Whereas all approaches to the commons substantiate the self-instituting power of the people as the key concept of the common, they do not fully address the political in terms of radical democracy, agonistic freedom, conflict and power structures (Kioupiolis 2019; Mouffe 2005, 15–16, 22, 33–34; Tully 2008, 306–314). Theorists often rest on a limited or ideological standpoint that runs counter to a holistic account of the political, which would translate into a set of cross-disciplinary policies conducive to the sustainability of the commons against the current neoliberal hegemony.

This book intends to produce a critical dialogue between the different approaches to the commons. By no means can it cover all the issues, nor is the coverage of any particular issue complete. The book serves as an introduction to the commons. It aims to provide an in-depth analysis of the core arguments on the commons. Yet the book does not limit itself to a broad-brush approach. It rather seeks to put forward a multidisciplinary account of the commons with the aim of bringing together technology, finance, politics, economics, sustainability science, education and law under commons governance. It does not elaborate another systematic theory of the commons, nor does it reproduce another postmodern, ‘anything goes’ narrative. It rather maps key proposals that stand out in the literature in a mission to integrate them into a holistic, multi-format political strategy that could variously advance the self-instituting power of the people beyond capitalism and the state. By ‘multi-format’ strategy this book does not introduce a politics à la carte, but an arsenal of policies that could variously pursue a unique goal: the advancement of the commons into the dominant socio-economic paradigm. The objective here is to critically reconstruct the current theoretical framing of the commons in the networked information economy and unravel the potential of ICTs for the creation of an economic democracy based on sustainability, openness, solidarity and cooperation.

The core argument running through this book is as follows: for the commons to become a fully operational mode of peer production they need to reach a critical mass. Economic democracy cannot exist without a critical mass participating in it. To do so, the commons need to create compelling benefits and use cases for people. They need to provide a steady income to their members along with the incentive to join an alternative socio-economic paradigm anchored in openness, sharing, cooperation, sustainability and democracy. Much of this depends on the degree to which technology can democratise finance and politics, while offering user-friendly solutions to citizens’ concrete needs, supported by commons-friendly state policies. In short, to rephrase Bauwens and Kostakis’s dictum, it all depends on whether commons-based peer production can become competitive with capitalist production.

The commons could be viewed as vehicles for the creation of a more inclusive social economy, aiming to eliminate the gaping inequalities and power asymmetries of neoliberalism by establishing a sustainable mode of production anchored in openness, sharing, democratic self-governance and the equitable distribution of value. The intent here is not to carve out a unique path but rather to encompass alternative visions of a commons-orientated transition under a holistic, post-hegemonic perspective that contrasts the liberal conception of the commons as ‘club’ goods, as niche markets coexistent with capitalism and the state. It also disengages from the anarcho-capitalist or libertarian strand of the commons that champions individualism as the core moral value of our times.

My perspective is post-hegemonic in that it seeks to embed the market into the political by socialising the state and economy. The goal is to transform capitalism into the post-capitalism of the commons, that is, a social economy

self-organised around the commons. Post-hegemonic holism expresses the need to radically transform the core structure of society by cross-fertilising commons policies and practices across the entire psyche and body of the social. It is often underestimated in the literature that the key to this social change is first and foremost the moral transformation of society; the replacement of ‘everyday libertarianism’ with ‘everyday cooperativism’. This requires the reinvention of humanism and community, the expansion of the politics of care and the overall improvement of the quality of life, including tackling climate change, securing health, food quality and well-being, promoting culture, affection, gender equality, sexuality and self-realisation, which are all primarily tasks of politics, everyday education and collective action.

My argument develops against the backdrop of the struggle between the commons and neoliberalism, which mutates today into the struggle of the digital commons (Aigrain 2012; Griffiths 2008; Morell 2010; Stalder 2010) against platform capitalism. This book situates this struggle within the broader normative framework of Marxism and liberalism, where major political concepts such as power, democracy, freedom, justice and equality are debated (Freedon 1996; Swift 2019). This book cannot but draw some basic lines of argument that serve as an introduction to the struggle between the commons and neoliberalism. Central theoretical categories (i.e. the commons, the political, Marxism, neoliberalism) are outlined upfront to help the reader connect the dots, when necessary, and gain a solid understanding of the core argument. Several other major concepts such as ‘platform capitalism’, ‘the digital commons’, ‘digital labour’, ‘immaterial labour’, ‘post-Fordism’, the ‘general intellect’, ‘cognitive capitalism’ and ‘the multitude’ are recurrent themes variously worked out in the course of the book. My argument, thus, disassembles into several modules to be reassembled at the conclusion in a set of concrete policies intended to put forward a post-capitalist, commons-orientated transition beyond neoliberalism.

1.1 The Contours of the Commons

Historically, the term ‘commons’ has served diverse theoretical contexts, charged with heterogeneous philosophical, religious, legal and economic connotations. To begin with, the etymology of the word ‘commons’ (*cum* = with and *munus* = obligation), analysed through the prism of ethnology and sociology (Clastres 1989; Godelier 1999; Lévi-Strauss 1969; Mauss 1967), implies a political principle of shared responsibility in the collective practice of public tasks, which is of theological-mythical origin, dating back to primitive societies (Dardot and Laval 2014, 25). The commons represents the ‘common good’ inherited from Gods/ancestors and further ‘incarnated’ in the communal institutionalisation of society and nature (Dardot and Laval 2014, 24–27). It is not society and nature in terms of objects or properties that constitute the commons, but the very collective activity of *the instituting*.

The sense of community through unity and equality took a juridico-political and philosophical turn in Greek and Roman thought, without ever losing its theological component, especially after the birth of Christianity (Dardot and Laval 2014, 24–27). Aristotle's *Politics* defines the 'common good' in terms of the collective activity of the *demos* to autonomously decide on the law governing the city. The 'common good' is less a common land and more a public deliberation over the city's common interests. Thus, in Aristotle, the 'common good' refers to the political self-institutionalisation of the city by citizens themselves (Dardot and Laval 2014, 24–27). Cicero revived the Aristotelian republican content of the commons by reconfiguring the 'common good' under the invention of the Roman law (Dardot and Laval 2014, 24–27). The officials of the Roman Empire were obliged by law to serve the 'common good', which was replaced by the public good as represented by the state. Roman republicanism nationalised the 'common good'. The state now held the monopoly of the commons. The common good translated into the public good run by the state and its officials.

The commons republicanism had at least two counter-effects. It highlighted, on the one hand, the juridico-political dimension of the commons over the theological dimension, while limiting, on the other hand, the knowledge of the commons to the experts, namely the legislators or the sovereign. Rousseau would, in one sense, redemocratised the commons by rendering the 'common good' the object of the general will. The 'common good' identifies with what is common between the particular interests of the citizens, turning the sovereignty of the general will against the monopoly of the state (Dardot and Laval 2014, 30, 241–242, 385). Thus, Rousseau prioritised anew the concept of the common as the self-instituting power of the people, which would take an economic turn in the Ricardo school of socialists and the work of Saint-Simon, Fourier, Proudhon and Marx.

Marx, in particular, radicalised the content of the common by integrating the economy into the 'common good'. *Contra* the separation of the economy from the 'common good' and the representation of the latter by the state, adopted by both republicanism and liberalism, Marx locates in the primitive communism of tribal societies the socio-economic model of the free association of producers that would replace capitalism and state despotism with future communism (Dardot and Laval 2014, 67).

The last two centuries have witnessed the emergence of a post-Marxist and post-foundational political ontology of the commons (Marchart 2007). Following the rupture with the philosophical foundations of modernity brought about by Nietzsche, Freud and Heidegger, a number of authors have embraced a post-Heideggerian notion of community and the common with the aim of 'commoning the political', that is, refiguring politics in light of an ontological sense of coexistence, aiming to clear the ground for social openness, solidarity, plurality and autonomy.

Drawing on the conceptual difference between the ‘political’ and ‘politics’, first introduced by Carl Schmitt, a number of authors such as Jean-Luc Nancy, Giorgio Agamben and Roberto Esposito elaborate on a concept of the common that welds together a plurality of singularities in a way that overcomes the fragmentation and exclusion of gated communities marked by fixed ethnic, cultural and ideological boundaries (Kioupkiolis 2017). Contrary to economics, the political is the ontological substratum that sustains the different areas of politics, including the economy, culture and state policies. Politics is the concrete instantiation of the political, which is the very ontological possibility of the social (Marchart 2007).

Nancy (1991; 2000), Agamben (1993) and Esposito (2011; 2012; 2013) attempt to address the ‘retreat of the political’ caused by the current hegemony of neoliberalism by bringing to the fore the political as an open, plural and ‘inessential commonality’, thereby aiming to reinvigorate the politics of the common. Contrary to variants of liberal communitarianism (Freedman 1996) that conceive of the community in terms of tradition, family, state and nation, the common represents the being-with a plurality of singularities, thus opposing closed identities of blood, soil, community or self. The political brings to the fore an ontological community that determines politics in terms of a collective deliberation that constitutes the common accordingly.

Alexandros Kioupkiolis, among others, has pointed out the political limits of this existential thought. He argues that Nancy, Agamben and Esposito reproduce an abstract level of philosophising, detached from any actual politics (2017, 284). Conversely, he attempts to politicise the common by comparing the ontologies of the common with the political theory of hegemony set out by Ernesto Laclau and Chantal Mouffe.

Laclau and Mouffe (1985) draw on the work of Schmitt and Gramsci, among others, to put forward a politics of the common predicated on the premises of hegemony and antagonism. Hegemony is the articulation of a precarious chain of equivalence among political alternatives, subject to constant change due to the antagonism inherent in the political. Conflict, power and representation are necessary components of democratic politics due to the unavoidable division between oppositional blocks.

In Laclau and Mouffe’s hegemonic politics, the commons refers to a multiplicity of spaces, social relations, movements, forms of identification and democratic practices, which retains its partial autonomy with regard to the ever-changing hegemonic articulation of the social (Laclau and Mouffe 1985, 176–193). Kioupkiolis (2017, 300) detects a tension, however, between the hegemony of a particular chain of equivalence and the autonomy of the commons. The hegemony of hierarchy is the cause and effect of uneven power, which contrasts the plurality and horizontality of the commons. To mitigate the tension, he situates hegemony and autonomy at different sites of the political, calling for the post-hegemonic alignment of the former with the latter.

Post-hegemony is the democracy of the common that seeks to balance out hegemony and autonomy.

Michael Hardt and Antonio Negri (2004) were the first to dissolve the misconception of the commons as certain properties or natural resources by introducing the notion of the common in the singular, thereby describing the peer production of the multitude, that is, a network of individuals spontaneously self-organising around common resources. The common stands beyond the private and public sphere of capitalism and the state respectively. It is not so much about destroying or protecting the commons, but about producing the common as the trans-historical political principle of governing nature and society according to collective rules and norms.

David Bollier and Silke Helfrich (2015, 1–12) describe the commons as shared resources, co-governed by their user community, according to the rules and norms of that community. They (2015, 1–12) emphasise the activity of commoning as a social process. The commons is neither the resource nor the community that determines protocols for its stewardship, but the dynamic interaction between all these elements. The term commoning, popularised by historian Peter Linebaugh, signifies the relationship between physical resources and the communities that utilise them and depend upon them for essential human needs. Massimo De Angelis (2017, 119) defines the commons as social systems in which resources are pooled by a community of subjects engaging in commoning, that is, the self-governing and reproducing of the community and the resources. Therefore, the commons consists of three elements: 1) the common-pool resources or common wealth, 2) the community and 3) commoning.

Dyer-Witheford (2006) and Gibson and Graham (1996; 2006) champion the circulation of the commons alongside the capitalist economy with the aim of transforming the latter into a post-capitalist economy. In the same vein, Bauwens and Kostakis (Scholz 2016b, 163) treat the commons as ‘a new logic of collaboration between networks of people who freely organise around a common goal using shared resources, and market orientated entities that add value on top of or alongside them’. Arvidsson and Peitersen (2013) refer to the commons as productive publics that help rationalise the public sphere along ecological and democratic lines. Kioupkiolis (2019) approaches the common as a post-hegemonic regime of agonistic freedom, radical democracy, conflict and antagonism. Similarly, Dardot and Laval (2014) conceive of the common as a new type of collective right best exercised under regimes of direct democracy.

Yochai Benkler (2006) discovers this new type of right in the digital commons of the Internet and free/open source software. For Benkler, the commons constitute a third institutional axis of civil society that coexists alongside capitalism and the state. He introduces the term ‘commons-based peer production’ to demarcate a non-market sector of information, knowledge and cultural production, not treated as private property but as an ethic of open sharing, self-management and cooperation between peers having access to fixed capital, namely computers and software (2006, 59–90).

The commons are also often used with a neoliberal connotation. Corporate terms such as ‘flat hierarchies’, ‘community spirit’, ‘the sharing economy’, ‘consumer tribes’ and ‘the collaborative economy’ are euphemisms and marketing buzzwords that aim to exploit commons-based peer production. Neoliberalism occasionally manages to infuse a competitive mentality into the commons themselves, alienating them into extractive enterprises adopting capitalist criteria.

On the flipside, several values of the commons such as common ownership, egalitarianism and collective self-government throb at the heart of communism. Yet the commons are at odds with several features of orthodox communism such as the centrality of the state and the party, top-down direction, totalitarian control, authoritarianism, violence, terror and the idolatry of leaders. Therefore, the signifier is not up for resignification, since it contrasts with the self-instituting power of the people, advanced here as the quintessential concept of the common.

Paradoxically, the digital commons meet with neoliberalism at the crossroads of cyber-libertarianism and cyber-collectivism. Whereas cyber-libertarianism advocates for a minimal state that protects the social and economic freedom of the individual to voluntarily reach mutual, consent-based, online agreements, cyber-collectivism embraces a state that promotes the cybernetic ‘general will’ or ‘common good’ (Thierer 2009). Maximum freedom and autonomy for the individual are common moral values within cyber-libertarianism and cyber-collectivism. But the digital commons part ways from both cyber-libertarianism and cyber-collectivism by opposing capitalism and the state. By reformatting the mechanisms of managerial hierarchies, property rights, contracts and prices, the digital commons play out in a variety of formats ranging from networked socialism to spontaneous networked anarchism or anarcho-communism (Benkler 2006; Wright 2009).

Ultimately, the concept of the common as the self-instituting power of the people today has three major and often entangled interpretations: a liberal, a reformist and an anti-capitalist. Yet all three interpretations falter to a lesser or greater degree upon the problem of collective action, formalised today by neoliberalism.

1.2 Neoliberalism and the Problem of Collective Action

The task of this chapter is to explore the problem of collective action posed by neoclassical economics which sustains the bedrock of neoliberalism, which, according to Michel Foucault (2004), is a new form of governmental reason, expanding the corporate model into state management. After exposing the problem of collective action in the normative framework of neoliberalism (1.3), the chapter goes on to introduce a number of challenges to neoclassical economics posed by non-mainstream currents of economic thought (1.4). The task of the latter section is to highlight some crucial heterodox economic points of view that could support a commons-orientated transition.

1.3 The Tragedy of the Commons

Aristotle (1932, Book II, ch. 3) observed long ago that individual interest often prevails over what is considered common to the greater number. Thomas Hobbes's parable of man in a state of nature indicates that the innate selfishness of humans culminates in a war of all against all, whence the need for a Leviathan state to settle conflict and prevent civil war. Most recently, Garret Hardin (1968) introduced the famous 'Tragedy of the Commons' to pose the free-rider problem in economics. He called on us to picture a pasture open to all, in which each herder acts as a self-interested actor, aiming to maximise his/her gain by adding more and more animals for grazing. Self-interest alone eventually results in overgrazing and pasture depletion. Hardin's metaphor has been often formalised as a prisoner's dilemma game expanding from economics to international relations and politics. To address the alleged tragedy, Hardin advocates for private-public control of common-pool resources, which resonates today with neoliberalism, that is, a contemporary version of economic liberalism.

The crux of the classical economic liberal argument is that the basic motive of behaviour is self-interest, the unintended consequences of which generate common welfare (Smith 1977/1776). By trying to maximise her own benefit via commerce and entrepreneurship, each individual unwittingly serves the common good. Unfettered markets are the most efficient means of allocating scarce resources, ensuring that everybody does what they are best suited for and gets what they deserve. Value derives from scarcity and, hence, is confronted by an opportunity cost, that is, the benefit one misses out by choosing one alternative over another. Unrestricted individual exchange guarantees the flow of scarce resources to the highest valued uses. Collective action, on the other hand, cannot produce the 'spontaneous order of the market' due to a lack of the information necessary to coordinate economic activity (Hayek 1944). Collective action either planned by the state or by groups misallocates resources, resulting in societal malfunction.

Classical economic liberal responses to the problem of collective action combine Hobbes's Leviathan approach – central command and control – with Smith's theory of the 'invisible hand' of the market that matches supply and demand through property rights and contracts enforced by the state. Cycles of the Leviathan state and the invisible hand of the market intersect historically at the overlapping peripheries of liberal democracy and the market economy, which demarcate multiple variants of state capitalism.

Neoclassical economics built on classical liberalism's ethics of individualism to construe a utilitarian theory of economics that laid the moral foundation for neoliberalism. David Hume and Jeremy Bentham introduced the notion of utility to argue that each individual aims to satisfy her economic preferences. This ethical idea spilled over into economics to replace the labour theory of value with the theory of utility maximisation. Whereas in classical economics value is synonymous with the labour necessary for the production of a

commodity, in neoclassical economics the value of a commodity resides in its utility to a buyer (Mazzucato 2018, 57–74).

Alfred Marshall (2013/1890) shifted thinking about value from the study of capital, labour and technology inputs to that of marginal utility measured by the usefulness of a commodity to a consumer. The value of chocolate is not solely determined by the means of production (land, labour, capital, technology), but is also proportional to the degree of customer satisfaction. Utility translates into the price a customer is willing to pay for the chocolate. Money is not concealed labour, as Marx would have it, but the measure of utility, which varies between individuals, reflecting the evolution of human preferences over time. Marginalism, thus, inverted the objective theory of value measured by labour into the subjective theory of value measured by consumer utility.

Neoclassical economic explanations of behaviour are anchored in the assumption of a fundamentally self-interested rational actor motivated by financial and other incentives (Lowenberg 1990). Humans mutate into economic ‘rational’ agents using a cost–benefit analysis to choose the market alternative that best satisfies their preferences (Mazzucato 2018, 65). Scarcity and marginal utility – that is, the added satisfaction a consumer garners from consuming additional units of goods or services – determine prices and the relative supply and demand equilibria. Scarcity renders resources rivalrous and subtractable. Hence, private property, contracts and compensation incentives are necessary for individuals to invest in the resource, exchange their valuable products and maximise their subjective utility. Prices, and not labour, are now the sole markers of value. Thus, market allocation produces more efficiency by directing resources to the highest valued use.

The ‘tragedy of the commons’ is, then, due to the absence of clear property rights, resulting in either underinvestment in resources or overuse and depletion. Motivation is considered lacking in collective action, since no one will invest time, money and energy in a project if they cannot appropriate its benefits. Power to organise collaboration is absent. Therefore, organisation lacks and collaboration necessarily fails. The ‘tragedy of the commons’ represents, thus, a version of the prisoner’s dilemma game, implying that rational strategies of self-interested maximisers can lead to collectively irrational outcomes.

In neoliberal versions of rational choice theory, there can be no common good save for the coincidence of individual ends (Downs 1957). The common good is served best if no one is there to serve it except for the invisible hand of the market. Neoliberalism is predicated on the assumption that collective action fails to manage the economy owing to the uncertainty and complexity inherent in information-processing, which renders coordination and planning impossible (Hayek 1944; Reisman 1990). Complexity and uncertainty impede collective action – the prisoner’s dilemma game renamed. Given that centralised planning lacks substantial information on markets and goods, privatisation is the most efficient method for managing resources. Only pricing in markets produces good information and coordination.

Marginalism, the economic bedrock of neoliberalism, suggests that government should limit itself to regulating the economy and intervening only under conditions of market failure. Democracy is merely ‘a utilitarian device’ for assessing the interests of competing elites (Schumpeter 1994). Voter apathy is then explained on the grounds of massive ‘rational ignorance’ adopted on the grounds of opportunity costs (Downs 1957). The citizen considers obtaining information on complex policy issues as a highly costly and time-consuming activity. Based on Kenneth Arrow’s (1950) theorem pointing out the mathematical impossibility of aggregating individual preferences, some theorists have even been arguing for the complete dismissal of democracy, since, when citizens are faced with three or more alternative options, there is no rational way to reach a consensus and therefore account for democratic governance (Riker 1982).

Capitalism, on the other hand, is considered a peaceful economic system that encapsulates the liberal ideal of self-regulating markets, operating as sites of voluntary exchange based on free trade and property rights, designed to foster technological progress and rising labour productivity to satisfy the wants and needs of all (Mazzucato 2018, 63). An ideal capitalism is supposed to produce multiple equilibria, allocating scarce resources under conditions of ‘perfect competition’ and perfect information fully accessible to all (Mazzucato 2018, 63–64). The democracy of the market, thus, comes to represent an ethical pluralism that breeds on freedom of choice, tolerance and the rule of law.

1.4 Mainstream vs Non-mainstream Economics

Michel Foucault (2004) describes neoliberalism as a normative order of governmental reason that differs from classical economic liberalism in a number of respects. Government intervention replaces the ‘invisible hand’ of the market, which is supposed to naturally serve the common good out of individual self-interested actions. The naturalism of liberalism gives way to the constructivism of neoliberalism (Brown 2015, 84). Government intervention should not identify with central planning. Rather, it aims to regulate market operation and facilitate entrepreneurship (Foucault 2004, 121, 131, 145, 164). The liberal image of humans as creatures of needs who contribute to the common good by pursuing individual interest through market exchange is now replaced by the image of humans as entrepreneurs, epitomised in the model of *homo oeconomicus* (Foucault 2004, 276–278).

In neoliberalism, capital replaces labour and entrepreneurship production (Foucault 2004, 116–118). Humans are now managers and self-investors of human capital, rather than solely sellers, workers, clients or consumers. Each person is a mini-capitalist susceptible to the uncertainties, risks and contingencies of the market. Responsibility becomes the indispensable component of self-sustenance inasmuch as the cost–benefit analysis of economic behaviour

meshes with state constituencies and the overall health of the economy, the latter standing now as the main site of veridiction (Brown 2015, 68, 84, 131–134). Economic metrics and market prices hold as the only truth valid for legitimising state policies. State governance, finally, breaks down to a neoclassical cost–benefit analysis subject to the dictates of the market.

Neoliberalism, thus, signals a two-way transformation of the economy and the state. On the one hand, the economy becomes the model of the state, marketising all sectors of governance, while, on the other hand, it becomes denaturalised and loses its liberal status as autarchic and self-regulated, requiring the intervention of the state to correct market failures and stimulate competition and growth.

Competition replaces exchange as the fundamental dynamic of the market economy, creating winners and losers and, by extension, inequality (Brown 2015, 64). In the neoclassical model, inequality is a non-issue, since utility is subjective and, therefore, non-comparable. There can be no inequality of utility, but only varying degrees of utility among economic actors (Varoufakis 1998, 43–113). Whereas political equality in the rule and application of law is both the norm of market exchange and the founding principle of the social contract in liberal democracy, economic inequality is considered a structural indicator of meritocracy and an additional incentive for the overall improvement of the economy. Economic inequality is both a cause and an effect of competition, resulting in multiple equilibria that render liberal democracy a contested terrain of corporate interests competing for favourable state policies through negotiation, lobbying, consensus and win–win public–private partnerships (Varoufakis 1998, 43–113). Both persons and states are now construed on the model of the contemporary firm, aiming to maximise their capital value and utility through entrepreneurialism, self-investment and/or attracting investors (Brown 2015, 22). The model of the market expands to all domains and activities, thus reconfiguring human beings first and foremost as market actors.

Simon Springer (2012) describes neoliberalism as a complex discourse articulated in various forms: a hegemonic ideology, a policy and a programme, a form of governmentality. Wendy Brown (2015) makes the case that neoliberalism inaugurates a new era of de-democratisation, thus marking the substitution of politics by technocracy and economics. William Davies (2017) argues that neoliberalism is the disenchantment of politics by economics. From a Marxist standpoint, David Harvey (2005) perceives neoliberalism as a class project aiming at consolidating class power through accumulation by dispossession, that is, the privatisation of public goods and services by financial institutions and state mechanisms.

From a neoclassical standpoint, neoliberalism is supply-side economics born out of the failure of Keynesian demand-side economics to maintain the mixed economy of the post-war period (Stiglitz 2016). Put simply, the state is too costly to sustain and prone to the periodic crises of capitalism. The goal should be, instead, to shrink the state, remove regulation and lower taxes at the

top to incentivise the economy and lead to faster economic growth that would trickle down to all and ‘lift all boats’ to prosperity. Neoliberalism, thus, has been hailed as a solution to the problem of collective action manifested in markets and institutions.

Yet neoclassical economics acknowledges that markets fail under various circumstances. Monopolies, information asymmetries between consumers and producers, externalities not reflected in market prices and the provision of public goods are all instances of market failure (Jacobs and Mazzucato 2016, 16). Governments should intervene and seek to ‘correct’ market failures, where appropriate, by promoting competition, requiring more available information for consumers, forcing firms to pay for externalities and providing or subsidising public goods. Neoclassical economics insists that competitive markets produce on average positive outcomes that maximise welfare (Jacobs and Mazzucato 2016, 17). Therefore, they should be allowed to operate with the least state interference possible. Governments should limit themselves to a minimum regulatory framework of employment, low taxation, consumer and environmental protection. Excessive regulation is considered to slow economic activity to a crawl and precipitously reduce government revenues, eventually ‘killing the goose that lays the golden eggs’.

Yet a number of mainstream economists (Blanchard and Summers 2017) admit today that the market is not a self-stabilising system; the financial system, in particular, becomes over time more complex and is still poorly understood. Therefore, the market needs the state to stabilise the economy with proper policies. The basic difference between mainstream and non-mainstream economics – and between non-mainstream economics themselves – lies in the degree of state intervention and the mixture of policies necessary to regulate the economy.

1.4.1 Post-Keynesian Economics

Post-Keynesian economics considers neoclassical economics an inadequate model for understanding how capitalism operates. A number of authors claim that there are different kinds of market behaviour and several varieties of capitalism (Jacobs and Mazzucato 2016, 17–23). Post-Keynesian economics builds on Keynes’s key insight that private investment is volatile and procyclical. It therefore requires public investment to balance it out. Governments should do more than ‘levelling the playing field’. They should help tilt the playing field towards publicly chosen goals by investing in education, training, health, child-care, social care and infrastructure:

Public policies are not ‘interventions’ in the economy, as if markets existed independently of the public institutions and social and environmental conditions in which they are embedded. The role of policy is not

simply of ‘correcting’ the failures of otherwise free markets. It is rather to help create and shape markets to achieve the co-production, and the fair distribution, of economic value. Economic performance cannot be measured simply by the short-term growth of GDP, but requires better indicators of long-term value creation, social well-being, inequality and environmental sustainability. (Jacobs and Mazzucato 2016, 23)

Joseph Stiglitz (2013; 2016) argues that neoliberalism has failed, since it has produced immense income and wealth inequalities from the 1980s onward, exacerbated by the credit-fuelled boom and bust cycles of the market, as in the case of the 2008 financial crisis. Thomas Piketty (2014) describes a patrimonial capitalism of inherited wealth where the rate of return of capital surpasses the rate of growth in the long run. Monopoly rent creates an oligarchy of the 1% that undermines democracy. The winners of the capitalist competition are not compensating the losers, but speculate and hoard profits through rent-seeking mechanisms instead. Rather than expanding the economic pie by means of reinvestment, innovation and job creation, they occupy an even larger space in the economy, with idle capital circulating in the finance sector in the form of share buybacks, derivatives, options, and the like. Asset prices inflate while wages rest more or less stagnant.

For conventional economics, finance performs a number of essential functions for the economy: it allocates capital by recycling surpluses across the globe from surplus countries to deficit countries in the form of investment and credit, it mediates between savers and investors providing credit to individuals and companies, it promotes innovation and job creation, it manages risk, it provides liquidity, and it runs the payment mechanism (Stiglitz 2016, 40). Finance adds value to the real economy by completing markets, thereby propelling the Arrow-Debreu general equilibrium momentum: if only all different agents create as many contracts as possible, complete all markets and trade continually among them, the economy will reach the Pareto-efficient maximum possibility of human welfare.

However, Stiglitz (2013; 2016) has shown that trading in financial instruments is not trading between different people with different consumer preferences or production possibilities. It is rather trading between different people with different points of view over the state of an uncertain future wherein more trading can be actually harmful. One of the justifications of high-frequency trading is that it increases price discovery, thus contributing to perfect information. Yet the Grossman–Stiglitz theorem (Grossman and Stiglitz 1980) has revealed that high-frequency trading reduces the informativeness of the price system. Opaqueness and leverage produce a zero-sum game, a casino activity that impacts all sectors of the economy, from retail to wholesale. By creating leverage, that is, speculation, finance shifts risk from one sector to another, with risk eventually ending up in the public sector due to the interconnectedness of the financial sector and its spreading into the real sector.

The 2008 crisis proved that finance failed in every dimension: it misallocated capital, it did not provide credit for new job creation, it mismanaged risk, it misguided innovation, it prioritised exploitation and market manipulation and created an exorbitantly expensive payments mechanism (Stiglitz 2016, 108). Finance became, finally, a negative sum game, creating enormous profits for corporations and benefiting the affluent few at the expense of the rest. Many of the profits were achieved as a result of predatory lending, abusive credit card practices, market manipulation and excessive market power. The economic consequences of the failures of finance have been gaping inequality, low growth, high instability, and high levels of private and public indebtedness.

The sociopolitical result has been the revival of the nightmares of the 1930s in the form of the rise of racist, xenophobic and neo-fascist far right-wing populism. Wealth and income inequality, economic nationalism, deglobalisation, trade wars, geopolitical tensions and the migrant crisis accompany the sustainability crisis, in which global warming increases, pandemics spread, ecosystems degrade, fossil fuels are diminishing and food remains insecure (Dedeurwaerdere 2013).

To reverse the neoliberal tide, Stiglitz (2016, 97–168) suggests changes to executive compensation schemes, combat against short-termism, the reduction of rent seeking, the elimination of racial and gender discrimination, macroeconomic policies to restore full employment, the regulation of the shadow banking system, greater investment in education and infrastructure and the reform of capital taxation, among other things. Mariana Mazzucato calls for the ‘socialisation of investment’ by an ‘entrepreneurial state’ investing in innovation to address major societal problems such as climate change and elderly healthcare (Jacobs and Mazzucato 2016, 14). Yanis Varoufakis (2011) calls for a Green New Deal funded by the issuing of Eurobonds as a first step before reimagining the corporation. Piketty (2014) advocates for a global wealth tax and higher top marginal tax rates.

1.4.2 Radical Economics

Theorists coming from the radical left call for a socialist transition to an economic democracy via either more or less direct state intervention. Erik Olin Wright (2009) is one of the most prominent scholars to have advocated for radical reforms wherein the state should assume a central role towards a socialist transition. He argues for the creation of a more democratic financial system where we should reimagine the role of governments in private capital markets.

Under neoliberalism, the state is considered a drain on taxpayers’ private money, with its capacity to print money causing inflation. Conventional economics considers money a scarce resource that is more efficiently managed by the law of supply and demand. Money is a market innovation that replaced the barter economy with a more efficient economic system (Mellor 2019, 638). It

dates back to the invention of coinage, that is, the adoption of precious metal as a valued commodity. Given the scarcity and the physical properties of gold and silver (durability, divisibility, transferability, storability, usability), money in the form of coins is considered the embodiment of economic value, circulating in the market as the general equivalent of goods and services. Money functions simultaneously as a unit of account, a medium of exchange and a store of value.

Yet money is also a means of social and economic power. What fuelled the market and the growth of capitalism was not the invention of coinage but the proliferation of bank-issued debt (Mellor 2019, 639). Money accumulates into profit, which then transforms into rent and interest-bearing credit and debt. Banking became the steam engine of modern capitalism, anchored in the gold standard, linking money to the price of gold. Since the final decoupling of the US dollar from gold in 1971 and the subsequent establishment of fiat money, that is, government-issued money not backed by a physical commodity, finance has held the steering wheel of neoliberalism.

Conventional economics sees banking and finance as intermediaries between supply (surplus units) and demand (deficit units). Robert Hockett (2019, 492) calls this the ‘intermediated scarce private capital orthodoxy’. According to this view, capital is limited to what has previously been accumulated by rentiers in the form of financial assets held in banks and other financial institutions. Banks and capital markets link rentiers of surplus capital with households, firms and governments. Surplus capital is deposited in banks in the form of short-term demand deposits, which are then loaned out on a one-to-one basis in the form of longer-term loans. Interest amounts to money rental rates determined by the law of supply and demand just like all other prices. Deposits, thus, make loans, savings determine investment and interest rates equilibrate private fund supply and demand (Hockett 2019, 500–503).

Hockett (2019, 501) instead makes the case that loans make deposits according to a none-to-many credit-generation model. When a bank receives an application for a loan from a creditworthy business or household, it does not check out how much money is deposited in its vaults. It creates the money *de novo* by simply crediting a borrower account with the given amount and then booking the transaction as an asset and liability of its own and of the borrower. Banks do not merely act as intermediaries between savers and borrowers; they simply type digits on a computer ledger to create money *ab initio* (Mellor 2019, 639). Therefore, the money supply is not scarce. Credit is not limited to privately pre-accumulated capital but endogenously issued. Banks actually borrow depositors’ money, keep a percentage to handle daily operations and fictitiously multiply the rest in the form of circulating debt to be invested in the real economy and generate the money that will repay the interest-bearing debt, thus coming full circle *ad infinitum*. Money is actually interest-bearing debt fuelling the production of future value. In Britain only 3% of total money amounts to tangible currency (notes and coins) in circulation, the remaining 97% being composed of numbers saved in computers. The fear of the central

banks that became the money creators of last resort for the banks in the 2008 financial crisis was not the collapse of the money supply, but that ATM machines would run dry (Mellor 2019, 637).

Hockett paints a different picture of finance where the central bank in effect publicly monetises the promissory note privately issued and signed by the borrower in favour of the lending bank. The central bank is placing the full faith and credit of the nation behind the credit of the borrower in the form of the Federal Reserve notes. The private bank is simply assisting the central bank with privately issued promissory notes to swap for spendable, publicly issued promissory notes. The interest it earns on the loan is its payment for serving a public utility. Credit is not based on privately deposited loanable funds, but on the monetised full faith and credit of the state that pays private seigniorage rents with public currency. ‘The financial system then looks like a franchise arrangement in which the public is franchiser and the institutions dispensing its full faith and credit are its franchisees’ (Hockett 2019, 491). In other words, the capacity of banks to create credit rests on the laws, regulations and guarantees of the state under which they operate. Contemporary financial systems are then best interpreted as public–private franchise arrangements.

The state has been granting monopoly rights to corporations to build infrastructures, energy and telecommunications networks from capitalism’s inception, and has been heavily investing in the development of new technologies thereafter (Mazzucato 2013). The Fed and the Treasury department have been directly channelling and managing the flow of monetised public faith and credit through the financial system by backing and often turning private liabilities into public ones. The world’s first heavily capitalised securities exchanges, such as those in Amsterdam, London, Paris and New York, were set up as government instrumentalities or sites where government-issued debt could be purchased and sold. Venture capital dates back to 1958 when federal legislation created Small Business Investment Companies that had access to guaranteed financing. ‘Capital markets ride on treasury and government agency liabilities just as bank lending markets ride on central bank liabilities’ (Hockett 2019, 504). The latter became amply evident with the financial crisis of 2008, when the Fed stepped in to save the bankrupt banks:

Following the crisis, the very evident public creation of money revealed the inherently political nature of money. When other fiscal and monetary solutions appeared unable to refloat damaged economies, central banks resorted to the explicit creation of money out of thin air. Under what was described rather obscurely as ‘quantitative easing,’ vast amounts of newly created electronic money were used to rescue financial institutions. There was no question of the new money’s being borrowed from anywhere. It was a clear demonstration of the sovereign power to create money. Radical voices quickly asked why if the central

bank could create money out of thin air to rescue the banks they could not create new money to rescue the people. (Mellor 2019, 645)

Mary Mellor (2019, 640–641) argues that bank-created money is socially, ecologically, economically and politically unsustainable. It exacerbates racial inequality by favouring the more creditworthy borrower and locking out the poor and the non-white. Flows of finance at low interest rates are channelled into hedge funds, private equity funds and speculative investments in financial instruments, whereas poor and working-class people are forced to borrow from payday lenders or loan sharks at confiscatory interest rates. Financialisation has created a ‘winner-takes-all’ economy that has produced the exorbitant concentration of wealth and income documented by Piketty. It drives economic growth and creates ecological damage. It is crisis-ridden, turning private losses into public liabilities. Mellor (2019, 645) stresses the need not just to democratise finance but to reclaim the sovereign power to create money free of debt that could be spent directly into circulation. She calls for a public money system based on a widely democratic, transparent and accountable management of the creation and allocation of money.

Hockett takes this argument to its logical end, suggesting that there are no limits on the state’s capacity to generate credit or money. He introduces a tweak to existing institutional arrangements by advocating for the creation of a National Investment Council to coordinate public–private investment at a federal level, accompanied by Federal Reserve reforms such as the creation of Fed Citizen and Residents Accounts, a Fed price stabilisation fund or People’s Portfolio and a Fed-administered digital dollar engineered by Blockchain (Hockett 2019, 515–522). These reforms would eventually initiate a ‘QE for the people’ that would ignite the transition to a full ‘People’s Fed’ steered by a more effective counter-inflationary and counter-deflationary Fed monetary policy.

Fred Block (2019, 529–556) suggests the creation of a national investment bank linked to locally based and non-profit financial institutions such as credit unions, public banks, community banks and non-profit investment banks. Large-scale investment in research and development, infrastructure and clean energy would combine with local investment in affordable housing, small businesses, non-profits and employee cooperatives. The ultimate goal would be the creation of a parallel financial system alongside the existing financial institutions that would gradually replace the private sector with a public one.

Lenore Palladino (2019, 573–591) proposes that the ‘parallel credit system’ be accompanied by a ‘parallel equity system’. He suggests the creation of a Public Investment Platform followed by a ‘public investment account’ that would offer a ‘public option’ for investment opportunities to individuals and households locked out of the expensive private sector. Michael McCarthy (2019, 611–633) argues for the creation of state-administered sovereign wealth funds and worker-owned inclusive funds run by firms and corporations.

In short, the aforementioned proposals build on Wright's argument for the creation of a more democratic financial system that would fuel a socialist transition. However, unlike Wright's intention, they tend to address the periphery rather than the core of the problem. To tackle the structural contradictions of capitalism that produce immense inequalities and destroy the planet, it is necessary to alter the mode of capitalist production from within. State-centred, radical democratic rebalances of the capitalist economy need to tilt towards a decentralised, post-capitalist, post-hegemonic, commons-orientated transition geared by the self-management of the economy and society as a whole. As a response to the various crises of capitalism, ecologists, activists, politicians, scholars and citizens gather in all sorts of social movements and communities across the globe to juxtapose capitalist production with commons-based peer production anchored in the principles of democratic self-management, equitable distribution of value, sustainability science and the ethics of collaboration.

1.5 In Defence of the Commons

Following up on the critique of neoliberalism, we now put forward additional arguments to move the terrain of discussion from post-Keynesianism and radical state-centred economics to post-capitalism. The standard neoclassical model of perfect competition, perfect information, perfect risk markets and perfect rationality fails to correctly depict how the economy works. The model of *homo oeconomicus* introduced by marginalism and incarnated thereafter by neoliberalism is challenged today in multiple disciplines, starting with economics itself (Dedeurwaerdere 2013; Keen 2001; Mason 2015; Mazzucato 2018; Vatn 2005). The theory of marginalism that dominates textbook economics is fallacious, superfluous and ideological (Keen 2001; Mason 2015, 162). It reduces humans to calculating 'machines' of pain and pleasure, gain or loss; to mere traders, entrepreneurs or capitalists. It discards an exuberant human psyche replete with heterogeneous emotions, motives and rationales. The model of a rational actor calculating past and present information to maximise future utility is in stark contrast with real-world social dynamics driven by information asymmetries along with diverse motivations (Dedeurwaerdere 2013, 7). Humans are complex animals, fusing monetary with non-monetary motivations in unimaginable ways.

1.5.1 The Digital Economy

The development of ICTs over the last decades poses a number of challenges for neoclassical economics. Information technology transforms norms of consumption, modes of production, commercial transactions, organisational forms, network management, and so on (Brousseau and Curien 2007, 2).

Industry now comes to be organised around a flexible assembly model (dis)intermediated by digital platforms that (dis)connect the place where value is produced from the place where value is collected by decentralising and transnationalising economic space, while constituting a mobile global audience that navigates between e-commerce and e-communities; competitiveness relies heavily on technological innovation; products and services bear an increasing information intensity generating a two-way commoditisation and customisation; new business models emerge that adopt a great variety of communication, differentiation and discrimination strategies based on the multimedia character of the Internet (Brousseau and Curien 2007, 3–17).

But instead of information technology becoming the ‘lubricant’ that removes all friction in commerce and gives reality to a transparent, ultra-competitive market economy, it brings about typical market failures such as club effects, market concentration and monopolisation, while sowing the seeds of a cooperative economy. Markets tend towards greater segmentation rather than greater fluidity; hierarchies become more malleable rather than more efficient; and, most importantly, information becomes a free input into the production of knowledge (Brousseau and Curien 2007, 19).

A number of often disparate authors such as Yochai Benkler (2006), Eric Brynjolfsson and Andrew McAfee (2014), Jeremy Rifkin (2014), Paul Mason (2015) and Michel Bauwens (2019) argue that information technology challenges the basic tenet of marginalism, which is scarcity. Whereas the market economy aims to allocate efficiently scarce resources, information creates an abundance of value owing to its unique characteristics: 1) it is not ‘used up’; 2) it can be infinitely reproduced at zero marginal cost; and 3) it produces a number of positive externalities through the creation of network effects. Information ‘dematerialisation’, that is, the dissociation between information and commodities, produces a knowledge economy built around intellectual commons that constitute a non-rivalrous good, thereby giving rise to a public good within a market economy (Brousseau and Curien 2007, 3, 19–21; Broumas 2020). An agent who transmits information can still keep and consume the same information, granting a very low opportunity cost compared to the utility transferred to the receiver. Therefore, given the limits of saturation effects, a great number of agents can consume the same information simultaneously.

Kenneth Arrow (1962, 609–626), a mainstream economist, pointed out in the 1960s the problem of the optimal allocation of information as a commodity due to its zero marginal cost of reproduction accounting for its incomplete appropriability by a seller. In contrast to tangible commodities such as a car or a chair, the moment information is disclosed, it can be infinitely copied and reproduced almost freely. And since information is abundant by nature and markets exist for allocating scarce resources, there can be no markets for information. Put simply, one cannot easily create a market to sell information. Given that the root of invention and innovation is knowledge, information breeds a contradiction

between market economics and the production of knowledge. If firms cannot appropriate the returns of producing knowledge, then they will have little incentive to invest in it. Whence, the notion of knowledge as a public good to be provided by state universities and further advanced through research grants and subsidies. Intellectual property rights protected by the state aim to tackle this contradiction, but they lead to the underutilisation of information and the inefficient use of knowledge.

Ultimately, information technology produces a paradox for conventional economics: it disrupts the function of the price signal and the relevant matching of supply and demand either because richer information than just price is necessary (information-intensive goods) or because it pushes marginal price close to zero (pure information goods) (Brousseau and Curien 2007, 22). The transition to the knowledge economy has led to the increased importance of fixed costs and the diminishing role of competition. The marginal cost, that is, the extra cost in the reproduction of knowledge, is very low. The cost of distributing an ebook on the Internet is close to zero. But the fixed cost of writing a book is still present. Therefore, the existence of large fixed costs upstream compared to the low marginal cost in the reproduction of knowledge downstream undermines the neoclassical ideal of a well-functioning competitive economy.

To recover the increased fixed costs upstream, companies finance them downstream either by rationing demand or applying coarse pricing or shifting revenue towards advertising or, finally, calling for the state to finance infrastructure (Brousseau and Curien 2007, 22). To fill in the gap between supply and demand caused by information overload, they co-opt infomediation among self-organised online consumer communities that spontaneously couple supply with demand, using the zero marginal free supply of tools and content on the Internet to share information. Rather than market operation reaching Arrow-Debreu's neoclassical equilibrium model of perfect information and perfect competition, it resembles a Schumpeterian-Hayekian model wherein suppliers and consumers constantly 'co-invent' the terms of their trade.

Eric Brousseau and Nicolas Curien suggest that the digital economy should become in the long run a 'co-opetition' economy that breeds business to business (B-to-B) marketplaces where companies cooperate upstream as monopolies as well as monopsonies, benefiting from scale effects generated by mass purchases, and compete downstream on the retail markets. Apple is a monopsony in purchasing apps from developers across the globe (Tepper and Hearn 2019). Facebook is the sole 'purchaser' of user-generated content at zero price. It controls almost 80% of mobile social traffic. Airbnb dominates short-term rentals. Amazon bought dozens of e-commerce rivals and online booksellers, acquiring a monopsony position in the book industry. It gets about 75% of ebook sales. Facebook bought Instagram and WhatsApp. Google bought its main competitor, DoubleClick, and vertically integrated online ad markets by buying advertising exchanges. It controls 90% of search advertising. Google's monopsony vision is to become the dominant digital wholesale information broker to

the global Internet audience. On the whole, Google, Amazon, Apple, Facebook and Microsoft have together acquired more than 500 companies in the past decade (Tepper and Hearn 2019). Altogether, these companies make up a data-extracting model of platform capitalism to the tune of 3 trillion dollars.

Down the line, Brousseau and Curien (2007, 21–24) anticipate that the digital landscape should experience a ‘path-dependent’ reconstruction of the value chain where the differentiation of goods and services reduces competition, with infomediation leading to the coexistence of several ecosystems rather than a merciless struggle of the winner-takes-all type. Thus, ‘fringe’ monopolies allow for a multitude of small businesses or cooperatives to subsist in niche markets. Network interactions will eventually create adaptable relations rather than hierarchical subordination, reconciling stability and flexibility under a repeated game equilibrium.

At present, however, technological change exacerbates the disparity between private and social returns to information (knowledge) (Stiglitz 2016, 48). It enhances rent seeking and the capacity for rent extraction, turning information into an artificially scarce good disproportionately exploited by corporations having differential access to it. Asymmetries of information and concentrated market power create an oligopoly of knowledge production that stifles innovation. The extent to which technological change will reproduce – and even exacerbate – the current concentration of market power or lead to an equilibrium among reticular market powers will be determined by the rules of the game over privacy rights, among others. To the extent that data will be treated as a public good, technological change is likely to produce a game equilibrium and a balance between static and dynamic efficiency rather than an oligopoly of market power.

1.5.2 The Commons

But this depends largely on the future of class struggle. Mainstream information economics focuses on supply and demand dynamics, discarding the potential of online consumer communities actually turning into self-organised prosumer communities that make use of open source technologies on the Internet to create an alternative mode of production that bypasses both firms and managerial hierarchies. They take for granted that capitalist production is the most efficient mode of allocating resources. Yet digital networks, open source technologies, Blockchain and the Internet of Things have the potential to support a new type of social relations anchored in the mutual coordination of common-pool resources, which are not set according to the price mechanism of the market nor the managerial hierarchies of corporations and states.

There are plenty of ideological elements in the Hayekian framework: prices are an accurate and sufficient signal of information to allow for decentralised coordination to produce social welfare; intellectual property rights are necessary

and sufficient for the production of knowledge; competition is hard wired into the human species; collective self-management of the economy is destined to failure, and so on. Yochai Benkler (2006) and Elinor Ostrom (1990) consider prices, contracts and strict property rights lossy, sticky and costly. The commons advance, instead, a more refined, flexible and cost-efficient information processing, better attuned to the variability of human creativity than managerial hierarchies (firms, states). The free flow of information among large sets of agents who have cheap access to means of communication produces substantial information gains by better allocating value to preferable courses of action, thereby unleashing creativity and innovation while reducing complexity and uncertainty. The information and allocation gains of the commons could under certain circumstances translate into better, fairer and more sustainable socio-economic outcomes in comparison to price signals and managerial hierarchies. Transparency, openness and sharing could distribute value more equitably than firms that restrict access to knowledge by enclosing information under strict intellectual property rights.

The commons are premised on a simple yet radical idea: great improvements in production could be achieved by reducing barriers to knowledge exchange (Bollier and Helfrich 2015, 145). Collaboration and openness could produce a constantly improving collective repository of best ideas and practices; hence, the open source technologies of the digital commons adding up to rural and urban commons. The commons consist in a shared pool of resources from which everybody can draw or to which everybody can contribute according to their needs and capacities. Collaboration prevents free riding by self-monitoring mechanisms reinforced both online and offline. Cosmolocalism, that is, the local use of global (digital) commons, could democratise the economy and set a new socio-economic paradigm anchored in the self-management of the means of production (Kostakis and Bauwens 2014).

Price signals, property rights and contractual relations are just some elements in an institutional toolkit. Commons-based peer production increases the diversity of actors, motivations and transaction forms (Benkler 2006). It decentralises authority where the capacity to act exists, thereby diffusing power and freedom to the many. Free access to information and the means of production empowers citizens and helps address the sustainability crisis through the ecological control of the economy. Open design, open protocols, open supply chains and open book accounting ensure maximum participation through modularity, and promote strigmergic collaboration by mutual coordination, which can in turn advance democracy, reduce waste and sustain a circular economy (Bauwens et al. 2019).

Further evidence from evolutionary biology and the social sciences illustrates the shift in the scientific understanding of human rationality from the model of the self-interested maximiser, driven by competition and separable motivations, to the model of *homo socialis* featuring cooperation and diverse pro-social motivations (Benkler 2011). The competition hailed by neoliberalism

Table 1.1: Neoclassical vs commons-based economics.

Neoclassical economics	Commons-based economics
scarcity	scarcity (local commons and ethical market entities) ↔ abundance (global, digital commons) > cosmopolitanism, <i>glocal</i> commons
self-interest	diverse motivations: self-interest, solidarity, affection, care
competition	cooperation
privacy	open access
strict property rights	relationalised property through sharing
hierarchical management	self-management
planned obsolescence	circular economy
profit maximisation	profit is not central but peripheral > equitable distribution of value and risk
individual labour > capitalist division of labour	collective labour > mutual coordination by stigmergic collaboration, equipotentiality = participation conditioned <i>a posteriori</i> by the process of production itself, where skills are verified and communally validated in real time > creativity, self-realisation vs alienation of labour, precariousness, intensification of labour, performance pressure, stress
growth > climate crisis	degrowth > sustainability
collective action > tragedy of the commons	self-monitoring mechanisms for avoiding common-pool resource depletion > comedy of the commons
network effects (Internet) > positive externalities > value crisis > enclosure of the digital commons > surveillance capitalism	the tokenisation/monetisation of positive externalities across the commons value chain > federalism, post-capitalism
finance and credit	community transaction mechanisms such as as internal lending, smart contracts, participatory budgeting, common liquidity fund, resource pooling, microfunding
entrepreneurial innovation	commons-based eco-techno-social innovation
regulatory state, minimum state, capitalist state, social democratic state	commons-centric partner state

as the evolutionary pattern of human society is contradicted on the grounds of cooperation facilitated today by ICTs. Competition is not a zero-sum game between rivals but a win-win game between peer producers collaborating on

symmetric terms. Rationality does not always translate into self-interest, since humans often rationally pursue non-self-interested goals. Cooperation rather than competition is the evolutionary drive of human species' survival (Bowles and Gintis 2011).

Today, the decentralised use of the Internet and free software/hardware disrupts centralised capitalist production on the model of commons-based peer production operating in terms of sustainability, openness, sharing and bottom-up techno-social innovation. Commons-based peer production is alive and kicking, as evidenced by the range of the digital commons, the Free and Open Source Software (FOSS) movement, the solidarity economy, platform and open cooperatives, all joining forces with social movements to subvert the neo-liberal hegemony of capitalism. Prominent cases of the digital commons, FOSS, platform and open cooperatives (e.g. Stocksy, Fairmondo, Mozilla Foundation, WikiHouse, Mondragon) will be examined in the course of this book.

1.6 Structure of this Book

Part 1 deals with the liberal argument on the commons. Elinor Ostrom (1990) proved Hardin wrong by illustrating hundreds of cases of common-pool resources self-managed by user communities for centuries according to well-defined rules and norms collectively established. She showed that not only is cooperation possible in hundreds of cases of common-pool resources, but that locally developed institutions and practices occasionally outperform market or state-driven systems governed by private property control and expert regulation respectively. Ostrom's empirical work offers important insights into how formal and informal norms can structure collaboration along the lines of non-property-based schemes.

Lawrence Lessig (2001) and Yochai Benkler (2006) expanded Ostrom's work on the digital commons. Lessig introduced the innovation commons of the Internet. Benkler coined the term 'commons-based peer production' to describe open contributory networks of distributed tasks, set and executed by groups online in a decentralised and autonomous fashion. The proliferation of open/free software in the digital landscape today testifies to a set of collaborative practices not adequately explained in terms of property rights and monetary motivations.

Part 2 examines the reformist argument. David Bollier builds on the work of Ostrom to introduce the model of the green governance of the commons (Bollier and Helfrich 2012). He argues that the state must shift its focus to become a partner of the commons, rather than the market. Along with Silke Helfrich (Bollier and Helfrich 2019), he demonstrates a theoretical framework for the commons based on a common language. Jeremy Rifkin (2014) introduces the model of green capitalism connecting to the Internet of Things infrastructure, fuelled by renewables. He advocates the gradual shift of green

capitalism towards the commons, supported by the Internet and free/open source software/hardware.

Trebor Scholz (2016a; 2016b) adds a cooperative twist to the commons by juxtaposing platform cooperativism against platform capitalism (the so-called sharing and gig economy). Platform cooperativism consists of online business models based on democratic self-governance, platform co-ownership and the equitable distribution of value. Kostakis and Bauwens (2014) give a challenging spin to platform cooperativism by introducing the model of open cooperativism between the commons and ethical market entities, operating in terms of open protocols, open supply chains, commons-based licensing and open book accounting. Open cooperativism is backed by a partner state through taxation, funding, regulation, education, and so on. Open cooperativism aims at the creation of a commons-orientated economy based on shared resources from which actors can draw or to which they can contribute according to their needs and capacities. DECODE (Decentralised Citizen Owned Data Ecosystems) is an ambitious research project that seeks to democratise data infrastructures. It has conducted extensive research to apply the principles of platform and open cooperativism in concrete case studies located in Amsterdam and Barcelona (Morell et al. 2017).

Adam Arvidsson and Nicolai Peitersen (2013) illustrate a technologically advanced Habermasian transformation of the public sphere, where collaborative networks of peer producers, supported by the Internet and mobile applications, would open up a more rational and democratic negotiation of economic value, bringing together politics, the commons and a reformed capitalism. Douglas Rushkoff (2016) introduces a model of digital distributism that would reprogramme capitalism into post-capitalism, where the pursuit of growth is subsumed to a sustainable economy based on value creation and the recycling of money.

Erik Olin Wright (2009) portrays a pluralistic socialist transformation, grounded on a centrally coordinated decentralisation of power. His socialist transformation strategy is premised on the radical democratisation of both the state and the economy by civil society.

Part 3 critically engages the anti-capitalist argument. Alexandros Kioupiolis (2017) attempts to politicise the commons by commoning the political. He calibrates the tension between Ernesto Laclau and Chantal Mouffe's verticalism and Michael Hardt and Antonio Negri's horizontalism in favour of the self-instituting power of the people. Pierre Dardot and Christian Laval (2014) work on a similar line of argument to transform the common into a new type of right anchored in the self-instituting power of the people.

Katherine Gibson and Julie Graham (Gibson-Graham 1996; 2006) embark on a concrete elaboration of the commons into a post-capitalist context. They articulate the creation of a community economy that would gradually transform capitalism into the commons. Dyer-Witheford (1999; 2015) and

De Angelis (2017) formalise the circulation of the commons alongside the circulation of capital with the aim of transforming capitalism into post-capitalism. George Caffentzis (2013) and Silvia Federici (2012) take a more radical stance against capitalism and the state, arguing for the autonomous reproduction of the commons.

Slavoj Žižek (2008; 2010), Jodi Dean (2009), David Harvey (2003; 2010), Paul Mason (2015) and Christian Fuchs (2008; 2011) approach the commons in the context of classical Marxism. Whereas Žižek and Dean adopt a more statist approach, Harvey, Mason and Fuchs seek to strike a balance between the state and the commons.

1.6.1 Thesis

This book makes the case that the liberal argument underestimates the reformist insight that technology has the potential to decentralise production, thereby forcing capitalism to transform into post-capitalism. While the reformists argue for the cooperation of the commons with the state and friendly capital, the anti-capitalists argue for the autonomous development of the commons against and beyond capitalism and the state. Yet the anti-capitalists cannot provide a viable strategy as to how to safeguard the autonomy of the commons under conditions of grave dependency on state and capitalist production. While the reformists attempt to abolish the heteronomy of the commons by means of reverse co-optation via transvestment, they cannot address the precariousness and economic unsustainability that pervades commons-based peer production. They lack concrete strategies to help peers monetise use value and gain public trust and involvement in commons-based peer production. Finally, both the reformists and the anti-capitalists lack adequate strategies to reach a critical mass and transform capitalism into post-capitalism or anti-capitalism.

This is partially due to the contradictions of the commons often replicating the contradictions of capitalism and the state. Localism, gated communities, vested interests, atavism, traditionalism, ideology, conflict, neoconservatism and techno-elitism represent some of the internal contradictions of the commons (Harvey 2003, 169). One of the major problems of the commons is the equilibrium of communities with the fluid, hybrid and mobile identities of individuals in the networked information economy. This is partially coextensive with the tension between the non-commerciality and the commerciality of the commons, that is, the principle of keeping the open character of the commons while securing income for those contributing (Morell et al. 2017, 11). Externally, the commons are facing problems in access to capital and training, lack of entrepreneurial and managerial skills and the absence of institutional support from governments, larger cooperatives and NGOs (Bollier and Helfrich 2015). Both internal and external contradictions can equally result in the tyranny of the commons over the heterogeneity of the individual immanent in the cultural diversity of any collectivity.

Technology has, indeed, the potential to address these issues. It can help feed more people, cure illness, address climate change, create a more equitable economy and enhance democracy. But only a few commons-based applications can currently support such a claim. Human-computer interaction is still in its infancy and relevant research is at a preliminary stage. There are still limited successful cases available to point towards an economically, ecologically and socially sustainable commons-based peer production.

The problem with the information argument is the technological determinism that often comes to downplay the political. It falsely presumes that technological fixes can account for democratic processes. A number of authors such as Trebor Scholz (2016a; 2016b), Bauwens and Kostakis (Bauwens et al. 2019) and Alexandros Kioupiolis (2019) attempt to address this issue, but still the problem persists: the big challenge lying ahead for the commons is the compatibility of democratic governance with technological efficiency. Participatory democracy, tele-democracy, cyber-democracy, post-democracy, the commons democracy are all terms invented to solve the puzzle. But cyber-optimism is still contradicted by the non-replicability of the digital commons in the rest of the economy, let alone the technical inadequacies in addressing environmental and societal issues along democratic lines. Technology cannot but be subject to the political, that is, the moral ground that forms the rationale behind coding and algorithms. Put simply, technology is necessarily embedded in the broader political institutionalisation of society.

For the commons to avoid both tragedy and/or parody, it is crucial to grow into open, transparent and mutually reinforcing networks that can provide for their members a sustainable livelihood along with the political conditions for democracy, autonomy and justice. To do so, it is essential to transform into multi-way socio-economic circuits of peer production and ethical market operation, supported by relevant state policies. The short-term goal of the commons would be the creation of a commons/private/public economy on the basis of a common pool of resources from which actors can draw and to which they can contribute according to their needs and capacities. The long-term goal would be the gradual adjustment of capitalism to the post-capitalism of the commons.

The commons-based, post-capitalist transition needs to be enacted by a holistic, multidisciplinary strategy aimed at encompassing technology, finance, politics, economics, education, sustainability science and law under commons governance. Proper incentive schemes, well-designed policies, financial mechanisms, law reforms, education are all part and parcel of a post-hegemonic strategy aiming to transform capitalism and liberal democracy into the post-capitalism of the commons, supported by a partner state that represents the interests of the people rather than elites. The comprehensive understanding of a commons-orientated socio-economic transition can potentially lead to the introduction of relevant policies that can mobilise the collective action necessary to embrace a truly collaborative economy premised on principles of sustainability, justice, democratic self-governance and the equitable distribution of value.