# The Open City Concept: Evidence from Berlin

Grace Abou Jaoude, Olaf Mumm, and Vanessa Miriam Carlow

## 1 Introduction

In the summer of 1999, Berliner Festspiele developed a guidebook that was later issued by the Berlin Senate to celebrate Berlin as an Open City: an open exhibition that showcased, through thematic tours and spectacles, ongoing processes of transformation (Berliner Festspiele and Architektenkammer Berlin, 1999). The Senate seized every opportunity to curate the city's image for residents, tourists and international corporations by opening construction sites and newly renovated buildings to the public. Berlin, a palimpsest where certain pasts were erased and new visions were inscribed, was branded as an inclusive, receptive and forward-looking city open to change and innovation. This vision sought to attract creatives, youth and investments by presenting Berlin as a global city of the twenty-first century (Huyssen, 1997). The vision extended beyond politico-institutional contexts to impact and shape urban spaces. However, Berlin's rhetoric of openness belied top-down planning and market-driven hegemonic forces that all too often intensified socio-spatial exclusion and gentrification. Allegedly intended to foster the Open City, spatial imaginaries and urban developments in Berlin concealed contested patterns of spatial injustice and capital accumulation (Allon, 2013a).

The developments after reunification along the Berlin Wall best represented this paradox. While Berlin was celebrated as an Open City, various areas around the former Wall were vulnerable to commercial developments and increasing land values (Loeb, 2006). As the dismantling of various sections of the Wall continued in the late 1990s, the Berlin Senate, led by the Red-Green coalition, highlighted the

G. Abou Jaoude (✉) · O. Mumm · V. M. Carlow
ISU Institute for Sustainable Urbanism, Technische Universität Braunschweig, Braunschweig, Germany
e-mail: g.abou-jaoude@tu-braunschweig.de; o.mumm@tu-braunschweig.de; v.carlow@tu-braunschweig.de



N. Čamprag et al. (eds.), *Rethinking Urban Transformations*, Diversity and Inclusion Research, https://doi.org/10.1007/978-3-031-37224-7_2

need to preserve the history of the Wall by establishing green spaces and memorials (Loeb, 2006). The idea of a greenbelt that facilitated free movement and openness along the former border was indeed the antithesis of the 'wall' but one that also privileged surrounding areas. While the proposed open spaces presumably activated inaccessible spheres for the public, corporate actors' new investments around the Wall maintained forms of division and intensified exclusion across the urban fabric. Overall, urban imaginaries of openness, acceptance and tolerance, driven by corporate interests, sustained racialised narratives that suppressed the 'other', reinforced borders and uprooted the city from its past.

Beyond the context of Berlin, the term 'Open City' is rooted in the ideas of Popper (1945) and generally evokes a panoply of connotations. The term has been used across literature particularly in fiction, urban economics, data mining and architecture (Cordua et al., 2015; Domínguez, 2016). From the perspective of physical planning and design, various scholars emphasised the Open City as an approach that nurtures and orients emergent potentials and latent changes based on an understanding of the city's dynamics. It is an incremental process that denies definitive or pre-established future outcomes (Porqueddu, 2018). The Open City stems from a critique of top-down masterplans that all too often separate the city into closed systems. It rather emphasises a piecemeal or gradual development of parts—an open-ended project where socio-spatial elements collectively interact based on certain rules to allow for further accretions (Sennett, 2018). In an institutional schema, the Open City is not merely concerned with providing equal access to resources and opportunities (Rieniets, 2009); rather, it involves the democratisation of institutional capacity to prioritise social needs and shared resources over capital gains (Brenner, 2013). From the social perspective, the Open City accepts immigration and multicultural identities and affords the conditions to foster a productive cultural complexity that affects urban politics (Ipsen, 2005). In the Open City, inhabitants engage with and actively participate in different urban processes (Rolshoven, 2014). Ipsen (2005: 646) asserted ambivalence as an element of the Open City and confirmed that the latter is 'not a structure … not a system, but either a configuration which creates itself, or a project which lives in and through its contradictions'. In sum, the Open City is often described as an inclusive vision (Friedmann, 2002); an ideal concept or project (Ipsen, 2005); an urban condition that productively incorporates difference, contradictions and unpredictability (Porqueddu, 2018); or a positive and desirable value of cities (Clark, 2010).

Given its different understandings, defining the Open City is a difficult undertaking. Assuming that all interpretations of the concept are presented in a single definition is essentially challenging the concept's openness to new understandings. Contrary to prevalent dichotomies (open vs. closed; private vs. public), the notion entails a degree of flexibility where every day social practices and dynamics extend along a continuum with two opposites, namely, the acceptance of new people and ideas against the exclusion of the foreign. As per this scale, the degree of openness denotes the acceptance of new and foreign concepts, people and commodities (Ipsen, 2005). According to Reijndorp (2009), the Open City refers to the extent newcomers are accepted and offered access to existing networks. This continuum

draws forth a set of questions as to which socio-spatial conditions and attributes foster the emergence of the Open City and how are these conditions analysed in relation to the built environment.

While various scholars problematised the Open City based on observations and case studies (Christiaanse, 2009; Sennett, 2018), an operationalisation of the concept remains limited in literature. This chapter aims to explore and operationalise the Open City concept using geospatial analysis and an equal weighting approach. Berlin serves as a case study to develop a better understanding of the concept and its attributes. Scoring results are verified through field observations conducted across four districts with varying degrees of openness. To the best of the authors' knowledge, this is the first study that spatially analysed the Open City attributes through an applied perspective. The term Open City is sometimes used interchangeably with openness throughout the chapter. While the Open City is widely used in planning, the term is one of the derivatives of the concept of openness. Various derivatives, such as open access, open data and open government, have been used across literature and carry different meanings depending on the context and discipline. The Open City concept is first discussed based on a thorough review of urban studies literature. After briefly introducing Berlin's historical context, the attributes of openness are analysed, and the case studies are discussed by connecting the findings to the Open City concept.

## 2 The Open City and Its Attributes

The Open City concept is widely associated with diversity (Ipsen, 2005; Sennett, 2018), tolerance, acceptance, accessibility and inclusivity (Gleeson, 2001) as well as participation and political transparency (Lundgren & Westlund, 2017). The British Council along with a group of European cities defined openness as 'the capacity of a city to attract international populations and to enable them to contribute to the future success of the city' (Clark, 2010: 10). The Open City refers to a forward-looking city with a capacity to accept differences, new ideas and unpredictable tendencies. Historically, the openness of the urban to new ideas, often from outsiders, was instrumental to modern societies and a driver behind the Open City's transformation into a 'machine for creative social and economic development' (Shields, 2013: 347). In effect, openness is not only a capacity to welcome, accept and integrate new and diverse ideas and foreigners but also entails an outlook to the long-term future.

The Open City entails a participative approach and emphasises porous and accessible urban spaces. It allows spontaneous encounters and gatherings and fosters reciprocal interactions between inhabitants and the physical environment. The Open City rejects top-down planning driven by state institutions and private interests, which suppresses unpredictability, diversity and resilience (Porqueddu, 2018). The design of the Open City is contingent on emergent social, political and economic developments. The process orchestrates continuous negotiations and contentions between dualisms: control and informality, order and chaos, private and public,

permeance and change, etc. Since the Open City is not a clear-cut vision or plan but a balance between contradictory forces (Christiaanse, 2009), variations, substitutions and additions to the physical environment are indispensable and adaptations and changes that influence the character of a place are encouraged (Sennett, 2018).

Sennett (2007) credited Jacobs (1961) for the Open City concept. The latter rejected tabula rasa approaches and top-down plans that produce rigid forms, exclusionary spaces and closed systems. Alternatively, Jacobs (1961) advocated for complexity, diversity, dissonance and density. Drawing on Jacobs's urban vitality concept, Sennett (2007, 2018) and Christiaanse (2009) emphasised the role of urban form in promoting the Open City. Sennett (2018) subsequently proposed five conditions of openness including porous boundaries, incomplete forms, punctuations, synchronicity of activities and finally seed-planning. The latter condition called for the gradual development of parts or 'pockets of order' that interact to form a complex image of the urban whole. This condition resonates with the assemblage theory, where the image of the city emerges from interactions of different local clusters or parts without top-down interventions (Dovey, 2011; Porqueddu, 2018). The orchestration of different parts and their micro-interactions, based on minimal rules, facilitate the development of variations and support the emergence of open systems. Such an Open City is in constant flux—a process of making and remaking and of becoming (Porqueddu, 2018).

However, the question remains as to how can cities that emphasise barriers and exclusion promote openness? Through the theory of reflexive modernisation, Beck (2007) provides some insights and calls for the 'city of And', a cosmopolitan Open City characterised by diversity, cultural tolerance, harmony and ambivalence. This Open City is underpinned by 'socio-economic inclusion, a democratisation of public space and a radical opening out of non-political spheres' (Gleeson, 2001: 261). The 'city of And' accepts difference and embodies the vision of a reflexive architecture: one of hospitable and inclusive spaces. It entails a flexible urban form and fulfils individual needs while offering spaces for communal life. Elements of inclusion are reflected in the city's spatial forms and functions and are celebrated as a proxy of heterogenous identities that strengthen the sense of belonging. To attain this city, a democratisation of institutions and ideologies that shape the production of space is necessary including masterplans, markets and regulations (Gleeson, 2001).

Ideas of Beck (2007) echoed with Brenner's (2013) call for democratising collective and institutional agency to shape and produce urban space. Brenner (2013: 45) highlighted the role of designers in attaining the Open City and the need to incorporate 'questions of institutional control, political power and social justice into their vision of the site'. Indeed, the Open City is a continuous process of participation, use and appropriation where inhabitants equally impact decisions related to shared urban space and institutions. This understanding of the Open City and the role of designers resonates with the Right to the City concept introduced by Lefebvre (1996). The concept extends beyond calls of accessibility to resources and includes the transformation of urban governance to activate a democratic control over processes of urbanisation. It is a collective right to (re)shape the city 'as a socialist body politic in a completely different image - one that eradicates poverty and social

inequality' (Harvey, 2012: 138). The Right to the City is a call to restore the agency of inhabitants, who are not passive users, but rather emancipated citizens and participants in making the city (Shields, 2013).

A significant feature of the Open City is the acceptance of social diversity, foreignness and heterogeneity. As an urban area, the Open City is in a constant state of adapting to differences and creative dissention (Ipsen, 2005; Shields, 2013). It is predicated on a productive cultural complexity that results from immigration and gives rise to new urban cultures (Ipsen, 2005). New urban cultures can generate knowledge while contributing to economic productivity. At some instances, diverse groups can (in)voluntarily retreat into protected cultural enclaves that give rise to socio-spatial isolation. These self-contained enclaves and encapsulated communities often exist side by side and can be triggered by exclusions from traditional citizenship frameworks, national narratives and market-driven regulations (Allon, 2013a). Isolation can intensify tensions and fractures and is considered an unproductive form of cultural complexity. From surveilled luxurious neighbourhoods, designed for affluent social groups, to the clustering of marginalised minorities, these enclaves reinforce the emergence of walls and barriers. Indeed, isolation and the ensuing inaccessibility are characteristics of a closed city, which are often exacerbated by institutional and spatial barriers. However, where individuals are voluntarily clustered, a network of communal economy can form facilitating the development of autonomous spaces and cultures while providing their individuals security, refuge, familiarity and safety (Ipsen, 2005). These homogeneous spaces reduce encounters with the 'other' and resist the heterogeneity of the Open City, yet it is in these very spaces—which offer a haven to their inhabitants—that the Open City can also emerge. Often marginalised and neglected, these spaces embody new codes of sharing and social belonging.

By hosting diverse ethnic minorities, marginalised areas transform into sites where new forms of belonging emerge (Allon, 2013a, 2013b). However, such multiplicity is often not well captured in traditional forms of citizenship and national imaginaries (Shields, 2013). In general, the multiplicity of urban cultures brings to the fore the disparity between traditional citizenship, which is territorially bounded to nation-states, and urban citizenship, which is tied to inhabitants' daily urban practices and their active engagement as participants in the production and appropriation of space (Allon, 2013b). As an alternative form of citizenship and belonging, urban citizenship includes political and grassroot activism, everyday activities of urban inhabitance as well as frictions resulting from negotiations, resistance and struggles to claim space. It provides groups, who are ostracised by legal citizenship, the potential to form communities and participate in creating and shaping urban spaces. More specifically, this local urban citizenship involves participatory and inclusionary everyday practices of (re)creating, inhabiting, producing and appropriating urban spaces and resonates well with the Open City and Right to the City concepts (Allon, 2013b; Friedmann, 2002). Overall, urban citizenship, reflexive architecture and the Right to the City concepts present valuable modes of enquiry to understand the Open City.

While certain enclaves can constitute a safe refuge, the retreat from a shared urban space to an isolated area can prompt the rise of boundaries and challenge borders. When boundaries are rigid, borders in an Open City are characterised by malleability, permeability, fluidity and self-regulation—operating as gradients between different entities (Sennett, 2018; Wolfrum, 2018). Borders can be symbolic or territorial. They entail thresholds that contribute to their porosity and facilitate interactions, encounters and exchange between diverse urban spheres (Stavrides, 2006). In fact, a porous city is the cornerstone of an open and tolerant city, one that embraces diversity and enables exchange between different cultural groups (Wolfrum, 2018).

While the diversity and interactions of urban cultures is necessary, Ipsen (2005) considered that a third culture—a 'meta-culture' that emancipates from existing cultures—is a prerequisite of the Open City. The meta-culture builds on shared rules, customs and norms and borrows from individual cultures to form a unique configuration. As an image of the city, the meta-culture can spatially manifest across the urban fabric, in common spaces with shared representation or materialise through symbols in particular spaces pertaining to a specific culture. Social infrastructure and places with diverse uses accommodate different urban cultures and offer spaces for social encounters and the emancipation of the meta-culture.

In sum, the Open City concept is a utopian ideal that manifests in parts of the city and across different scales. It is an attempt by planners to design physical conditions and structures that foster openness and creativity. It welcomes people from diverse backgrounds, promotes participation and entails the democratisation of institutions. The Open City favours flexible instruments or frameworks that enable piecemeal development, over predetermined top-down plans and fixed forms. Overall, the Open City involves spontaneity, ambivalence, volatility, flexibility, unplanned experiences and malleability of form. It engages with contingent social, political and economic developments. It is rather an approach for the long-term future that considers uncertainty and democratic engagement whereby the city is touted as an experimental and open-ended project. Used by policy-makers as a virtue for branding cities, the Open City has become a buzzword in policy and planning rhetoric. It remains unclear whether this desirable value that manifests in different parts of the city can be quantitatively evaluated and ultimately translated into planning and policy-making.

## 3 Case Study: Berlin

Berlin has witnessed many transitions and urban restructuring processes that shaped its identity and urban fabric: industrialisation in the nineteenth century, incorporation of settlements to form Greater Berlin (Groß-Berlin) in 1920, wartime destruction, reunification followed by its transition into the German capital (1990), transformation into a service-oriented city and currently its increasing digitalisation. The city's narrative was selective as it engaged with certain epochs of the cultural memory while erasing others (Loeb, 2006). Its reinvented image and

vision—the Open City—along with the monumental reconstructions and transitions masked historical struggles and exclusions and uprooted Berlin from its recent past. Outwardly, the vision signalled a new future where Berlin is demonstrated as a cosmopolitan, forward-looking and tolerant city that accepts change as well as social and cultural difference. Practices of space appropriation, such as squatting and grassroot movements of the 1960s, formed a significant part of Berlin's cultural identity and were used to brand the city as an experimentation playground for artists (Allon, 2013a). Ethnic pluralism as well as counter and micro-cultural spaces were employed as drivers of cultural competence that supported the city's global presence, competitive advantage and economic viability. Openness held social and visual connotations and materialised into new architectural interventions that emphasised transparency. However, the corporate-led building boom of Berlin has been fraught with controversy and complexity and brought about displacement, gentrification and resistance (Holm, 2013). Ironically, the self-proclaimed Open City increasingly privatised land for capitalist development. In effect, the celebrated image of the city emerged at the expense of difficult pasts where the concept of openness was exploited for capital accumulation (Allon, 2013a). These practices question Berlin's openness and the inhabitants' right to the city and provide an opportunity to explore ensuing processes of inclusion and displacement.

### 3.1 Operationalising the Open City in Berlin

Drawing on an extensive literature review (Abou Jaoude et al., 2023), six attributes of the Open City were identified, namely, accessibility (AC), borders and porosity (BP), participation and appropriation (PA), safety and surveillance (SA), synchronicity (SY) and diversity both social (SD) and typo-morphological (TD). Each attribute is based on one or more variables (Fig. 1). As Sennett (2007) attributed the Open City to Jacobs (1961), her four conditions of urban vitality were considered. In addition, previous research that systemically investigated vitality was consulted to develop the methodological framework (Delclòs-Alió & Miralles-Guasch, 2018; Xia et al., 2020; Ye et al., 2018). Abou Jaoude et al. (2023) further elaborated on the operationalisation and calculation of the Open City attributes in their recent work.

The data, pertaining to each attribute, was collected from different sources with varying spatial resolutions and reconstructed on a 100 × 100 m grid. The six attributes of openness were synthesised using an equal weighting approach, and the mean value of openness per district was calculated. The synthesis followed a three-tier hierarchical structure where 25 variables were separately generated as normalised values. Variables corresponding to a particular attribute were then summed together, and the mean openness score (OS) was finally calculated by summing the six attributes into a single value as per Eq. 1:

$$\mathrm{OS} = \mathrm{TD}\left(\frac{1}{8}\right) + \mathrm{SD}\left(\frac{1}{10}\right) + \mathrm{AC}\left(\frac{1}{4}\right) + \mathrm{BP}\left(\frac{1}{2}\right) + \mathrm{PA}\left(\frac{1}{2}\right) + \mathrm{SA}\left(\frac{1}{2}\right) + \mathrm{SY} \quad (1)$$

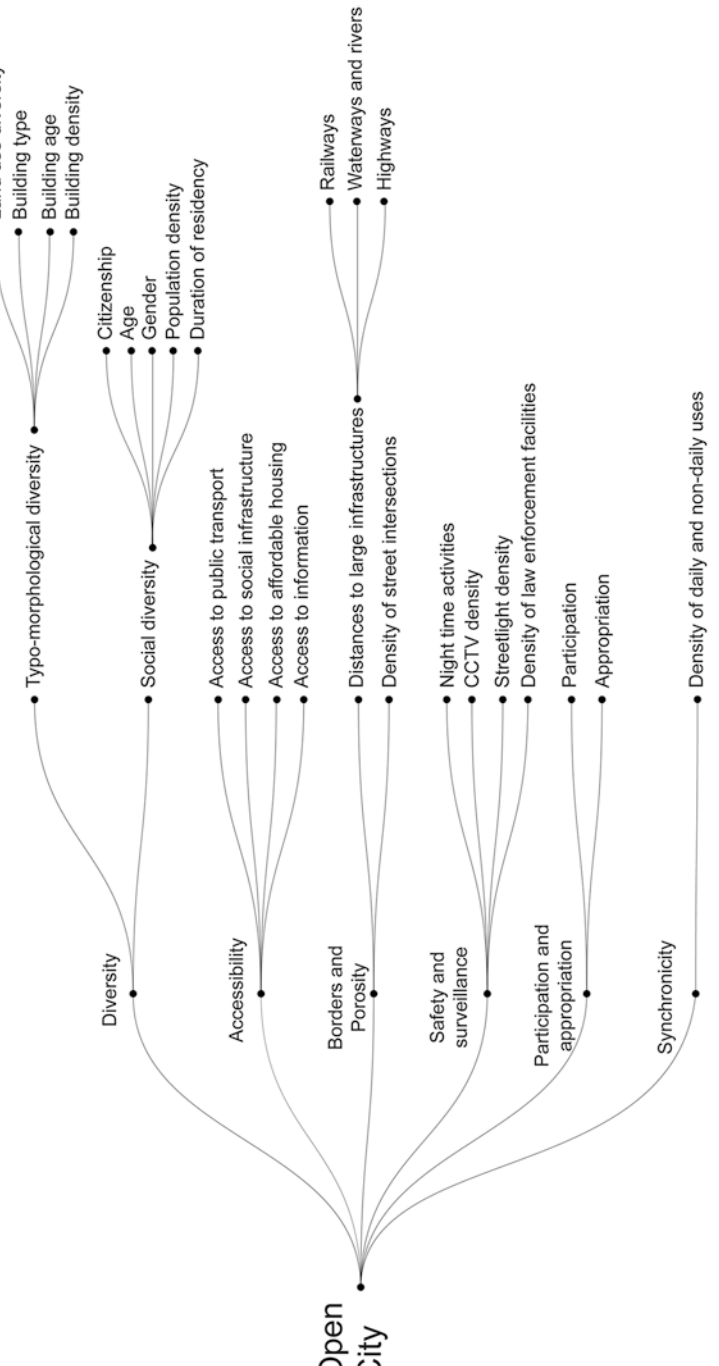


**Fig. 1** The six attributes of openness, their categorisation and corresponding variables

A thorough understanding of the Open City requires an analysis of complex systems and interactions across multiple scales. Based on the scoring results, four neighbourhoods in Berlin, which reflected various degrees of openness, were selected to gain further insights on the concept (Fig. 2). The cases included Hellersdorf, Gesundbrunnen, Niederschöneweide and Charlottenburg-Nord. The fieldwork visits and observations were intended to verify the scoring results and identify the reasons behind a district's score.

## 4 Case Studies Findings

The results of the geospatial analysis (Fig. 3) and synthesis emphasised a centre-periphery pattern (Fig. 4), and the data followed a normal distribution ($\mu = 3.93$ and $\sigma = 0.67$). A high potential of openness was found at the centre particularly in Friedenau, Kreuzberg and Wilmersdorf due to their high accessibility, land use and social infrastructure diversity as well as richness of building ages and types (Figs. 3 and 4). Areas with a moderate degree of openness surrounded central districts and offered a gradual transition towards conurbations with the lowest potential of openness. A lower potential of openness was evident along the peripheries, particularly in Wartenberg and Blankenfelde. Despite their centrality, certain districts such as


**Fig. 2** The four selected case studies: Hellersdorf, Niederschöneweide, Gesundbrunnen and Charlottenburg-Nord. The designation of districts (Ortsteile) follows that of Berlin's Senate Department for Urban Development, Building and Housing (Geodata was obtained from (Geoportal Berlin, 2021)

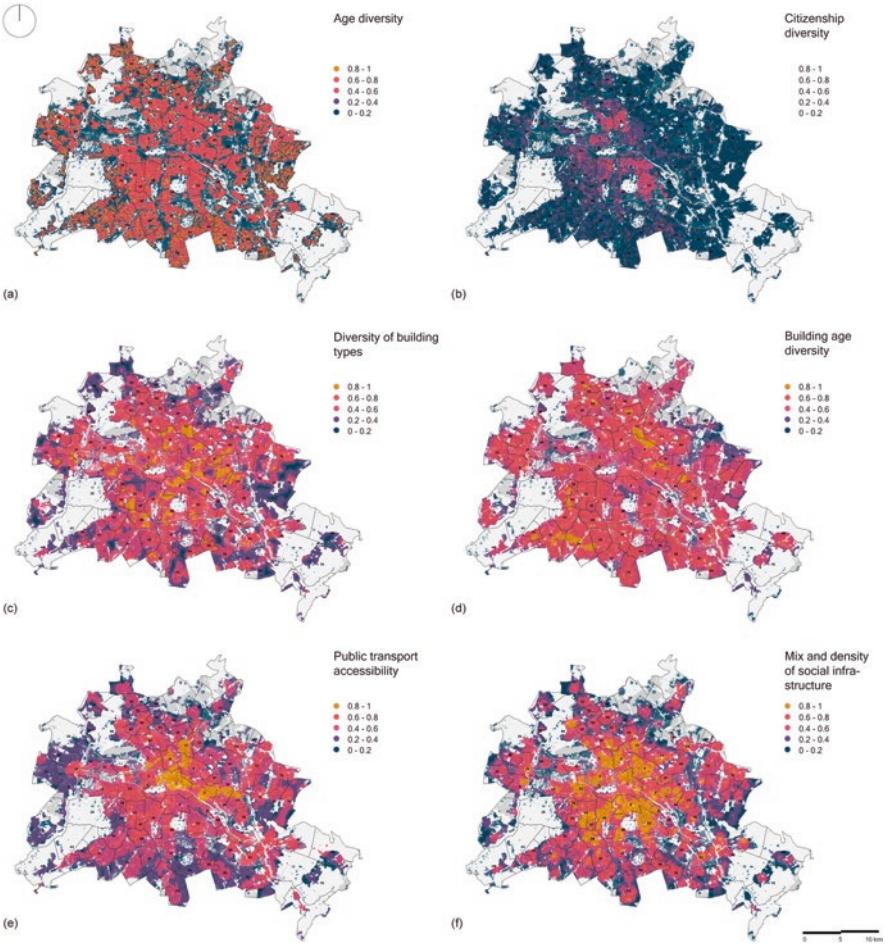


**Fig. 3** Geospatial analysis of selected attributes of openness: (**a**) age diversity, (**b**) citizenship (as a proxy of cultural diversity due to the lack of available data), (**c**) diversity of building types, (**d**) building age diversity, (**e**) public transport accessibility, (**f**) mix and density of social infrastructure. Abou Jaoude et al. (2023) elaborated on the attributes and the analysis

Tiergarten scored significantly low due to the presence of large open spaces and the consequent small built-up area. It is worth mentioning that certain peripheral areas, such as Buckow and Gropiusstadt, exhibited a high potential of openness, given their social diversity (Figs. 3 and 4).

Following these results, four case studies were selected and are discussed further below.

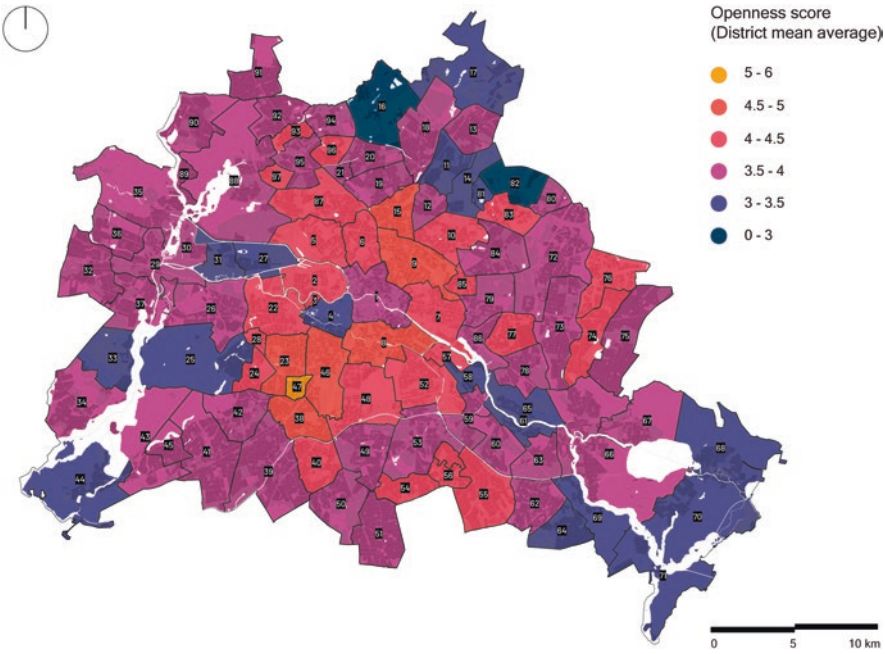


**Fig. 4** Mean openness score per district in Berlin (Abou Jaoude et al., 2023)

## 4.1 Hellersdorf

Historically, the district of Hellersdorf was established in the 1980s on former agricultural land. Similar to most districts in former East Berlin, Hellersdorf consisted predominantly of large-scale prefabricated residential buildings circumscribed around a common courtyard (Carlow, 2016). Due to the lack of funding and with the fall of the Wall in 1989, few amenities and infrastructure were initially constructed. In response to the increasing housing demand and social polarisation, the Berlin Senate launched a regeneration programme after the German reunification to refurbish and improve the deteriorating former eastern estates (McCarthy, 1997). Accordingly, the building stock in Hellersdorf was structurally repaired and modernised to accentuate the distinctiveness of its micro-neighbourhoods. The programme also sought to integrate ecological principles and introduce new services, amenities and public art to improve and differentiate the relatively monotonous urban structure and architecture.

Our study revealed a low building age diversity[1] (0.38) underlining the homogeneity of the building stock and reflecting the temporally concentrated development. The provision of social infrastructure in Hellersdorf today is comparatively high given the district's network of sub-centres that hosts shops, schools, kinder gardens,

[1] The values presented above are obtained from Abou Jaoude et al. (2023). They provided detailed explanations and calculations pertaining to each variable.

higher education institutions, care homes and other services. Overall, the district is very well connected to public transport (scoring 0.57 for four public transport modalities[2]) and comprises various leisure and night-time activities (two activities within 500 m radius). Most commercial premises are located around Cecilienplatz, Alice-Salomon-Platz and Fritz-Lang-Platz. Wiesenpark and Kienberg Park, which are adjacent to the district, act as green corridors and are used by residents for outdoor activities. While courtyards and open spaces around apartment blocks are intended for residents' use, these spaces remain largely empty, while others serve as green buffer zones along railways and passageways.

Hellersdorf is characterised by a low percentage of non-German[3] residents (2.6%). The district is home to many German descents (Russlanddeutsche) and other migrants from the former Soviet Union. Murals on apartment buildings and artefacts in the neighbourhood emphasise this cultural identity and define the cultural landscape of the district (Fig. 5). Apart from the low voter turnout[4] (47.6%), the area consists of diverse age groups with adults between 30 and 49 years old forming the majority.

While the area exhibited a high potential of openness, field observations partially aligned with our findings. Results can be attributed to various reasons including the fenced courtyards. Initially intended for urban equity, the fences currently act as borders to guarantee security. They hamper exchange between different groups and thus reduce the porosity and openness of spaces. In addition, the increasing privatisation of the building stock, reflected in the district's current low social housing density (0.03), contradicts the collectivist principles that the area was predicated on. Historically, the standardised apartment blocks were intended as an open, safe and collective city that represented an egalitarian model (Rieniets, 2009). With the hegemony of capitalist urbanisation, these allegedly open cities transformed into closed entities. Findings from Hellersdorf also align with evidence that the retreat of people from similar backgrounds could give rise to protected cultural enclaves (Rieniets, 2009; Stavrides, 2006). This is evident by the strong presence of the Russlanddeutsche community whose cultural symbols manifest throughout the built environment. Overall, the continuous stigmatisation of these large-scale estates as physically deteriorating and socially polarised districts challenges their openness and fuels their perception as closed areas.

[2] To measure accessibility, four public transport modalities were considered and the Euclidean distance from the grid cell's centre to the closest public transport hub was measured. A score of 0.25 was given to each modality within the mode-specific threshold distances.

[3] Due to the lack of data on ethnicities, cultural diversity was calculated using the categorisation of German statistics which differentiates between Germans, irrespective of their cultural backgrounds, and foreigners, segregated by country groups (European Union (EU), non-EU states, etc.).

[4] Voting data was obtained from 2017 to calculate voters' turnout ratio in a specific district as a proxy for participation and openness.

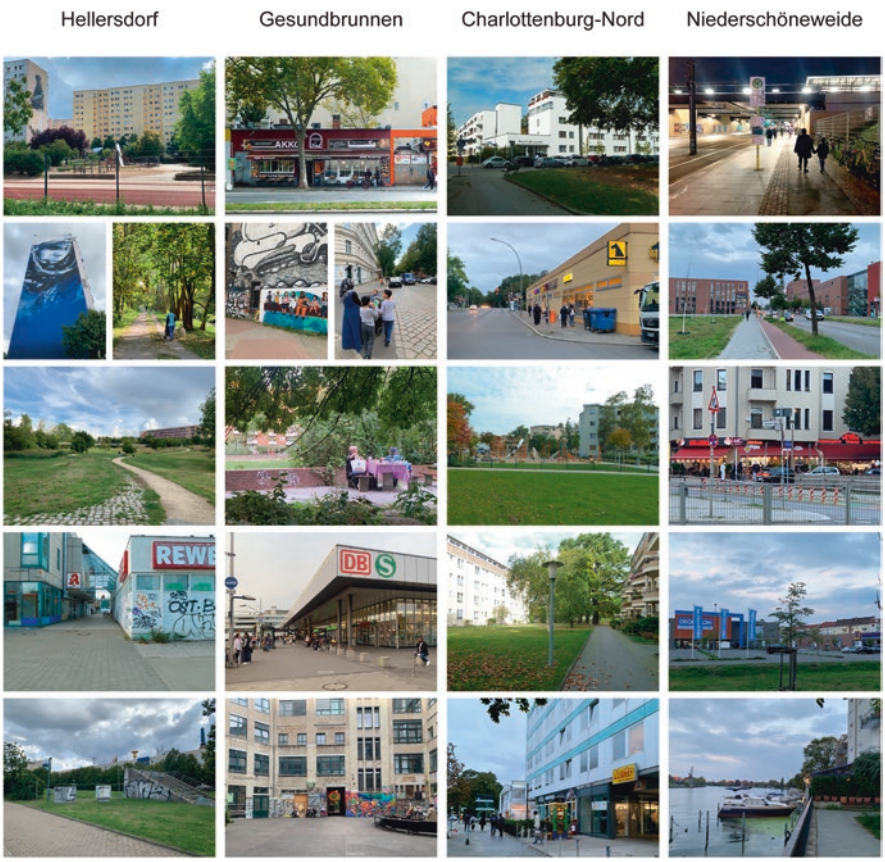


**Fig. 5** Pictures of the four case studies. The pictures reveal the diversity of urban spaces, the representation of cultural identities and the variety of uses in the different neighbourhoods

## 4.2 Niederschöneweide

Niederschöneweide is a former industrial area and part of Treptow-Köpenick, a borough in former East Berlin. The district prospered during Berlin's industrialisation era as textile firms initially settled, followed by the chemical and metal industries. Prior to the 'Zukunftsorte' (Future Areas) strategy (Suwala et al., 2021), the district has witnessed ongoing transformation due to the renovation of its building stock and displacement of its industrial premises. Apart from maintaining its industrial character, the area is characterised by a high building age diversity (0.49) particularly with the gradual redevelopment of industrial lands along the waterfront into residential and commercial spaces. The district is also characterised by a high residential mobility where a low residency duration (below five years) was observed (0.22). A low residency duration can be a proxy of continuous change, weak neighbourhood ties and a low sense of belonging.

Niederschöneweide has a low social diversity as most residents are considered German citizens (94%). However, streets connected to Edisonstraβe and the Kaisersteg Bridge host various shops that reflect multicultural ethnicities. The age composition of Niederschöneweide varies where most of the population is between 30 and 49 years old (28.2%). As a district bordered by the Spree River and with the presence of an extensive green area and railway network, which is largely inaccessible and unoccupied, the distance to border vacuums or large infrastructure is short[5] (310 m per grid cell). These borders reduce accessibility as well as the area's permeability and affect its potential of openness. The district's porosity is further exacerbated as large parts of the waterfronts are inaccessible and largely developed as residential or commercial premises.

Overall, field observations from Niederschöneweide aligned with the results of the analysis. The district's low potential of openness can be attributed to the presence of large infrastructure, particularly the extensive infrastructural networks that divide different neighbourhoods. These findings support conclusions that border vacuums weaken the vitality and porosity of urban areas (Jacobs, 1961; Wolfrum, 2018) and thus the openness of the district. Developments along the river hamper access to the waterfront and exacerbate the district's openness.

### 4.3 Gesundbrunnen

Gesundbrunnen is a district located just north of the city centre, in former West Berlin. It was developed into a working-class neighbourhood featuring predominantly multi-storey tenement buildings with one or more courtyards (Mietskaserne). Gesundbrunnen today shows a high potential of openness. Despite its high density of social housing (0.56), the district has a high residential mobility given its inhabitants' short length of residency (0.45). With the ongoing transition of Brunnenviertel and the renovation of former industrial grounds and neighbourhoods along the Panke Canal, the area is characterised by high building and housing age diversity (0.74 and 0.69, respectively). Gesundbrunnen has a diversity and synchronicity of uses and activities (0.71) with various local shops that reflect multicultural ethnicities. In addition, the area has the highest percentage of non-German citizens (31.7%) in our study with numerous residents of Arab and Turkish origins. The Arab, Turkish and African landscape of the district is reflected in the signage of local shops, languages spoken on the streets and the presence of individuals who share similar cultural practices, thereby indicating difference or 'otherness' (Fig. 5). The presence of proximate uses and amenities, particularly with the district's high mix of social infrastructure (0.75), emphasises social equality as it facilitates access to daily activities, particularly to groups with no private vehicles (Talen, 2006). These diverse uses along with the high density of intersections (230 intersections within

[5] To map border vacuums, large infrastructure networks, such as railways, highways and water bodies, were considered. The Euclidean distance to these border types was calculated from the centre of a specific grid cell.

500 m) promote spontaneous encounters, encourage pedestrian activity and increase the porosity of the urban fabric. Various open spaces and playgrounds are well exposed to the streets and are predominantly occupied by families from different social backgrounds after-school hours. The outdoor playtime after-school not only contributes to vital streets but also increases interactions and strengthens the sense of community and safety in Gesundbrunnen.

Despite Gesundbrunnen's high mobility, which can lead to weaker social ties (Kan, 2007), field observations supported the quantitative results and verified the high potential of openness that the district affords. The district's high potential of openness is credited to the high building and age diversity, the mix of uses and social infrastructure as well as to the district's social diversity. These characteristics promote pedestrian activity. The accessibility and inclusivity of the spaces in Gesundbrunnen shape urban identity and provide a unique urban experience. These findings confirm arguments put forth by Sennett (2018) and Christiaanse (2009) who advocated for mixed-use programmes, variegated urban structures and social diversity as prerequisites of the Open City.

## 4.4 Charlottenburg-Nord

Charlottenburg-Nord is a district of the former West Berlin. The area consists of post-war developments, allotment gardens and industrial areas. The Jungfernheide Volkspark is at the heart of the district and considered its largest open space. The design of Charlottenburg-Nord was centred around the notion of a city as an urban landscape. Largely planned by Hans Scharoun, a former City Architect of Berlin, the district embodies concepts of modernism and has a productive residential structure that emphasises the relationship between dwelling, neighbourhood and the city (Borsi, 2018). These notions are reflected in the diversity of building types (0.57) that are predicated on a variety of dwelling plans and row housing construction (Zeilenbauweise). The district's planning, which entails the mixing of different social classes, is evident across various neighbourhoods and promotes a sense of collectiveness and openness. Indeed, the area has an adequate density of social housing (0.31) and a mix of social infrastructure (0.43). Charlottenburg-Nord has a relatively high percentage of non-German residents (14.7%), which demonstrates the complex composition of the district and emphasises cultural otherness. The district's high social diversity is attributed to the influx of migrants. In addition, Charlottenburg-Nord is characterised by a low voter turnout (46.5%). The district is bordered by the so-called *Stadtring* (city ring), the Berlin-Spandau Canal, Westhafen Canal and the Spree River and is divided by the A111 Road. Along with the low density of intersections (113 intersections within 500 m), these large infrastructures create border vacuums and reduce the porosity of the area as well as its openness.

Overall, field observations from Charlottenburg-Nord partially confirmed the results of the analysis. The district's high social and typo-morphological diversity foster a high potential of openness that reflects across different neighbourhoods. Nonetheless, Charlottenburg-Nord's low potential of openness, as per the geospatial

analysis, can be attributed to the large infrastructure, particularly the Jungfernheide Volkspark and the highway networks that cut across the district. Large infrastructure creates border vacuums that reduce the vitality, permeability and porosity of the district (Jacobs, 1961). The presence of large infrastructure in Charlottenburg-Nord align with findings that the latter can erode the vitality and porosity of urban areas and thus their openness (Delclòs-Alió & Miralles-Guasch, 2018).

## 5 Conclusion

The debate on the Open City is associated with urbanisation processes and imbued with contradictions, negotiations, consensus and tensions. In this study, six attributes of the Open City were derived based on a literature review and synthesised using an equal weighting approach to map the potential of openness across Berlin. Apart from the geospatial analysis, field observations of selected districts offered insights into the city's socio-spatial dynamics and contributed to understandings of the Open City concept. It is worth mentioning that the findings and the socio-spatial attributes used in this study, which include diversity (typo-morphological and social), accessibility, borders and porosity, participation and appropriation, safety and surveillance and synchronicity, remain unique to Berlin and cannot be generalised across different contexts.

Research findings revealed a high potential of openness around Berlin's city centre which gradually faded towards to the city's edge. The presence of atypical districts, which defied the centre-periphery pattern, revealed that thresholds and neighbourhoods are in a constant state of negotiation and transformation. The districts' potential of openness is largely dependent on the social and physical composition of the neighbourhoods. Field observations from Gesundbrunnen and Niederschöneweide confirmed the results of the geospatial analysis. Gesundbrunnen exhibited a high potential of openness given its high social and typo-morphological diversity, high accessibility and mix of social infrastructure. As a place that has continuously hosted migrant populations, marginalised minorities, newcomers and the youths (Al-Khanbashi, 2020), Gesundbrunnen is a site of urban citizenship where microcultures contribute to the district's complexity and where struggles of space appropriation and production manifest. Field observations from Hellersdorf and Charlottenburg-Nord challenged our findings. Hellersdorf's social homogeneity, fenced courtyards and empty green spaces around apartment blocks may be reasons behind the perceived low potential of openness. Different neighbourhoods in Charlottenburg-Nord exhibited a high potential of openness, yet various infrastructures that cut across the district maybe behind its low openness score.

While the vision of Berlin as an Open City was rather an ahistorical and predetermined prescription, the geospatial analysis and field observations confirmed that openness only manifests in parts of the city. Indeed, the Open City does not prevail across all of Berlin. Openness is found across different instances in the city and is rather in a continuous state of flux (Christiaanse, 2009; Porqueddu, 2018). To foster this condition across different areas in Berlin, the city needs flexible narratives,

participative approaches and an experimental urban policy that can contribute to inclusive urban developments, democratise institutions, strengthen the agency of inhabitants and embrace unpredictability. Future projects and developments require a thorough understanding of the specificities and socio-spatial dynamics of urban spaces. These interventions, which could incrementally form the building blocks of the Open City, should capture the cultural complexity, idiosyncrasies and contradictions of Berlin.

While the study focused on quantitatively evaluating the potential of openness across different districts in Berlin to achieve a better understanding of the Open City concept, future research can adapt and customise the approach to specific geographic contexts and scales. Additional attributes from different disciplines can also be consulted to provide better interpretations of the Open City and its spatial conditions.AcknowledgementsThe authors would like to thank Majd Murad for the curation and analysis of data as well as the production of maps. They also thank Yevheniia Berchul for conducting the field visits.

**Funding** This work was supported by a Research Grant 32.5.F070.0017.0 from the Robert Bosch Stiftung.

## References

Abou Jaoude G, Murad M, & Mumm O, et al. (2023 (under review)). Operationalizing the Open City concept: A case study of Berlin. *Environment and Planning B: Urban Analytics and City Science*.

Al-Khanbashi, M. (2020). *The social construction and use of landscape and public space in the age of migration: Arab immigrants in Berlin*. VS Springer.

Allon, F. (2013a). Ghosts of the Open City. *Space and Culture, 16*(3), 288–305.

Allon, F. (2013b). Litter and monuments. *Space and Culture, 16*(3), 252–260.

Beck, U. (2007). Die offene Stadt. Architektur in der reflexiven Moderne. In D. Baum (Ed.), *Die Stadt in der Sozialen Arbeit* (pp. 46–51). VS Verlag für Sozialwissenschaften.

Berliner Festspiele and Architektenkammer Berlin. (1999). *Berlin: Open City: The City on exhibition*. Nicolai.

Borsi, K. (2018). Hans Scharoun's 'dwelling cells' and the autonomy of architecture. *The Journal of Architecture, 23*(7–8), 1104–1142.

Brenner, N. (2013). Open city or the right to the city? *Topos, 85*, 42–45.

Carlow, V. M. (2016). *LIMITS: Space as resource*. JOVIS.

Christiaanse, K. (2009). The Open City and its enemies. In T. Rieniets, J. Sigler, & K. Christiaanse (Eds.), *Open City: Designing coexistence* (pp. 25–36). Martien de Vletter, SUN.

Clark, G. (2010). *Understanding OPENCities*. British Council.

Cordua, C. H., Monge, D. J., & Hensel, M. (2015). The Open City and the e[ad] School of Architecture and Design. *Architectural Design, 85*(2), 34–39.

Delclòs-Alió, X., & Miralles-Guasch, C. (2018). Looking at Barcelona through Jane Jacobs's eyes: Mapping the basic conditions for urban vitality in a Mediterranean conurbation. *Land Use Policy, 75*, 505–517.

Domínguez, G. M. (2016). Abel Cahen's Open City: A theoretical inquiry into urban complexity and the limits of control. *Journal of Architectural Education, 70*(2), 223–235.

Dovey, K. (2011). Uprooting critical urbanism. *City, 15*(3–4), 347–354.

Friedmann, J. (2002). City of fear or Open City? *Journal of the American Planning Association, 68*(3), 237–243.
Geoportal Berlin. (2021). Berliner Ortsteilgrenzen, abgeleitet aus dem Alkis Datenbestand [Berlin district boundaries derived from the Alkis dataset]. Available at: https://fbinter.stadt-berlin.de/fb/wms/senstadt/k_alkis_ortsteile. Accessed 3 May 2021.
Gleeson, B. (2001). Disability and the Open City. *Urban Studies, 38*(2), 251–265.
Harvey, D. (2012). *Rebel cities: From the right to the city to the urban revolution/David Harvey*. Verso.
Holm, A. (2013). Berlin's gentrification mainstream. In M. Bernt, B. Grell, & A. Holm (Eds.), *The Berlin reader: A compendium on urban change and activism* (pp. 171–187). Verlag.
Huyssen, A. (1997). The voids of Berlin. *Critical Inquiry, 24*(1), 57–81.
Ipsen, D. (2005). The socio-spatial conditions of the Open City: A theoretical sketch. *International Journal of Urban and Regional Research, 29*(3), 644–653.
Jacobs, J. (1961). *The death and life of great American cities*. Random House Inc.
Kan, K. (2007). Residential mobility and social capital. *Journal of Urban Economics, 61*(3), 436–457.
Lefebvre, H. (1996). *Writings on cities*. Blackwell.
Loeb, C. (2006). Planning reunification: The planning history of the fall of the Berlin Wall. *Planning Perspectives, 21*(1), 67–87.
Lundgren, A., & Westlund, H. (2017). The openness buzz in the knowledge economy: Towards taxonomy. *Environment and Planning C: Politics and Space, 35*(6), 975–989.
McCarthy, J. (1997). Housing regeneration in former East Berlin. *European Planning Studies, 5*(6), 793–802.
Popper, K. (1945). *The open society and its enemies*. Routledge.
Porqueddu, E. (2018). Toward the open city: Design and research for emergent urban systems. *Urban Design International, 23*(3), 236–248.
Reijndorp, A. (2009). The City as bazaar. In T. Rieniets, J. Sigler, & K. Christiaanse (Eds.), *Open City: Designing coexistence* (pp. 93–101). Martien de Vletter, SUN.
Rieniets, T. (2009). Dimensions: Introduction to part one. In T. Rieniets, J. Sigler, & K. Christiaanse (Eds.), *Open City: Designing coexistence*. Martien de Vletter, SUN.
Rolshoven, J. (2014). Die Sicherheiten einer Offenen Stadt. *Dérive, 2014*.
Sennett, R. (2007). The Open City. In R. Burdett & D. Sudjic (Eds.), *The endless City: The urban age project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society* (pp. 290–297). Phaidon.
Sennett, R. (2018). *Building and dwelling: Ethics for the City*. Farrar, Straus and Giroux.
Shields, R. (2013). Lefebvre and the right to the Open City? *Space and Culture, 16*(3), 345–348.
Stavrides, S. (2006). Heterotopias and the experience of porous urban space. In K. Franck & Q. Stevens (Eds.), *Loose space: Possibility and diversity in urban life* (pp. 174–192). Routledge.
Suwala, L., Kitzmann, R., & Kulke, E. (2021). Berlin's manifold strategies towards commercial and industrial spaces: The different cases of Zukunftsorte. *Urban Planning, 6*(3), 415–430.
Talen, E. (2006). Design that enables diversity: The complications of a planning ideal. *Journal of Planning Literature, 20*(3), 233–249.
Wolfrum, S. (2018). Porous City-from metaphor to urban agenda. In S. Wolfrum (Ed.), *Porous City* (pp. 9–14). De Gruyter.
Xia, C., Yeh, A. G., & Zhang, A. (2020). Analyzing spatial relationships between urban land use intensity and urban vitality at street block level: A case study of five Chinese megacities. *Landscape and Urban Planning*, 193, 103669.
Ye, Y., Li, D., & Liu, X. (2018). How block density and typology affect urban vitality: An exploratory analysis in Shenzhen, China. *Urban Geography, 39*(4), 631–652.