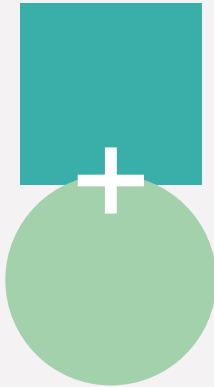




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TECHNO-SOCIAL INNOVATION IN THE COLLABORATIVE ECONOMY

REPORT ON CASE STUDIES

Deliverable 8

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ΕΛΙΔΕΚ.
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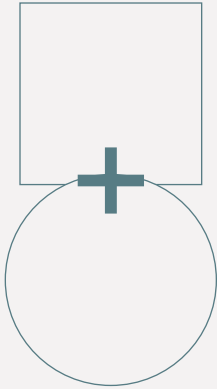


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Executive summary

The report elaborates on the research findings from the project “**Techno-Social Innovation in the Collaborative Economy**”, funded by the **Hellenic Foundation of Research and Innovation** for the years 2022-2024. Research objective is to examine the role of open-source technologies and the digital commons in the creation of a cooperative economy. To this end, the project conducts a conceptually-led and empirically grounded multi-case study. The project reviews in particular the cases of **P2P Lab/Tzoumakers** (*Greece*), **Open Food Network** (*Australia*), **CoopCycle** (*France*) and **Circles UBI** (*Germany*) as illustrative case studies of Internet-enabled grassroots organisational models such as the digital commons, platform cooperatives, open cooperatives and Distributed Autonomous Organizations (*DAOs*) on Blockchain. Ultimate goal is to highlight the normative and empirical conditions of grassroots technologically-driven innovation as well as to bring to the fore success and limiting factors for sustainable business models in the cooperative economy, potentially enabling the transition towards a commons-oriented post-capitalist economy.



Introduction

The last decades are witnessing the rise of a digital economy, comprising various Internet-enabled organisational models such as platform capitalism, platform cooperativism, peer production and the digital commons. Internet affordances such as networked computing, decentralisation, open sourcing and cost reduction enable peer production and network effects on digital platforms at a global scale. Whereas platform capitalism builds on network effects on digital platforms to launch multi-sided markets, facilitate trade and capitalise on market exchange on the Internet, platform cooperativism combines the principles of traditional cooperatives with algorithmic design on the Internet to launch worker-owned cooperatives that operate on quite the opposite logic of platform capitalism (Scholz 2016; Scholz and Schneider 2016; Spier 2022; Zhu and Marjanovic 2021). Platform cooperatives apply collective ownership over the means of production and are run democratically on the basis of the “one member, one vote” principle. Platform cooperatives pursue social, ethical and ecological goals rather than strictly commercial ones. Their core principles extend to value distribution as opposed to profit maximization.

Michel Bauwens and **Vasilis Kostakis** put a commons spin on platform cooperativism by seeking to instill platform cooperatives with the principles of peer production. They advocate for the transformation of platform cooperativism into the model of open cooperativism that places commons-based peer production at the center of collaboration between civil society, ethical market entities and a partner state.

The report examines variants of platform and open cooperativism through a multi-case study approach. In the first part, the report exposes the normative foundations of platform cooperativism and the commons that set the tone for empirical research. In the second part, the report puts its normative assumptions to the test by reviewing **P2P Lab/**

Tzoumakers (Greece), **Open Food Network** (Australia) and **CoopCycle** (France) and **Circles UBI** (Germany) as illustrative case studies of Internet-enabled grassroots organisational models. **Tzoumakers** is a community that uses open-source software/hardware to manufacture mid-tech small-scale agricultural tools per demand. Open Food Network deploys the digital commons to launch local short food supply chains that cut out the middlemen in food distribution. CoopCycle is a federation of bike delivery coops that deploy the digital commons in the food delivery sector to combat the current hegemony of the gig economy. Circles UBI deploys the Blockchain technology to issue tokens of Universal Basic Income for all. In the third part, the report discusses the multifaceted implications of empirical research through the lens of transforming platform cooperativism into the model of open cooperativism. The report concludes with some recommendations for future research going forward.



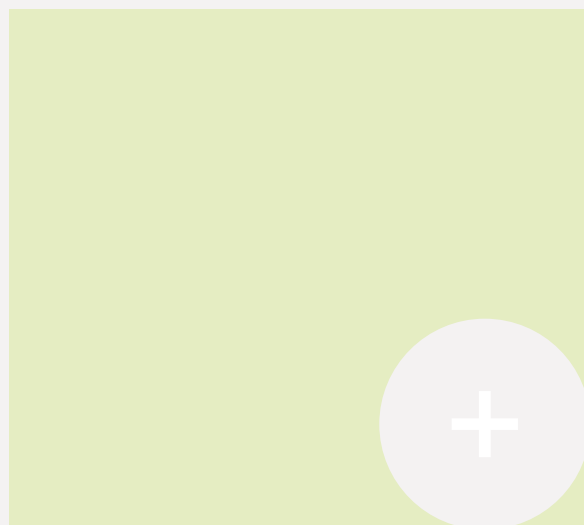
I. The Merge: Platform Cooperativism, Cosmolocalism and Open Cooperativism

Trebor Scholz (2016) has coined the term “platform cooperativism” to describe an Internet-enabled model of production where digital platforms are communally shared and run by their members. A common definition of a platform cooperative is the following one:

“A platform cooperative, or platform co-op, is a cooperatively owned, democratically governed business that establishes a computing platform, and uses a website, mobile app or a protocol to facilitate the sale of goods and services”
(Calzada 2020, 8).

Scholz et al. (2021, 15) define a platform cooperative as “worker co-ops, data co-ops, multi-stakeholder co-ops, and producer co-ops for whom their digital business is central to their operation”. Another plausible definition of a platform cooperative would describe “an enterprise that operates primarily through digital platforms for interaction or the exchange of goods and/or services and is structured in line with the International Cooperative Alliance Statement on the Cooperative Identity” (Mayo 2019, 20).

The idea is to use the algorithmic design of profit-driven platforms such as Uber and Airbnb in the service of a cooperative business model based on community ownership, democratic governance, sustainability and fair distribution of value (Scholz 2016). Instead of workers earning meagre wages from precarious labour that makes investors rich, they would be able to design, manage and



own the means of production themselves. Platform cooperativism works on the model of a multi-stakeholder synergy of consumers, investors, producers and users. It aims to reunite existing cooperatives and labour unions under digital self-governance.

Platform cooperatives have not escaped criticism. Not only do these Internet-enabled organisational models have to address the shortcomings of traditional cooperatives (De Lautour and Cortese 2016; Malta et al. 2020; Mohamad et al. 2013; Puri and Walsh 2018; Restakis 2010; Simon 2019), they also encounter the overall tendency of platform capitalism towards monopoly formation (Srnicek 2017). Platform cooperativism exhibits contradictions between politics and enterprise, democracy and the market, commons and commercialisation, as well as activism and entrepreneurship (Sandoval 2020).

“Platform cooperativism is proposing a bottom-up strategy of transforming platform capitalism. It seems promising as it offers an avenue for positive critique – a strategy of actively creating alternative realities instead of merely criticising existing ones. Such a bottom-up strategy is particularly appealing in times when many have lost confidence in neoliberal governments to regulate corporate power and support projects for social change. Many examples show that platform co-operatives can have positive impacts on their members and communities. However, thus far they have been unable to create large-scale structural change” (Sandoval 2020, 809).



Tensions and contradictions are detrimental to the overall transformative potential of the cooperative sector. Trebor Scholz (2016) himself oscillates between a moderate and a radical thesis when he contends that it is unrealistic to anticipate that platform co-ops will dominate capitalist markets, thus settling with a more diversified economy.

Overall, the literature has documented three basic normative approaches of the future of platform cooperativism vis-à-vis platform capitalism:

- The liberal regulation of platform capitalism towards an eco-friendly, social and human digital capitalism (Codagnone et al. 2016a, 2016b; Eurofound 2018; Frenken et al. 2020; Rani et al. 2021; UNCTAD 2019).
- The reformist regulation of platform capitalism through democratisation and/or nationalisation (Dufresne and Leterme 2021; Fuchs 2014; Graham and Shaw 2017; Huws et al. 2018; Morozov 2018; Srnicek 2017; Varoufakis 2020).
- The radical bottom-up replacement of platform capitalism with grassroots commons-based post-capitalist organisational models aided or not by the state (Bauwens et al. 2019; Gibson-Graham 1996, 2006; Muldoon 2022; Papadimitropoulos 2020, 2022; Scholz 2016; van Doorn 2019; Woodcock 2020). This tendency often comes in terms of a radical reformism that seeks to create public service Internet platforms and platform coop/public service Internet hybrids that challenge the power of digital capitalism and aim at replacing it (Fuchs 2021).

Michel Bauwens and **Vasilis Kostakis** (2014, 2017) are exploring the third scenario of transforming platform cooperativism into open cooperativism. Open cooperativism places commons-based peer production at the center of collaboration between civil society organisations producing commons, ethical market entities adding exchange val-

ue on top of the use value of the commons and a partner state enabling commons-based peer production through funding, legislation, infrastructures, education, and so on. The commons consist of distributed or common property resources and infrastructures (natural resources, software, hardware, knowledge, capital, culture), self-managed by user communities in accordance with collectively established rules or norms (Ostrom 1990). The digital commons, in particular, refer to a non-market sector of information, knowledge and cultural production, not treated as private property but as an ethic of sharing, self-management and cooperation within peers who have open access to the Internet and free/open source software (Benkler 2006). The digital commons present an alternative to traditional models of intellectual property by promoting open access, collaborative innovation, and knowledge sharing. In doing so, they alleviate barriers to information, encourage community ownership, and contribute to knowledge democratization, fostering more inclusive, sustainable digital ecosystems. Commons-based peer production spins around the phygital - the symbiosis of the physical and the digital space - and the cosmological - the symbiosis of global/digital knowledge with local applications - to launch Internet-enabled grassroots organizational models such as platform cooperatives, open cooperatives and Distributed Autonomous Organizations (DAOs) on Blockchain.

The literature has documented three main contemporary normative approaches of the commons (Papadimitropoulos 2020):

liberal (Benkler, 2006; Lessig, 2001, 2004; Ostrom, 1990, 2000); **reformist** (Arvidsson and Peitersen, 2013; Bollier and Helfrich, 2012, 2019; Kostakis and Bauwens, 2014; Wright, 2009; Rifkin, 2014; Rushkoff, 2016; Scholz, 2016; Scholz and Schneider, 2016); and **anti-capitalist** (Dardot and Laval, 2014; Dean, 2009, 2012; De Angelis, 2017; Dyer-Witthof, 1999, 2015; Federici, 2012; Gibson and Graham, 1996, 2006; Hardt and Negri, 2000, 2004, 2009; Kioupiolis, 2019; Mason, 2015; Söderberg, 2008; Žižek, 2008, 2010). The classification is overly schematic since arguments often intersect.

Liberal scholars conceive of the commons as an alternative mode of production that exists alongside liberal democracy and the capitalist market. The commons pertain to the civil society that interacts both with privatisation and government regulation. Liberal scholars such as **Elinor Ostrom** (1990; 2000), **Lawrence Lessig** (2001; 2004) and **Yochai Benkler** (2006; 2013) envisage the future of the commons in tandem with the state-market operation. With the exceptions of some anarchistic and collectivist strands, the liberal commons by large do not intend to challenge the state-capitalism nexus but to coexist peacefully on the premises of civil society, the state and the capitalist market.

Reformist scholars approach the commons as an alternative organizational model of civil society, economy and politics, which does not necessarily oppose liberal democracy and the capitalist market, nor does it peacefully coexist with them. Reformists such as **Bauwens** and **Kostakis** (*Bauwens et al. 2019*), **Bollier** (2003; 2014), **Rushkoff** (2016) and **Wright** (2009), among others, seek to transform the state-capitalism nexus by advancing the commons into a dominant mode of production that is increasingly less dependent on corporations and state intervention. The reformist approach of the commons combines liberal, social democratic, socialist and revolutionary elements in varying forms to foster a commons-based transition towards a post-capitalist ethical and sustainable economy.

Anti-capitalist thinkers champion the commons as an anti-capitalist terrain of production that clashes head-on with capitalism and the state. For anti-capitalists, the commons engages in a constant class struggle with capitalism (*Papadimitropoulos, 2017: 572*). Well-renowned scholars such as **Ernesto Laclau** and **Chantal Mouffe** (2001), **Pierre Dardot** and **Christian Laval** (2014; 2017), **Massimo De Angelis** (2017), **George Caffentzis** (2014), **Silvia Federici** (2004; 2012) and **Alexandros Kioupkiolis** (2017; 2021) set out from a radical standpoint to confront neoliberal capitalism and render the commons autonomous vis-à-vis the state-capitalism nexus. All oppose the concept of a “liberal commons”, that is, a com-

mons confined to civil society that operates at the fringes of market economy and the state.

The report adheres to the reformist strand without excluding convergences with the liberal and anti-capitalist trajectories towards a commons-based post-capitalist transition. As such, the report elaborates here on transformative tech as it plugs into Internet-enabled grassroots organisational models such as the digital commons, cosmocalism, platform and open cooperativism. It specifically explores the potential merge of the digital commons and cosmocalism with platform cooperatives on the model of open cooperativism. The “**Design Global-Manufacture Local**” (*DG-ML*) - aka cosmocalism - combines open-source software with hardware, 3D printers and computer numerical machines deployed in fablabs and makerspaces powered by renewable energy resources to install a new mode of production that opposes capitalism in that it promotes decentralization, value distribution, self-management, sharing, openness and sustainability (*Kostakis et al., 2015*).





II. Methodology

Next, the report explores empirical applications of transformative tech in the cooperative economy. Research has adopted a case study approach (*Yin, 2014*), which is deemed more appropriate when exploring novel organisational models such as the digital commons, cosmocalism, platform and open cooperativism. The case studies have been documented in detail elsewhere (*Papadimitropoulos, 2023b; Papadimitropoulos and Malamidis, 2023a; Papadimitropoulos and Malamidis, 2023b; Papadimitropoulos and Perperidis 2024*). Here, we cite only core fragments of empirical research. Data collection was based on literature review, participatory observation and interviews. Semi-structured in-depth interviews (*Fiss, 2009*) were conducted with core members of the selected case studies. In total, 34 members of P2P Lab, Tzoumakers, Open Food Network, CoopCycle and Circles UBI were interviewed. Interview length ranged from 40 to 100 minutes. Interviews were recorded via Skype and transcribed using Descript. Interview questions revolved around four coding themes: value proposition, governance, economic model, law policy. The author (principal investigator) also participated in workshops, online meetings and general assemblies. Data from the interviews was then triangulated (*Gibbert et al., 2008*) with data collected via literature review and field work.



III. Case studies



Tzoumakers

Figure 1. Tzoumakers

Tzoumakers is an illustrative case study of commons-based peer production, cosmopolitanism and open cooperativism (Figure 1). It is a pilot project incubated by the P2P Lab¹, a research collective situated at Ioannina, Greece. P2P Lab explores the democratisation of knowledge and technology in science, academia, politics and economics. It advocates the counter-hegemony of a post-capitalist transition geared by open-source technologies and the digital commons. P2P Lab has received funding from the European Research Council (ERC) to launch Tzoumakers² as the Greek pilot of the cosmopolitanism project³.

Tzoumakers is a community of farmers, peasants, researchers and entrepreneurs who experiment with open-source agriculture. Tzoumakers seek to address the lack of commercial agricultural tools for small-scale agriculture located in the mountains as well as the hegemony of closed, costly agricultural technologies that are unaffordable and non-repairable by smallholder farmers (Pantazis and Meyer, 2020). To this end, P2P Lab, in concert with the municipality of Ioannina and the local community of farmers and entrepreneurs (Tzoumakers) situated at the whereabouts of Tzoumerka mountains, set up a FabLab at the village of Kaletzi near Ioannina. The FabLab is equipped with computer numerical machines such as welding station, laser cutter, milling machine and sensors to be used, among others, for the manufacturing of small-scale open-source agricultural tools (Pantazis and Meyer, 2020).

Farmers, researchers and entrepreneurs organise workshops where they co-design and manufacture agricultural tools on demand. Thus far, Tzoumakers have organized 30 workshops and created 13 types of agricultural tools. Some examples include a legume-harvesting machine, a hammering fencing pole, a tilling fork and an aromatic herb grinder. The blueprints, bills of materials, and assembly instructions are open sourced on the project's website. The FabLab, the machinery, the designs, the tools, all are part and parcel of the commons to be used freely upon demand. Sustainability, relocalization, openness, sharing, transparency, collective decision-making, resilience and commoning are at the core the principles of Tzoumakers (Table 1).

| VALUE PROPOSITION | GOVERNANCE | ECONOMIC POLICY | LAW POLICY |
|--|--|---|---|
| The digital commons, cosmocalism, open cooperativism, small-scale open-source agriculture, technological sovereignty, sustainability, circular economy, degrowth | Direct democracy, decentralization, open participatory design, multi-stakeholder governance, heterarchy, revocability, do-ocracy, liquid democracy, modularity of research teams | Equitable distribution of value, manufacturing of on-demand customizable low-cost tools | Non-profit organization, EU, municipality |
| Problem: the absence of commercial agricultural tools for small-scale agriculture | Multiple stakeholders: core members, fellow researchers, affiliates, third-party community members, farmers, community members, the municipality | Revenue streams: EU grants, donations, crowdfunding | Licenses: copyleft, Creative Commons, copyleft, lack of open source licenses and certifications for hardware |
| Solution: peer production of small-scale open-source agricultural tools to be used as a commons | Workshops: open participation calls | | |

Table 1. Discourses in P2P Lab/Tzoumakers

Tzoumakers have recently progressed into a non-profit organisation. P2P Lab and Tzoumakers prefigure a model of open cooperativism inasmuch as they comprise: (1) a community of researchers, farmers and technicians producing the commons; (2) ethical market entities such as social enterprises and local coops participating in the workshops and the co-production of the artifacts; and (3) the ERC and the municipality of Ioannina supporting the project with capital (funding and infrastructure). Yet, a number of factors challenge the long-term sustainability of Tzoumakers. Low demand, non-familiarity with digital technologies for farmers and peasants, vested interests, neoliberal lock-ins and path dependencies, are some of the main obstacles going forward. We discuss the future prospect of Tzoumakers in the last chapter.



Figure 2. Open Food Network

Open Food Network⁴ (OFN) is a well-established open cooperative run by a global community of volunteers and members who deploy the digital commons to launch Internet-enabled short food supply chains (SFSCs) that cut out the middlemen by directly interconnecting producers and consumers (*Figure 2*).

S SFSCs come thus to address, among others, the profit squeeze most prevalent in agriculture, with farmers getting paid the 1% of their produce sold in the market.

The rest 99% variously splits in taxes, production costs, processors, suppliers, wholesalers and retailers. SFSCs guarantee local and fresh quality products, support sustainable and healthy agricultural methods, increase producers' income and contribute to the revitalization of local society and economy (*Jarzębowski et al., 2020: 2*). "The result is customers are getting better, fresher, more ethically raised food. In return, farmers get direct lines of feedback from their customers, less food waste and more money in their pockets" (*Cornish, 2019*).

The OFN calls for systemic change in agriculture by juxtaposing agroecology against neoliberal agri-business. It sets out to spawn a global social movement aiming to reverse climate change through sustainability practices that promote permaculture, fair pay, food democracy and food sovereignty. Cosmolocalism, transparency, sharing and the equitable distribution of value are core features of the OFN, which encompasses various community food enterprises adopting a diversity of business models (*Table 2*).

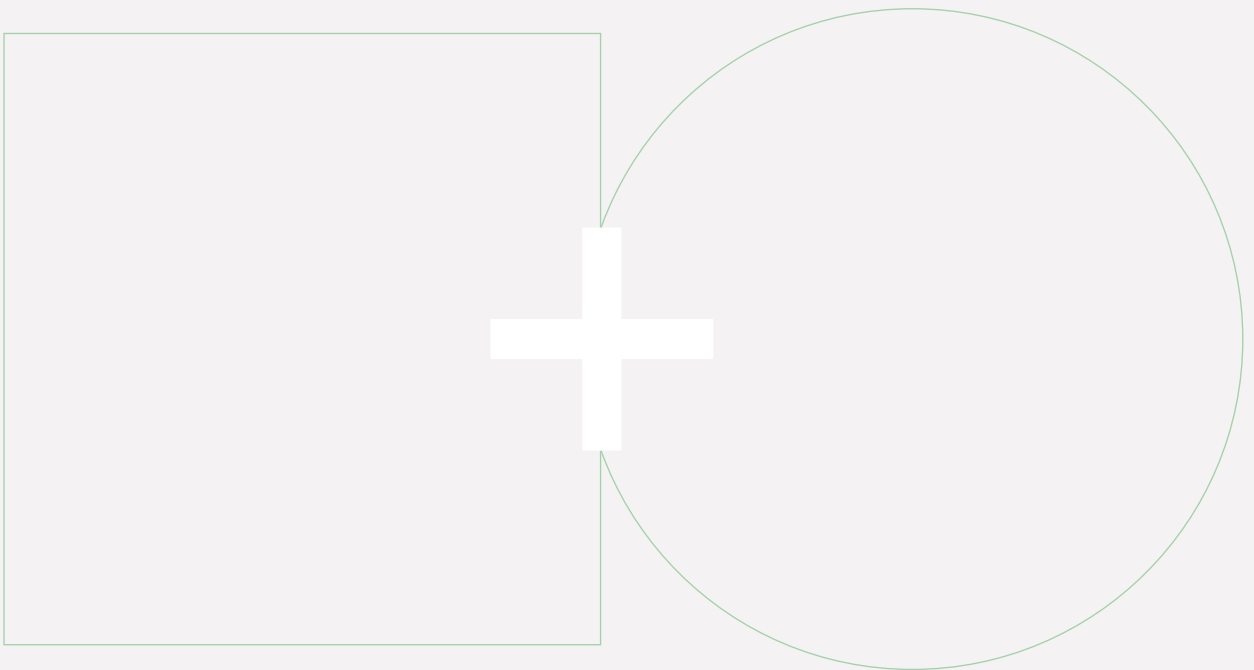
| VALUE PROPOSITION | GOVERNANCE | ECONOMIC POLICY | LAW POLICY |
|--|---|---|--|
| <p>The digital commons, SFSCs, agroecology, systemic change, food sovereignty</p> | <p>Multi-stakeholder governance, subsidiarity, holacracy, sociocracy, lazy consensus</p> | <p>Diversity of revenue streams and business models, transparency, fair pay, "cutting out the middleman"</p> | <p>Open-source software, the digital commons, diversity of legal entities, data food interoperability</p> |
| <p>Problem: food centralization and disconnection, profit squeeze</p> | <p>OFN Global: 5 coordination Circles (Delivery of code/software, Marketing/Communications, Governance, Fundraising, Other Services/Providers)</p> | <p>Revenue streams: fundraising, grants, subscriptions, fees, OFN instances contribution, crowdfunding, partnerships</p> | <p>For-benefit foundation: the Open Food Foundation</p> |
| <p>Solution: decentralization and connection via SFSCs</p> | <p>Instances/members: 20 local/national instances, 100 members (members of local/national instances)</p> | <p>Fair pay for farmers: cutting out the middlemen > decrease of production and transaction costs</p> | <p>Community pledge: informal legal agreement</p> |
| <p>Economic sustainability: fair pay, "cutting out the middleman", lower costs, reduced information asymmetry, consumer empowerment, producer-consumer reconnection</p> | <p>Decision-making: subsidiarity, community forums and newsletters > equal voting rights using online voting tools/mechanisms, lazy consensus</p> | <p>Fair pay for OFN employees: payment according to the cost-of-living index by country (10 to 40 euro per hour)</p> | <p>Food certification: compliance with organic and food safety standards</p> |
| <p>Social sustainability: inclusion, relocalisation, reduced health inequality and food poverty, community building</p> | <p>Stakeholders: farmers/growers, food processors, food hubs, shoppers, distributors, consumers, associates (white label users), service providers, volunteers</p> | <p>Business models: producers selling directly to customers or indirectly through food coops, farmers' markets and food hubs</p> | <p>Open-source content and code: licensed with CC BY-SA 3.0 and AGPL 3 respectively</p> |
| <p>Environmental sustainability: organic, recycling waste, permaculture, reduction in CO2 emissions, resource efficiency, biodiversity</p> | <p>Workshops: open participation calls</p> | <p>Transparency: open budget spreadsheet</p> | <p>Data food interoperability: common standards and protocols</p> |
| | | | <p>Community food enterprises: not-for-profits, charities, associations, local food markets, coops, social enterprises, community interest enterprises, community support-aided agriculture</p> |

Table 2. Discourses in Open Food Network

The OFN institutionally is backed by the Open Food Foundation, which is a non-profit charity established to protect the open-source knowledge, code and platform. As such the OFN is a paradigmatic case of an open cooperative, since it comprises:

(1) a community of volunteers and members producing the digital commons and managing the OFN platform in terms of subsidiarity and democratic governance; (2) ethical market entities participating in the OFN platform; and (3) a Foundation and local authorities variously supporting the OFN, thereby prefiguring the role of a partner state. The OFN expands further the digital commons into open protocols and standards designed to launch data food interoperability with the aim to enhance value flow traceability and low-cost efficiency across different platforms connecting to the OFN.

Yet, systemic change is in tension with diversity, which often breeds fragmentation and contradictions. “There’s tension between not-for profit, open-source philosophy, and closed-source profit-making, individual gain versus collective gain” (Interviewee).” OFN seems to focus mostly on business management, food security, data interoperability and sustainability, thus losing sight of broader societal transformation. Long-term radicalism goes hand in hand with short-term reformism and a mixed economy often curtailing a more radical vision. Therefore, one wonders whether OFN could deliver in its promise to realize systemic change in the long term. We discuss this prospect further in the last chapter.



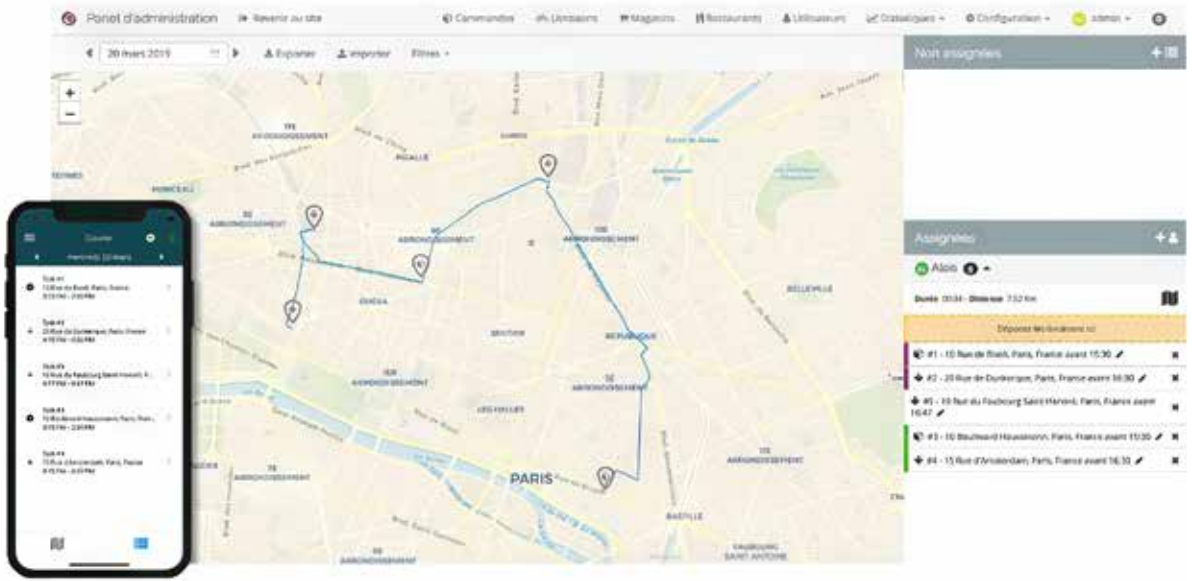


Figure 3. CoopCycle

CoopCycle is an informal federation of more than 67 bike delivery cooperatives spanning the globe (Spier, 2022). Formally, CoopCycle is a French-based association of volunteers who develop open-source software for bike delivery e-logistics and services in the cooperative sector. As such, the association/federation provides the institutional backbone as well as the digital infrastructure for bike delivery coops across the globe (Figure 3).

CoopCycle was initially founded to combat the precariousness of the couriers working in the so-called gig economy. The developer behind CoopCycle copied the proprietary software of foodtech platforms and reprogrammed it into a digital commons to be deployed solely by cooperatives or collectives that adhere to the principles of the social and solidarity economy. CoopCycle puts the digital commons in the service of an anticapitalist model premised on the collective ownership of the means of production, democratic decision-making and the equitable distribution of value among workers (Table 3).

In contrast to foodtech platforms that classify workers as independent contractors and pay them per drop, workers in the CoopCycle federation are paid per hour, all the while enjoying the benefits of safe employment

such as social security, insurance, sick day and holiday leave pay. In contrast to foodtech platforms that seek to maximize shareholder value, CoopCycle strives to equitably distribute value among workers: “Money should not make money. All the benefits should go to workers. You need to ride a bike to earn money” (Riders Collective, 2021).

Opting for bikes, CoopCycle is a pioneer in reducing the carbon footprint of the food delivery sector. CoopCycle’s environmental mission features most prominently in its value proposition, establishing partnerships with City Councils and companies aiming to adopt a more ecological approach and no longer risk having their trucks stuck in traffic jams. Thus, CoopCycle fosters economic, social and environmental sustainability for coops and local economies.

| VALUE PROPOSITION | GOVERNANCE | ECONOMIC POLICY | LAW POLICY |
|---|---|--|---|
| The digital commons; anticapitalist economy; sustainability; lobbying | Direct democracy; general assembly; centralization vs decentralization | Contribution; fair pay; delivery fee; partnerships | Multi-stakeholder cooperative; worker-owned cooperatives; non-profit social inclusion companies; Coopyleft license |
| Problem: foodtech platform precarisation and uberisation | Federation: 67 coops across 10 countries; 3 employees (2 developers, 1 coordinator); a board of 8 administrators; working groups | Federation revenue streams: 2,5% of the added value of coops annual turnover (500 euros minimum annual fee); donations; grants; awards; consulting services | Legal entity: formally a French association, informally a federation, a precursor to a multi-stakeholder cooperative |
| Solution: the digital provision of bike-delivery e-logistics and services | Decision-making process: general annual assembly; monthly coop assembly; one coop, one vote; one member, one vote; consent-based decision; majority voting; sociocracy | Coop revenue streams: delivery fee 20-30% | License: Coopyleft license |
| Services: software development; onboarding and training; food delivery; last mile | Decision-making tools: Slack, Loomio | Fair pay: replace volunteer work in the federation with paid work; couriers paid by the hour; annual profits distributed to workers | Partnership agreement: associations and collectives joining the federation commit to becoming a cooperative within 2 years |
| Economic sustainability: cost reduction; fair pay; the sharing of value | Centralization: hard and heavy software development (back-end) | Partnerships: MAIF; MACIF (insurance); FACTTIC Argentina; ITDP Mexico: Programa Rodando Juntas; Maison des Coursiers / Riders' Shelter; CG SCO | |
| Social sustainability: local and ethical social economy; solidarity; care | Decentralization: software customization; coop self-management; marketing, pricing strategy workshops; open participation calls | | |
| Environmental sustainability: less traffic and noise; reduced waste and CO2 emission | | | |

Table 3. Discourses in CoopCycle

CoopCycle is currently evolving into a multi-stakeholder cooperative, supported by the French legal framework that allows for various economic actors to join forces for social and environmental purposes. Eco-friendly companies, zero-waste restaurants, family-run social enterprises, associations, municipalities, hospitals and schools, all craft an entrepreneurial coalition in the local economy. Thus, the organizational melange of CoopCycle illustrates a diverse ecosystem of a social and solidarity economy variously intersecting with the capitalist economy.

CoopCycle's future vision is to further develop the software and specialize in lobbying to expand the cooperative economy in France and beyond. CoopCycle seeks to occupy a niche of socio-economic activity and become sustainable in the short term, thus posing a potential threat for platform capitalism in the long term. CoopCycle's members are aware that establishing an anti-capitalist block presupposes the transformation of politics at a macro-institutional level (*Borrits, 2019a, 2019b*). Yet, there is no clear strategy on how to contribute to broader societal transformation besides lobbying. We explore this scenario in the next section.

CIRCLES UBI

Circles UBI is a decentralized blockchain-based sovereign version of credit money operating on a web of trust (*Figure 4*).

In contrast to the commodity theory of money according to which money is backed by a commodity such as metal or gold and is determined by market forces and relevant factors of production, sovereign money derives its legitimacy merely from trust and political power (*Crocker, 2020: 32–35*). Sovereign money thus can be anything that is backed by trust or political power, be it fiat currency, cryptocurrency or community currency.

In technical terms, Circles UBI is a protocol built and deployed on the Gnosis Chain in October 2020 (*Linares, 2023*). Contrary to a state-backed UBI, the Circles protocol distributes ERC-20 tokens equally and unconditionally on a per person stateless basis (*Avanzo et al., 2023*). Contrary to other blockchain-based UBI projects, Circles is not a commodity type of a virtual asset designed for the purposes of accumulation and profit. It is rather a unit of credit issued to settle debts in accordance with promises made among individuals.

The idea behind Circles was to create a fairer and less concentrated cryptocurrency than Bitcoin and to connect it with a political project aiming to provide a universal basic income (UBI) for all people across the globe to cover their basic needs. This societal transformation presupposes a reversal of values away from neocolonialism, exploitation, extraction, individualism and laborism towards the ethics of creativity, ecology, self-sufficiency, autonomy, community, care, and mutualism (*Table 4*). To this end, money dissociates from the commodity fetishism of both Marxism and Liberalism, in which money represents reification and utility, respectively. Money also parts ways with the nation-state sovereign money, fiat, or credit, to empower people through mutual credit systems designed to circulate values others than profit maximization and capital accumulation (*Cabaña and Linares, 2022*).

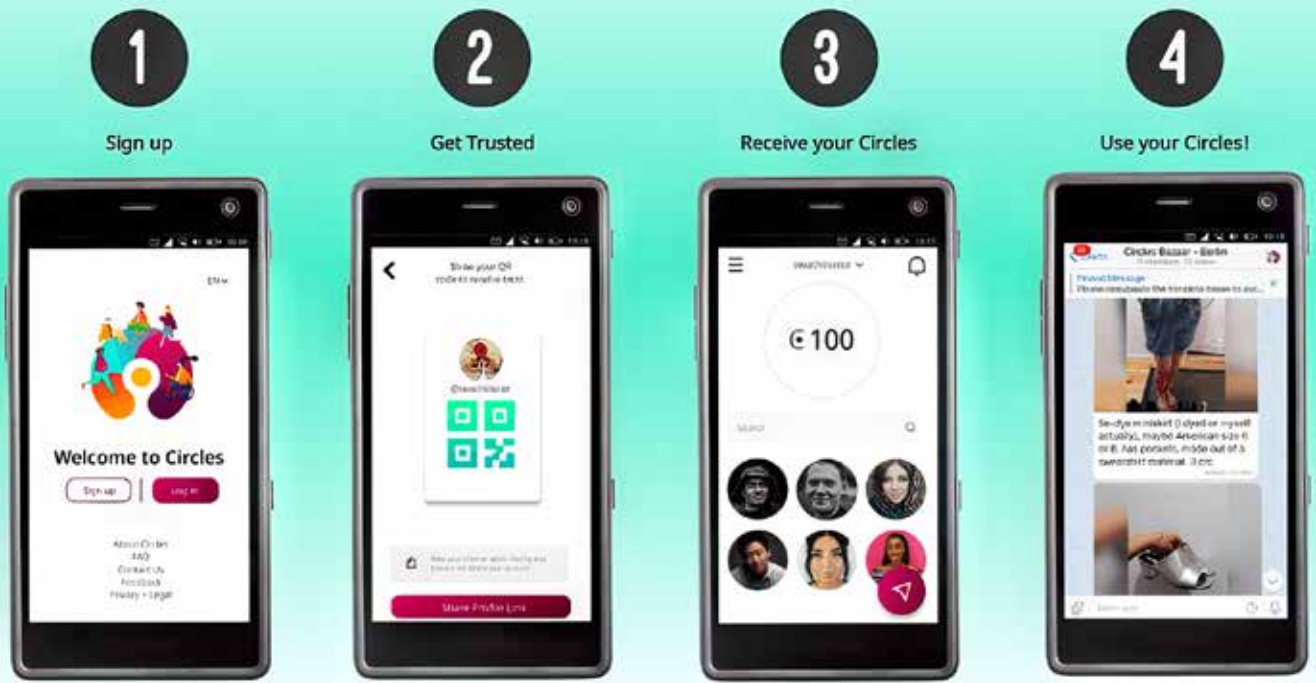


Figure 4. Circles UBI

Mutual credit systems point to the potential democratization of money, its creation, and its institutions—a money commons—a currency for the commons where credit is issued, co-owned, and administered by people democratically from the bottom-up rather than by state bureaucracies and banks (Cabaña and Linares, 2022).

In February 2020, the Circles Coop was established to build up a flagship pilot in Berlin, aiming to apply the Circles protocol in the local economy and support equivalent implementations across the globe. The Circles Coop supported groups and businesses who want to join the network and use Circles. The team set out to onboard cooperatives, producers, and businesses that can complement each other to claim the stuff of a basic income: food, care, health, housing, etc. After the official launch in October 2020, the network grew to a worldwide entanglement of over 100,000 people. In July 2021, the Circles Coop began running a subsidy program for a group of local businesses, which allowed them to convert their Circles (CRCs) into fiat (EUR). The goal of the subsidy pro-

gram was to broaden the Circles network by incentivizing like-minded businesses to accept and circulate CRCs across their supply chains. The subsidy program comprised a diversity of businesses such as bicycle sales and repairs to cooperative distribution bike fleets; yoga studios and saunas; meditation and massage practices; small farmers and local cooperative supermarkets; local shops and cooks that produce their own drinks, products, and clothing; and other service providers.

| VALUE PROPOSITION | GOVERNANCE | ECONOMIC POLICY | TECH / LAW POLICY |
|---|---|---|--|
| UBI, blockchain, anti-capitalism, anarchism, libertarianism, economic democracy | Direct democracy, monthly general assembly, decentralization, localism, democratic confederalism | Complementary currency, transparency, €2.3 million in donations, employee salaries | Bylaws of Circles worker cooperative |
| Problem: nation-state centralized debt-based money supply and unfair capitalist distribution of money | Circles worker cooperative: two full time and eight part time employees and several freelancers | R program in EUR for businesses participating in the Berlin pilot | Bitsposessed collective |
| Solution: blockchain-based decentralized UBI | Executive board, core team meetings, online and in-person assembly, collective brainstorming, community hub, coordination group, working group, community reach out | Resilient localized and complementary supply chains which allow for affordable prices using CRC | Gnosis Chain, open-source software |
| Fair circular economy, money as a commons | | Community regulated exchange rates of CRC and fiat money | Circles wallet, seed phrase, public and private key |
| Solidarity, diversity, resilience, self-sustainability | | Transaction fees on Gnosis Chain are covered by Gnosis | Circles Safe: a smart contract that holds the keys to the accounts |
| Change in the ethic of work | | Proposed 1/5 ratio between Circles credit and reserve capacity for B2B | Transparency of transactions versus privacy (Entropy project) |
| Berlin and Bali pilots | | | |

Table 4. Discourses in Circles UBI

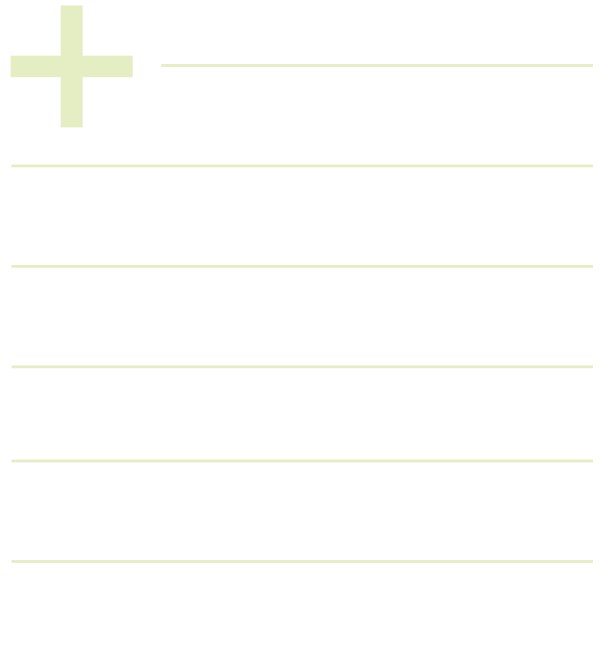
Circles UBI is a sort of a decentralized voting system that distributes reputation points across a web of trust in a digital marketplace and/or a local economy. The Circles standardized smart contract issues one Circles ERC-20 token (CRC) per hour for everyone who has an account in the network. To get an account, one needs to create a Circles Wallet and gain the trust of at least three trustees to start issuing. One can then spend or gain CRC by selling products or services. CRC cannot be exchanged for fiat or cryptocurrency but only for products and services. To become a buyer or a seller (private or business), one needs to register at the Circles Marketplace, which is the matchmaking infrastructure for resources and needs. Today, Circles UBI accounts number around 200,000 in total.

To prevent hoarding and incentivize economic activity, Circles UBI comes with an in-built deflationary monetary policy in the form of demurrage, which is a 7% annual decrease on all Circles balances. Inflation (an increase of 24 CRC/day or 8,760 CRC/year) and deflation (7% decrease per year) eventually cancel each other out in the course of approximately 14 years, meaning that every account would converge to around 125,143 CRC if they did not engage in any economic activity (buying or selling with CRC). The goal of demurrage is to increase the velocity of spending and ensure that over time there is a convergence between those who own more and those who own less CRC, thereby decreasing the disparity between those who join first and those who join later. Eventually, demurrage aims to engineer a fairer circular economy.

However, the idea of each individual issuing her/his own token is problematic both technically and economically. The web of trust mechanism supported by the pathfinder algorithm is very complex and it does not work in practice. Also, the value an individual brings into the system can be subject to a misalignment of incentives like the one, for example, witnessed in the Berlin pilot. An amount of fiat money in Euro (EUR) was given as a subsidy, aiming to lower the risk on the part of businesses that were willing to accept and use CRC as a means of payment.

Yet, the Berlin pilot faced a number of hurdles that caused the Circles cooperative to run out of funding, end the pilot and stop its operation.

The Circles Coop ran into a number of problems. Blockchain technology is not ready to support thousands of users willing to join the network. Scalability issues, cumbersome smart contract upgrades, and numerous bugs constantly popping up in the system made its use problematic in Berlin and in Bali where Circles UBI is being currently implemented. Also, most businesses participating in the Berlin pilot were cashing out 90% of their CRC into EUR. Businesses were using CRC as an exit to EUR, thereby not contributing to the circulation of CRC across their supply chains (*Avanzo et al., 2023*). Eventually, they were doing business as usual, while often-times being engaged in price gouging. Businesses and merchants were raising the prices of the products traded in CRC to unaffordable levels for the community, thereby rendering those products luxury items. Encountered with the realities and contradictions of building alternatives outside the state and within the current capitalist economy, the Circles Coop ceased its operations in January 2024.



IV. Discussion

P2P Lab/Tzoumakers, OFN, CoopCycle and Circles UBI apply core principles of commons-based peer production and cosmopolitanism: sustainability, openness, sharing, transparency, self-governance, decentralisation and the equitable distribution of value among coop members. They deploy transformative tech such as open-source software/hardware, the digital commons and copyleft licenses to put forth a post-capitalist ethical and sustainable economy.

Whereas P2P Lab/Tzoumakers, OFN and Circles UBI sketch out a model of open cooperative, which produces material and immaterial commons that are freely accessible to all such as agricultural tools, software and money, CoopCycle operates under a version of a copyleft license (Bauwens and Kostakis, 2014) that restricts the use of the software to federation members such as bike delivery coops and collectives that pay membership dues and comply with the principles of the social and solidarity economy. CoopCycle operates mostly as a platform cooperative that limits the digital commons - that is, the software, e-logistics, etc. - within the confines of the federation. Whereas a copyleft license keeps the software code open to all (Stallman 2002), a copyleft license requires reciprocity (contribution) or some sort of capital in exchange for software use. Cooperatives and collectives that seek to avail of CoopCycle's digital commons need to pay at least €500 per year as membership dues. A copyleft license thus comes to overcome a major hurdle open cooperativism: the capitalist cooptation of the digital commons, which is owing to the unrestricted openness of the copyleft license (Birkinbine 2020). Profit-driven digital platforms such as Facebook and Google capitalise on open-source software to benefit from peer production and network effects on the Internet. In Marxian terms, the capitalist cooptation of the digital commons is merely surplus value extraction of the digital labour and the general intellect of Internet users and e-communities, appropriated by platform capitalism.

While the copyleft license such as the one adopted by CoopCycle helps secure the sustainability of the commons vis-à-vis extractive capitalism, it is not enough to foster the counter-hegemony of open cooperativism vis-à-vis neoliberalism. Laclau and Mouffe's (2001) discourse theory of hegemony can be instructive here as to how to articulate a chain of equivalence between the commons, ethical market entities and a partner state, seeking to establish the counter-hegemony of the model of open cooperativism vis-à-vis the current hegemony of neoliberalism. By a chain of equivalence we refer here to a temporary alliance of societal actors operating in different spheres of the social such as politics, economics and civil society. A chain of equivalence links together a disparate set of particular demands (freedom, ecology, feminism, democracy, equality) in a common discourse so as to construct a more universal political project capable of bringing about systemic change. A common discourse such as the model of open cooperativism connects disparate actors of the economy, politics and civil society into a chain of equivalence represented by the common identity of a collective subject that incarnates the values of the commons. In short, a collective subject applies a minimum agreed-upon set of principles (i.e. the commons) that lie at the core of a common sense other than the one of neoliberalism that feeds on individualism, private property, market fundamentalism and profit maximization.

Interestingly, we are witnessing P2P Lab/Tzoumakers, OFN and the CoopCycle gradually opening up their value chains with the aim to scale widely across the economy via public/private/commons partnerships with municipalities and ethical market entities that share common values. In particular, OFN and CoopCycle are currently discussing a partnership in Spain. CoopCycle is interested in utilising the OFN e-commerce platform to expand its operations in the Basque country. Similarly, a network of woodland cooperatives in the UK is willing to use the OFN platform to dis-

tribute firewood, charcoal, permaculture and educational courses. Circles UBI is currently experimenting with future implementations of the protocol across the globe.

Cross-sectoral synergies put forward by P2P Lab/Tzoumakers, OFN and CoopCycle can be backed by alternative community currencies such as Circles UBI and multiply across the economy, politics and civil society to form a commons-based networked ecosystem of open cooperativism. Politics begs for a theory of hegemony to accommodate institutional diversity across a chain of equivalence linking up ethical market entities, the com-

mons and a partner state around the model of open cooperativism, wherein freedom and pluralism meets equality and fairness in the prospect of a radical and plural democracy. Future research needs to elaborate on sustainable business models in the cooperative economy coupled with a political theory of hegemony capable of transforming capitalism into post-capitalism. To this end, cross-sectoral synergies, inclusive governance, value distribution, innovative law and open sustainability standards are sine qua non for the counter-hegemony of open cooperativism to challenge the current hegemony of neoliberalism.

V. Conclusion

The report elaborates on the research findings from the project “**Techno-Social Innovation in the Collaborative Economy**”, funded by the Hellenic Foundation of Research and Innovation for the years 2022-2024. The project examined the role of open-source technologies and the digital commons in the creation of a cooperative economy. In doing so, it went through an extensive literature review on platform cooperatives and the commons to lay the theoretical background for empirical research. The report backs the theoretical construction of the model of open cooperativism with empirical evidence to offer some glimpses of the transformative potential of open-source technologies and the digital commons. The report reviews in particular the cases of **P2P Lab/Tzoumakers (Greece)**, **Open Food Network (Australia)**, **CoopCycle (France)** and **Circles UBI (Germany)** as illustrative case studies of Internet-enabled grassroots organisational models such as the digital commons, platform cooperatives, open cooperatives and Distributed Autonomous Organizations (DAOs) on Blockchain.

P2P Lab/Tzoumakers, OFN and Circles UBI sketch out a model of open cooperative, which produces material and immaterial commons that are freely accessible to all such as agricultural tools, software and money.

CoopCycle operates mostly as a platform cooperative that deploys a copyfair license that limits the digital commons - that is, the software, e-logistics, etc. - within the confines of the federation. While all four case studies put forward cross-sectoral synergies with ethical market entities and municipalities to expand their operations and scale wide and deep in the economy, a copyfair license turns out to be a crucial component of open cooperativism, since it shields the commons from capitalist cooptation, all the while allowing the use of the commons within the confines of the federation. The copyfair license functions as membrane that protects the commons and allow the ecosystem of open cooperativism to scale deep and wide.

However, neither legal hacks nor grassroots federalism can produce systemic change alone. To challenge the current hegemony of neoliberalism, projects such as P2P Lab/Tzoumakers, OFN, CoopCycle and Circles UBI need to articulate a political chain of equivalence linking up the commons, ethical market entities and a partner state around the counter-hegemony of open cooperativism. The model of open cooperativism can thus advance an alternative technological rationality and modernity anchored on the values of democracy, pluralism, equality, openness, sharing, value distribution and sustainability.

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