

Uneven geographies of COVID-19: Reviewing geographical research agendas and concepts from a syndemics perspective

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Abstract

Building upon a review of geographic research agendas and concepts related to the uneven geographies of COVID-19, this first of three articles debates the benefits of geographic analyses to the syndemic approach and, vice versa, of a syndemics perspective to geographic analyses. The syndemics perspective was proposed by critical medical anthropologists. It seeks to deepen the understanding of the structural dimensions and processes that lead to the convergence and cascading of multiple epidemics in specific population groups. Geographers have also highlighted the intersections of multiple health or other crises during COVID-19, when the pandemic and global health emergency coincided with and escalated existing structural inequalities produced by the climate crisis, environmental degradation, political conflicts and war, socio-economic disparities and poverty, social divisions, racism, hatred and violence, mental health problems and stress. Geographers have mobilized concepts such as scale, territory, borders and intersectionality to unravel the uneven unfolding and consequences of the global health emergency for diverse population groups. We therefore argue that geography has a lot to contribute to the understanding

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of the spatial and contextual dimensions of COVID-19 as a pandemic as well as a syndemic – but it has so far not actively employed the latter concept's analytical lens. Mobilizing the syndemics approach can contribute to more comprehensive accounts of the structural dimensions and processes that continue and cascade in pandemics.

KEYWORDS

syndemic, pandemic, border, inequalities, intersectionality, scale, territory

1 | INTRODUCTION

Looking back at the pandemic phase of COVID-19,¹ it becomes clear that this global health emergency had a highly unequal impact on persons, groups, communities, countries and world regions. From the initial stages of the pandemic, discourses surrounding COVID-19 prominently featured its uneven geographies as a prevailing theme. A quintessential representation of the disparate geographical patterns was embodied in the Johns Hopkins dashboard, which visually depicted the documented COVID-19 infections across different geographic scales. In this article, we seek to highlight what geographical research has contributed to the awareness of the uneven geographies of COVID-19; from the very first formulations of research agendas to the results of empirical research. We summarize and critically discuss the studies' findings based on this research – with a special focus on the inequities produced or amplified by COVID-19.

Our agenda is twofold. First, we reviewed the geographical literature on the uneven geographies of the COVID-19 pandemic that was published between early 2020 and April 2023. Through an inductive process we identified six threads within the geographical debate: (1) the applicability of geographical concepts, (2) intersectionality and ethics, (3) spatial patterns of infection, (4) crisis temporalities, (5) economic impacts and disparities and (6) social impacts and disparities. In this first of three articles we will address threads one and two, while the other threads will be addressed in two separate review articles.

Second, and beyond merely summarizing research within these six threads, we discuss the findings from a syndemics perspective. In doing so, we are able to highlight common threads within the geographical literature as well as to clarify the contribution these geographical findings could make within other fields of research that sit at the intersection of public health and social sciences. The concept of syndemics is not yet well established in geography. It was developed by critical medical anthropologists (Singer, 2009; Singer & Clair, 2003; Willen et al., 2017) in the context of the HIV/AIDS epidemic. The starting point was the observation that two or more diseases – for example, TB and HIV/AIDS – tend to cluster in certain socio-economic groups, times and spaces, prompting an acknowledgment that “the fact that in the real world a disease does not usually exist in isolation from other diseases and disorders” (Singer, 2009, p. XVI). In consequence, Singer (2009) defines syndemics as “the concentration and deleterious interaction of two or more diseases or other health conditions in a population, especially as a consequence of social inequity and the unjust exercise of power” (Singer, 2009, p.XV).

The syndemics approach specifically asks which structural inequities lead to the emergence of (multiple) illnesses in the same persons, how affected populations (can) deal with these illnesses and how being affected relates to social position. This structural perspective allows for an analysis that goes well beyond the medical understanding of a contagion as a biological process. The perspective suggests that we should “analyse political factors,

including structural vulnerability [...] [that] can have a complex, cascading impact on individual and population health" (Willen et al., 2017, p. 968).

From our point of view, a syndemics perspective on COVID-19 resonates with the geographical work we are highlighting in this paper. First, both allow for a more nuanced understanding of how COVID-19 affected persons with pre-existing conditions and vulnerabilities – which often have structural root-causes like diabetes or COPD – much more strongly. Second, both perspectives showcase how the overall impact of the disease was socio-spatially highly uneven in almost all countries and places. For instance, geographers pointed out the intersectional and multiscale inequalities that were co-produced and scaled up by the convergence of COVID-19 with multifarious health and other crises (Hadjimichalis, 2021; McCann et al., 2021; Sultana, 2021) – such as the climate crisis, environmental degradation, political conflicts and war, socio-economic disparities and poverty, social divisions, racism, hatred and violence, mental health and stress. The dynamics of the spread of COVID-19 have been addressed as catalysis, continuation and intersections of the medical epidemic with these parallel epidemics (Burton & Harwood, 2023). Sultana (2021) states that “the COVID-19 pandemic only created more layers of burdens and additional individual and systemic vulnerabilities, thereby compounding sufferings spatially, temporally, and intergenerationally, foregrounding how marginalized groups are rendered more vulnerable, treated differently, and why a critical social justice lens is important” (Sultana, 2021, p. 454). The structural lens, which is important for syndemics scholars, is also deeply rooted in geographical works, as in that of Grove et al. (2022), who argue that “response measures (and efforts to motivate people to cope with them) reflect how the COVID-19 emergency has been intersecting with context-specific manifestations of the multiple slow emergencies such as racism, patriarchy, poverty, biodiversity loss, and climate change that characterise normal liberal life and its arithmetic of futurity” (Grove et al., 2022, p. 8).

Geography could contribute to a further development of the syndemics approach by elaborating the spatial and contextual dimensions of syndemics. Especially the focus on scale and nested scales enhances the understanding of structural unevenness; between different individual living standards and life expectancies, within regions, cities and neighborhoods, within countries and between the Global North and the Global South. As human geographers had predicted, these socio-spatial and scalar inequalities came into sharp relief during the COVID-19 pandemic, exacerbating existing unevenness as well as creating new injustices (e.g., Burton & Harwood, 2023; Hadjimichalis, 2021; McCann et al., 2021; Sultana, 2021).

In this first of three articles, we begin by presenting geographical research desiderata and agendas formulated in the early phase of the global health emergency. We carve out how specific geographical concepts such as scale, territory and borders were mobilized to theoretically grasp the unfolding uneven effects of COVID-19. Thereafter, we point out the structural and intersectional dimensions of COVID-19 before summarizing debates on post-pandemic ethics and futures. We thus cover here the first two of the five threads of the geographical debate as described above (applicability of geographical concepts, intersectionality and ethics).

In the other two review articles we re-interpret the findings on the other four geographical threads identified above: spatial patterns of infection, crisis temporalities, economic and social geographies of COVID-19. Together all review articles will then show possibilities for integrating the syndemics concept into geography's analytical toolkit – and for a further development of the syndemics approach through the inclusion of spatial dimensions.

2 | FRAMING GEOGRAPHICAL RESEARCH ON COVID-19

2.1 | Early research agendas and interventions

Within the first year of the pandemic, geographers engaged in creating comprehensive and inclusive research agendas to contextualize COVID-19 in relation to ongoing debates within human geography. By May 2020, Sparke and Anguelov (2020) published one of the earliest articles detailing the conceptual and methodological approaches

of human geographers towards pandemics, drawing partially on their earlier work on the H1N1 pandemic (Sparke & Anguelov, 2012). As original geographical research was in its infancy, Sparke and Anguelov (2020) introduced approaches that geography offers to address global public health concerns: (1) infection, (2) vulnerability, (3) resilience, (4) blame, (5) immunization, (6) interdependence, and (7) care, all of which were addressed in the unfolding geographical research that followed suit.

Still in the early phase of the pandemic, editors of several geography journals launched special issues to address the global health emergency academically. In the first half of 2020, a special issue in *Dialogues in Human Geography* collected 42 commentaries. The editors already underlined the emerging unevenness:

“There are also increasing concerns that governmental attempts to deal with the pandemic without further disrupting the market may ultimately lead to the emergence of a new neoliberal authoritarianism, already expressed in cities across the globe in measures that have allowed the re-opening of shopping malls and tourism but criminalize people’s gatherings in public spaces –as we have witnessed with police crackdowns on anti-racism demonstrations” (Rose-Redwood et al., 2020, p. 104).

In the *Tijdschrift voor Economische en Sociale Geografie* the editors (Aalbers et al., 2020) sorted 26 contributions into the following categories: knowledge production, geopolitical governance, social geographies, financial geographies, urban and regional geographies, and economic geographies – demonstrating geography’s contribution of concepts and methodologies for fine-grained analyses.

In a special issue of *Fennia*, the editors discuss the situation in different countries (Kallio et al., 2020). The collection of papers is animated by the observation that COVID-19 has diverted attention from many other important issues. The editors inquire into how geographers “have witnessed the intertwining of the pandemic with other pressing issues” (Kallio et al., 2020, p. 1). They point out that “the vulnerable and the underprivileged” (Kallio et al., 2020, p. 1) are the worst affected, while right-wing populism with nationalistic and racist discourses of othering became more and more influential. The withdrawal of people into private spaces due to the public health measures made “people become less attentive toward issues beyond their immediate vicinity” (Kallio et al., 2020, p. 2).

In their special issue for the *Boletín De La Asociación De Geógrafos Españoles*, Gonzalez et al. (2021) point out that geographers have methods and concepts to deal with spatial diffusion, spatial patterns and territorial borders. Yet, they criticize the fact that geographers’ expertise has not been capitalized upon while a “government of doctors” (Gonzalez et al., 2021, p. 18) was installed. The editors point to one crucial conceptual flaw in the public health response: “One of the most prominent (and geographical) [errors] has been the tendency to once again raise territorial borders of all kinds in the face of a global health crisis that has nevertheless spread throughout the world” (Gonzalez et al., 2021, p. 20). While not questioning the usefulness of mobility restrictions to limit the spread of COVID-19, they debate the way in which they were designed without being based on sound spatial analyses. Further, the focus on the politics and restrictions of mobilities led to a neglect of the issue of immobilities, especially among the risk group of elderly people in care homes, and has likewise exposed the problems and indecency of privatized care. Further, the *Annals of the American Association of Geographers* published a special issue on displacement (Strauss, 2022) during the COVID-19 pandemic. The collection’s overarching theme was the geographical conceptualization and theorizing of displacements with foci on specific sites, spaces and processes of displacement, scales, and actors. The journal *ERDKUNDE* released two themed issues with papers that highlighted the regional and thematic diversity of COVID-19’s uneven geographies (Everts et al., 2022). The papers in this collection provided empirical evidence from various geographical sub-disciplines on how the pandemic and its effects have affected inequities and inequalities on different scales.

With regard to research agendas, geographers emphasized the need for regionally differentiated approaches. Finn et al. (2020) point out with reference to Latin America that the “pandemic is exposing and intensifying deep

pre-existing and intersecting structures of inequality across geographical scales, as lesser developed countries and marginalized communities are hardest hit by both the health crisis and the cascading economic crises and will have the most difficult road to recovery in its aftermath" (Finn et al., 2020, p. 167). For the South African context, Massey and Denoon-Stevens (2022) highlighted the particularly problematic interplay of poor health, exclusion and marginalization.

Thus, since the beginning of the geographical inquiry into the COVID-19 pandemic, research agendas highlighted the structural production of inequities. Geographers, not unlike syndemic scholars, contributed in this way to an understanding of the pandemic beyond the medical domain.

2.2 | Mobilizing geographical concepts: scale, territory and borders

Scale, territory and borders are central geographical concepts that were mobilized to grasp the unfolding of the pandemic and how it related to inequalities and unevenness. These are not only important for detailing the uneven geographies of COVID-19 but may also contribute to syndemics theory, which lacks a sophisticated understanding of diverse spatialities.

Right from the beginning, the *scaling* of COVID-19 – a global threat, the possibility of infection through local contact, the slowing down of transmission through sealing off regions – became an important praxis, affecting almost the entire human population. As Linder (2021, 2022) argues, it is vital to attend to emotions and affects in relation to how scale and scalarity is experienced. Linder writes that "(...) the pandemic dramatically altered everyday experiences of scale" and the "domestic scale especially was revalorized and reasserted, imbued with new significations and associations" (Linder, 2022, p. 67-8), concluding that the "pandemic ignited widespread scalar stress, whereby previous imaginaries of the domestic, the urban, and the global faltered and became less tenable" (Linder, 2022, p. 80; cf. Bowe et al., 2020). Brinks and Ibert (2020) suggest that the terms *scale* and *crisis* need to be understood in conjunction with COVID-19, since "due to its transboundary character it evades any single scale and instead calls for complex strategies of multi-level governance adapted to the institutional idiosyncrasies of different nation states" (Brinks & Ibert, 2020, p. 285). The concept of scale helps to grasp the disease diffusion analytically (e.g., by tracing infection chains in space and time), unveils the scalar politics of widely varying COVID-19 management (i.e. between and within countries) and also contributes to management strategies. This understanding of scaling could also enrich future debates on syndemics. These synergistic epidemics result from structural factors on different scales, and in addition certain nosologies – clusters of diseases in certain population groups for example, COVID-19 and diabetes – can be found at different scales. The scalarity of different nosologies can be an important factor in their emergence, and a useful aspect to consider in order to enrich our understanding – local disease clusters point to societal inequities, global clusters point to unequal exposure to pathogenetic factors and a lack of access to means of coping with this exposure.

The concept of *territory* was mobilized to understand different levels of federal, national, and subnational decision-making. It also shed light on the territorialization of countermeasures (lockdowns, quarantines, social distancing, border closures; Dodds et al., 2020). Dodds et al. (2020, p. 293) reveal how territorial politics became apparent in the regional and global management of public health systems. They also discuss how "'pandemic populism', authoritarian opportunism and geopolitical skulduggery" emerged alongside "worldwide expressions of support and solidarity towards vulnerable communities". Similarly, Murphy (2022) emphasizes how the disease reveals the stickiness of territory, finding that "(...) there is little evidence that the pandemic has the potential to seriously challenge, much less upend, territorial nationalism's widespread influence and hold on the public imagination. Instead, the evidence suggests that its influence is working in the opposite direction" (Murphy, 2022, p. 35). Territoriality is yet another concept that could enrich our understanding of syndemics, as populations in which risk factors intersect are most often clustered in specific places. These territories can be formalized or imagined, but

severely affect and reproduce practices related to the structural roots of syndemics, like socio-political exclusion, marginalization and violence.

Consequently, *borders* and *bordering practices* within and across nation-states became of central importance. Geographers have researched the interplay of such bordering practices with inequalities and exclusionary practices. Particularly international migrants, as border crossers, became constructed as human scapegoats for the spread of the disease. Casaglia (2021) emphasizes: "COVID-19 is showing in a very clear and strong way that mobility injustices are a fundamental issue of the contemporary world, together with a tendency towards forms of localism related to exclusion and racism that often give rise to forms of nationalism" (Casaglia, 2021, p. 696). Reflecting on the unequal treatment of different population groups during the health emergency and personal experiences as a researcher abroad, Yip (2021) insists that it is "imperative to reflect upon why some specific groups of people such as businesspersons are allowed to move or have their quarantine period shortened but not others, or why some countries adopt border controls targeting travelers from particular places but not others" (Yip, 2021, p. 179). The impact of COVID-19 border controls at times differed fundamentally according to a person's socio-economic status or nationality – which holds true for global mobility regimes in general.

Especially for socio-economically entangled border regions, the sudden hardening of borders meant considerable disturbance (see Spennemann, 2021 for the border region between New South Wales and Victoria, Australia). Many local and regional administrative borders have little to no significance in the pursuit of most daily affairs. With COVID-19, they suddenly became obstacles, (re-)instated and imbued with meaning as territory to which and within which human mobilities were governed. These restrictions of movement did not just pertain to borderlands but extended to all places via lockdowns and stay-at-home orders affecting intra-regional mobilities. To gain time and slow the rate of virus transmission, virtually all countries used long-lasting and repeated lockdowns (Bourdin et al., 2021). This draconian, unprecedented and controversial public health measure needed to be enforced through a considerable amount of control practices and surveillance mechanisms.

Although implemented worldwide, the specific implementation and execution of mobility restrictions and lockdowns largely differed from one region to another. As a proven location for super-spreading events for the whole of Europe due to its location for Alpine ski tourism, the Austrian state of Tyrol was subjected to one of the strictest quarantine regulations in Europe (Bork-Hüffer et al., 2021). It was generally forbidden to leave one's house except to get essential supplies, access medical care, go to work or care for people in need of assistance. All these activities had to be conducted inside local administrative borders. Outdoor sports and activities were generally prohibited, with the exception of short walks (Land Tirol, 2020). With splintered development and urban sprawl characterizing many places, administrative borders that are not visible but cut through socio-economic entangled places and that often seem historically arbitrary became tools for confinement and exclusion.

These bordering practices showed highly ambivalent impacts, as they – if at all temporarily – shielded populations from infection, but not from either the socio-psychological or economic impacts of the health emergency. Based on a study of the lived experiences of border policies to protect "Covid-free Tasmania", Burton and Harwood (2023, p. 81) showed, "how separation does not equate with a lack of sociomaterial and emotional impact from the pandemic". Also related to bordering practices, a somewhat militaristic rhetoric emerged stating that humanity was "at war" with the virus – and indeed in many countries the military became involved in the emergency response (Opillard et al., 2020; Pfrimer & Barbosa, 2020) and in enforcing bordering practices. In India, the smart control centers of major cities were transformed into "Covid War Rooms" (Bailey et al., 2021, p. 1962).

Quarantine was frequently applied in many countries as a measure for the sub-group of people who felt sick, had symptoms, tested positively for COVID-19 or had traveled internationally. It resembles bordering practices imposed upon individual bodies. Quarantine orders could last from ten days to several weeks and were everywhere very strict. While in countries like Germany, compliance with quarantine orders was tested through random visits, countries like India experimented with new technologies (smartphone mobility data and face recognition) to control for adherence to quarantine orders (Datta, 2020).

Once vaccination became more widely available, certificates became in many countries “access to all areas” passes. As Alemanno and Bialasiewicz (2021) highlighted, the discriminatory and exclusionary effects of such certificates are based, for example, on age (often excluding younger people), preconditions (preventing vaccination) or lack of access to timely vaccination. In China, algorithmic governance enacted through diverse “health code” apps enforced not only national contact tracing but also quarantines. Yu et al. (2022) elaborate how many spheres of public urban life became dependent upon these health apps, turning urban public space into “code/space” (Kitchin & Dodge, 2011) “to such an extent that without the code, the spaces cannot function” (Yu et al., 2022, p. 94). Thus, during the COVID-19 pandemic spaces experienced completely new forms of governance. In many countries new digital forms of (surveillance) governance were rolled out, leaving little room for informal arrangements and practices.

A special role in the enforcement of public health measures was played by politicians. Many had for the very first time to deal with concepts like quarantine and lockdowns, to decide if they supported them, to convince people of their usefulness and to enforce them. This resulted inter alia in a “geography of blame” with people blaming politicians for mishandling the disease and/or politicians blaming the population for not complying (see for example Owusuet al., 2022 for the geographies of blame in Ghana).

Scientific advice informed policy-making and the many spatial approaches to the pandemic (see for instance Moiso, 2020 for Finland). This did not go unnoticed by geographers who have pointed out the responsibilities of academics in general and geographers in particular during the pandemic (DFG, 2022; Lewis & Morgan, 2021; Schragar, 2021). Spatial concepts such as borders and scales are appealing and seem straightforward to the untrained eye. Yet, as geographers show, they are complex and slippery at closer inspection and do not offer quick fixes or easy solutions. Adding to the concepts discussed above, cities as spatial units, for instance, can either be seen as the root of the problem of viral transmissions due to their density – or they could be seen as part of the solution since they enable public health, social encounters and care through proximity (Dzudzek & Füller, 2022; Keil, 2020).

After all, some claim the global health emergency closed a “territorial trap” (Agnew, 1994) as choropleth and dot maps became the favorite depiction – claiming validity as visualizations of scientific data – of the spatial diffusion of the disease on popular online dashboards (Bowe et al., 2020; Everts, 2020). The spatial imagination of a world of territories and borders implicitly suggested territorial approaches to public health. Yet these territorial and bordering practices are one-sided and overlook the relevance of space, spatial relations and the social determinants of health and illness. Especially socio-spatial inequities as structural causes of disease distribution deserved more attention. Socio-spatial differences related to gender, age, race, class, rural or urban, peripheral or metropolitan areas have a distinct bearing on how people are subjected to a transmission of COVID-19 and their abilities to cope, and significantly affect who is suffering the most.

3 | INTERSECTIONALITY AND THE IMAGINING OF POST-PANDEMIC ETHICS

3.1 | Structural factors intersecting in syndemics: racism, gender, age and poverty

The uneven impact of COVID-19 and related public health measures on individuals and social groups need to be understood from structural perspectives and by applying intersectional approaches. Intersectionality is “not only about multiple identities but [...] about relationality, social context, power relations, complexity, social justice and inequalities” (Hopkins, 2019, p. 937). As an analytical lens, intersectionality reveals axes along which inclusion, exclusion, membership and othering are constructed and negotiated (Marquardt & Schreiber, 2015; Valentine, 2007).

Experiences of the first lockdowns were shaped by place of residence, occupation, socio-spatial inequalities and discriminations based on race, class, gender and other social markers (cf. Neely & Lopez, 2022a). Ho and

Maddrell (2021, p.1) point out that the “multiple intersectional burdens” surfacing due to COVID-19 call for new conceptual deliberations, which deepen our understanding of previously obscured social issues and cultural dynamics. They underline how [i]nstitutional and governmental failure to address the particular needs of women, minorities, migrants, older adults and others made especially vulnerable by the pandemic represents one of the greatest challenges (Ho & Maddrell, 2021, p. 7).

By now, rich empirical data vividly provide evidence on how diverse intersectional inequalities were experienced during the pandemic's main phase. Using the case of migrant women in Delhi and Gurugram in India, Azeez et al. (2021) analyze how being female and being a migrant led to the utmost precarity. While these migrants lost significant portions of their household income, state benefits and relief programs were not accessible for them. Lockdowns did further damage to already very vulnerable households, and the risk of becoming infected was feared not only because of potential sickness but also due to the very limited possibilities of getting medical help. In the US, higher case numbers and fatalities were observed in Black, Latino and minority groups aggravated by (spatial) inequities in the access to treatment and testing facilities (Whitacre et al., 2021). Phulkerd et al. (2023) show how prior socio-economic disparities linked to income, education and age significantly affected food insecurity during COVID-19 in Thailand and became a catalyst for the deepening of socio-economic and regional inequalities. This evidence clearly underlines the reading of COVID-19 not only as a pandemic, but also a syndemic.

Population groups already experiencing discrimination were often subjected to further xenophobia and racism. Early in 2020, the disease's probable origin in Wuhan, China, boosted anti-Chinese and anti-Asian sentiments, reactions and even violence around the world (Klingberg, 2020). Right-wing politicians capitalized on these resentments – for example, in the case of the then US president Trump fuelling hate crimes by calling SARS-CoV-2 the “Chinese virus”. Racism was experienced more strongly by migrants in many parts of the world (Adebayo, 2022). They were trapped in lockdowns, often even locked-in in specific quarantine centers, camps or dormitories (Ullah et al., 2021). Such developments can be interpreted as not only a continuation but a deepening of territoriality as migrants were conceptualized as not belonging to the territory they were staying in. Governments hardly felt responsible for these “outsiders”. Rather the opposite, they were constructed as carriers of the virus and thus as a threat from which the local population had to be protected. Taking the specific example of Singapore, Ye (2021) carved out how techno-political discourses and COVID-19 management were employed to justify and increase the state's biopolitical attempts to spatially segregate and separate the everyday lives and mobilities of migrant workers from the local population. Xenophobia and racism are thus important factors for analyzing spatial differences in disease burdens from a syndemics perspective.

Another group, stigmatized in public discourses as spreaders of the virus, are young people. In the case of University students in the province of Tyrol, Austria, research found that, much in contrast to public discourse, particularly in the early phases of the global health emergency, this group paid meticulous attention to practices of contact and hygiene, mostly in fear of endangering loved ones and risk groups (Kaufmann et al., 2020). Several authors emphasized that young people faced other challenges apart from infection and illness, such as complex social, psychological and economic costs of the pandemic measures (Burton & Harwood, 2023; Kulcar et al., 2021, 2022) .

Eaves and Al-Hindi point out, “the advent of COVID-19 means that the time is now for geographers who have not already done so to take up intersectional approaches that prioritize vulnerable lives and places” (Eaves & Al-Hindi, 2020, p. 134). This includes the analysis of suffering due to inequalities as well as of the self-organization and protesting of marginalized groups (McIlwaine et al., 2022, p. 7). Self-organization was also observed in stigmatized informal urban areas. Emerging structures of mutual help in Dharavi, Mumbai's largest “slum”, were widely recognized (Kaushal & Mahajan, 2021). Taking the intervention-oriented syndemics perspective seriously means that intersectional factors such as disability, age, and marginalized and ethnic or minority-community membership need to be addressed in post-COVID-19 health policy.

3.2 | Calls for overcoming uneven geographies: Post-pandemic planetary ethics and futures

The global health emergency threw into sharp relief the paradoxes and injustices through which most societies operate. Capitalist and neoliberal models of extraction and socio-economic organization are in the center of the critique. In several studies geographers reflect in a radical way on how unjust socio-spatial relations can be overcome, as COVID-19 is exposing them globally (Sparke & Williams, 2021). Tyner and Rice (2020) argue for a whole new ethics as “through alienation and the commodification of life, capitalism perverts and displaces empathy” and “hijacks our care and concern and redirects them from worthy pursuits toward objects and ideologies that pay no meaningful dividends” (Tyner & Rice, 2020, p. 118).

COVID-19 brought health care systems globally to their limits and beyond. This raises questions regarding the organization of (health) care work, which has experienced fundamental transformations through capitalism, too. Neely and Lopez (2022a) mobilize a Black feminist ethic of care for post-COVID-19 times. They advocate “a praxis that foregrounds the care of community, not the privatization of care through the nuclear family nor through the over-exploited labor of front-line workers” (Neely & Lopez, 2022b, p. 10; cf. also Saltiel & Strüver, 2022).

Taking the discourse on capitalism as a root cause further, some authors argue for new ethics which include viewing human health from a planetary perspective. This is in line with discourses in the health sciences, which in the last decade have developed a new understanding of human health as being embedded in larger contexts. Relevant concepts that seek to grasp this include “One Health” (Zinsstag et al., 2011) and “Planetary Health” (Whitmee et al., 2015). Smith et al. (2021), writing from an indigenous Australian perspective, state: COVID-19 “brings into clarity the many ways that the dominant system is unsustainable and fails to support the wellbeing of people and our Mother Earth” and that it “cleaves to existing inequalities, further highlighting its entanglements with ongoing colonisation” (Smith et al., 2021, p. 164). Collins et al. (2023, p. 701) argue for “making use of moments when habits are disrupted” to develop pathways towards a more socially compassionate and environmentally sustainable future.

Więckowski (2020) points at intersections of human-enforced global change in the Anthropocene and the dynamics of COVID-19. He concludes: “[i]t ought to be the case that social justice (...) and spatial justice now assume ever-greater significance” (Więckowski, 2020, p. 486). In this regard, Martin (2021, p. 145) argues that geography needs to become more “melioristic” if it wants to mitigate planetary inequalities. By meliorism, he means “an openly proclaimed normative and axiological position that existing conditions of social and spatial inequality are unacceptable and can and must be improved through appropriate purposive analysis, debate and persuasion, a position that encourages us to critically interrogate the forces that produce regional inequalities, to expose the obstructions to a fairer and more equitable spatial distribution of socio-economic outcomes, and to undertake the research and engagement to overcome those obstructions” (Martin, 2021, p. 154). This planetary perspective on inequalities reflects human practices as being embedded in a larger system, which relates well to recent paradigm shifts in health sciences.

Dobson (2021), in turn, discusses the impact of the COVID-19 pandemic on the revalorization of urban blue-green spaces (UBGS) in the Global North. The author fears that in the post-COVID-19 phase the “continued financial pressures on UBGS suggest that even viewed as a resource for human wellbeing, urban nature will struggle to attract investment on a scale comparable with “grey” infrastructure such as roads and buildings” (Dobson, 2021, p. 7). In contrast, Florida et al. (2021) are cautiously optimistic about potential post-COVID-19 urban transformations. However, they highlight two potential major drawbacks: (1) downtown areas may have difficulties to recover (Florida et al., 2021, p. 19; cf., Fiorentino et al., 2022), and (2) structural urban inequalities will not just go away due to some kind of benign post-COVID-19 planning efforts: “It would be naive to believe that policies to address the unique conundrums of the pandemic will create greater urban justice without major and specific attention to systemic injustice” (Florida et al., 2021, p. 19). Thus, the question is raised as to how changes in

practices – like the observed increase in the use of UBGs during lockdowns – are capitalized upon and result in the production of new (health) inequities.

A different perspective is opened up by Klapka et al. (2020), who argue for utilizing Hågerstrand's time-geography in preparing for the post-pandemic phase, as “individuals may experience social and perceptual unease and stress, which can be felt differently in specific population groups (children, women, men, the disabled, etc.)” (Klapka et al., 2020, p. 243). Considering the case of the UK, Collins and Welsh (2022) ask how the COVID-19 emergency may lead over the longer term to a more localized economy. They conclude that “[l]ocally networked support structures can enable personal, social-psychological recoveries as well as economic and environmental recoveries – a synergy that will be needed for a green recovery to be both just and sustainable” (Collins & Welsh, 2022, p. 456).

4 | RE-READING GEOGRAPHICAL UNEVENNESS OF COVID-19 FROM A SYNDEMICS PERSPECTIVE

After summarizing two major fields of geographical research on the spatial unevenness of COVID-19, we would like to offer an alternative perspective on these findings and discourses. The syndemics concept, which has been developed in medical anthropology, has enriched public health discourses since its inception in the early 1990s. Merrill Singer, a medical anthropologist, and co-authors coined this term based on their work with deprived inner-city communities with a high AIDS prevalence. They suggest the term *syndemic*, as established terms like *epidemic*, *endemic* and *pandemic* with their specific connotations do not “quite capture the contemporary health crisis of the North American inner-city, which is characterized by a set of closely interrelated and mutually reinforcing endemic, epidemic, and pandemic conditions. Consequently, we have urged the use of the term syndemic to call attention to the synergistic nature of the health and social problems facing the poor and underserved” (Singer & Snipes, 1992, p. 225).

The syndemics concept thus focuses on the interactions of multiple epidemics within a population. Unlike Western medical approaches that tend to view health challenges as separate and independent, a syndemics perspective emphasizes their social dimensions and the interconnectedness between various health problems. The syndemics concept was informed by research on the AIDS epidemic in the 1980s, where it became evident that factors such as socio-political exclusion, poverty, inequality and substance abuse reinforced each other (Singer, 1996, 2009). To make clear that disease, structural factors and practices cannot be treated independently, researchers proposed a new nosology – a new system for classifying the causes for disease, illness or sickness. Singer and Clair (2003) suggested in the context of HIV/AIDS research in North America for example, the term SAVA to label the syndemic caused by Substance Abuse, Violence and AIDS. Based on the early works of Singer, the concept has been constantly developed further.

In 2017 a series of three articles was published in *The Lancet*, which summarized the concept's evolution. Singer et al. (2017, p. 943) summarized in the first articles the conceptual foundations, highlighting that the “core concern of syndemics research is the investigation of the specific pathways through which disease and other health conditions interact in the body and within populations to allow multiplication of adverse health effects.” The aim of this investigation is to understand disease-disease interactions, and the impact of socio-environmental conditions and of pathways from these socio-environmental conditions to biological or psychological conditions which ultimately result in a higher burden of disease. In the series' second article, Mendenhall et al. (2017) illustrate the concept's applicability for the analysis of syndemics related to non-communicable diseases (NCDs) in emerging economies. They conclude that conceptualizing comorbidities from NCDs as a syndemic opens up new ways of structuring health care programs. Willen et al. (2017) in the third article finally link the syndemics concept to ethical issues. Based on research with migrant and refugee groups in different contexts, they argue that “[f]or multiple reasons –

human rights reasons, public health reasons, reasons of health equity – the protection of vulnerable people from syndemic suffering is both an urgent need and a fundamental matter of social justice” (Willen et al., 2017, p. 975).

As other authors have pointed out already, a syndemics perspective on COVID-19 helps to increase our understanding of the disease's complex and relational impact. In his call for a – broader – syndemic understanding of COVID-19, Horton (2020) highlighted for example, that “no matter how effective a treatment or protective a vaccine, the pursuit of a purely biomedical solution to COVID-19 will fail.” Further, we argue that most of the findings presented in sections two and three of this paper can help us to understand the syndemic pathways that lead to highly unequal burdens of diseases. The syndemics concept has so far been relatively “non-spatial”, thus a spatial turn in syndemics research – fuelled by the COVID-19 pandemic – could lead to a further evolution of the concept.

With respect to geography's approaches to the COVID-19 pandemic as described in Section 2, it has become obvious that a common thread is the debate on structural causes of observed patterns of disease diffusion. Consequently, the specific geographical concepts of scale, territory and borders can fruitfully enrich the understanding and investigation of the syndemic. Scale provides a scheme for sorting structural causes and designing interventions adequately, as the actors that need to be addressed differ fundamentally for structural factors on different scales. Territory is related to the so far (in the syndemics literature) understudied fact that syndemics clustering aligns with power relations and actors' socio-political contestation and negotiations over space. The concept of borders can be employed to understand spatial governance of syndemics and related spatial exclusion and stigmatization. Likewise the syndemics concept can add to the perspective of health geography as it can provide a conceptual framework for the interaction between social and physical environments, human bodies and practices (in space) – which has been the core of a substantial body of geographical research but without this conceptual bridge to the health sciences. Re-reading these works from a syndemics perspective thus adds to the understanding of syndemic pathways, especially by shedding light on the underlying societal and demographic structures that influence the emergence of disease clusters and the spatial diffusion of COVID-19. At the same time this also sheds light on the disease's impact on other diseases and on the socioeconomic conditions of different groups.

This is in line with the studies discussed in Section 3. Intersectionality emerged as an important concept for geographical research on COVID-19 and is at the same time a core topic of syndemics research. Thus, the various case studies undertaken by geographers contribute to identifying the most vulnerable populations and spaces, which were affected by COVID-19 more gravely and enduringly. Geographical work on post-pandemic ethics finally connected the pandemic to more fundamental structural causes and the Anthropocene, the relation between human and non-human actors, and the extractivist as well as capitalist world order. This deeper interrogation into the emergence of particular socio-environmental conditions could contribute an additional layer to the syndemics concept. Willen et al. (2017) have previously established a connection between the syndemics concept and broader ethical inquiries. As we have illustrated, insights from geography could enhance comprehension of syndemics in this ethical dimension even further.

5 | CONCLUSIONS

We started this article by highlighting how geographical research on COVID-19 formulated agendas for researching the illness, applied specific geographic concepts for the analysis of its distribution and addressed how discrimination affects specific groups or formulated visions and desires for a post-COVID-19-world. Hardly any of the publications referred to the syndemics perspective, which stresses the structural, multidimensional and intersectional production of diseases, resulting in the concentration of disease burdens in certain population groups.

Yet, as we came to argue, the analyses they delivered can be interpreted as pieces of a larger mosaic that together constitute the COVID-19 pandemic as an overlapping crisis (Sultana, 2021) as much as a syndemic. Geographers' unraveling of the spatially uneven impacts of the disease and the research agendas formulated early in the global health emergency aim at identifying structural explanations, similar to the syndemics logic. Geographers successfully mobilized concepts like scale, territory or borders to explain how specific structural dimensions aggravated the pandemic's uneven impacts. The intersectional perspective is very close to the core idea of syndemics and its interest in structural dimensions and processes that cluster and produce a cascading of epidemics and vulnerabilities in certain population groups. Geographers' visions formulated for a post-pandemic future are in most cases calls to overcome the resulting health inequities and build a healthier and more just world. Geography as a discipline contributes to the understanding of COVID-19 as a syndemic. The pandemic has come on top of existing uneven structural vulnerabilities that were already characterized by socio-spatial as well as health inequities.

In the second part of our review, we continue by analyzing further rich empirical evidence produced by geographers on spatial patterns of infection and economic geographies of COVID-19. In the third part of the review we address social processes and practices and on the temporalities of COVID-19. Hence, we close with a call for integrating the syndemics concept into geography's analytical toolkit.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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ENDNOTE

¹ According to the WHO, this phase stretches from the declaration of COVID-19 as pandemic on 11 March 2020 (WHO, 2020), to the announcement that it was no longer a public health emergency on 5 May 2023 (WHO, 2023).

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