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COMMONS-BASED PEER PRODUCTION IN BENEFIT OF GRASSROOTS INITIATIVES OF SUSTAINABILITY TRANSITIONS

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ABSTRACT

Socio-technical and socio-economic systems need to adapt to become more resilient and sustainable to combat environmental and socio-economic challenges. Commons-based peer production (CBPP) and grassroots initiatives of sustainability transitions can be the solution. A case study about Parks Slope Food Coop (PSFC), a member-owned and operated food store, was carried out to uncover elements of commons-based peer production in this organization. Based on the framework of the grammar of peer production, Park Slope Food Coop is shown to be an example of a successful CBPP initiative. The analysis shows that not all CBPP initiatives use complex technology in the production process. Commoning, generating value through cooperation, self-organization, openness to participation, democratic community governance mechanisms, heterarchy, and localization make communities more resilient and sustainable. It is vital to produce more digital commons in this field to spread best practices globally.

Keywords: commons, commons-based peer production, grassroots initiatives, sustainability transitions, food cooperatives

INTRODUCTION

In 1972 Meadows et al. published a book called The Limits to Growth, which was among the first and most influential studies predicting many of the crises we are facing today: the climate crisis, ecological breakdown, economic crisis and resource depletion. The authors claimed that limitless growth on a finite planet is impossible (Meadows et al., 1972; Meadows et al., 2004). If the human population overshoots planetary boundaries by consuming more than the ecosystems can provide and emits more waste than the biosphere can absorb, environmental degradation will result in an economic and social regression (Meadows et al., 1972; Meadows et al., 2004; Rockström et al., 2009; Barani et al., 2018; Gernert et al., 2018). Considered alarmist at the time of publishing, this position is being revisited in scholarly literature and policy discourses that acknowledge the problems of growth economies (Heikkurinen et al., 2019). Growth economy refers to an economic system where the growth of GDP is considered a natural goal of societies (Kallis, 2011). The increase of matter-energy throughput of a society is essential to grow the GDP (Kallis, 2011; Robra et al., 2020).

Green growth strategy, also called economic decoupling, is being increasingly challenged (Hickel and Kallis, 2020). Green growth refers to an economic strategy that aims at growing the economies while remaining in the ecological boundaries of the planet (Jänicke, 2012). But it is becoming more widely accepted that truly curbing economic growth is still necessary to combat climate change and ecological breakdown (Wiedmann et al., 2020). Sustainability in the sense of maintaining the stability of current lifestyles and production systems is not enough in a world that is battling climate change, economic and ecological crises, and geopolitical tensions (Gernert et al., 2018; Abel et al. 2006). These crises are symptoms of a fundamental unsustainability of the dominant neoclassical growth-oriented socio-economic system (Gernert et al., 2018). Society can only achieve true sustainability through building resilience that focuses on fast changing environments and adapting to new circumstances (Abel et al. 2006).

According to the Intergovernmental Panel on Climate Change (IPCC, 2018), humanity has less than a decade left to successfully implement systemic change to achieve sustainable modes of production and consumption and avoid catastrophic climate change. The ongoing crises push for innovation and a shift to new production models using ICT – information and communication technologies (Perez, 1983, 2010). ICT provides organizational capabilities that are at the core of new commons-based models of production and social organization. Commons are social systems that refer to shared resources where each stakeholder has an equal interest (Ostrom, 1990). Commons are a different way of social and economic organization, made up of dynamic sets of social relationships, rules, and norms managing the resources (Bollier, 2014; Bollier and Helfrich, 2012). Commons-based peer production is a socio-economic system of production that is emerging in the digitally connected environment (Benkler, 2002; Benkler and Nissenbaum, 2006). The technical infrastructure of the Internet allows for large groups of people to cooperate and produce knowledge, information or goods without the mediation of market or state forces, and without corporate hierarchies (Benkler, 2002; Benkler and Nissenbaum, 2006).

When higher levels of governance fail to take decisive action, grassroots initiatives emerge to tackle mounting challenges (Poland et al., 2019; Poland et al., 2005; Barr and Pollard, 2017; Roseland, 2005). Grassroots initiatives of sustainability transitions are collaborative social undertakings aiming to transform the communities and the local environment into a more sustainable and resilient state (Markard et al., 2012). More sustainable modes of production and consumption have to be established in all socio-technical systems, including energy supply, water supply, transportation, and food supply. Various elements, actors, material artifacts, institutions, and other stakeholders play a crucial role in those strongly interlinked systems providing specific services for the society (Geels, 2004; Finger et al., 2005; Markard et al., 2012).

“The capacity to self-organize is the foundation of resilience” (Abel et al., 2006, p. 21). Localization is an obvious call to action when maintaining complex systems (Abel et al., 2006). Designing globally but keeping the physical production and life as local as possible would enable a society to be resilient and globally interconnected at the same time. This dynamic is also called cosmolocalism by Bauwens et al. (2019). Cosmolocalism stems from the discourse on cosmopolitanism which asserts that humanity forms a single community that has shared morality

and future (Bauwens et al., 2019). It cherishes every particular place while keeping in mind the rights of everybody else in the multifaceted world (Schismenos et al., 2020). Cosmolocalism emerges as small-scale technology initiatives address local problems, but at the same time take part in global digital commoning and collaborative production (Kostakis and Giotitsas, 2020). Regarding the uncertain times, it would be ideal to reap the benefits of both the innovative and organizational power of commons-based peer to peer production and the resilience of grassroots initiatives of sustainability transitions.

This thesis focuses on commons-based peer production (CBPP) and grassroots initiatives of sustainability transitions such as Park Slope Food Coop. The rising number of grassroots initiatives of sustainability transitions worldwide, and other emerging transition-oriented political and social movements show that change is already happening. Grassroots initiatives of sustainability transitions have the power to speed up learning, creating, and problem-solving in areas that have so far been strongly neglected but are essential for self-sufficiency, resilience building, and strong sustainability. This study aims to showcase how CBPP and grassroots initiatives of sustainability transitions are part of the same new socio-economic system and why it is essential for both communities to actively start learning from each other.

The Park Slope Food Coop case is explored to answer the following research questions:

1) What are the shared elements of commons-based peer production and grassroots initiatives of sustainability transitions?
2) Are grassroots initiatives of sustainability transitions and commons-based peer production part of the same socio-economic system?
3) Is Park Slope Food Coop a commons-based peer production initiative?
4) What other noteworthy findings are resulted from exploring the case?

The remainder of the thesis is organized as follows. The following section will outline the theoretical background of commons, commons-based peer production, and grassroots initiatives of sustainability transitions. The second section contains a qualitative case study description, exploration of the findings, and answers to research questions.

1. THEORETICAL BACKGROUND

1.1. Commons

In this paper, we define commons according to the critical theory of the commons, which was presented by American political scientist Elinor Ostrom and was then further expanded by many researchers, scholars, and activists (Tomašević et al., 2018). This differs from the theory proposed by Hardin (1968) which claims that without the regulation of central authorities or privatization, a common pool of resources will face the tragedy of the commons by being over-exploited until the resource collapses. Observations made by Ostrom (1990) in the historical period from 1970-1990 proved that there exist successful examples of commons-based resource management of natural resources. The key argument in Ostrom's research is that in a realistic world where people use basic communication, communities can create rules and social norms that solve the so-called free-rider problem and thus avoid overexploitation of the common resource (Ostrom, 1990). Similar findings are later discussed by Moor (2008), Bollier (2014), and Bollier, together with Helfrich (2012).

Commons can be either natural or man-made. A defining characteristic is that they are too large to conveniently and affordably exclude potential beneficiaries from using the resource and obtaining benefits from it (Ostrom, 1990). However, commons refers to more than just shared resources. The resource has to be governed accordingly to obtain a favourable condition of this shared resource system or stock to produce the maximum flow of value or goods (Ostrom, 1990). That is why commons also means ways of social and economic organization (Bollier, 2014; Bollier and Helfrich, 2012). Those resources that can be managed as commons are almost all the ones humans use: natural, urban, digital, technical, scientific and cultural (Bollier and Helfrich, 2012). Fishing grounds, groundwater basins, grazing areas, irrigation canals, bridges, parking garages, mainframe computers, streams, lakes, oceans, and other bodies of water can all be considered commons (Ostrom, 1990). The social relationships that govern the commons take the form of institutions that set the rules for commoning (Bollier and Helfrich, 2012). For example,

this involves open-source licenses like the creative commons license. Most importantly, there is no commons without a community governing and reproducing the commons (Bollier and Helfrich, 2012).

Commoning has emerged in various spheres of our globalized civilization creating new practices, research fields, political and social movements. One of the breakthroughs of commoning happened in the digital space. Digital commoning was first established with open-source software, for example, the operating system Linux, Apache HTTP server, and open knowledge projects such as the free encyclopedia Wikipedia (Benkler, 2006). After online communities had emerged, commoning also moved to open design and manufacturing (Kostakis et al. 2018). Digital and physical resources enabled creating an interconnected and global ecosystem for creating and sharing open designs as commons while manufacturing physical goods in local settings (Bauwens et al., 2019; Kostakis et al., 2015; Schismenos et al., 2020). Examples of initiatives like this are WikiHouse (buildings), RepRap (3D printers), OpenMotors (vehicles), OpenBionics (robotic and prosthetic hands), and L'Atelier Paysan (agricultural tools) (Schismenos et al., 2020).

However, another thread of commoning among communities had taken place long before the invention of digital technologies. Because so many of the valuable elements in our environment are inherently common-pool resources, the best practices of managing those resources need to become more widely implemented. According to Ostrom (1990), commoning proves to be one of the most efficient strategies. Local ecosystems and natural conditions are too complex to standardize the resource into packets for market exchange (Ostrom, 2011). Bureaucratic management falls short because it tends to lose important information about the resource (Ostrom, 2011). The most optimal practices for common-pool resource management are developed by local people who have access to tacit knowledge about the resource (Benkler, 2017).

1.2. Commons-based peer production

With the invention of the Internet, the cost of communication and information sharing dropped, and the capital and knowledge necessary for innovation became more widely distributed (Benkler, 2017). ICT allowed many individuals to pool their resources, knowledge, ideas and work together by testing and making improvements to enrich collective designs (Benkler, 2017). This technology made it possible for people to work towards shared goals without the mediation of firm managerial hierarchies or markets (Benkler, 2017). Because of the freedom, social cooperation, and sharing possibilities, the Web and other digital technologies and platforms have become preferred spaces for experimentation (Bollier, 2014). According to Bollier (2014), the Internet makes it easy for every user to create digital commons: website, blog, community. Without market or state control, the Internet is a space for mutual learning, social organization, and creative production (Bollier, 2014).

Online commoning first took place in the form of free and open-source software. Some of the first examples in this sphere are, for instance, Apache web server and Linux operating system (Bollier, 2014). Another example of distributed network projects is the online encyclopedia called Wikipedia (Bollier, 2014). Recently, the organizational routines and practices of open and distributed network projects have also reached into the physical world, with successful examples of peer-producing physical appliances, machines, infrastructure and other products. Production and innovation centers, also called makerspaces, have enabled the new norms and mentality to jump over to real-world innovation (Kostakis et al., 2015). In 2018 Kostakis et al. described projects that use open designs, 3D printing, and other local manufacturing methods to develop affordable and highly sophisticated robotic hands and off-grid wind and hydro-electric power generators. Similarly, it has been showcased that using open design and local manufacturing methods can also be applied to modern buildings such as the WikiHouse (Priavolou and Niaros, 2019) and farm machinery, as demonstrated by communities such as Farm Hack (Bauwens et al., 2019) and L'Atelier Paysan (Pantazis and Meyer, 2020). The described phenomenon, the self-organizing way of production that does not depend on the market or state, is called commons-based peer production (Benkler, 2002).

Commons-based peer production provides organizational routines that help find an efficient balance between complete decentralization and collective action (Benkler, 2017). When innovation becomes the property of networks and not just an output of an individual actor, individualistic property models lose their importance, which gives room to alternative and more efficient community governance that does not require markets of formal hierarchies (Benkler, 2017). Commons-based peer production takes advantage of diverse motivations (Benkler, 2017). Decentralized and modular organizational structure provides the outlet for many people with various levels of energy, skills, and other resources to contribute for the common goal. Modular design and innovation process increases the chances that all tasks are matched with the right type of person with specific motivations and skills.

It is clear that from an efficiency perspective, commons-based peer production provides a case against the status quo of organizational and production practices. But what if it also has a case from the environmental perspective? Based on the emerging productive model Kostakis et al. (2015) described a new societal and economic organizational model called cosmolocalism. According to Kostakis et al. (2015), using CBPP, we can design globally and manufacture locally. Global digital commons helps build local resilience and innovation capacities while the burden and complexity of global supply chains can be replaced with small-scale local manufacturing (Schismenos et al., 2020). The previously mentioned commons-based physical manufacturing projects are all examples of cosmolocal arrangements where the design results in global collaboration, but the manufacturing takes place in a local setting using local resources (Schismenos et al., 2020). With every iteration, the global pool of knowledge is expanded with new insights (Schismenos et al., 2020).

Based on the observations previously made, Kostakis and Bauwens have proposed a framework, called the grammar of peer production, to describe and compare such initiatives in much more detail. The list includes eight principles (O'Neil et al., 2021, pp. 24-26):

1) Distributed Networks describe how freely community members and contributors can make decisions and create changes in the virtual system or physical space. In distributed networks autonomous agents are free to decide and determine their behaviour and relationship to the network without the intermediary or obligatory hub. In

commons-based networks, there is distributed power and distributed access to resources. Highly distributed networks such as the Internet allow peer production to transcend some restrictions of time and space. Distributed networks enable communities to be globally connected but locally productive.

2) Commons is a social system where people voluntarily and cooperatively construct shareable resources that are governed according to the principles and norms of the community members. The use-value that is created through free cooperation is freely accessible to all of the members. Commons-based peer production communities are managing social and natural resources regeneratively.
3) Equipotentiality means that anyone is welcome to participate in peer production processes without pre-judgement and discrimination. Equipotentiality comes from the terms "equal" and "potential". Nobody has the authority to decide whether someone has more or less potential than anybody else and exclude them from the cooperation. Everybody is equally considered as a potential cooperation partner.
4) Holoptism describes how horizontal the information flows are in the peer production community. Holoptism, from the Greek words ὁλος ("whole") and ὀπτικος ("seeing"), is the opposite of panopticism, which means that only centralized power can see the whole. In the commons-based peer production community, any participant should access all the information regarding the project: aims, metrics, documentation, and other participants. They represent the opposite of traditional hierarchical top-down systems, where regular participants only have access to information that they need to know to be able to contribute and the elite protects their information monopoly.
5) Stigmergic cooperation means that no work is directed by corporate hierarchies but mutual coordination mechanisms: signals about work done by others, transparent information flows, and distributed action towards serving the needs of the system. Stigmergic comes from Greek words στίγμα ("mark, sign") and έργον ("work"). The community of contributors can include paid labour, freelancers, or just volunteers. Nevertheless, it is an open and transparent system in which everyone can adapt according to their needs or the system's needs.
6) Modularity, granularity, and low-cost integration are characteristic of most commons-based peer production projects. Those elements in a system design are at the core of many other characteristics in this framework. Commons-based peer production

projects are broken down into smaller components called modules. Modules are made up of specific tasks or a list of responsibilities in various areas of the project. Modular design means that the project is made up of smaller elements that together make up a whole. Modules can be smaller and larger. Granularity refers to the smallest possible modules of the project, for example smallest or easiest tasks, that enable even the smallest contributions. It should be easy to organize, sort and put together different modules. An effective system for quality control is necessary to have a functional final product.

7) Heterarchy is achieved through quality control systems that do not coerce work. Every CBPP community has people who are the maintainers/editors/coordinators to protect the system's integrity. However, they do not have more authority for leadership or decision-making than others. Leadership and power are distributed among various teams who work together in a dynamic hierarchical structure. CBPP initiatives have flexible and dynamic structures to make it easier to participate.
8) Cosmolocalism allows community members to develop contributory lifestyles. People can participate in various paid or unpaid jobs to generate income and cover their needs. Be it freelancing work in a digital commons-based peer production initiative, building open-source houses or simple technologies, building and restoring furniture in a local makerspace, or growing food in a community garden. “Cosmolocalism reflects the convergence of the global digital commons of knowledge, software, and design with local manufacturing technologies” (O’Neil et al., 2021, p. 26).

Although commons-based peer production practices were first noticed in the virtual space, it is not the only place where such organizational structures, values, and principles can be applied successfully. In fact, they can be rooted far from the digital. This framework helps to notice, analyse, and compare various commons-based peer production initiatives. With this framework, one can determine if any initiative is part of the CBPP phenomenon. This framework forms the basis for this study.

1.3. Grassroots initiatives of sustainability transitions in the food commons

In response to global crises, various communities have taken action to build resilience and livelihood despite the potential increase in societal disorder. When complex societal subsystems fail or become insufficient in newly arrived economic, material or social circumstances, smaller communities are motivated to take action. They adapt and solve problems to maintain the livelihood of the community. Grabs et al. (2016) define grassroots initiatives as collaborative social undertaking organized at the local community level. Grassroots initiatives have a high degree of participatory decision-making, flat hierarchies, and the community engages in the voluntary contribution of time and resources to achieve a particular shared cause (Grabs et al., 2016; Seyfang and Longhurst, 2016). Grassroots initiatives are groups of people who use a hands-on approach to solve challenges as they face them (Gernert et al., 2018). Grassroots initiatives are bottom-up collective actions in civil society intended to promote and develop new forms of social organization and economic life to increase the quality of life of the community (Kirwan et al., 2013; Gernert et al., 2018).

Grassroots initiatives primarily focus on local sustainability transitions, but they can link to broader social movements (Gernert et al., 2018; Forrest and Wiek, 2015). One of them is the Transition movement originating from 2006 in the UK, which aims to build more resilient, convivial, and vibrant local communities (Poland et al., 2019). Contrary to marked-based or state-led systems, grassroots initiatives are value-driven and focused on social needs and not financial profits (Seyfang and Longhurst, 2016; Wolfram, 2018). Grassroots initiatives also tend to be more democratic, socially inclusive, and just (Kirwan et al., 2013). Grassroots activists are committed to giving everybody access to tools and knowledge to build alternative social and economic systems together (Kirwan et al., 2013; Gernert et al., 2018). Sustainability innovations coming from community-led initiatives are primarily focused on issues connected to energy, mobility, housing, food, and alternative local currencies (Wolfram, 2018; Poland et al., 2019; Ornetzeder and Rohracher, 2013; Seyfang and Longhurst, 2013; Smith, 2006).

Food shortage is one of the risks in times of a crisis. Food is a resource for life that cannot be compromised. However, it is a resource that individuals can produce in a decentralized way. That

is why one of the most popular spheres of grassroots initiatives is the food domain (Connelly et al., 2011). Community gardening, city gardening, creating food cooperatives, farmers markets, local produce markets, food sharing groups, and community seed libraries are all signs of communities who are establishing more sustainable and reliable food sources. According to a survey made in the United Kingdom, the birthplace of the Transition movement, food was found to be one of the most widespread focuses of practice (Seyfang and Haxeltine, 2012).

Food cooperatives, one of the strategies to increase food security, are autonomous enterprises formed by voluntarily self-organized groups of individuals motivated to source affordable, local, and healthy food (Fikar and Leithner, 2020; Nicol and Taherzadeh, 2020; International Co-operative Alliance, 2017). Food cooperatives provide communities an alternative to unsustainable large-scale food systems (Fikar and Leithner, 2020; Jarosz, 2008). According to the International Co-operative Alliance (2017), cooperatives share the following principles: voluntary and open membership, democratic and member control, member economic participation, autonomy and independence, education, training, and information, cooperation among cooperatives, and concern for the community. Although their legal, economic and cultural context may vary, their nature is to be commons-based (International Co-operative Alliance 2017).

Some cooperatives and commons-based peer-to-peer networks share similar features. They are commons-based, democratically governed, and socially inclusive productive systems where value is generated without direct mediation of state or market forces. The creation and success of commons-based peer production projects and cooperatives are entirely dependent on the communities' motivation to take action voluntarily. The biggest and most well-known commons-based peer production projects are heavily based on the internet and demonstrate their capability to self-organize and spread globally in the virtual space. The question arises of how peer-to-peer dynamics look like in cooperatives that do not use ICT for the production process. Park Slope Food Coop is a food store in Brooklyn, New York, owned and operated by its 17 000 members. The majority of work at the Coop is made by working members who come to the store every four weeks to contribute with voluntary labour for three hours. The food in the store is fresh, healthy, mainly organic and locally produced. Cooperative arrangements allow 20-40% lower prices on groceries because labour costs are usually the single largest expense for a

grocery store. The Coop has a management board and many other paid workers, but decisions are made democratically. General Meetings are taking place every month to discuss issues and plans of the Coop. Every participant has a voice and a vote at those meetings. In the next sections of the thesis the case of Park Slope Food Coop is analysed and research questions are answered.

2. A CASE OF PARK SLOPE FOOD COOP

2.1. Methodology and data collection

A single case study design was used to analyze the grammar of peer production in the organizational structure and productive model of a grassroots initiative of sustainability transitions called Park Slope Food Coop. This strategy enables the researcher to analyze the organization in depth and answer how and why questions (Edwards et al., 2014; Yin, 2018). A single case study increases the likelihood of finding an organization that fits the specific study at hand (Yin, 2018). Three methods were used to collect case study evidence because this allows to get a fuller understanding of the object and make more convincing conclusions about the matter (Yin, 2018). Firstly, observation based on visual data (documentary film) was used to get insights that are not accessible with other methods (Patton, 2015). Visual data makes it possible to observe the environment, activities, and people in the context of the chosen case (Given, 2008). A documentary film works well for getting a general introduction to the organization under observation, frame further research questions, and design the following steps regarding the collection of additional research data.

Visual data was available in the form of a 97 minutes long documentary film about Park Slope Food Coop called Food Coop (2016). The documentary film describes the operational model that is at the core of Park Slope Food Coop. A documentary film is an excellent source of information, especially when a physical visit to the location is not possible because of covid-19. Secondly, qualitative content analysis was used to get a deeper insight into the organization's operating model, structure, and productive model. The documents required for the analysis are usually not created as a result of the study. They can be hard to find or accessed (Yin, 2018). However, if available, they provide a stable and specific source of information, and they can be analysed more than once (Yin, 2018). Park Slope Food Coop has an official 45 pages long document available at its website that is called the Membership Manual of Park Slope Food Coop (2020). It describes the organization’s history, the goal and mission, and the ways which

work is organized. The document gives an overview of how decisions are made, who is responsible for what, how the work shifts are organized, how a member can change and choose his or her times and areas of contribution, how to behave and not behave in the space. Content analysis was carried out mainly based on the Membership Manual document. Articles, announcements, work schedules, and other online material helped to understand the context. Because Park Slope Food Coop shares a lot of information with the public as well as being transparent with their members and potential members, those documents were not hard to find or difficult to access. The majority of the findings rely on qualitative content analysis.

Interviews were included in the methodology because they allowed the author to ask specific clarifications, cover factual information, and talk about topics that no other source mentioned or revealed. Interviews were semi-structured, which meant it was possible to ask further questions when interesting points were raised during the discussion and cover topics that the researcher was unaware of before the interview (Berg and Lune, 2017; Ngumbi and Edward, 2015). The interviewees were chosen randomly by contacting the organization via public email addresses. The main criteria for the interviewees was that they needed to have different relations with the cooperative, they could not be volunteering together or working together in the same team at the Coop, and they needed to have at least five years of experience being a member of the Coop. If the interviewee has a longer membership experience then they are able to share more stories about it. More experienced members know the organization better. Interviews with people who have different relations with the organization enables the researcher to get a broader perspective of the case. The first interviewee was a recently retired member of the management team. The second interviewee was a regular member who had never been involved with the Coop more than shopping and mandatory volunteer work.

The interviews consisted of questions covering the topics of all aspects of the chosen framework of the grammar of peer production. The questions were designed to understand the organization's objectives, operative model, structure, quality assurance, governance, values, social inclusion, sharing of information and knowledge. Additionally, the discussions touched upon emotional attunements towards the cooperative, attitudes regarding volunteer work, the motivation behind becoming a member, and strengths and weaknesses of this particular production model. The interview questions are in Appendix 2. Although the interviewees' personal opinions,

motivations, and feelings towards the organization were out of the scope of this case study, they paved the way for further research on the topic. The interviews took about 100-110 minutes and were conducted in English. The interviews were recorded.

Part of the analysis is exploratory. The available data is used to answer not just pre-posed questions, but is also considered in an open-ended manner to discover surprising or otherwise noteworthy aspects of the case. Combining a question-directed and exploratory approach allows for a more comprehensive understanding of the case. The information presented about Park Slope Food Coop in the next section is mainly collected from the Membership Manual of Park Slope Food Coop (2020). The interviews and the documentary film helped to clarify and cross-check the information presented in the document. The reader should assume that all of the factual information is referring to the Membership Manual if not stated otherwise.

2.2. Findings

Park Slope Food Coop (PSFC or 'the Coop' for short) is a member-owned and operated food store founded in 1973 in Brooklyn, New York. In the 1970's the founders of the Coop were on a mission to find ways to provide good food at low prices to the local community. Back then, the community lacked an opportunity to have a healthy diet full of produce. Now the Coop is especially famous for its fresh produce that is mainly organic and grown in local farms. In addition, the Coop carries a wide variety of products, including pasture-raised and grass-fed meat; free-range, organic, and kosher poultry; fair-trade chocolate and coffee; wild and sustainably farmed fresh and frozen fish; freshly baked bread, environmentally safe cleaning supplies; and much more. The store's inventory is replenished more than once a week, ensuring that the products being sold are as fresh as possible. The Coop's membership is culturally as diverse as New York City (Food Coop, 2016).

Unlike other cooperatives in the United States, the Park Slope Food Coop requires its members to contribute volunteer work hours. To shop in the Coop, one has to become a member in the first place. Membership of the Coop is defined by the person's participation in the work slot

system. Every person who joins the Coop must make a reasonable member-equity investment and must work. Ownership is defined by his or her financial contribution. That is where the term member-owner is originating. In the Coop, the person is always both. PSFC has around 17 000 members and earns about 50 million dollars in revenue a year. Everybody has to contribute three hours of volunteer work every four weeks to keep the shop operating. As a result of cooperative work, members can have between 20-40% savings on groceries because labour costs are usually the single largest expense for a grocery store. Another outcome of cooperative work is that the Coop can act regeneratively towards social and environmental matters. It constantly works on ways to reduce the disposal of waste. For example, PSFC does not sell plastic bags or bottled water. Farmers and suppliers reuse food containers and boxes. PSFC donates unsellable but still edible food to a local soup kitchen, and all the inedible produce is taken to the local community gardens for compost.

PSFC is a food store with a physical location. It does not use complex computer software or internet networks to operate. In that sense, it does not represent the standard model of a peer-to-peer network, where there are fewer restrictions on time and space. However, PSFC is a commons-based project and shares many characteristics with commons-based peer production initiatives. By definition, cooperatives are democratic organizations controlled by their members. PSFC is a collective of motivated individuals who have come together to have access to mutually valuable resources. The production process, continuous operation, and cooperative autonomy are the responsibility of all members. The main incentive of PSFC is to generate value and not financial profits. The guidelines and principles governing PSFC result from more than 40 years of trial and error and present an opportunity to understand one sustainable commons-based business model. In Appendix 1 the case of Park Slope Food Coop is analysed using the framework called the grammar of peer production (O'Neil et al., 2021, pp. 24-26). This framework helps to uncover the elements of commons-based peer production present in the case of Park Slope Food Coop.

In Appendix 1, the most significant similarity between PSPF and the elements in the commons-based peer production framework is the commoning aspect based on the critical theory of the commons. Commons-based peer production projects, including PSFC, present a successful example of commons-based resource management. The Park Slope community has established

routines to generate and use the resource while avoiding overexploitation. The first one is the rule that to shop in the Coop, one has to become a member and participate in work shifts. To be part of the Coop, all adults from the same household have to join. Those rules help to avoid the overexploitation of the generated value – the groceries. If many people were shopping for an entire household of people, who were not contributing, the Coop could not operate successfully.

PSFC welcomes everybody to join the Coop without any discrimination. The only requirement to be filled is that the person must be willing to take part in cooperation. They have to actively participate in the work slot system to be a member. The person's capacity to work is validated in the process of cooperation. Through trial and error, each person can find a suitable role in the Coop. Physical capabilities and preferences vary among people and that is why everyone can choose themselves what they want or can do. When a person joins the Coop, they have to make about a 100 dollar equity investment. This is how they legally become the owners of the cooperative. But such investment is not possible for everyone to make. That is why the Coop has lowered the investment rate for people who receive any type of income-based assistance. This is how the Coop treats everyone as equipotential partners in cooperation. In return, everybody has to work.

However, there exist other types of cooperatives that do not share the same approach as PSFC. Most cooperatives offer members a wider variety of membership levels or business deals with the organization. For example, one strategy would be to offer more significant discounts to those who work and less to those who do not. Nevertheless, according to the experience of PSFC, people feel more connected to the cooperative if they work. Without a constant incentive to rethink personal economic deals with the Coop, the members can feel more like they are the owners and not just people making deals with a business. Without the ownership connection, the Coop would not improve because people would not care that much. Based on the interviews, when the covid-19 pandemic started and PSFC faced difficulties, many members supported the Coop financially by raising their equity. They cared about the Coop's existence and wanted to support it during difficult times. Similarly, people care about other matters at the store. "If there is rotten food, I tell somebody. If something is well, I want to encourage the workers because they are part of my community" an interviewee said. If everyone has the same deal with the

Coop, there is also less risk for socio-economic divisions. Otherwise, the wealthier people could afford to avoid volunteer work while less wealthy people could not.

Another important part of the analysis concerned the Coop's management structure and mechanisms. The Coop has a centralized two-tiered management structure. The management collective consists of around eight members, from which one is chosen to be the general manager. The managers are responsible for the day-to-day management, broad overview, and planning. The management is also supervising the rest of the paid labour (around 70 people), who help organize the members' work. Because those tasks are difficult to organize in work slots, the Coop must have a management board. The managers and technical team are paid the same with the exception of the general manager, who has slightly higher salary. Area coordinators are getting paid by the hour. Their salary is more than double the minimum wage in New York City. Everybody gets paid the same regardless of personal qualifications, work position, or tenure. PSFC is a large community that requires full-time workers to organize their cooperation. More so, it requires more than one layer of coordination structure to keep the shop operational. However, the Coop has managed to keep the organization as simple as possible by having a simple salary system. Without keeping track of tenures and personal qualifications, the team has less managerial overhead. Also, similar treatment of staff makes people feel equal to each other.

Despite the presence of the management board at the Coop the responsibility is shared, and decisions are made democratically. The managers make decisions based on the advice received on the General Meetings – monthly meetings for all the interested members to attend and participate in the decision-making. Around a few hundred members usually participate at the regular General Meetings. The only decisions not ratified are the ones believed to be illegal or irresponsible. However, such occasions are infrequent. The interviewee, who had been part of the Coop for 45 years, had only witnessed one situation like this. Democratic governance or peer-governance is essential in commons-based initiatives. People join the Coop voluntarily to serve the same purpose and achieve a shared goal. Shared decision-making is vital to keep the cooperative to serve the needs of the community continuously. It enables the ownership connection, distributed power, and maintaining access to resources and information. Input from the community is invaluable for keeping the Coop's incentives aligned with the community's

needs and adapting to new circumstances. Effective communication among the community of the Coop is the substitution of market forces and state regulation.

Decision-making is not the only way that the members can influence the development of the cooperative. The members can initiate new projects under Coop that are not controlled by the management. If there are new development areas recognized by the management, then they acknowledge that they do not have all the expertise that the membership has. When they need further counseling, they invite together a separate group of experts among the members to help out or organize a referendum. Heterarchy, meaning sharing responsibility, information, and power, enables the Coop to involve more people and experts in any problem-solving process. That results in better-informed decisions for the organization. A vital part of the management process includes cooperation of the management team and working members. The people in the management must be aligned with the Coop's incentives. The Coop is guarding against hiring people who do not share cooperative ideals. This is why hiring is not a responsibility of the management but is dealt with by a separate group of people called the Personnel Committee. They interview new candidates and have the authority to let go of a paid staff member who is not succeeding at their job. This includes the management.

Other factors are standing in the way of democracy and transparency. The members can request any information they wish to receive, but they are not aware of what they could ask about in many cases. According to the interviews, there is a strong information monopoly at the management just because they are in the business of PSFC eight or more hours a day every single week. It is why the management can have a more decisive influence on the organization. "After many years of being a regular member at the Coop, there are still many surprising things to learn about the organization," an interviewee said. There is a lot of information to share about the Coop. There is not enough time to tell the member everything there is to know during the new member orientations. It is harder for a new member to participate in the Coop development because it takes a lot of time to understand the organization well enough. According to the interviews, during the orientation, the new member of the Coop is encouraged to try out different jobs in various areas to get to know it better. Better informed members make better informed decisions.

The work in the Coop is organized in Work Committees. The committee references to the work that is done in this group. The main ones are Shopping, Food Processing, Receiving and Stocking, Office and Maintenance. In addition to that, some member-workers do their work slot on the official PSFC newspaper, Linewaiters' Gazette, as editors, writers, and illustrators. There are also the Soup Kitchen Committee, Concert Committee, the Fun Committee, the Compost Committee, the Orientation Committee, the Environmental Committee, and the Personnel Committee. Committees consist of working squads that are small teams of working members who regularly work their shift. Every member chooses a squad to join. Every squad has to select its leader to ease communication between volunteers and staff supervisors. Most of the time, the self-selected squad leaders (as one interviewee put it, "the mommy or the daddy of the group") takes care of the discipline and quality of work during a shift. Area coordinators usually never address an individual working member. They oversee the bigger picture and supervise the group if they did not get it right.

Almost all the shifts last for three hours. The work schedule runs in a four-week circle where every week is symbolized with a letter A, B, C, and D. Every member-worker has to remember their week's letter and squad to attend a shift. Modularity enables easily organized make-up shifts or programs for people who prefer irregular work schedules. For example, a person can make their entire yearly contribution in a few weeks during summer. Many people leave the city during the summer, and this creates many openings in shifts. Members can also make shifts in advance if they need to miss a shift in the future. Scheduled work is invaluable for the Coop. It enables to avoid unnecessary management overhead and guarantee a stable workforce. Modular schedules and a squad system make it easy for new members to integrate into the organization and quickly adapt if circumstances change in work or their personal lives. It decreases the overhead when changes have to be made and makes internal communication more effective. Modularity gives the working members more authority and power over their working times, places, and people they work together with without increasing the managerial overhead of PSFC.

Squad members can decide themselves about the attendance guidelines of the shift. It is because the squad members are the ones who suffer the most when the squad is short-staffed. On some jobs, the burden is smaller than on others. That is why decisions must be made by people who are directly affected. Every member can change their squad without explanation. If they would

like to try something else, if the shift time does not fit them anymore, they do not like the other squad members or for any other reason. They can easily register to get another place in the system. However, the Coop does not encourage people to change their shift or program too often because it would raise the overhead of the organization. There are other special programs at the Coop to make the system more accustomed to the community's needs. For example, there are parental aid, disability of illness leaves, and a retirement program for people who have a serious reason not to work but still need to shop.

A regular shift at one hand, is restrictive, but on the other hand it gives the members an opportunity to develop deeper relationships with people in their squad and build a sense of community. The workshift in not just a time to work, but an opportunity to catch up with friends. “The Coop community felt like a substitute to a church group sometimes,” an interviewee said. “It is one thing to know you are a member and feel like you own the Coop. But the feeling that you belong to it, comes from formed relationships.” However, according to the interviews, it would be unwise to tell that the relationship factor of the cooperative always has a positive outcome. There are many situations of conflict and misunderstandings. If another Coop member has mistreated a person, they can register a complaint to receive justice. Depending on the severity of the incident, a paid staff member, the Dispute Resolution Committee, or the Diversity & Equality Committee will take action to resolve the matter. There are awareness training sessions and conflict resolutions taking place to improve the social and emotional aspects of the Coop. Additionally, PSFC recognizes racial issues and makes efforts to raise equality by hiring more people of colour and exclusively supporting social justice movements like the Black Lives Matter.

PSFC is an example of an area of life that can be managed cosmolocally. And now, even though a food store is something very tangible, the idea has spread beyond borders via digital channels. The Coop supports other communities to start their own cooperatives. According to the interviews, supporting new cooperatives is exclusively part of the management responsibilities. Some years ago, a group of people from France approached PSFC and asked for mentoring to set up their cooperative in Paris. They created their membership manual entirely based on the one of PSFC. The cooperative is called La Louve, and it has now operated for more than five years and has attracted thousands of members already (La Louve). The same people are the ones who made

the documentary about Park Slope that was used in this paper. According to an interview, the management of Park Slope Food Coop takes an active role in mentoring and supporting new initiatives. They would also share their very primitive software if anybody wanted it.

After the successful launch of the documentary and La Louve cooperative, many new cooperatives are popping up in France and other countries in Europe claiming to model Park Slope Food Coop, including the three hours of voluntary work every four weeks (Coop des Vénètes; SuperCoop Madrid; La Caravane; SuperCoop Berlin). The communities support each other by spreading the word and inviting people to participate in crowdfunding campaigns of new coops. ICT has played a role in spreading invaluable knowledge about a specific functional organizational structure the Park Slope Food Coop has established during its existence. The knowledge accumulated over the past 45 years is now spreading globally to speed up the learning process for other cooperatives.

It took many years for PSFC to become financially stable. Now the pandemic has had its toll on the community. The shop used to be full of workers and shoppers at all times. Social distancing measures make it hard to keep the prices as low as they used to be because fewer workers and shoppers can be at the shop simultaneously. The waiting lines are long, and home delivery is not possible at this point. On a positive note, the Coop did not suffer almost any abnormalities like hoarding or other shocks in the supply of goods when the pandemic started. In the day-to-day business, the Coop usually never had a moment where there was nothing out of stock or missing from the shop. However, in the times of crisis of covid-19, the struggles are more staff-related. “The idea behind buying local as possible is that you develop real relationships with suppliers. No one doubts our integrity. ... This also helps the farmers to have a steady demand from a community that they are supporting.” It is yet unknown what are the full impacts of the pandemic on the cooperative business model of Park Slope Food Coop and others. According to the interviews, if there is hope that one day the pandemic is over, PSFC has a great chance of survival.

2.3. Discussion

The first research question concerned the shared elements of commons-based peer production and grassroots initiatives of sustainability transitions. As a result of the study, the shared elements are found to be commoning, use-value driven cooperation, self-organization, openness to every potential participant, community governance mechanisms that do not involve state or market forces, resilience, heterarchical structures, and physical value creation takes place in the local setting with local resources. The case of Park Slope Food Coop explains that grassroots initiatives of sustainability transitions aim at building resilience that is achieved through commoning. Self-organization, community governance, and ownership connection are the key to the success of this grassroots initiative. PSFC focuses on local production and supporting local farmers. In that way, it is less complex than other food stores that are part of big retail chains and depend more on complex global logistics. Localization has an additional benefit, as it enables shorter supply chains that decrease energy used for logistics processes. Less energy consumed makes the initiative more environmentally sustainable. Ownership connection to the cooperative makes people more caring for the Coop. Self-organization enables the Coop to quickly adapt to new circumstances because it always has the latest information regarding the needs of the community.

The second research question was whether grassroots initiatives of sustainability transitions and commons-based peer production are part of the same socio-economic system. The answer to this question is that they are part of the same socio-economic system that is commons-based. Park Slope Food Coop is a space for commons-based economy. The community has shared intentions and values. They have come together to serve the community through cooperative work and provide themselves an opportunity to get access to resources that would otherwise be out of reach. A food store full of local and healthy food is not aiming at generating profits. The Coop remains as big as there is demand for it in the local area. In the 48 years of existence, the Coop has remained to serve its local community. Members of the Coop have established contributory

lifestyles to satisfy their need for a healthy diet. Time and contribution is exchanged for value.

The third research question was if Park Slope Food Coop is a commons-based peer production initiative. The answer is that it is because the majority of the characteristics of the grammar of peer production are strongly present in the case of PSFC: commoning, distributed power and responsibility, democratic governance, equipotentiality, transparency of information, modular and flexible work system where members can have the authority over what they do and when, heterarchy, and cosmolocalism. Members of the Coop produce the commons by contributing 75% of the labour. The rest of the work is done by paid staff. Power is distributed through democratic management and independent decision-making committees. Anyone who wants to join the Coop is treated as an equipotential partner in cooperation. The organization values and maintains transparency of information among the member-owners. Modularity enables the members of the Coop to cooperate efficiently. Every person involved has a choice when it comes to their working schedule and tasks. A majority of the members work in regular shifts, but modularity allows some freedom and flexibility. Integrating a new member into the organization is easy. The members come together to work as a small team - a working squad. Because of that, everyone has easy access to supervision when needed. Additionally, the tasks that require doing are relatively simple. When doing a make-up shift, one can choose any job they wish. Make-up shift is a work shift a member has to do when they have missed or plan to miss their regular shift. Park Slope Food Coop is not structureless, but the management and paid staff are there to only support the members in the peer production process and not to maximize profits. The Coop is characterized by cosmolocalism. The members have developed contributory lifestyles, and the Coop supports other communities who want to start their food cooperative. As a result of the free sharing of information, knowledge, and experiences (i.e. holoptism), new cooperatives based on the same model pop up worldwide, the most prominent being La Louve in France.

The analysis reveals that the presence of some elements of the grammar of peer production is arguable. Firstly, there is an information monopoly in the management team because they are more involved with the Coop than other working members. Although the working members can access all the information there is besides personal matters, they often do not know what to ask about. This is an example of diverging from holoptism. Secondly, PSFC does not use distributed

networks such as the Internet in the production process. In the author's opinion, this raises the importance of the case study. This is the first exploratory finding of the study. Large-scale self-organization and cooperation can happen outside the digital space. The case of Park Slope Food Coop proves that 17 000 people can successfully cooperate without the Internet. Although PSFC is using primitive Internet software in its daily operations, it can manage without it. After all, PSFC existed before the wider public had access to digital devices. Park Slope Food Coop represents a strong case linking CBPP to grassroots initiatives of sustainability transitions not empowered by complex technology. It is vital that more scholars of CBPP actively start searching for more grassroots initiatives from the sustainability transitions to uncover more successful examples of commons-based peer production in the physical space. However, in the author's opinion, these ideas and best practices do not spread easily without the Internet. More grassroots initiatives of sustainability transitions should cooperate on the global scale using digital technologies. More digital commons should be created about successful initiatives such as PSFC to spread the know-how to more places and communities. It is essential for both communities to actively start learning from each other to empower more communities to transition into more sustainable and resilient ways of life.

The next exploratory finding is that Park Slope Food Coop is an example of commoning where man-made resources are managed sustainably. This supports the claims and observations made by Ostrom (1990). The way that Park Slope Food Coop protects the common-pool resource is by only allowing members to shop in the store. Every member has to work and the entire household of the member has to become part of the PSFC system. In that way the Coop avoids overexploitation of the resource. Every shopper or anyone who could be potentially benefiting from the resource is then required to work in the store to do their part in the production process and earn access to the groceries. Most importantly, the community itself is governing the commons that they have created. More grassroots initiatives of sustainability transitions should be researched to find out if there are other similar initiatives like Park Slope Food coop that have successfully managed a modern common man-made resource over long periods of time. This would support the spread of best practices globally which leads to more sustainable and resilient communities.

The final exploratory finding is that cooperation enables communities to act more regeneratively towards social and natural environments. Voluntary contribution makes it easy to direct resources towards activities which value is difficult to measure or assess – ecological and social value. Member workers prepare food for the local soup kitchen, they take organic waste to local community gardens to create compost, and some groups make sure that people have fun throughout the membership experience. Park Slope Food Coop is part of sustainability transitions because it intentionally makes efforts to be more environmentally sustainable and socially caring by supporting organic suppliers, limiting waste, and contributing to raise the well-being and equality of the community. Regeneration is the opposite of exploitation where resources are being used in a way which they get depleted. To build a more sustainable and resilient socio-economic system, the society needs to become more regenerative in case absolute decoupling is unlikely to happen. Grassroots initiatives of sustainability transitions are valuable because they experiment and teach how to be more regenerative so that the rest of the society can do the same.

The limitations of the research are that this study is based on the materials available and experiences shared about the times before the pandemic of covid-19. Since the pandemic started, the Coop has needed to adapt and change according to new circumstances. The changes in the organizational structure or other aspects caused by the pandemic are not known or taken into account in the analysis process because the author could not consult with active members of the management team. It became clear from the email exchanges with the management team that they did not have the time to contribute to this study because they were busy managing the impacts of the crisis. According to the interviews, PSFC is resilient and has the potential to survive the crisis and return to its previous state. Another limitation of this study is that it encompasses a single case study. The findings and conclusions of this thesis might not be universal. More research among food cooperatives should be carried out to make stronger claims. The author of the thesis intended to make an additional case about the food cooperative of La Louve that was mentioned above. But covid-19 has struck the small team of La Louve even worse than it has impacted PSFC. The contacted manager of La Louve had to continuously postpone the interview because of recurring problems connected to staff members getting infected.

CONCLUSION

Socio-technical and socio-economic systems need to adapt to become more resilient and sustainable in times of the climate crisis, ecological breakdown, economic crisis, and geopolitical tensions. Transition into a more sustainable system includes new types of social organization and production models that would be regenerative towards social and natural resources. Commons is an alternative social system where resources are governed by the community directly. Social norms, rules, and relationships manage the resource where every stakeholder has an equal interest. Grassroots initiatives of sustainability transitions are bottom-up social undertakings to solve challenges as they face them to increase the community's quality of life. Commons-based peer production (CBPP) is an alternative model of production that was first observed in online digital networks. On the Internet, large groups of people with various motivations could come together to produce use-value for themselves and other contributors. ICT enables collaboration and production of knowledge, information, and goods without the mediation of state or market forces.

Theory suggests that grassroots initiatives of sustainability transitions and commons-based peer production have a lot in common. The aim of the study was to determine the shared elements of commons-based peer production and grassroots initiatives of sustainability transitions. A case study about Park Slope Food Coop (PSFC), a member-owned and operated food store, was explored to find out if the chosen case was a commons-based peer production initiative. The study aimed to showcase how CBPP and grassroots initiatives of sustainability transitions are part of the same new socio-economic system. Additionally, exploratory findings were discovered and discussed.

Three methods were used to collect case study evidence because this allowed getting a fuller picture of the case. Observations based on a documentary film about the object helped to understand the context of the case and have a virtual tour of the Coop. Secondly, qualitative content analysis based on the Membership Manual document of the cooperative was used to get

a deeper insight into the organization's structure and productive model. Additionally, two in-depth semi-structured interviews were carried out to gather clarifications, cover factual information, and discuss topics that no other source mentioned or revealed. One of the interviewees was a long-time member of the management team, and the other interviewee was a regular member of the Coop. PSFC was analyzed based on a framework called the grammar of peer production. The framework consisted of eight characteristics: distributed networks, commons, equipotentiality, holoptism, stigmergic cooperation, modularity, heterarchy, and cosmolocalism. In addition, all data was considered in an exploratory manner as well.

The study found that the shared elements of CBPP and grassroots initiatives of sustainability transitions are commoning, use-value driven cooperation, self-organization, openness to every potential participant, community governance mechanisms that do not involve state or market forces, resilience, heterarchical structures, and physical value creation takes place in the local setting with local resources. Secondly, commons-based peer production and grassroots initiatives of sustainability transitions are part of the same socio-economic system that is commons-based. Thirdly, Park Slope Food Coop is an example of a commons-based peer production initiative because the majority of the characteristics of the grammar of peer production are strongly present in the case of PSFC. The only arguable characteristic of the case is that there exists an information monopoly in the management team and this makes them to have more control over the organization than other members.

Exploratory analysis found that PSFC showcases that large-scale self-organization, cooperation, and peer production can happen outside the Internet. Park Slope Food Coop does not rely on complex technology in the production process. It highlights that complex technology is not an essential part of this production model. However creating more digital commons would speed up the spread of the operational model of PSFC to other places and communities. Another exploratory finding of the study is that Park Slope Food Coop is an example of commoning where man-made resources are managed sustainably. More similar initiatives should be researched and explored to uncover best practices. This would empower more communities to also manage resources more sustainably. The last exploratory finding is that PSFC behaves regeneratively towards social and environmental matters and enables its members to participate

in the sustainability culture. A culture which more communities need to become part of to transform the socio-economic system of the society into a more sustainable and regenerative one.

Scholars in the field of commons-based peer production should more actively search for commons-based peer production projects that do not produce value using complex technologies. At the same time, grassroots initiatives of sustainability transitions should actively learn about the ways in which CBPP initiatives have started to spread and cooperate globally by using digital technologies. More research can be done about the experience of Coop members. Based on the interviews, it was clear that personal feelings and experiences can significantly vary when participating in a collaborative organization. Cultural background and race can influence the experience in the Coop. Also, the success factors of the Coop and motivations behind participation is a possible new research topic. A potential research question is how and why Park Slope Food Coop, or similar other cooperatives like La Louve in France, were created and how they have managed to stay in operation for such a long time. Covid-19 pandemic has also brought new strategies in the day-to-day operations of the Park Slope Food Coop that were not analyzed in this paper but can be beneficial in helping to learn about the resilience of the business model of cooperatives during the pandemic.

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APPENDICES

Appendix 1. Grammar of peer production in Park Slope Food Coop

An element in the grammar of peer production	Examples from Park Slope Food coop
Distributed networks	● Digital technologies are not central in the production process of Park Slope Food Coop. ● Distributed power – democratic management in monthly assemblees; every member can raise issues, and every member can activate new developments without the mediation of the management; an independent member-governed work committee called the Personnel Committee hires and fires personnel. ● Distributed access to resources – no information besides personal matters is classified (financials, other members, workers, future plans, past records). ● Organizational model has spread and inspired other initiatives exactly like PSFC.
Commons	● Members produce the commons – healthy food at good prices for all working members. ● Democratic governance – members can take an active role in the decision-making process and participate in planning and discussions of the organization's future. ● Members contribute 75% of the labour in the Coop. ● Members are encouraged to take part of General Meetings by giving them work credits for participation. ● PSFC takes care of the common resources by only allowing working members to shop at the Coop. ● All the adults from the same household have to join the Coop if one of them wants to join.
Equipotentiality	● Park Slope Food Coop is a voluntary organization, open to all persons able to accept the responsibility of membership without gender, social, racial, political or religious discrimination. ● The person's capacity to cooperate is validated in the process of cooperation. No credentials are asked and no prior

	selection is made beforehand. ● Every member can pick and change their workshift based on their preference of work and people, and based on their physical ability. ● If a person receives some form of income-based assistance, the joining fee and equity-investment is lowered by 50% and 90% to allow people to join despite financial difficulties.
Holoptism	● Every member of the PSFC can access all of the information regarding the cooperative. The Coop is managed in a way to allow transparency. ● The paid staff including the managers are more involved with the Coop and that is why they are usually much better informed. ● The members can request any information they wish to receive, but in many cases they are not aware of what they could ask about. ● The information monopoly that exists in the management is not protected. The Coop does not value secrecy.
Stigmergic cooperation	● The work in the shop is not governed by corporate hierarchies. Everyone can choose what they work on and when. ● Modular workshifts allow the members to continue with the tasks from where they were left off by the member-worker in the previous work shift. ● Squad members can decide fair attendance guidelines within the Coop's parameters. Usually a member has to do one or two make-up shifts in case a shift is missed.
Modularity, granularity, and low-cost of integration	● Work shifts and work schedules are modularly organized in committees, squads, and ABCD week systems. ● Modularity enables programmes for irregular work schedules. ● People can change their workshift and organize shift swaps with other members. ● Only a few Work Committees require training to do the job (Cashier and Childcare). ● It is easy to integrate a new member into the Coop's system. After one orientation session, the person is ready to start contributing.
Heterarchy	● Simple salary system for the paid workers. ● Monthly General Meetings is the decision-making body. Every attendant has a vote and a voice in advising the management board. ● There are mechanisms to spread responsibility. ● Some decisions are made by referendum. ● Every member can submit an item to be discussed in the General Meeting.

	● Everyone can suggest items to be sold at the store.
Cosmolocalism	● Members of the Coop have established contributory lifestyles to satisfy their need for a healthy diet. ● Park Slope Food Coop actively supports new cooperative initiatives. ● New cooperatives are popping up around the world that have the same business model as PSFC.

Source: Park Slope Food Coop Membership Manual (2020); data gathered by the author

Appendix 2. Interview questions

1. How long have you been a member, and what was your role at the Coop?
2. Why are you a member?
3. Please describe the vision and values of the Coop.
4. Would you consider yourself the owner of the Coop?
5. Please describe the organizational structure of Park Slope Food Coop.
6. Can you please describe to me the processes with which you usually make decisions in the Coop?
7. Can everyone become a member of the Coop?
8. How about equality. Are the paid workers, managers, and working members equal?
9. How does the PS food coop manage information (other participants, metrics, documentation, aims)? Who has access to it?
10. Please describe how the work was organized at the Coop.
11. How did the quality control process look like when you were working there? Did you ever have to pick on someone else's work?
12. Did you have the opportunity to choose your squad, and did you ever change that?
13. In your opinion, how difficult or easy was it to integrate a new member into the Coop?
14. Is the Coop in some way engaging with other organizations or cooperatives?
15. Is Park Slope Food Coop a better supermarket and food system for everybody, or is it a niche club for some?
16. Is there anything else the interviewee wants to add or discuss?

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