XXXIVème CONFERENCE ANNUELLE DE L'AIMS
« Le management des ressources au 21ème siècle »
Lille, du 3 au 6 juin 2025

Alternative ways of managing resources.
Towards a new social circular economy with a commons perspective

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Résumé :

This paper addresses a key gap in the circular economy (CE) literature, which has largely focused on technical and economic aspects, often neglecting the social relations of production. While existing research emphasizes material efficiency and waste reduction, it tends to overlook how issues of control, ownership, and equity shape circularity. We introduce *commoning* as a theoretical framework to explore how collective management and shared use of resources can foster a more socially inclusive and equitable CE. Through an ethnography of the ex-ZAD of Notre-Dame-des-Landes, we examine how reuse, repair, and recycling practices are embedded within collective social arrangements. We find that commoning practices enable sustainable circularity by integrating production and consumption, emphasizing reciprocity, and decommodifying resource use. We contribute to the literature on the social dimensions of the CE by providing an alternative lens that challenges the consumer-producer dichotomy, emphasizing the need to take seriously the social relations of production and consumption.

Mots-clés : Social circular economy, commoning, ZAD, reciprocity, decommodification

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1. INTRODUCTION

The circular economy (CE) is often seen as a solution to environmental degradation by creating closed-loop systems that prioritize resource efficiency, waste minimization, and the continuous reuse of materials. However, while the dominant CE discourse emphasizes environmental and economic benefits, it frequently overlooks the underlying social dimensions and the nature of social relations of production. This paper addresses this gap by exploring how integrating commoning practices into the CE framework can promote a socially equitable, just, and sustainable circular system.

Current literature on the CE primarily focuses on technical and material efficiency, often sidelining social aspects such as labor practices, community well-being, and economic inclusivity (Murray et al., 2017; Korhonen et al., 2018). Although recent scholarship has started to acknowledge the need for more socially inclusive CE models (Leipold et al., 2021; Ziegler et al., 2023), there is still a lack of attention to how social relations of production, including issues of control, ownership, and distribution, shape CE practices. This oversight limits our understanding of how the CE can be implemented in ways that genuinely benefit society rather than reinforcing existing inequalities.

The concept of commoning provides a theoretical framework to address these limitations in CE literature. Based on the work of Ostrom (1990), 'commoning' emphasizes the collective management and shared use of resources, enabling community-driven governance structures that operate outside of traditional market and state mechanisms (Fournier, 2013; Euler, 2018). By focusing on commoning, this paper proposes an alternative approach to resource management that centers on reciprocity, collective ownership, and the co-production of goods and services. This perspective challenges the logic of commodification and presents a model for integrating social and ecological sustainability within the CE.

Our methodology involves a case study of the ZAD of Notre-Dame-des-Landes, a long-standing self-organized community in France that has developed alternative social relations of

production. Through ethnographic research, interviews, and secondary data analysis, we explore how the community practices of commoning can manage resources, allocate labor, and sustain communal living. The fieldwork allowed for an in-depth examination of the interactions, conflicts, and collective decisions that sustain this form of social circularity.

Our findings illustrate that the ZAD's circular reuse, repair, and recycling practices are deeply intertwined with collective social arrangements enabling resource circulation. These practices are sustained by reciprocity-based systems that blur the lines between producers and users, and the allocation of resources is driven by collective needs rather than market mechanisms. Such practices show how commoning can lead to reduced resource consumption, greater inclusivity, and a more sustainable and resilient community.

This study contributes to the CE literature by demonstrating that integrating commoning practices into CE frameworks can offer alternative social relations of production, which challenge the traditional consumer-producer dichotomy (James, 2022). It highlights the potential for commoning to facilitate a socially distributed form of circularity that moves beyond the market-based, profit-driven approaches that dominate current CE models (Dzhengiz et al., 2023). This focus on the dynamics of social production adds to the growing literature that explores the social dimensions of the CE (Leipold et al., 2021; Mies and Gold, 2021; Clube and Tennant, 2023; Ziegler et al., 2023). This article emphasizes not only inclusivity and equity in CE practices but also highlights the need for decommodification and shared ownership of resources.

This study has broader implications for implementing the CE on the ground. By showing how commoning practices can foster socially just and distributed circular systems, it offers a blueprint for policymakers, activists, and community organizers to envision inclusive and equitable CE strategies. Our approach underlines the importance of rethinking the social relations that underpin economic practices, making the CE not just a tool for greater resource efficiency and environmental sustainability but also a means to foster social justice and community resilience.

2. THE SOCIAL DIMENSION OF THE CIRCULAR ECONOMY: A LITERATURE REVIEW

The circular economy (CE) is an economic framework that aims to decouple economic growth from resource consumption and environmental degradation (Kjaer et al., 2019). Traditionally defined, the CE emphasizes the continuous use of resources through the 4R practices (Reduce, Reuse, Repair, and Recycle) to create a closed-loop system geared toward minimizing waste (MahmoumGonbadi et al., 2021). This model is often portrayed as a sustainable alternative to the 'take-make-dispose' economic model, described as extractive and linear (Rashid and Malik, 2023). The CE aims to bring about circularity by promoting resource efficiency, which can radically reduce the environmental impact of production and consumption by bringing down waste to almost zero (Neves and Marques, 2022).

However, such a CE approach focuses predominantly on environmental, engineering, and economic dimensions, often underemphasizing social aspects (Murray et al., 2017; Ziegler et al., 2023). The conventional CE framework primarily targets improvements in material flows and energy efficiency – often through technological solutions – measuring success in terms of reduced resource inputs and waste generation (Mayer et al., 2019). While perhaps beneficial for some sustainability objectives, this approach often overlooks how these practices impact social dynamics, consumption practices, institutional structures and processes, labor markets, community well-being, and the broader societal implications of shifting to a circular system (Korhonen et al., 2018; Millar et al., 2019; Appolloni et al., 2022).

The narrow focus on technical and business processes within the CE can perpetuate existing capitalist approaches, potentially reproducing and even widening socio-economic disparities (Hobson, 2016; Leipold et al., 2021). For example, the damaging labor practices in the electronic waste industry have been widely documented, showing how emphasizing recycling may bear significant social consequences (Stowell and Warren, 2018). Equally, there are calls for a more democratic, participatory approach to economic and environmental challenges, ensuring that CE practices are not only efficient but also just and inclusive (Leipold et al., 2021; Ziegler et al., 2023).

Hence, there is an increasing number of scholars who acknowledge that there is an urgent need to consider the social dimensions of the CE, exploring how CE practices impact labor rights, community well-being, and social equity (Mies and Gold, 2021; Clube and Tennant, 2023;

Ziegler et al., 2023). This means considering also actors other than the dominant for-profit corporations, such as public institutions and solidarity organizations (Monciardini et al., 2024). This body of work emphasizes the need for the CE to foster inclusivity, enhance job quality, and ensure a fair distribution of economic benefits (Clube and Tennant, 2020). By integrating human-centered approaches into CE strategies, these studies aim to redefine how the CE might fit into existing sustainable development agendas, advocating for a balanced approach that values environmental integrity, economic viability, and social equity (Schröder et al., 2020).

For example, Clube and Tennant (2022) explore the integration of social inclusion within CE practices at a fashion textiles manufacturer in Vietnam. The study highlights the company's strategies to promote employment opportunities for marginalized groups, arguing that true sustainability in the CE should address economic and environmental aspects and consider social equity dimensions. Also focusing on the corporate context, Jabbour et al. (2019) call for more research into how human resource management practices can be aligned with CE principles. They emphasize the role of leadership, organizational culture, and employee engagement in successfully implementing CE strategies, proposing a more inclusive and participatory approach to CE practices.

At a wider socio-economic level, Valencia et al. (2023) argue that CE practices can enhance social equity, community involvement, and economic benefits for underserved populations. They suggest that CE can play a crucial role in social innovation by fostering inclusive growth and supporting sustainable community development, proposing a model to measure and enhance the social impact of CE initiatives. Equally, Pitkänen et al. (2023) develop and test social sustainability indicators, including employment quality, social inclusion, and community engagement, providing a structured approach to evaluate the broader social effects of CE practices and policies. Linking the CE to broader human development goals, Schröder et al. (2020) argue that CE initiatives should explicitly aim to improve social conditions, enhance community resilience, and promote economic opportunities, especially in less developed regions. This means that the CE should not only be about resource efficiency and optimized material flows but also yield tangible benefits for people's quality of life.

Scholars such as Hobson and Lynch (2016) and James (2022), however, are skeptical that such a measurement approach will fundamentally challenge existing capitalist relations that underpin the CE approach. Hence, Hobson and Lynch (2016) propose a radical reinterpretation of the CE

by integrating concepts of diversification and degrowth. They call for the CE to deliberately scale down production and consumption in resource-scarce environments. This perspective advocates for a transformative CE approach that challenges the prevailing economic paradigm. Similarly, James (2022) critiques prevailing CE approaches for not fundamentally going beyond capitalist efficiency drives. The author advocates for deeper integration of the CE into broader social fabrics, proposing that CE should aim for resource sustainability and foster social equity and community empowerment. James (2022) suggests that for CE to be truly transformative, it must be re-embedded within a wider set of social relations and life circles, moving beyond mere technical fixes. In sum, in order to contribute to a more diverse understanding of CE and to consider its social dimension, there is a need to challenge the dominant ideological assumptions such as neoliberalism, growth, consumption, and profit maximization (Dzhengiz et al., 2023).

Some authors emphasize the role of individuals, communities, and cooperative organizations to bring about a socially sustainable CE, or what Ziegler et al. (2023) call the 'social economy'. Hobson (2020), for example, emphasizes the micro-level practices and 'small stories' that illustrate social circularity in everyday life. Such focus highlights how individual and community practices can significantly impact broader CE goals through everyday decisions and behaviors. Similarly, Carenzo et al. (2022) show that informal local recycling efforts can provide a more equitable model of CE that incorporates community-based practices of 'commoning' rather than conforming to top-down, profit-driven strategies. The authors argue that a bottom-up CE approach needs to consider social justice and address power dynamics, suggesting a reframed CE that fosters inclusivity and local empowerment. In extension, Böhm et al.'s (2023) argument builds on social movement perspectives of societal transitions, showing that grassroots communities often enact change in everyday settings. What they call 'circular society activism' highlights the prefigurative action that communities can enact to bring about the CE in meaningful, place-based settings in the here and now. However, theorizations of alternative approaches to social circularity remain limited (Monciardini et al., 2024).

What is missing in these recent debates on the social dimension of CE is a more explicit problematization of the social relations of production. What is needed is a more in-depth discussion of how people interact within economic structures and processes of the CE, considering issues of control, ownership, and distribution of the means of production. Whereas Marxist theory has been at the forefront of critiquing the dominant social relations of production

within capitalist societies, it is the literature on commoning that has explored alternative and more sustainable ways of producing, using, and allocating resources (Fournier, 2013; Euler, 2018; Peredo et al., 2020).

3. THEORETICAL FRAMEWORK: COMMONING

Building on the previous section's critique of the CE literature's limited engagement with social dimensions, this section introduces the concept of 'commoning' as a theoretical framework to address these gaps. While some CE scholars have started considering social issues such as equity, inclusion, and well-being, they often overlook how these practices affect broader social and economic structures. By considering the concepts of commons and commoning, we aim to explore alternative approaches to resource management and social relations of production that challenge existing capitalist frameworks.

Elinor Ostrom's extensive work provides a foundational basis for understanding commons. Through her meta-analyses of case studies and experiments on community-based common pool resources (CPR) management, Ostrom demonstrates that communities can self-organize to manage resources sustainably without relying solely on market or state mechanisms (Ostrom, 1990; Peredo et al., 2020).

Ostrom's work was, in part, a response to Garrett Hardin (1968), the American ecologist and philosopher who is best known for his 1968 essay, 'The Tragedy of the Commons', which argues that individuals acting in their own self-interest can ultimately destroy shared resources, leading to their depletion and degradation. His main argument is based on a thought experiment involving a common pasture shared by multiple herders. Hardin posits that while each herder gains individually from adding more animals, the negative consequences of overgrazing are shared by all. Consequently, this leads to a situation where the pasture becomes overused and eventually ruined, despite it being in everyone's long-term interest to conserve it. Hardin concluded that without coercion mutually agreed upon, the commons would inevitably be over-exploited and destroyed.

Ostrom counters this by highlighting that effective governance of the commons does not have to involve external coercion. Instead, through shared ownership and collective decision-making processes, communities can self-govern. This also challenges the notion that private ownership

is the only viable form of property (Ostrom, 1990; Fournier, 2013). Table 1 compares Hardin's and Ostrom's approaches.

Table 1 : Hardin's assumption is compared to Ostrom's demonstration of the commons.

HARDIN'S ASSUMPTION	OSTROM'S DEMONSTRATION
institutional arrangements are governed by a state/market dichotomy	there are alternative institutional arrangements to the state and market logics.
social competition is inherent in human nature and leads to a situation of anomy	when they are part of a social structure, individuals are capable of cooperating to manage resources by producing rules according to a typology
the only possible form of ownership is private ownership. shared ownership is thus synonymous with the absence of ownership.	five bundles of property rights can be used cumulatively to enable shared ownership
decisions are systematically taken by individuals alone without the involvement of others. decisions follow a rational and competitive logic.	decisions can be made using polycentric forms of governance.

Ostrom's work has laid the groundwork for broader discussions on the commons, extending beyond academic debates to influence activism and social movements. Activists have used the notion of the commons to describe and legitimize desirable ways of self-organizing against the rampant privatization and commodification of resources (Klein, 2001; Fournier, 2013; Bollier, 2022). Activists and academics alike argue that the commons present a viable alternative to the capitalist enclosure process (Fournier, 2013; Angelis and Harvie, 2014).

Historically, 'enclosure' referred to the violent abolition of the open-field system from the 16th century, where villagers owned non-contiguous strips of land in a communal field (Federici, 2004). From a Marxist autonomist perspective, however, enclosures are not just a one-time event that happened in the late Middle Ages but a continuous process by which capital accumulates resources through dispossession (Midnight Notes Collective, 2009; Angelis and Harvie, 2014), often involving violence (Chertkovskaya and Paulsson, 2020). Consequently, commons have an ambivalent relationship with capital, "being simultaneously outside the market relations that characterize capitalism and, in the moment of their re-appropriation, essential to capitalist development" (Fournier, 2013, p. 434).

Subsequently, several scholars have emphasized the importance of focusing on the underlying organizing processes within the commons, known as 'commoning' (Fournier, 2013; Euler, 2018). Marxist historian Peter Linebaugh (2008, p. 279) stresses that "to speak of the commons as if it were a natural resource is misleading at best and dangerous at worst – the commons is an activity and, if anything, it expresses relationships in society that are inseparable from relations to nature. It might be better to keep the word as a verb, an activity, rather than as a noun, a substantive". This perspective suggests that commoning should be understood not merely in terms of resource allocation but also in terms of use and production (Fournier, 2013; Euler, 2018).

Accordingly, Fournier (2013, p. 447) defines commoning as a "collective process of self-management which is independent of market or state authority and through which communities decide how the use of a particular resource is to be distributed and (re)produced". Commoning aims at the (re)production of both resources and community (Euler, 2018), through practices of reciprocity (Fournier, 2013). This approach highlights the dynamic and cooperative nature of commoning, emphasizing its role in fostering sustainable and equitable resource management.

Fournier offers one of the most comprehensive understandings of commoning (Mandalaki and Fotaki, 2020) by distinguishing three pillars of 'commoning': organizing *in* common, organizing *of* the common, and organizing *for* the common. 'Organizing in common' addresses the issue of allocation. Here, reciprocity is defined as "a give and take: users can appropriate resources in return for participation in care/maintenance. What is reproduced in perpetuity is the resource system" (Fournier, 2013). 'Organizing for the common' and 'organizing of the common' pertain to the issues of production and use. In this context, reciprocity is described as a "creative, recursive process through which common use is productive of the common". What is important to realize within this framework is that production and use cannot be separated. "What is reproduced in perpetuity is not the resource system but the community" (Fournier, 2013). That is, the production and use of resources and materials are inseparable, and the processes of production and reproduction tend to be integrated (Euler, 2018). This is why Euler suggests conceptualizing commoning as the integration of use, production, and reproduction under the concept of '(re)produsage'. Additionally, production and use are intertwined because users are also producers. As Euler (2018) puts it, commoning corresponds to "voluntary and inclusively self-organized activities and mediation of peers who aim at satisfying needs". This

contrasts with the historical separation of the spheres of production and consumption that have characterized the development of (industrial) capitalism (Graeber, 2007).

In summary, commoning offers a framework for understanding alternative social relations of production and resource management beyond capitalist paradigms. By emphasizing collective self-management and reciprocity, commoning provides a valuable lens for analyzing the social dimensions of the CE. The following section will outline our methodological approach to exploring these concepts through a case study.

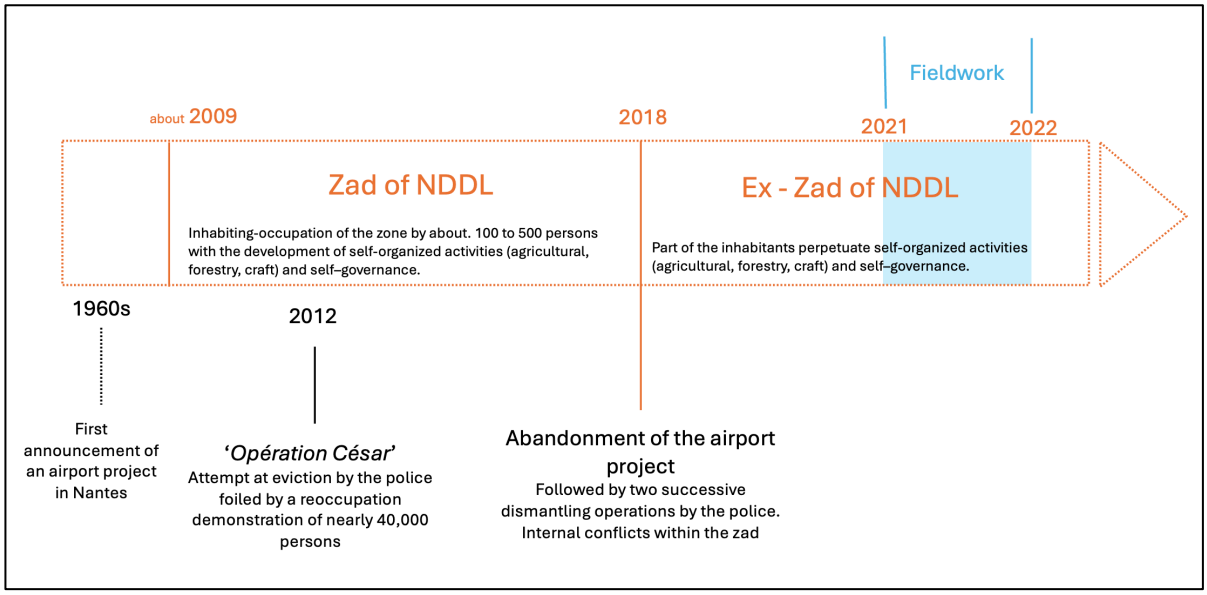
4. METHODOLOGY: ETHNOGRAPHY OF THE EX-ZAD OF NDDL.

Considering with Monciardini et al. (2024) that the study of alternative forms of organization is critical to better grasping what a socially and environmentally sustainable CE may look like, we base our research on the case study of the ex-ZAD of Notre-Dame-des-Landes (NDDL). The ZAD corresponds to one of France's longest-lasting self-organization experiments, (Collectif comm'un, 2019) where actors claimed to have developed commons organizing over more than ten years. The first author conducted ethnographic fieldwork between 2021 and 2022 to grasp how circular organizing processes were perpetuated.

4.1. THE CASE OF THE EX-ZAD OF NOTRE-DAME-DES-LANDES

The ZAD of NDDL represents one of France's longest-lasting contemporary struggles (Mauvaise Troupe, 2018), often viewed as a "utopian experimental occupation" (Bulle, 2020, p. 206). It originates from an opposition to an airport project for the city of Nantes planned for over 4,000 acres of agricultural land, wetlands, and woods. The Figure 1 provides a synthetic timeline.

Figure 1 : Synthetic timeline of the case-study



If the airport project was planned in the 1960s, activists started to occupy and squat buildings that were made empty for the airport's development around 2009. ZAD refers to a subversion of the administrative acronyme "Zone d'Aménagement Différé" (zone to be developed) created by the state in order to facilate land preemption, into "*Zone A Défendre*" (a zone to be defended). In 2012, an extensive dismantling and evicting police operation, officially named *Opération César,* was organized (with approximately 1,500 police officers). It remained unsuccessful, leading to a reoccupation demonstration (with approximately 40,000 people).

Over nearly ten years, the occupation movement has grown. It organizes self-building activities, collective agriculture, craftmanship, self-media, etc., with up to 500 occupants spread over around sixty living places. Following various political developments, the French Prime Minister announced the abandonment of the airport project in 2018. Internal conflicts escalate within the movement over openness to negotiation with the state.

In the face of military eviction operations (with approximately 2,500 police officers, drones, helicopters, and armored vehicles), a regularization process is initiated by part of the movement. Their main goal is to "preserve our commons" (Morgan, an inhabitant, July 2021, logbook) through a struggle for shared ownership of land and buildings. This will to defend the commons also translates into the shared refusal to reproduce the dominant production and consumption patterns. In a report addressed to local authorities, the inhabitants, via the *Association pour un Avenir Commun dans le Bocage* (AACB) (association for a common future in the Bocage), inhabitants write:

> "The ZAD is a territory where a solid collective awareness of the impacts of human activities has developed, and a fierce determination to remedy them on a local scale. Many refuse to accept the injunctions to produce and consume, bringing us to the triple climate, ecology, and social crisis. Actions are those that directly save resources and energy. The attention paid to the implementation of activities that maintain the balance between the living spaces of humans and non-humans, the use of techniques and methodologies that consume very little fossil energy and chemical inputs to meet the needs of the ZAD's inhabitants and users, the recourse to reuse (of materials, equipment, ancestral know-how) and the sharing of resources are all part of new paradigms" (AACB, 2018, p. 36).

This quote shows the collective claim to maintain forms of self-organizing sustainable production and allocation of resources that have been developed over ten years. The inhabitants stress that these forms of organizing rely on specific social relations of production. Like them, we raise the need to pay attention to the social relations needed for sustainable resource management.

4.2. DATA COLLECTION AND ANALYSIS

The first author conducted an ethnography over three months between 2021 and 2022. Often used in the study of alternative organizations (Jaumier, 2020), ethnography is "not a quick dip into a research site using surveys and interviews, but an extended period of time in which the ethnographer immerses herself in the community she is studying" (Cunliffe, 2010, p. 227). Consistently, the first author was able to grasp the social relations in the community life that she describes in her logbook and pictures. Indeed, she shared the inhabitants' daily lives and participated in their activities (agriculture, forestry, self-construction, care, festivities) while sleeping in yurts, dormitories, or campsites. To better understand how specific activities were organized, she also interviewed a dozen inhabitants (lasting between one and two hours) within a particular context. For instance, interviews about forestry were undertaken in the forest so the interviewees could show it to the researcher while talking. In addition, she collected and processed data analysis, mainly based on the self-media *ZAD.nadir* website (created in 2011), to contextualize and better grasp the historical background of the fieldwork. The data collected are summarized in Table 2.

Table 2 : Ethnographic Dataset

Logbook and pictures where the first author describes her daily life over 3 months with the inhabitants by participating in activities (e.g., agriculture, forestry, self-construction, care, festivities) while sleeping in yurts, dormitories, or campsites.
Interviews with 12 inhabitants lasting between 1 and 2 hours to understand better how specific activities were organized.
Paper documents on display at the ZAD (newspaper, flyers…) (2021-2022)
Articles from the website ZAD.*nadir* (self-created in 2011) (2011-2022)

This article is part of a larger research project focusing on the ex-ZAD of NDDL. Ethnographic experience led the first author to a progressively more profound qualitative understanding of commoning practices in that place. Dividing fieldwork into shorter periods allowed for ongoing analysis over the years.

Empirical materials were then confronted with conceptual categories through interaction with the other authors. While the second author brought analysis elements from circular economy theory, the third author facilitated the data analysis process throughout the four-year project. This interactive analytical process resulted in a reduction and selection of key empirical materials based on their capacity to construct a coherent narrative and answer the research question rather than a comprehensive identification of practices.

As the research investigates the social relations of production and is based on the first author's ethnographic fieldwork, we chose to use the first person in the results section.

5. FINDINGS

5.1. ORGANIZING WITH PRACTICES OF CIRCULARITY

Several key practices point to the potential presence of a CE: the circulation of resources in supply chains and reuse, repair, and recycling practices.

5.1.1. Circulation of the resources in short supply chains

Considering the case of wood, inhabitants explain that:

> "The Abrakadabois[1] collective locally produces wood for all everyday needs in a "short micro-supply chain" on the scale of the ZAD: firewood, construction, woodwork, handicrafts, sawdust for compost toilets, etc." (AACB, 2018, p. 22).

[1] Abrakadabois is a play on words with "*abracadabra"* (abracadabra) and *"bois"* (wood)

Inhabitants manage the forest and hedges to extract timber and firewood. The inhabitants then process wood using a saw, chainsaw, or haxes. The co-produced sawdust is made available by the inhabitants to the inhabitants for use in the compost toilets – all the inhabitants' collectives on the ZAD have compost toilets. The compost is then used for agricultural purposes. One inhabitant repurposes scrap wood for a forge to produce and repair forestry and agricultural tools. This example of the wood sector is just a glimpse of what may come as a circulation of resources, mainly produced locally, by short supply chains.

5.1.2. Reuse, repair, and recycle as circular practices

These resources are extracted and reproduced through diverse practices, reuse, repair, and recycling, leading to reduced overall consumption. Many production activities utilize reused resources. Much of the machinery in use on the ZAD has not been bought from new ; tractors from the 1960s and 1970s were donated by local farmers during the airport project fight.

For the construction activities, self-produced and manufactured resources are most often used together, as in the Ambazada building case. The building was constructed in 2017 using primarily self-produced resources from the ZAD (straw, earth, wood, hemp) and salvaged resources (Airbus crates and floor tiles from a local potter). The furniture is also salvaged. When I go to other sites with ongoing construction activities, inhabitants tell me that the turnbuckles between the beams come from shipyards. Similarly, the canvas for the yurts is made from reused woolen blankets and window blinds.

To facilitate the reuse of manufactured resources, inhabitants organize processes for allocation and storage. In everyday discussions, they speak a lot about the reused resources available and needed, ensuring circulation among themselves. There is even a Signal social messenger channel on "recoup good deals," where people post opportunities to give or collect tools, planks, tarpaulins, paints, etc. All the material is then stocked in specific places (Figure 2).

Figure 2: Storage shelves in a collective place (Source: Author. November 2022)

There are also contacts with people living outside the ZAD who come and give materials. As for the cannery where, inhabitants collect and sterilize used glass jars to make preserves.

Indeed, there is much salvaging of perishable resources, too. In everyday discussions on Signal channels, inhabitants share food surplus that needs to be consumed soon. The cannery contributes to collecting part of this surplus.

Reused resources often require repairs, as indicated by labels like "Light, to be repaired" Figure 2). Extended time for repair activities enables prolonged use. Weekly workshops focus on repairing engines and bikes (Figure 3). An inhabitant laughingly tells me, "It is better not to say that you are a mechanic on the ZAD" because these skills are in great demand. She spends part of her time repairing tractors used for farming and logging at the *Curcuma*[2]. She adds that most spare parts are self-made at the forge.

[2] Curcuma stands for "*Coopérative d'usure, de réparation, de casse et d'utilisation du matériel Agricole"* (Cooperative for wear, repair, breakage and use of agricultural equipment). It is a

Figure 3: Bike workshop (Source: Author. August 2021)

Most organic resources are also recycled. Sawdust from wood activities is utilized in compost toilets for agricultural purposes, while food waste is collected for composting and agricultural purposes. Additional farm inputs include sheep wool and shredded wood. Sheep serve as lawnmowers and provide meat. Shredded wood is issued from the remaining wood from hedge-cutting for heating wood. Indeed, most places are heated with wood from the surrounding hedge, with reused paper.

play on word with the spice "*curcuma*" (Turmeric) and the acronym "*CUMA*" (Cooperative for the use of agricultural equipment).

Only when no reuse is envisaged are manufactured resources thrown away. Cardboard, metal, and glass are sorted and collected by public services. Otherwise, they are disposed of at waste collection centers. Recycling is, therefore, delegated to the state rather than self-organized.

Collective and systematic practices of reusing and repairing rely on a high circulation of resources, supported by sharing and alternative ways of living. Many inhabitants live in shared buildings with communal spaces like kitchens and laundry rooms, surrounded by individual mobile homes (e.g., yurts, cabins, caravans, *carabanes*[3], vans, mobile homes, tiny houses, etc.). These habitats require relatively fewer resources for construction than conventional housing. In addition, the amount of firewood used for heating is reduced, as inhabitants tend to stay more in shared areas in winter.

Consequently, collective ways of living and sharing on the ZAD correspond to an overall reduction of resource use compared to more conventional ways. As some inhabitants write:

> "the future of the ZAD depends on consolidating existing ways of living [and] saving resources through collective use" (AACB, 2018, p. 42).

In sum, resources on the ZAD are reproduced through collective and systematic shared reuse, repair, and recycling practices. This results in an overall reduction in the use of resources.

5.2. Organizing circular practices based on alternative social relations of production and use

5.2.1. Inhabitants are users and producers

The circular practices also rely on self-organization, where users are also producers. Indeed, I never have to go to the supermarket when I am welcome in a inhabitants' collective. We cook with vegetables from the collective garden and heat our homes with wood from the nearby hedges. Indeed, we get the vegetables by participating in the collective garden one day a week or at the Supermarchouette[4], a self-organized market where inhabitants make vegetables available for free. Moreover, as I cycle around the ZAD, I regularly encounter inhabitants participating in collective activities such as agricultural production, wood-cutting, self-building, mechanical work, etc...Therefore, inhabitants self-organize production, use, and allocation of collective resources for many activities.

[3] *carabane* is a play on words with "*cabane*" (cabin) and "*caravane*" (caravan) to describe a caravan that was "upgraded" with self-construction work.

[4] Supermarchouette is a play on words with "*supermarché*" (supermarket) and "*chouette*", which can be translated as "nice" or "owl."

5.2.2. Organizing use and production with poly-activity.

Consistently, inhabitants participate in multiple-use and production schemes. In other words, poly-activity is the norm instead of a social division of work. When I ask several inhabitants which activities they are involved in, they take a while to dress in a long list of diverse activities:

> "I bake at Bellevue[5]. I'm also part of the collective gardening team, where I sometimes guide collective activities. That also means welcoming people. I'm also one of the permanent members at Bellevue, so I organize things there, too. I do organizational work such as the monthly Assemblies of Uses (AU), maintenance tasks, monthly group activities and the annual renovation project. [...] I'm part of a prevention and management group for sexist and sexual aggression at events on the ZAD. I'm part of a support group for sexist and sexual aggressors, with a view to long-term change. [And in the AU], I was on the housing committee for two and a half years. I was also part of the delegation [for negotiations with the government] for two years". [Quentin, July 2022]

> "I'm very much involved in agricultural activities, but not just that: agricultural, para-agricultural, and processing. I'm involved in agricultural mechanics to make sure that the machinery works. [I am also involved in the hedgerow group]. And many other things, all the general organizational stuff, political activity. I can't even name them all. I'm not just involved in farming, even though it takes up a lot of my time. This stuff is about organizing collectively. It takes time and energy to bring places like that to life". [Alix, July 2022]

In addition, their involvement does not correspond to a paid work logic but to reciprocity. Through the process of production of resources, inhabitants also become direct users. Quentin eats parts of the bread and vegetables he is contributing to produce. To produce it, he bakes it each week with wood that Alix contributes to cutting with the hedgerow group each winter. In the hedgerow-cutting activities, woodcutters also eat bread. Moreover, these activities also benefit from the inhabitants's participation in the ZAD monthly Assemblies of Uses (AU), as Quentin, each month to sustain production and use. Inhabitants' involvement is thus long-term and recursive.

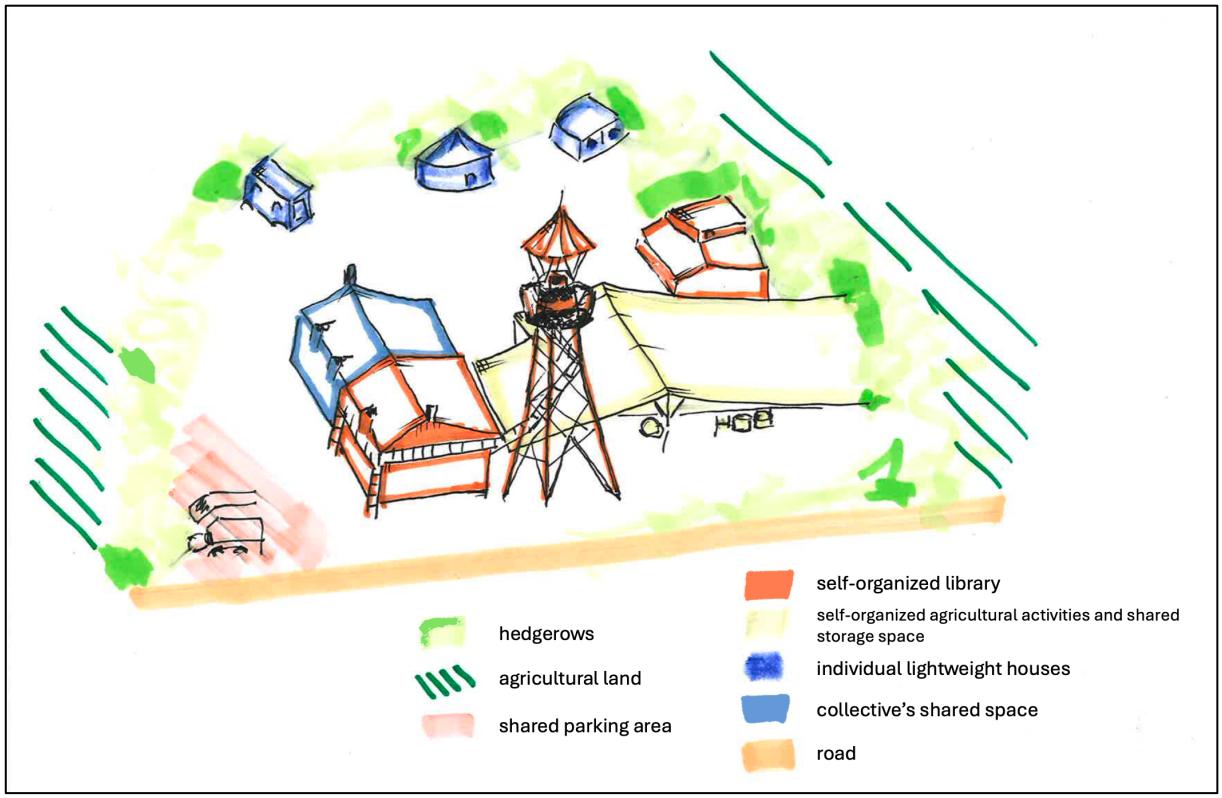
5.2.3. Organizing an interweaving of diversity of use and production

As inhabitants are producers and users in many activities, various uses and productions happen in the same places. Inhabitants of the ZAD depict it as an "interweaving of a diversity of uses" (Presse Océan, 2020).

[5] Bellevue is the name of a collective place on the ZAD.

For instance, the collective la Rolandière (Figure 4) gathers the ZAD library, a self-constructed headlight, a shed for agriculture activities, and an inhabitant collective of about eight people. The place is organized around one stone-built farm surrounded by lightweight houses next to hedgerows. Abundant throughout the ZAD, hedgerows serve multiple purposes: they provide firewood for inhabitants, act as crossing points for people, machinery, and wildlife, and help demarcate crop and livestock fields where cows spend their days.

Figure 4 : The spatial organization of a collective place. Source: Author



Considering that inhabitants are users and producers involved in a diversity of use-production processes that are intertwined, it appears that collective use and production of common resources cannot be separated on the ZAD. In other words, organizing for the common and of the common cannot be separated. Common use is productive of the common through a creative recursive process characterized by reciprocity. What is reproduced in perpetuity is not just the resource system but the community.

5.3. ORGANIZING CIRCULAR PRACTICES BASED ON ALTERNATIVE SOCIAL RELATIONS OF ALLOCATION

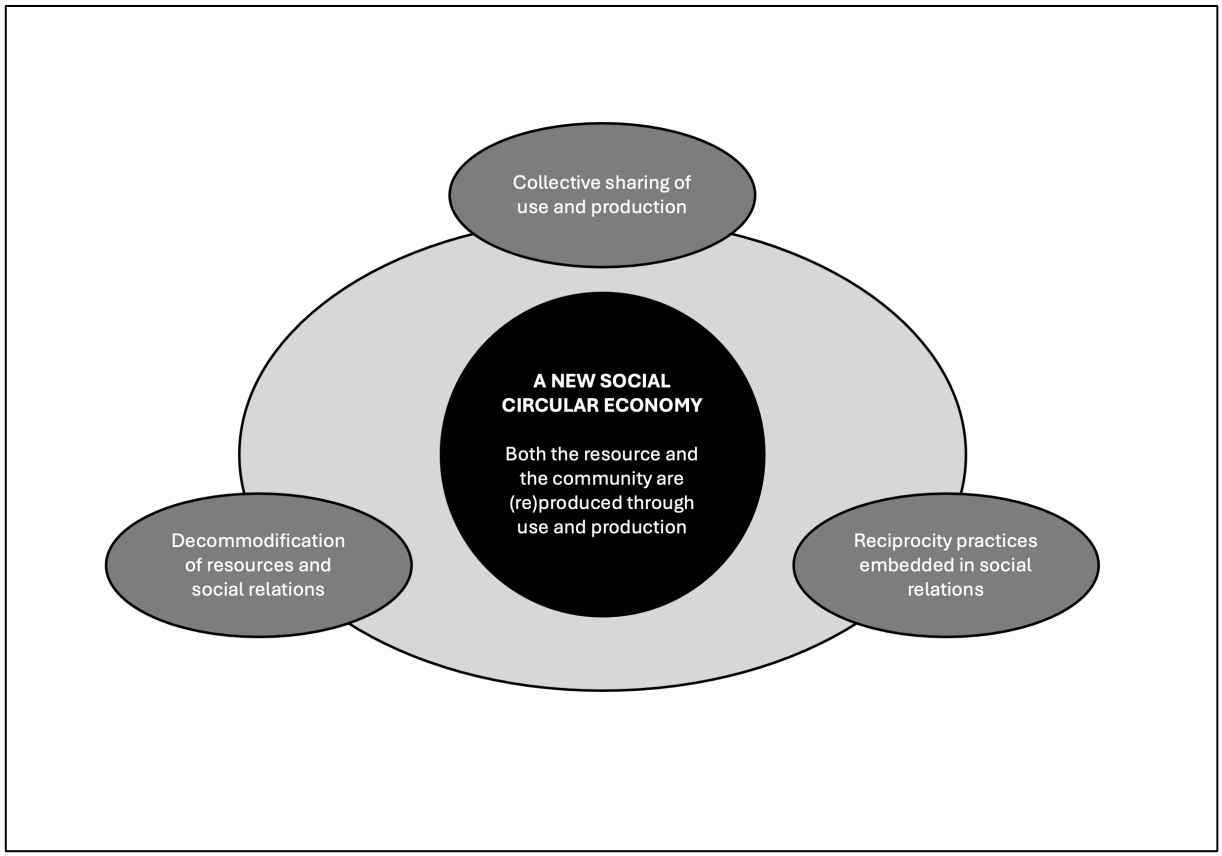
For collectively produced and used resources to circulate, they must be allocated between inhabitants. At the – unsupervised – free shop, you can drop off clothes and/or take them home with you. It corresponds to a reciprocity logic of give and take without using money. At the cannery, some inhabitants donate vegetables in exchange for jars, following a bartering system based on reciprocity. Although money is sometimes exchanged, allocation remains regulated by these reciprocal principles rather than market logic. Indeed, Christian, an inhabitant, explains to me the self-elaborated social rules for allocation: the more collective an activity is, the higher its priority for allocation is, and the more people are involved in production processes and use of the ZAD, the higher their priority.

In sum, the way the allocation of common resources is organized, that is, organizing in common, is based on reciprocity. Inhabitants, as users, can appropriate resources in return for participation to reproduce the resource system. In other words, there is no surplus value resulting from the allocation. The resource is decommodified through a decommodification of social relations.

6. DISCUSSION

Our study has shown the social relations of production at stake with a commoning-based approach to CE. Through a case study analysis, we show how people interact within the CE's economic structures and processes, considering issues of control, ownership, use, production, and allocation of resources. Theorizing from our case study, we now provide the outline of a new model for a social CE economy (Figure 5).

Figure 5: A model of a social CE based on a commoning approach. Source: Authors



Our model demonstrates, first, that a commoning-based approach of CE corresponds to a reproduction of resources through collective sharing of use and production with collective and systematic shared practices of reuse, repair, and recycling. It results in a circulation of resources with an overall reduction in resource use. Second, we show that the circulation of resources is sustained by long-term and recursive reciprocity practices embedded in social relations, meaning that reciprocity enables the reproduction of the resource and the community. It implies an indistinction between use and production where inhabitants are users and producers, and use-production processes are diverse and intertwined. Third, we show that reciprocity practices sustaining the circulation of resources also rely on allocation patterns outside a market logic. The resource is decommodified through a decommodification of social relations.

Our article makes three interlinked contributions to the CE literature by offering an alternative perspective to dominant forms of social relations of production.

First, our analysis shows that a commoning-based approach to CE implies an indistinction between use and production. This contrasts with extant social CE literature (Schröder et al.,

2020; Leipold et al., 2021; Pitkänen et al., 2023; Ziegler et al., 2023), which tends to perpetuate the dichotomy between consumers and producers, even if some authors acknowledge that organizational boundaries are sometimes porous (Böhm et al., 2023). On the one hand, social CE scholars argue that producers should better integrate social aspects in their business model, such as inclusion in their workforce (Clube and Tennant, 2023). On the other hand, it is argued that the role of consumers in enabling CE should be better considered by businesses and policymakers. Consumers are even sometimes depicted as potential CE facilitators by becoming 'citizen-consumers' – as in the right-to-repair movement (Bradley and Persson, 2022; Clube and Tennant, 2023). Their willingness to pay for sustainable products should consistently be better understood, and policies could involve creating discount vouchers or price discrimination (Neves and Marques, 2022). Nevertheless, the latter corresponds to a solventization of CE product demand and remains blind to other pathways, such as consumers' self-production. Instead of calling to transform producers' and consumers' behavior, our research highlights the need to dismantle the dichotomy between consumers and producers. In other words, we argue for a new approach to social CE that considers people's ability to self-organize to fulfill their needs. This goes beyond the call for the participation of clients and workers (Mies and Gold, 2021; Clube and Tennant, 2023) by emphasizing the autonomy of communities' self-organization.

Second, we show that collective sharing reduces resource use and production in a commoning-based approach to CE. We argue that a truly social CE is incompatible with private property, given that property relations always depend on the commodification of social relations. Instead, our model emphasizes a collective approach, which goes well beyond the dominant CE approach of focusing on the individual level (e.g., Zero Waste, responsible consumption) (Aguiñaga et al., 2018; Schröder et al., 2020). In the cases where the concept of 'sharing' is used by social CE scholars, it is mostly understood as in the 'sharing economy' (Jabbour et al., 2019; Pitkänen et al., 2023), which relies on the commodification of sharing privately owned products (e.g., Airbnb, carsharing) or public sharing (e.g., libraries) (Jabbour et al., 2019). Here, 'sharing' remains within the paradigm of private property. Hence, we call for a serious engagement with property dimensions, which are hardly mentioned in extant social CE literature. So far, property is only framed as the alternative between private and public property (Moreau et al., 2017; Pitkänen et al., 2023; Valencia et al., 2023). However, our commons approach alludes to many other ways of dealing with property in communal and other shared settings.

Third, we demonstrate that a commoning-based approach to CE implies decommodifying resources and social relations. Although a few scholars stress that a social CE should include non-monetary exchanges (Hobson and Lynch, 2016; Clube and Tennant, 2020), most of the literature is based on the assumption that CE can only be market-based (Dzhengiz et al., 2023). We argue that the social CE literature needs to address commodification directly. Indeed, scholars tend to focus on the need for better CE business models that imply financial performance (Jabbour et al., 2019; Schröder et al., 2020), as in the Fairphone case (Hobson and Lynch, 2016), which is nothing other than profitability relying on the exchange of goods as commodities. Here, we need to remind ourselves that a social CE based on wage relations reproduces the logic of the commodification of labor (Clube and Tennant, 2020; Neves and Marques, 2022). This is why research on a new social CE should explore alternatives to profit-driven organizations (Moreau et al., 2017; Mies and Gold, 2021; Ziegler et al., 2023) and foster alternative modes of allocating resources outside market logics.

In sum, considering that it is becoming vital to "resist a business-as-usual that is reformed on its own terms" (James, 2022, p. 1209), a new social CE approach implies breaking up with the consumption-production dichotomy, private property, and commodification of resources and social relations, which are the key pillars of linear, capitalist economies. We argue that the CE 'empty signifier' (Valenzuela and Böhm, 2017) must be filled with new, commoning logics that create livable, just and inclusive ways to organize for all.

7. CONCLUSION

This study has argued that while the circular economy (CE) is often promoted as a solution for environmental sustainability, its conventional frameworks tend to overlook the social dimensions of production and consumption. By introducing the concept of commoning, this paper has highlighted an alternative approach that integrates social and ecological sustainability. Through a case study of the ZAD of Notre-Dame-des-Landes, the research demonstrated how circular reuse, repair, and recycling practices are embedded in collective social arrangements that promote equity, reciprocity, and community resilience. This perspective challenges the dominant market-driven models of the CE and proposes a more inclusive and sustainable approach to resource management.

This study contributes to the literature on the social dimensions of the circular economy (CE) by focusing on social relations of production. It highlights the importance of collective practices and shared ownership in fostering circularity, challenging conventional models that separate producers and consumers. By examining commoning, the research offers an alternative perspective on organizing circular practices outside market mechanisms, enriching discussions on resource decommodification (Hobson and Lynch, 2016; Euler, 2018) and advocating for inclusivity, equity, and participatory governance within the CE framework (Clube and Tennant, 2023; Ziegler et al., 2023).

Future research could explore commoning across various economic, social, and cultural contexts, from urban cooperatives to rural initiatives. This could reveal how social circularity can be scaled and adapted and how these practices interact with existing legal and political structures.

Beyond academic debates, we hope our study informs real-world efforts to implement socially just and sustainable CE systems. It emphasizes the need to move beyond mere resource efficiency, illustrating how commoning can foster equitable resource distribution and community empowerment. Our approach emphasizes that sustainability efforts must go beyond technical fixes to address deeper social dynamics, making the CE a tool not only for environmental preservation and resource efficiency but also for advancing social justice and community resilience.

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