(En) coding care into digital urbanism: Vignettes of collective practices[☆]Niloufar Vadiati^{a,*}, Letizia Chiappini^b, Martin Bangratz^c^a HafenCity University Hamburg, Germany^b University of Twente, the Netherlands^c RWTH University, Germany

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ABSTRACT

The tech-entrepreneurial model behind the computation of urban processes is (re) producing what has already been identified as a technocratic, solutionist, and commodifying model of urban planning. Within this model, not only is care no longer a prerequisite for urban production, but decades of smartification and platformization have been diminishing the spaces, infrastructures, and socio-economic relations that were co-produced to enable care.

Through the lens of feminist geography, care is examined as a multidimensional concept encompassing socio-spatial dynamics, power relations, and ethical urban practices. Using empirical data from three research projects, the study showcases alternative digital urbanism practices, categorized into three vignettes: refusal, commoning, and reappropriation. These categories are illustrated with cases such as grassroots food cooperatives, feminist hack-spaces, digital sovereignty initiatives, platform-based welfare experiments and civil society initiatives such as Code for Germany.

By situating care within the spatial and social fabric of urban life, the paper argues for its potential as a politic, practice, and epistemology that challenges the exploitative logic of contemporary digital infrastructures. The findings reveal the embeddedness of care practices within local contexts, highlighting the dual need for trans-local networks and territorial embeddedness. This study contributes to the discourse on caring digital urbanism, advancing a feminist theorisation of everyday digital urbanism.

1. Introduction

Digital urbanism, as augmenting digital technology into cities, encompasses the incorporation of data as a resource, algorithms as logic, and platforms as infrastructure within urban processes. In the context of neoliberal urbanism in Central European cities, major digital urbanism practices have led to the predominance of the tech-entrepreneurial model (Cardullo & Kitchin, 2019) with an increasing influence of its tech-solutionist rationality in urban planning and its tech-actors in urban governance. This trajectory of digitalization has fueled the ongoing vaporization of various ways of social reproduction in the pursuit of capital accumulation, ultimately contributing to the already escalating ecological and economic crises in cities. Numerous key research studies in the fields of urban studies and digital geography have raised concerns about the development of data-driven urban systems, algorithmic governance, and platform-based urban infrastructures

under a tech-entrepreneurial model, suggesting that such development may deepen urban problems rather than alleviate them (Jarrett et al., 2024; Hodson et al., 2021; Datta & Odendaal, 2019). While the majority of these studies focus on examining smart cities and platform urbanism through the lenses of socio-economic justice and the right to the city, there is a notable absence of looking at how such digital transformations are perceived from another critical urban imperative: care.

The lens of care here, as a multi-dimensional concept in feminist geography, has the capacity to interrogate the socio-spatial dynamics, power relations, emotional labor, gendered-bodily experiences, and ethical considerations within the mundane connectivity of digitally mediated urban living (Barns, 2019). However, the discussion on the (un)caring dimensions of smartification and platformization in everyday urbanism, within feminist geographical scholarship, is increasingly extending beyond domestic spaces (Bria et al., 2019; Datta et al., 2023; Listerborn, 2023). However, despite decades of top-down

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conceptualizing and practicing smart cities, there is limited scholarly work that reflects on how such pervasive digitalization strategies have had major impact on spaces, infrastructure, and socio-economic relations that were once designed for generating care within everyday urban living (Elwood & Leszczynski, 2018; Gillian, 2017).

Also, digital platforms have become integrated into myriad aspects of everyday urban life, ranging from food delivery services (e.g., Foodora, Deliveroo) and taxi services (e.g., Uber, Lyft) to short-term rentals (e.g., Airbnb) and location-based dating applications (e.g., Tinder) (Celata et al., 2020). A substantial body of recent academic inquiry into platform urbanism has focused on the infrastructural role, but for capital and labor, leading to discussions about how the ecosystem of major digital platforms is based on the reproduction of exploitation, extraction, and extreme commodification (Bauriedl & Strüver, 2020; Chiapini, 2020; Shaw & Graham, 2017; van Doorn, 2019). However, moving ‘beyond transactional logic’ (Barns, 2018) and ‘work-labor rearrangement’ (Richardson, 2024), the ubiquity of digital platforms in the urban everyday has caused numerous forms of urban transformation, some of which can be characterized as ‘urban injuries’ (Hill, 2020; Katz, 2010). From the violation of the right to the city, ‘black-boxed’ governance, datafied surveillance of urban space, privatized internet infrastructure, exploitative platform labor, and patriarchal structures of everyday urban living, caring toward such ‘injuries’ have led to various degrees of (re)imagination and transformative practices across different geographies and at different scales of urban communities.

Aligning with Special Issue’s trajectory of conceptual framework: from (de)coding the machine to (en) coding care, this paper examines the responses toward the machinery of exploitation, commodification, and dispossession, of tech-capitalist smartification and platformization through care-based theorization. The focus is on new forms and networks of praxis that encoded care as a politic, a practice, and an epistemology of everyday life. By contextualizing these practices within their urban settings, this paper aims to provide detailed accounts—both discursive and empirical—of these praxes, challenging the pervasive injuries inflicted by tech speculation, and instead speculating on the possibilities of care that exist at the intersection of the code and urban everyday.

Methodologically, the paper synthesizes the empirical findings from three previously conducted research projects on alternative digital urbanism (Vadiati, 2022), which focuses on non-tech-capitalist models. Utilizing vignettes as a narrative form and care as a conceptual lens, the goal is to provide detailed accounts of the cases from these three research projects and analyze the geographic approaches of these cases toward ‘caring digital urbanism’.

In order to do so, the first part of this paper is to situate ‘care’ within the context of digital urbanism and build a conceptual framework to understand the emerging caring praxes. We introduce our lens of care by positioning it at the intersection of critical urbanism, feminist geography and digital geography.

Second, we empirically introduced cases in various Central European cities that are experimenting an alternative toward mainstream (tech-entrepreneurial) digital urbanism. The first vignette focuses on a collection of urban activists in refusing the exploitative/oppressive logic of the digitization process and building alternative digital urbanism in the city of Berlin. The second vignette provides a detailed analysis of the digital platform Commonfare, a non-commercial platform that advocates for the practice of commoning of commerce using a ‘social wallet’ and cryptocurrency within two urban communities in Milan and Amsterdam. The third vignette highlights city-making practices by civil society initiatives that (re)appropriate data and technology, primarily from the Code for Germany network of civic tech “labs”. We further examine how these collective practices are spatially composed, socially constructed and the types of territories in which they are embedded.

Third, we analyzed the empirical works using our conceptual framework of care (refusal, commoning, and reappropriation). Subsequently, we developed an understanding of their approaches by

situating them within the context of critical urban geography.

2. Conceptualizing Care in Digital Urbanism

Care can include “everything we do to maintain, continue, and repair our world so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment” (Fisher et al., 1990: 40). Thinking of care as “a critically disruptive force that can open to ‘as well as possible’ configurations engaged with troubled presents”, de La Bel-lacasa (2017: 207) argues that despite its commodification and its ambivalent terrains, care has transformative potential. As a subject and issue, care has gained prominence in geographical debate in the last decade, with particular attention during and after the COVID pandemic. After all, it showed how the near-ubiquitous positioning of profit-making as the organizing principle of life has resulted in demonstrating care as labor, commodity, industry, practice, and choice.

While much of the classic scholarship on feminist care conventionally revolves around seeing care as domestic labor within the geography of the home (Federici, 2012; Fortunati, 2011), new areas of debate has emphasized the “importance of care in our everyday lives, advocating for the reappropriation of caring places and public spaces to create a more convivial and inclusive city opened room” (The Care Collective, 2020: 32). There is no clear-cut definition of care in urban studies or what constitutes caring and uncaring spaces, especially regarding spatial practices and social relations that are augmented by digital technology. But still, the idea of care to urban studies has expanded in the theoretical realm, possibly in parallel to the ways that right-to-the-city thinking has transformed urban scholarship on questions of urban ethics.

While there is a strong tendency in the critical digital geography literature to call for ‘bottom-up’ initiatives to challenge ‘top-down’ neoliberalisms, in particular neoliberal urbanism (Rose, 2021; Calzada, 2018; Cardullo & Kitchin, 2019; McFarlane & Söderström, 2017); in the context of the urban mundane though, Williams (2020) argues that feminist ethics of care is more situated and contextual than abstract political-economy conceptions of justice and right-to-the-city. Endorsing such points of view, there is an emerging body of scholarly work and activism with an interest in examining care as a conceptual lens and empirical focus, diverging from the tradition of ethical engagement with urban inhabitants, communities, and collectives through ‘the right to the city’ discourse (Purcell, 2013; Wiesel et al., 2020; Gabauer et al., 2021). Meanwhile, Williams (2020) suggests going beyond seeing Justice and Care as opposing rationales, introducing care-full justice, as interdependent practices of care in responding to injustice in everyday, ordinary, mediated urban living. It is in this light that we see a new generation of urban activism and collective practices, addressing the issue of unequal resource distribution by organizing themselves around distributed networks to challenge different aspects of urban ‘injuries’ and provide caring spaces (Hill, 2020).

Encountering the digitization process in cities, care has been conceptualized (Middleton & Samanani, 2021; Simone, 2004) as politics and practice for inverting digitally-mediated spaces for more safe, just and unoppressive places. Particularly, in the literature on feminist urbanism, care has been considered alternate urban infrastructure (Alam & Houston, 2020). While empirically, it has been exercised as “the range of important city-making practices that take place outside the invited spaces of professional planning, from practices of alternative movements, building spaces of care and solidarity in everyday life as well as in the more visible street protests and contestations” (Mirafteb, 2023, n.d.).

While the current debate is inspired by the foundational manifesto written by Joan Tronto and focuses on how care intersects with the urban, and how care might be “designed,” through the lenses of technology, politics, and the senses (Kopitz & Chow, 2023). Conceiving care as a form of political resistance, our contribution to the Digital Geography debate lies in our shared positionality of considering care as a critical concept for analyzing digital and spatial practices.

In that sense, our approach toward care cannot but be both critical

and feminist (Elwood, 2021; Hara Kouki and Makrygianni, 2022). By situating care in relation to digital urbanism, we define care as political practices, in conjecture of the right to the city, that recognize, repair, and sustain ordinary living.

To de-abstract this definition and build understanding of the various forms of discursive practices of care that are now being experimented in different urban fields, we draw on feminist theorization of caring digital urbanism, followed by our advance on the analytical framework for caring digital urbanism.

3. Caring Digital Urbanism from the Minor

The theoretical approach in this paper is aligned with what Katz (1996) defined as a ‘minor theory’. In eschewing totalizing analytics in favor of the relationalities and intersectionality of marginality, minor theory can give an alternative and complementary view to more classical ways of studying the multiplicity of politics and practices of care rooted in everyday digital practices of urban denizens (Katz, 2017; Leszczynski, 2020). Theorizing caring digital urbanism from the minor is an effort to work through and against engagements with different forms of ‘injuries’ (Hill, 2020) generated by smartification and platformization of urban processes.

By urging an epistemological turn from major to minor theory, Katz (1996: 496) set up “an imbricated or interstitial politics; a way of negotiating and reworking a space of betweenness to produce something new”. In 2004, Katz categorized much of the ‘in between real praxis’ as “Resistance, Rework and Resilience”. Through the interconnected issues of resilience, reworking, and resistance, Katz’s critical insight highlights the agency of marginalized communities in confronting and transforming oppressive structures.

Similarly, Leszczynski (2020) built the narration of three specific platform/city interfaces from the minors of their glitchy margins, in which platform–urban configurations are demonstrably open to three further categories: diffraction, reconfigurations, and negotiation through tactical manoeuvres rooted in everyday digital practices of urban denizens. It “underwrites a more hopeful platform urban politics by extending and recognising ordinary urban denizens’ abilities to express political capacity through everyday digital interactions and practices *outside* the bounds of acts of collective resistance which presuppose and necessitate forms of social, political, and often economic capital to which many do not have access” (Leszczynski, 2020: 202). She positions her minor theory precisely as an erratum to the totalising analytics of masculinist critiques which overdetermined the expanding presence of platform enterprises to be the catalyst of an imminent urban technocalypse (Katz, 1996). In this paper, we align with the glitchy positionality (Lynch, 2022) but we also take a different stance by adding the lens of care.

Kouki and Makrygianni (2022) in their special issues also considered this trilogy as “emancipatory, contestations, negotiations possibilities”. All these sets of categorizations have been theorized by feminist minor theory, considering computational urbanism as a phenomenon that may beget an array of potential outcomes that remain shapeable by mundane tactical interventions in digitally-mediated urbanism. They are also common for ultimately underwriting possibilities for more hopeful digital urban politics, theory, and futures (Leszczynski, 2020).

Building upon the theoretical review above, our theoretical lens draws from and extends the framework of caring digital urbanism through a minor theory lens and our methodological approach through a trilogical categorization.

4. Methodological approach

This paper is empirically grounded in the findings of three separate research projects, each of which collected data on experimental and alternative practices for urbanism using digital tools. Located in cities across Central Europe (Germany, Italy, and the Netherlands), a research

context encompasses numerous projects being conceptualized and tested within the policy framework of *Digital Social Innovation (DSI) for Europe* and the broader notion of ‘technology for social good’ (Bria et al., 2019).

All three projects employed participant observation and interviews to gather data. Our paper presents vignettes of these practices, illustrating how care is (en)coded into digital urbanism.

By situating our work within the epistemological turn from major to minor theory, we aim to uncover and amplify the everyday practices and politics of care enacted by urban denizens as they navigate the glitches, injuries, and disruptions generated by the smartification and platformization of urban processes. Inspired by the categorizations of Katz (2017), Leszczynski (2020), and Hara Kouki and Makrygianni (2022), this article analytically examines the reality of encountering and engaging with such practices by identifying three empirical trajectories: (1) refusing, (2) commoning, and (3) reappropriating, which serve as our analytical framework:

4.1. Refusing

The dominant forms of digital urbanism, the disciplinary and top-down digital mediation of smart cities by city governments and the monopolist and entrepreneurial digital platformization by giant tech companies, are being contested among many right-to-the-city and technological sovereignty activists, refusing to be excluded from the ‘backend’ of algorithmically foreclosed urban making. At the same time, derived from the everyday urban alienation caused by current digital socio-spatial hegemonies, “care insurged as a situated politics of refusal but also for producing ruptures and what Deleuze and Guattari call ‘lines of escape’ so that something else is possible or happens” (Katz, 2017: 598). Here, refusal has shown to be an emancipatory practice that does not simply reject technology, but also the current exploitative/oppressive logic embedded in computational cities. It also resembles what Katz (2004) articulated as resistance, encompassing a wide range of practices, including grassroots organizing, political activism, emancipatory practices, and everyday acts of defiance. She underscores the significance of understanding resistance as a complex and dynamic process shaped by intersecting power relations and social contexts. Refusing, in this sense, embodies a critical engagement with how we know (about technology) and caring about the ongoing struggle (Hughes et al., 2022). Refusal strategies demand collective responsibility and negotiations of ‘otherwise’ politics toward experiencing the inequality of smart society and platform urbanism. Portraying how such strategies have been practiced in different forms, places and scales might enable transformative power for constructing assemblages and operative alternatives against exploitation, disposition and oppression (Katz, 2017).

4.2. Commoning

Geographers have contributed to and engaged with the growing scholarship and praxis on the commons. Commons are understood as self-organized systems rooted in shared responsibility and interdependence (Ostrom, 1990); and commoning as advancing other-than-capitalist community economies (Gibson-Graham, 2006), while challenging enclosure and accumulation by dispossession (Jeffrey et al., 2012; Hodgkinson, 2012). In particular, the autonomous Marxist tradition emphasizes the commonwealth that all humans share, the commons’ role in fostering post-capitalist subjectivities, alternative modes of production and provisioning, and ways of relating to and appreciating communal life (Caffentzis & Federici, 2014; Linebaugh, 2009; Bollier & Helfrich, 2014).

While scholars such as De Angelis (2017) frame commoning as a radical transformation rooted in the social reproduction of communities, lives, work, and society as a whole, this paper adopts the conceptualization of commoning as a nurturing ground for collective subjectivity (Singh, 2017), a coexisting strategy, and a form of caring practice.

In the context of digital urbanism, both urban and digital commons warrant further elaboration. Urban commons focus on the spatial dimensions of commoning rather than material goods. Urban spaces, in this sense, function both as arenas for human cooperation and negotiation (commoning activities) and as products of these activities (Dellenbaugh et al., 2015). This interdependence in the commoning of the built environment represents a form of caring practice, described by the *Care Manifesto* (2020: 42) as “prioritising green spaces and public transport over cars and roads and creating resources to cultivate caring communities based on a notion of the commons”. Similarly, digital commoning encompasses practices of communities striving for a transition to a post-capitalist world, addressing digital capitalism alongside issues of gender, race, age, and (dis)ability (Tsavdaroglou & Avlona, 2018).

In the domain of digital urbanism, both digital and urban commons operate at the intersection of neoliberal smart cities and emancipatory communal practices. Care in this context involves scalable possibilities of interdependence and solidarity, with commoning practices shaped by the forms of provision, space, and digital infrastructure (de Angelis, 2017).

This vision has inspired various offline and online initiatives, such as technology hubs (Moiso & Rossi, 2020), childcare facilities, and maker spaces (Chiappini & Törnberg, 2018). Commoning in this framework functions as a survival strategy for coexistence, rather than as a solution to the systemic logic that ties socio-political lives to undeclared algorithmic biases and economic exploitation.

Theorizing such initiatives from the minor, we integrate this approach with what Katz called in her category as ‘rework’. Commoning practices in her view are the ways in which marginalized communities “rework” their environments and social structures in response to challenges and oppression (Katz, 2004). Katz highlights the agency of communities in shaping their environments and identities, challenging dominant narratives that portray them as passive victims (Hughes et al., 2022).

4.3. (Re) appropriation

Other than outright refusal and commoning, some initiatives embrace the pervasiveness of digital technology by actively utilizing these technologies for specific purposes. These aims are often perceived as more ‘just’ or more ‘democratic’ by local communities compared to the control of technological elites over data and technology. In other words, technology is (re)appropriated to enact care in the sense of a grounded and relational manifestation of what Katz categorized as ‘resilience’ (2004).

The notion of (re)appropriation of technology in relation to city and society is concentrated on additional opportunities that technology could offer to tackle inequality and social marginalization. This strategy of care focuses on leveraging the ubiquity of digital devices and ease of creating and curating data, rather than merely generating and consuming it, to support people and communities in everyday living (cf. Tronto, 2013).

(Re)appropriation (of urban space) has long been a pragmatic part of the discourse around the Right to City, such as DIY, tactical, or guerilla urbanism, urban hacks, and even urban glitch (Leszczynski, 2020; Maalsen, 2023). In parallel to the urban dimension, (re)appropriation can also be referred to processes and discourses around digital

technology with urban impacts, such as hackers and collectives using data and technologies for purposes other than originally intended. These twin phenomena frequently overlap in computationalized cities, where spaces and data are blending into each other.

5. Methods and techniques

5.1. Vignette 1

The first vignette explores the category of refusal as a caring strategy. The empirical work is drawn from a postdoctoral research project by XXX from 2022 to 2024, which investigates Grassroots Digital Urbanism at the intersection of urban activism and the digital sovereignty movement in the city of Berlin. These movements were organized, initiated, and mobilized in resistance to and radical refusal toward the exploitative and oppressive logics of digitization in Berlin. The cases have been selected/discovered through desk research and also snowball techniques. The qualitative data collection methods employed in this exploratory study included participatory observation (attending gatherings and organized events), performative activism (actively participating in organizational processes and campaigns), and 8 interviews (recording podcast interviews with representatives and some of the activists of the initiatives and collectives).

5.2. Vignette 2

The collection of data about Commonfare combines participatory observations and digital ethnography (Caliandro, 2018; Dawson, 2019; Hjorth et al., 2017) activities. The empirical material was collected by XXX during the PhD fieldwork from 2015 to 2020. All the procedures are ethically approved (see: xxx). Participant observation and digital ethnography tasks included observing posting photos by final users, writing captions or comments, and exchanging cryptocurrency, as well as analysis of digital content (websites, forums, and social media). Additionally, thirty in-depth and unstructured interviews were conducted: five with consortium and software developers, and the rest with researchers, artists, activists, and policymakers (fifteen in Milan and ten in Amsterdam). These unstructured interviews allow participants to narrate their views on techno-political trends, revealing discourses about Commonfare and its challenges. The two maps are produced through GIS software.

5.3. Vignette 3

The empirical material on “(re)appropriation” was collected through desk research, an online questionnaire, podcasting and interviews in the context of an ongoing PhD research project pursued by XXX at RWTH Aachen University, with the aim to discover what and how “digital city-makers” contribute to urban governance. The cases were selected from a global long-list of initiatives according to their geographical situation in central Europe as well as their potential to represent practices of care. The descriptions of their practices are drawn primarily from desk research and 12 exploratory interviews, supplemented by deeper insights gathered through a qualitative and quantitative online survey (22 responses from Germany) and in-depth interviews (four in Germany).

6. Findings: Praxis of Care in Digital Urbanism

Regarding the complexity of various practices with different subjectivities of care, we structured the empirical work in the form of three vignettes, each illustrating one of the conceptual categories of caring practices in digital urbanism: (1) refusing, (2) commoning, and (3) (re) appropriating.

6.1. Refusal

(a) Khora, a co-operative food delivery company

In 2019, the delivery service company Deliveroo withdrew from Germany, causing many delivery bikers in cities like Berlin to lose their freelance jobs. During the pandemic, the Gorillas Workers' strike in 2021 was another significant event for delivery bikers in Berlin. These two events ultimately inspired some delivery bikers to establish a bicycle courier collective called Khora (Khora, 2025). Refusing exploitative and precarious work conditions at the giant platform food companies, Khora Cooperative aimed to establish flat hierarchies, fair working conditions, and zero-waste packaging. With 30 bike drivers, none of whom receive a flat-rate hourly wage, the earnings from the couriers used from their trips were pooled into a cooperative and then distributed among the drivers. They also had health insurance through the cooperative and could obtain unemployment and occupational accident insurance. Although their cooperative could not survive the pandemic, Khora used to be among the top three food delivery options in the neighborhoods of Friedrichshain-Kreuzberg and Neukölln in Berlin for almost two years. Platform cooperatives like Khora are actively territorialism-building and maintaining infrastructure of care within the gig economy and platform urban economy. They resist exploitative transnational urban platform corporations by diffracting from their model and opening up possibilities for emancipatory alternatives.

(b) Heart_of_Code: Feminist Hack-Space

Heart of code is a FLINTA Hackspace & Kollektiv, one of multiple CyberFeminist hack-spaces that are active in Berlin. Refusing the patriarchy of the digital city, Heart_of_Code argues that its space is for "playing with uncertainties, incalculable openness, and scope for design of possible futures within software and urban spaces" (Voigt, 2023:164). With around 15 active members, Heart_of_Code conducted its activities at the interface of feminist digital and physical spaces through learning programming languages together, writing code, and educating about technology, gender and society.

The desire of feminist hack-spaces, including Heart-of-Code, has been to counter the patriarchal system inherent in the current digital-technological model. Accordingly, their work is based on efforts to dismantle dominant discourses of the interconnection of gender, technology and human rights. Besides, they seek to reject the notion of commercially developed technologies based on certainty and predictability toward collaborative, ever-evolving, and diverse imaginaries of the future (XXX for Podcast episode address).

(c) MAZI: refusing corporate control of urban data and digital technology

A three-year EU-funded research for the cities of Berlin, Zurich and London aimed at creating techno-social infrastructures for digital sovereignty, through developing a toolkit for building local, community wireless networks: MAZI Zones. The difference between a typical WIFI and community wireless network lies in the fact that a MAZI Zone does not necessarily connect people to the internet, but rather to an alternative environment, in which they can use logics we know from being online (e.g. collaborating on a text, visiting a website, sharing files) while being disconnected from the "global" internet. This Do-It-Yourself networking combines wireless technology, low-cost hardware, and free/libre/open source software (FLOSS) applications which provide specific areas that local users can access, for example internal data about people, places and activities in their neighborhoods (XXX for Podcast episode address).

The MAZI project's refusal strategy is through developing interventionist methodologies that resist the increasing corporate centralization of digital infrastructures and the uniform modes of digital interactions. It achieves this by providing alternative spaces and infrastructures for digital interactions. The idea of digital sovereignty within MAZI focused explicitly on open-source community wireless technology (CWN) that is developed and used within hyper-local settings, at the neighborhood scale.

(d) Berlin versus Amazon

The 35-story high-rise Amazon Tower in the Friedrichshain neighborhood (officially known as the Edge East Side Tower), is set to be Berlin's tallest building. The structure has been at the center of some controversy since the final permit was granted in 2019. It is supposed to be a new workspace for US tech giant Amazon and has been promised to bring thousands of jobs to Berlin City.

In resistance to that, a coalition of activist groups has founded an initiative called Berlin Versus Amazon. Their organization, initiated as a political campaign against gentrification, later in response to Amazon's notorious record of exploiting workers, polluting the environment, and avoiding taxes, expanded by forming alliances with tech worker movements and Amazon logistics workers in other European countries, particularly in Poland. Thus, embedded within existing neighborhood urban activism, Berlin versus Amazon has tight collaboration with the Berlin Tech Coalition and Berlin tenants' movements, especially with the 'Initiative Deutsche Wohnen & Co enteignen'. Currently, the gig and warehouse labor of Amazon, urban logistics, and real estate have become focal points of the Berlin versus Amazon initiative, resisting Amazon's digital and urban logic and beyond that, refusing the top-down and hegemonial power of big-tech in cities.

Summarizing the refusal cases, the urban and digital experiments reviewed in this paper are based on resisting the conditions, the system, and the relations that have been considered by part of society as uncaring. Here, care has been practiced in the forms of platform co-operatives, digital sovereignty, opposing partisanship, and the right to the city. Questions remain regarding the true success of these initiatives in terms of scalability and their effectiveness as alternatives. Additionally, concerns arise about whether they may lead to other forms of inner-exploitative dynamic or exacerbate the gentrification process in vibrant areas such as Friedrichshain-Kreuzberg and Neukölln are all valid points of skepticism. But one cannot invalidate their practice of refusing to

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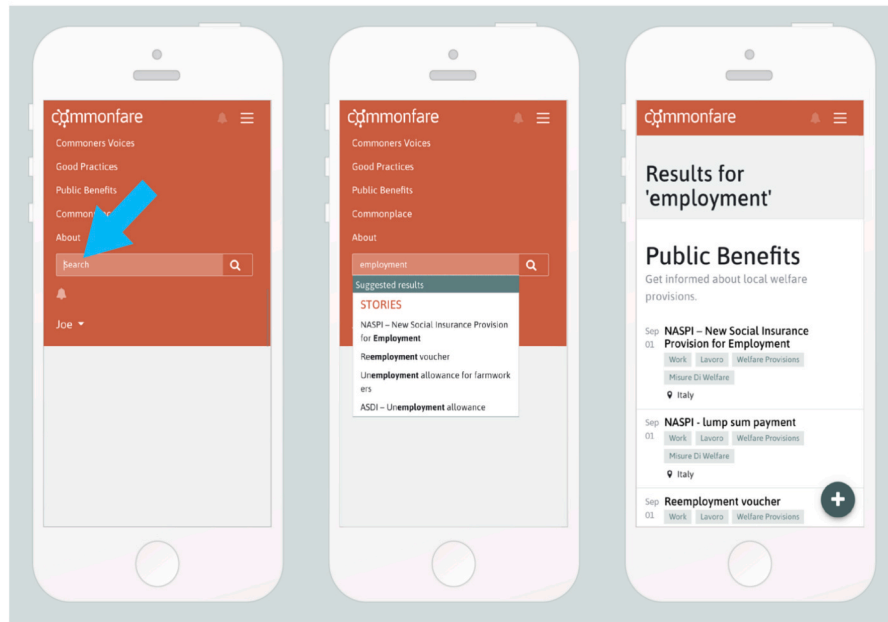


Fig. 1. Public benefits- welfare- information as form of care and commoning. **Source.** Authors.



Fig. 2. Exchange of goods and services via CC as Commoncoin. **Source.** Authors.

engage with existing disembedded and exploitative platform businesses. Nevertheless, we would caution against an overly optimistic stance concerning the possibilities of digital technologies (Lynch, 2020; Ribera-Fumaz, 2019).

6.2. Commonfare for Commoning

“Traditionally, care work has been considered ancillary to the factory’s production work. Now, in contemporary capitalism, it has become a direct source of value, partially waged and partially unpaid. The issue

of exploitation of re/production, and the becoming-invisible of domestic labor and care, is the contemporary mechanisms of reproduction and production that have dramatically expanded within the horizons of voluntary work under neo-liberalism.” (Commonfare Manifesto).

The project Figs. (1-3) Commonfare was founded in 2015 by a consortium of different partners including the University of Trento, the Bruno Kessler Foundation and Basic Income Network in Italy, the Centre for Peace Studies in Croatia, Dyne.org in the Netherlands, Abertay University in the United Kingdom, and Madeira Interactive Technologies Institute in Portugal (Pieproject, 2025). The consortium won a

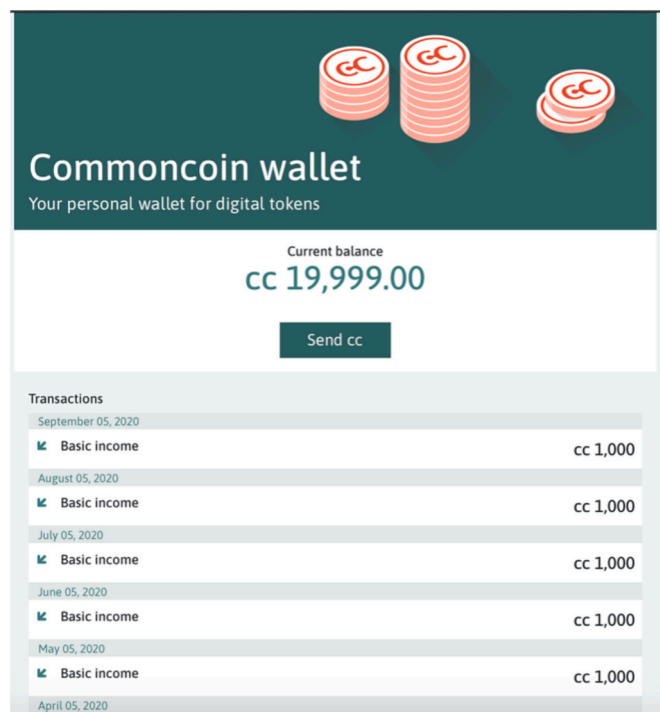


Fig. 3. Commoncoin wallet and basic income. Source. Authors.

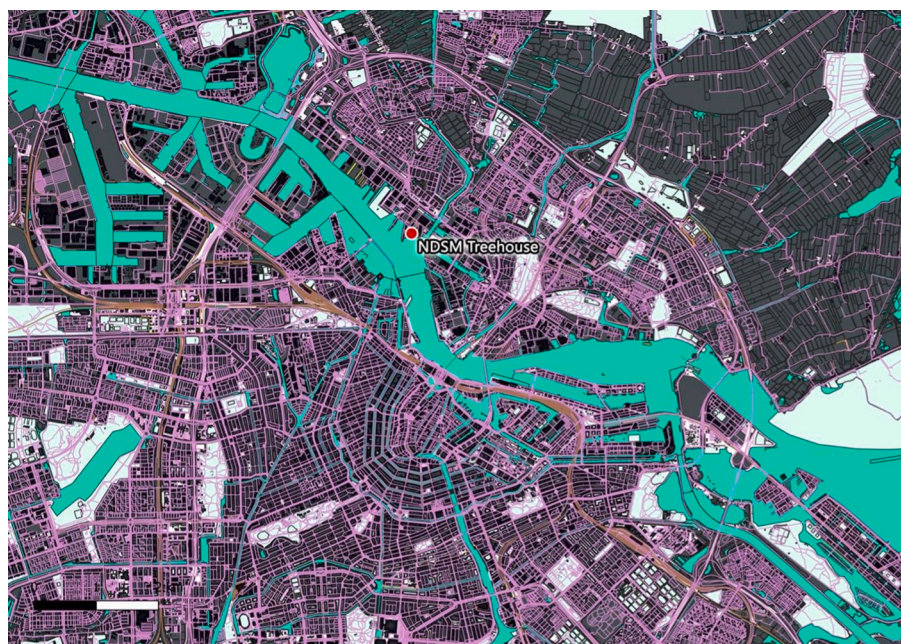
Horizon 2020, and the grant was primarily utilised to develop a digital platform for redistributing ‘commons’ and providing complementary welfare solutions to users of Commonfare. The project involved local organizations in the three selected pilot cities, Milan, Amsterdam, and Zagreb (Bassetti, 2019) and the consortium was solely responsible for budgeting and organizing events.

Dyne.org, a hacker and software developer collective located in Amsterdam, was in charge of designing the platform’s architecture and implementing the digital tools (i.e. technical support, data collecting, social wallet and API, a digital currency Common coin). The developers adopted a co-design approach with the local organizations located in the three cities. In Milan, Macao was the main actor that effectively contributed to the co-design process. The underlying premise is that Macao pursued its subjectification process using aesthetic tactics: the construction of a political subject is mediated by arts and creative expressions, as well as by implementing all the digital tools for its community of artists. It is, indeed, an urban social movement that in 2012 squatted the Art Nouveau building (former slaughterhouse) to establish its activities and artistic practices (Valli, 2015). In Amsterdam, Dyne.org and the NDSM Treehouse organization were the creators, facilitators and curators of the events and implementation of the Commonfare platform (Chiappini, 2022).

To localize these forms of care which are designed to be digital in their infrastructure e.g. commoncoine API and refusal to big-tech companies for transactions, and material in their final use. The Maps. (1-2) maps visually represent the spatial embeddedness of the initiatives. As the two maps show, the only two communities that were able to benefit from the social network and digital infrastructure use through a conspicuous use of common coins were the initial central nodes, namely the



Map. 1. Location of Macao, Milan. Source. Authors.



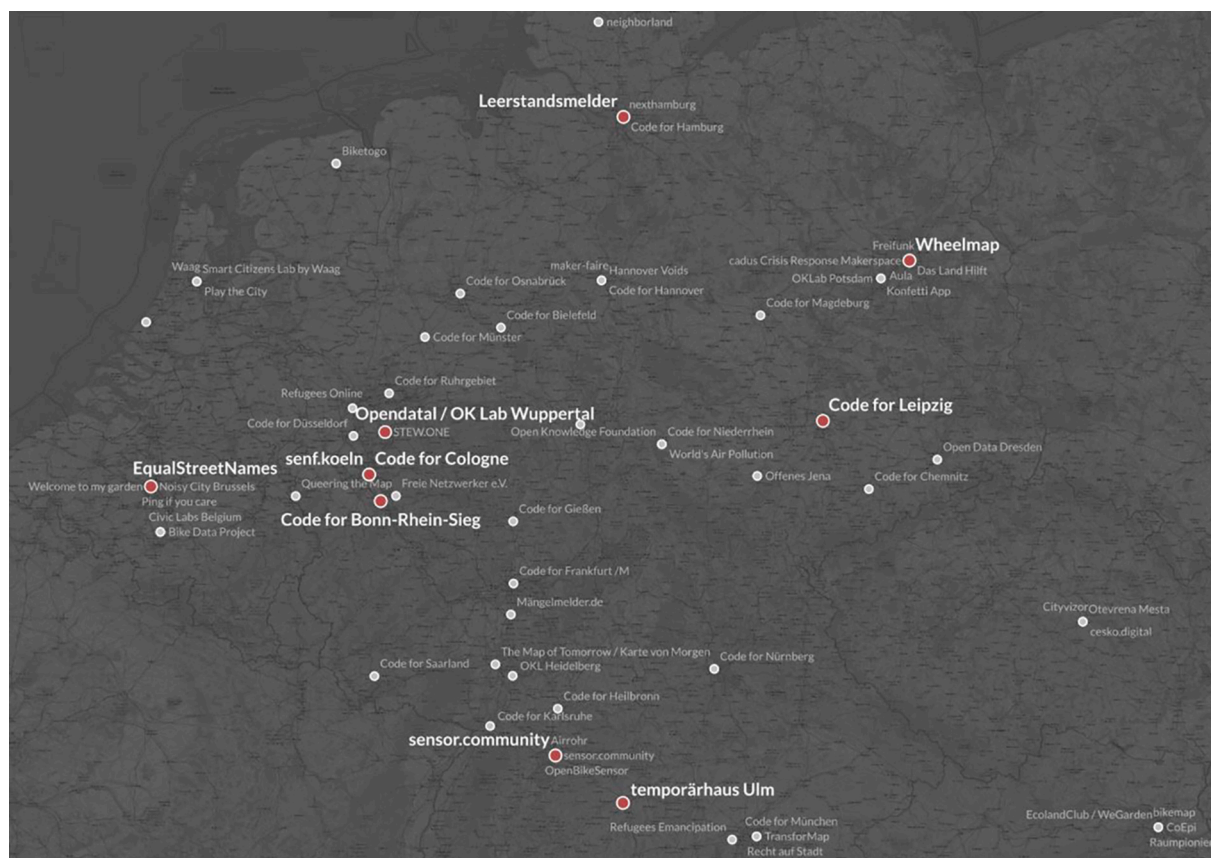
Map. 2. Location of NDSM- Treehouse, Amsterdam. **Source.** Authors.

promoters of discourses and projects. As a result, the care is very localized and exclusionary toward users which are not part of these two artistic communities in Milan and Amsterdam. This might lead to forms of gentrification and cultural exclusions in terms of values and lifestyles. It can be argued that although care is encoded in the discourses within Commonfare, it is not taken for granted that can be equally spatially

embedded.

6.2.1. Commoning in discourses: Care and Welfare

[Dyne.org](https://dyne.org) designed the platform to be an entirely non-profit business model, in which value is produced by users sharing information, content, and stories with either tags or geographically localized initiatives



Map. 3. Map of Code for Germany/OK Labs and other digital city-making initiatives. **Source.** Authors, OpenStreetMap contributors.

and projects. Commonfare is a digital platform designed to provide complementary welfare services in the three pilot cities. Its main goals are as follows: to share stories about social collaboration in neighborhoods and cities that respond to social needs and desires; to support the sharing of knowledge, goods, services, and skills; to develop a complementary currency to support financial networks whose goal is the autonomous and free implementation of cooperative welfare practices; and to collect and share information about public benefits and services.

The case of Commonfare represents care in digital urbanism in a threefold manner. First, by using bottom-up platforms to share knowledge about welfare and exchange tokens is a powerful strategy that emphasizes grassroots initiatives. This practice allows individuals and communities to collaborate in sharing information and resources related to welfare. Second, it promotes an alternative crypto currency and the exchange of tokens within this system facilitates the redistribution of both tangible and intangible resources, thereby promoting a more equitable distribution and access. Viewing commons as tokens for the redistribution of resources provides a structured means to allocate both physical goods and intangible assets such as services, knowledge, and social capital. This vision ensures that resources are distributed in a way that benefits the entire community, fostering a sense of shared ownership and responsibility. Last but not least, it aims to foster social cohesion and inclusiveness on an urban scale involving creating environments where diverse groups can come together, collaborate, and strengthen social bonds within the urban fabric (Commonfare website, n.d.).

The Co-creation process of Digital Tools as a form of Commoning:

The Commoncoin and social wallet are the two digital tools used to experiment with practices of commoning. The social wallet is where users can store digital tokens. It works as a digital interface and allows forms of exchange between members of the community. The Commoncoin cryptocurrency allows users to exchange goods or services, as well as local communities to provide incentives for artists, such as a basic income, build up projects autonomously, and sustain their cultural events. However, using the two digital tools requires a certain degree of understanding the design of the platform and digital literacy to exchange the coins.

The tools can be used effectively, and it is clear that they have been used mostly by the two artist/activist communities that were already embedded in their respective cities and that also took part in co-designing the digital tools in the implementation phase: Macao in Milan and NDSM Treehouse in Amsterdam.

In Macao, the community has its own self-organized basic income. They can then transform this from Commoncoin into Euros through a monthly fund that they have established. As an autonomous organization with a dedicated membership, they buy necessary goods within the faircoop system, either using digital tokens or Euros.

“We aim to develop concrete forms of micro-politics able to valorise presence and the capacity of different talents, the richness of human exchanges. Commoncoin has been adapted to the needs of our community in Macao to create a form of basic income.” (Artist-Milan)

Such commoning features characterize Commonfare as a non-profit business model, with principles of self-organization, solidarity, and complementary welfare provision. The internal horizontal structure and the specific capacity to engage with artist-communities in Milan and Amsterdam have provided benefits only to these two groups.

6.3. Reappropriating/repurposing

To illustrate practices of (re)appropriation, the following vignettes highlight examples from the “Code for Germany” community, further supplemented by illustrative accounts of processes that are not part of the network but align with them in many ways.

(a) Code for Germany / OK Labs

Code for Germany describes itself as a network of volunteers who want to contribute to a “digital future for the common good” (Code for Germany, 2025). The organization is itself part of the global “Code for All” network, while also being organized in local chapters known as “OK Labs”, as they are supported by the Open Knowledge Foundation. In their own words, they want to use data and technology to shape their cities and social cohesion in a positive way (Open Knowledge Foundation Deutschland e.V., 2025). The network (Map. 3) comprises 19 currently active local labs (as of December 2024). Although under the common umbrella of Code for Germany and branding as “OK labs”, the structure and spatialization of these initiatives varies, as do their thematic priorities. In many cases, the term “lab” refers less to a physical location than a community, and meetings take place online. Where they do have access to a workspace, it is usually a flexible space that is provided or co-used by other initiatives, such as the German Wikimedia association’s LOKAL K in Cologne, or the Hackerspace /dev/tal in Wuppertal. During times of Covid restrictions, labs moved their meetings online and many kept it in this or an alternating format. In fact, it was the digital structure and expertise of OK Labs and similar initiatives that enabled them to continue their operations and even help others maintain forms of care. For example, OK Lab Wuppertal quickly responded to lockdowns by creating stew.one, a platform that provided artists with a virtual stage.

In its most basic form, the activities often involve finding existing open data, accessing it, processing it, linking it with other data sources, and visualizing it to make it more accessible to others. The project database contains many examples of maps that help individuals access and understand localized (care) offers more easily, such as playgrounds and Kindergartens, defibrillators, or the quality of tap water.

In other cases, the output is not only purely informational but meant to elicit a caring (re)action. Code for Leipzig’s project **LeipzigGiesst**, for example, collects and shares information on which trees require water, calling for the city’s inhabitants to take action in caring for non-human agents.



Fig. 4. Screenshot of an AR Instagram filter developed by senf.koeln to visualize community-contributed urban design ideas in the here-and-now, in front of a trailer used by the initiative to bring a virtual participation format into physical space. Source: Authors.

Beyond such tangible output, initiatives like **Code for Bonn** encourage not only the public to participate but also aim to promote a culture of Open Governance within local administration and politics. They advocate for data and technology to become more widely accessible, while also aiming to alter perceptions and cultures of urban spaces and processes. In Bonn and a few other cities, the local OK lab works closely with local government officials — in fact, some wear multiple hats of working in the city's digital office and volunteering for the initiative. However, this is highly dependent on local actor networks and can take on more challenging and even (ant)agonistic forms in cities where mutual trust is lacking and the initiative perceives local government as un-caring. In **Ulm**, the initiative was forced by the city to change its name in a legal dispute (Temporärhaus, 2023).

While many of the projects try to make use of existing open data, other initiatives provide a platform to **collect new data**, whether in the form of ideas or hard data such as air quality measurements, collecting and often amplifying their impact. For example, the project **sensor.community**, originally started as **Luftdaten.info** by Code for Stuttgart, has grown into a global network of community run sensors for Open Environmental Data. This can be seen as an act of care for the well-being and health of inhabitants locally, but also as advocacy for climate justice globally. One individual involved mentioned being initially interested in addressing the fine dust pollution issue in Stuttgart, but saw their specific capacity to help in translating information into French. This act of translation can also be considered a form of care, as it involves making important information accessible to a wider audience, effectively extending the capacity of distant others to understand and act upon the information with further acts of care.

(b) Open Knowledge Belgium's EqualStreetNames project

To cite another example where data visualizations and mapping projects are used to advocate and express care for vulnerable communities, the **Equalstreetnames project** by Open Knowledge Belgium aims to raise awareness about gender representation in public spaces by mapping street names in the City of Brussels by gender (Open Knowledge Belgium, 2025). These initiatives take responsibility for community data by collecting it or demanding access to it and make it accessible to others not just in its raw form, but as visualizations to tell stories of local issues from their own perspective. While some volunteers may initially be motivated to contribute to a project just “because they can” or because it’s “fun”, there is usually an explicit aim of advocating for topics of care. In the case of Equalstreetnames and similar examples of data activism, the aim is usually described as making an impact on public perceptions and decision-making processes to promote inclusivity and address perceived injustices. While this was moderately successful in sparking a conversation within the city, resulting (thus far) in the renaming of a tunnel, less obvious or explicit impacts also emerged. It was reported that the very process of participating in the joint volunteer activity for a feminist cause sensitized participants to the issue. But the effects were not exclusively local, as evidenced by the fact that the Equalstreetnames project has since been replicated in over 60 cities around the world.

(c) Senf.koeln

While many of the projects originating within OK Labs focus on gathering or accessing data on the currently and historically existing city, there are also examples of more future-oriented initiatives. **Senf.koeln** (Fig. 4) (now Senf.app) is a grassroots-initiated platform that collects ideas for the city, puts them up for discussion, visualizes the most popular ones and submits them to the city through the official channels (senf.app 2023). Disenchanted by the city's official channels for participation, a group of university students designed this accessible and interactive platform, facilitating the exchange of knowledge and promoting a culture of care toward the city's well-being. The ideas are

collected on a map, grounding them in a local spatial context. They thus constitute a collective, if fragmentary, vision for the future city. In this case, the technology itself is not directed at a specific cause that the initiators care for, but it can be seen as a piece of caring infrastructure based in an ideal of democracy and participation.

(d) Wheelmap

Another example of an initiative that uncovers the potential for specific spaces to become more caring is **Wheelmap**, an interactive and crowdsourced map that shows the accessibility of spaces for wheelchair users (Sozialhelden, 2025). It was started by Sozialhelden e.V. in Berlin, but now contains information on spaces around the world. A simple color ramp from red via yellow to green, familiar from stoplights, is used to indicate whether a space is fully accessible, partially accessible, or inaccessible by wheelchair. Additional information and pictures can be provided to detail the reasons for a positive or negative score.

The most straightforward and evident benefit of such a map is that it helps people who use wheelchairs to plan their trips through a city. It can show them which spaces would cater best to their requirements and also the best routes to get there. In terms of care as politics, the transparency offered by such a map can also put pressure on people who are in a position to make a decision on infrastructures such as ramps — whether it is the municipal administrations, local politicians, public transport providers, and business owners. In terms of caring as an activity for well-being, our understanding of care extends beyond direct personal actions to include the creation of environments or tools that support the well-being of others, even in their absence. For example, contributors to Wheelmap provide acts of care that benefit others directly, albeit mediated across space and time through the platform. This also aligns with the idea of “care as alternate infrastructure” as described by Alam and Houston (2020). The exchange of information is inherently relational, and possessing or accessing information represents a form of power that some individuals hold and can share to distribute power more evenly. In line with minor theory, it can be argued that the spaces and activities of re-appropriating data and digital tools for social causes can themselves be considered acts of care, rather than just the outcomes.

7. Analysis

7.1. Surviving the Refusal

Refusal of urban ‘smartfication’ and ‘platformization’ with this current political and economic setting does not mean a rejection of digital innovation and development. Instead, these can become loci for imagining and building alternative digital futures (Lynch, 2021; Vadiati, 2022). The first vignette has explored the caring modes of digital urbanism through the example of platform-coops such as Khora food delivery, sovereignty over urban data and internet infrastructure such as MAZI as a community wireless infrastructure and intranet project, the right to the city as seen in Berlin versus Amazon, and the internal coalition between tech activists and local anti-gentrification activists, as well as the non-patriarchal setting of technology by the Heart_of_Code collective as a HackFeminist space. Consequently, the grassroots praxis of digital urbanism in Berlin showed that digital technologies can facilitate new caring arrangements for work, spatial production, Infrastructure in urban living. However, surviving this refusal through self-organized and autonomous organization is challenging.

Like many of their peers, such projects face myriad challenges to their long-term sustainability due to the constant ‘self-caring’ that these collectives require in terms of organization and maintaining skills and knowledge. For instance, the food delivery cooperative of Khora could not survive after the COVID pandemic, and most of the other cases have failed to expand beyond small groups of individuals because of limited time and capital. This precariousness in terms of sustaining explains why

such practices are territorialized, as members of each of these collectives/initiatives navigate complex local entanglements with others. For instance, although the data collection for this research project was not restricted geographically, all the cases collected for grassroots digital urbanism in Berlin are located in an area known as 'Kiez Berlin', the dynamic and rapidly gentrifying neighborhoods of Kreuzberg, Friedrichshain, and Neukölln.

Moreover, in the context of care and refusal, it is important to be cautious of idealizing survival and exoticizing solidarity within exclusive networks with homogeneous demography. An intersectional approach would instead address the inequalities and exclusion that are (re)produced within these spaces.

7.2. Commoning and building caring community

Commoning as a reworking strategy in the Commonfare project has peculiar curatorial functions in the promotion of discourses, manifesto divulgation, events, and organization of digital content. Even if the labor of curation is largely performed by users themselves, the initial intention was to promote commoning practices among the users on the platform. In their discourses, *care* is seen as an ongoing practice (not as a solution), and coding as a collective practice of care as a counter practice to resist the individualization promoted by Silicon Valley. What Commonfare missed was offering the convenience of use, its intuitive and aesthetically pleasing user interfaces. The facilitation of social connectivity and interaction between and among both producers and consumers were not delivered and therefore Commonfare was deployed by a discrete number of users. The users that were not part of the co-design activities of the digital tools were not able to use them, due to the fact that it requires more skills and basic technological knowledge. The commoning practices were confided by the use of the crypto currency; Macao and NDSM Treehouse were part of the co-design activities since the beginning, so they were the communities able to use the Common Coin as income for the activities conducted within the two cultural venues (i.e. concerts, book lunches, etc.).

The digital commons, just as the classic commons, are struggling with sustainability. To overcome such risk, as Casey Lynch notes on Barcelona's practices, commoning relies upon active, situated forms of knowledge sharing that contrast narratives of 'frictionless communication via the Internet' (Lynch, 2021). While dis-embedded local implementations of transnational platform corporations follow decisions from distant headquarters (Rose, 2021), our results on commonfare platforms affirm that such practices depend on local support structures to exist. This means that the commons approach needs to receive care from local structures (governance and civil society) to provide a caring economic infrastructure, essentially practising mutual care. This reflects Mies' (2014: 106) argument that "no commons can exist without a community".

7.3. Reappropriating spaces and technology for alternate infrastructures of care

As argued by Nancy Odendaal (2016), innovation and appropriation coexist with broader objectives of social justice within the networks and relations that have always existed, now facilitated and mediated by digital tools. In times when the basics of caring urban governance, which involve the affordability (in terms of time and energy) for citizens to participate in urban society and mundane urban decision-making, are scarce, developing tools for digital participation and community-based mapping to foster a sense of being cared for is necessary. Furthermore, collaborating on projects among community members with varying access to resources, technical know-how, and data literacy creates opportunities for exchange in diverse urban settings. Whether learning is an explicit, premeditated goal of a program or whether it arises as a by-product en route to more specific objectives, it is often cited by interviewees as a major benefit and a source of motivation for individual

members and the community as a whole.

Technologically, some of the open-source platforms, such as OpenStreetMap for crowdsourced mapping, may not have been developed with a specific focus on care in mind. However, due to their openness to adaptation, they serve as a technological foundation for numerous grassroots initiatives like Wheelmap, aiming to offer more personalized care across all the mentioned aspects. This type of technology could be argued to be an example of alternate infrastructure for facilitating care in digitized cities.

Reappropriating approaches can be considered as (en)coding care through co-design practices, which trickle the politics of care upwards into institutions. For instance, Code for Germany has members who also work for the local administration, mediating between both spheres to exchange information. They also prefigure alternatives, potentially leading to more caring and just measures in governance. Overall, it can be said that their unique contribution to the processes and discourses around digitalization (in cities and beyond) is that they bridge the apparent gap between care as an embedded, relational practice, and the aspiration to provide more justice at the institutional level. Nevertheless, despite all these potentials, the reappropriation practices fall short in their ability to effectively challenge the technocratic and entrepreneurial foundations that drive digitalization strategies in most European cities. In fact, there is a concern that these practices may inadvertently contribute to the perpetuation of capital accumulation rather than truly disrupting the existing political and economic setting.

Söderström, Paasche, and Klauser (2014: 318) wonder about "how to foster those alternative stories that are place-based insofar as they respond to local needs but still go beyond just 'anecdotal small-scale actions'". Returning to Fraser, we contend that alternative visions of smart urbanism that seek to promote participation and access to technology are affirmative remedies rather than being transformational. According to Fraser, affirmative remedies aim to correct 'inequitable outcomes of social arrangements without disturbing the underlying framework that generates them' (Fraser, 1995, 82). "In our case that would mean shifting the discussion away from the smart city, even an alternative one, and towards the caring city and a caring urbanism in the digital age" (Rosol & Blue, 2022).

8. Discussion

8.1. Care and justice

Our three vignettes (refusal, commoning and reappropriation) show different degrees of embeddedness and interdependency of justice and care. Khora's platform cooperative food delivery founds a non-exploitative work environment; the Feminist Hack-Space of Heart of Code opens space for non-patriarchal technology and technological spaces; Mazi's community wireless provides knowledge and social sovereignty over digital infrastructure; Berlin versus Amazon builds intersectional caring spaces that unite right-to-the-city advocates, labor right, and anti-racism activists in Berlin; Commoncoin and CommonWallet enable solidarity economies through prioritize collective well-being; Senf.koeln facilitates participative planning; and Wheelmap advances bodily accessible urban spaces.

In this context, the contribution of this paper is to empirically demonstrate the coupling of care and justice within the framework of alternative digital urbanism: alternative to the top-down, privatized, and exploitative tech-entrepreneurial model, instead caring toward urban living and the body—both individual and collective. Also, our lens of care has re-embedded the justice-oriented debate around some of these practices, making them less abstract and more tangible. We argue that this approach potentially reaches more people mobilising them to enact justice in their daily lives, within their own sphere of agency.

8.2. Localizing care

The cases discussed in this paper place a great importance on working ‘from the territory’ (Painter, 2010; Simone, 2004). These projects are highly interconnected and networked within their socio-spatial setting, demonstrating that technology is always intertwined with the social and therefore always spatialized. However, the degree of embeddedness for survival and scaling up of each of the caring strategies may vary.

While our cases on refusal strategies showed significant societal embeddedness and territorial (socio-spatialized) embeddedness (Rose, 2021), the practices of care through appropriation had more ‘network embeddedness’ (Rose, 2021), in which organizations maintain permanent and exclusive relationships with one another. This dependency on local support emphasizes that collectives/initiatives for alternative digital urbanism are, by necessity, locally embedded. Because the sustained nature of such practices is shaped both by the networks among activists, implementers, and volunteers (Rose, 2021) and by the local infrastructure for knowledge sharing (Lynch, 2021).

9. Conclusions

Many have rejected the idea that the Internet could be a meaningful tool to facilitate practices of commoning, arguing that it is inherently dominated by major corporations and cannot contribute to caring cities (Mies, 2014). Disputing such an idea, we join the scholars who think such skepticism is based on a faulty equation of the technology itself with the political economic model that currently dominates its development, production, and maintenance (Lynch, 2021). In order to decode the machine logic from urban living and replace it with caring spaces, relations, and means, “it is necessary to first decenter the debate from the technologies themselves toward broader relations between space, production, data, and body” (Ribera-Fumaz, 2019: 188).

Our vignettes illustrate the intertwined processes of decoding and encoding care within alternative digital urbanism. By exposing and challenging the uncaring results from the unjust logics commonly underlying digital urban systems, each empirically analyzed case offers its own speculation on the possibilities of care into the coded urban every day.

Encoding care refers to the deliberate embedding of relational, contextual, and collective practices of care into digital infrastructures and urban spaces. Examples practices such as Khora’s refusal to participate in exploitative gig economies or MAZI’s creation of alternative community networks to resist centralized control; or the use of Commonfare to facilitate alternative welfare systems through digital tools, or the reappropriation of open data platforms by Code for Germany to create accessible and inclusive urban interventions. Together, these processes demonstrate how alternative initiatives could reimagine and potentially reshape the interplay of technology and urban life.

Furthermore, there is much interest on datafication and platformization of care, where algorithms play a role in coding values, the paper argues that care still needs to be localized and embedded with territorial language, while cultural and societal values should be shared in the communities to ensure that these practices benefit the collective rather than solely the individual. In our empirical cases, there are varying degrees of localization and embeddedness, which may indicate the obstacles in the different collective practices analyzed. Our paper also shows that the embeddedness of care within these collective practices is twofold: one as trans-local networks where care practices of care are exchanged in a collective manner, and second, spatially through locations where these communities gravitate and carry out their actions.

Naturally, this study has multiple limits. We acknowledge that the concept of care in this paper has been integrated as a post-hoc analytical lens for interpreting the practices from three research projects. Ideally, a feminist geographical study would involve direct observations of social interactions and relations within their natural settings. This approach

would provide a more nuanced and contextual understanding of the dynamics of care within these practices. Nevertheless, we believe that these vignette forms of narration and analysis can be a valuable exercise in refining the conception of care as an analytical lens in this emerging and crucial debate within digital geography.

CRedit authorship contribution statement

Niloufar Vadiati: Writing – review & editing, Writing – original draft, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Letizia Chiappini:** Writing – review & editing, Writing – original draft, Methodology, Data curation, Conceptualization. **Martin Bangratz:** Writing – review & editing, Writing – original draft, Visualization, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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