Human / Non-Human Public Spaces

Designing for resilient urban neighborhoods

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PROJECT

From Prevention to Resilience:
Designing Public Spaces in Times of Pandemics

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ZonMw

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FUNDED BY

The Netherlands Organization for Health Research and Development (ZonMw)
Part of the subsidy round
'COVID 19: Maatschappelijke Dynamiek'
project nr. 10430032010029

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In this booklet and its accompanying cards, we introduce *Human / Non-Human Public Spaces* – a design perspective on neighborhood resilience. The perspective proposes to promote the resilience of urban neighborhoods by emphasizing the role that public spaces can play in building more resilient communities. It also purposely extends the scope of possible interventions beyond the well-being of human communities. We argue that, for the well-being of the planet at large, it is imperative to also include non-human communities – including plants, trees, animals, fungi, and insects – when designing for neighborhood resilience.

The recent COVID-19 pandemic has put the urgency of resilience at the scale of the neighborhood firmly on the mental map of both policy makers and designers. This urgency has not waned, now that this crisis seems to be past its height; we can easily identify other potential shocks and stressors impacting urban communities. The climate and biodiversity crises have already started to impact cities around the world. Recent rising costs of energy, food and other resources lay bare the complex social-economic situation of vulnerable neighborhoods. And the emergence of a new pandemic is more than just a theoretical possibility. There is thus an urgent need for perspectives that can guide local actions and help to mitigate and adapt to the effects of these crises, be they at the level of policy, design, or community action.

The *Human / Non-Human* design perspective aims to contribute to that need, simultaneously addressing social and ecological challenges. With this booklet and the cards attached, we invite policy makers, designers, and community organizers to take this perspective when developing strategic visions as well as more tactical interventions centered on public spaces. While the cards present a range of possibilities for design action, we introduce the design perspective more elaborately below by situating it in our present times, grounding it theoretically, and by articulating its rationale.

Lessons from the COVID-19 pandemic

Early 2020, the world came to see a crisis that had been predicted by experts for decades, yet at the time still was unimaginable in the way that it would unfold and impact the health, social and economic well-being, and everyday lives of people across the world. During the early phases of the pandemic, governments focused on preventing the virus from spreading. Various hygiene practices and social distancing measures were put in place. People were increasingly discouraged and prohibited to gather in groups, and public spaces came to be seen as potential places for contamination. In response, fences, painted or taped markings, and other barriers, were put into place to orchestrate people's movement and promote physical distance. These various preventive measures heavily impacted people in their daily lives, often confining them to their homes and local neighborhoods.

As people were thrown back to their neighborhoods, this also had an unforeseen side-effect. Both residents and policymakers started to perceive their neighborhoods and especially its public spaces in new ways. Home confinement was a stimulus for citizens to increasingly visit urban parks and other green spaces (Yap et al., 2022) and citizens came to revalue these spaces for their effects on mental and physical health (Levinger et al., 2022; Noszczyk et al., 2022; Reid et al., 2022). However, not everybody got to experience these benefits, due to unequal access to local green space (Mayen Huerta, 2022). Equal access is therefore considered key to reducing health inequalities exposed and exacerbated by Covid-19 (Geary et al., 2021).

Policymakers grasped the momentum and started to plea for greener cities with less cars and more space for pedestrians and bikes. Through visions such as the '15-minute city', they started to imagine cities with urban services provided at the level of the neighborhood and with more social interaction in public spaces.

The pandemic has also shown the value of local social networks. Research in the Netherlands shows that initiatives in the city of Rotterdam in response to the pandemic relied mostly on already existing connections between local citizens, businesses, welfare organizations and governments (Boonstra & Claessens, 2021). This, the authors argue, shows that the years of investment in these networks really do pay off, it is crucial to keep investing in these networks in order to respond resiliently to future shocks and stressors. A study in Sweden suggests that a pandemic crisis can even strengthen social networks – again, particularly when high levels of social capital are already present (Zetterberg et al., 2021). Such social capital does not only benefit resilience in the face of pandemics but could also provide value in times of other crises (Aldrich & Meyer, 2015).

The COVID-19 pandemic has shown the value of tackling challenges at the scale of the neighborhood, and we believe this value extends to dealing with other challenges as well. We consider the neighborhood as a relatively low-threshold setting for intervention, where policy and design action can be taken locally, while having an impact on a larger scale than individual citizens and households. Public spaces are key in such local settings, as they form the first places for citizens to encounter one another, thereby playing an important role in the emergence of social capital. At the same time, public spaces are also a key site for greening a neighborhood and making it more conducive to people's health and wellbeing.

Neighborhood resilience: for whom and for what?

Resilience is the ability of a system to withstand, adapt or transform in the face of shocks and stressors (Béné et al., 2012). Following on the conclusions of the previous section, we have found urban neighborhoods as systems of interest. Generally, an urban neighborhood is defined as a geographical area within a city, which consists of a built environment and a community of people that lives and interacts within that environment. The neighborhood may carry a certain identity, which may be because of its typical architecture or a dominant type of community that is living there. With the term 'community' we do not refer to its positive connotation relating to 'togetherness'; a neighborhood community consists of strong or weak ties, and while it is likely for some members to hold common values and engage in collaboration, there will also be conflicts and tensions between different members and groups.

Having pinpointed *what* systems are of interest – i.e., urban neighborhoods – a follow-up question is to ask, 'Resilience for whom?' In general, the value of public spaces and social networks for the people that live in a neighborhood are discussed with a human-centered focus. This is understandable, as cities and neighborhoods are mostly human creations, and the COVID-19 pandemic is a crisis of which the impacts are mainly of human concern. However, neighborhoods and how they are designed and managed, are of concern not only to humans but also to non-human actors. Neighborhoods are inherently 'more-than-human', and this shift in how we view neighborhoods is promising (see text box page 08-09).

When looking at developing crises other than the COVID-19 pandemic, the stakes that non-human actors hold come into view more clearly. Climate change and biodiversity loss are obviously directly impacting the lives of non-humans. This, in turn, could also have grave consequences for humans who are, in the long run, dependent on non-humans for their survival, from the bacteria in our guts to the insects that pollinate plants and trees, to the crops that we harvest for food. To a certain extent the survival of entire species, including humans themselves, is at stake. We just need to become aware that these issues are not only linked to distant and often protected ecosystems, such as tropical rainforests, but are as much at stake in the ordinary urban neighborhoods.

The more-than-human neighborhood

Some may question the relevance of including non-humans when designing for urban neighborhood resilience, as cities are typically considered human environments. However, the distinction between 'urban' and 'wild' or 'human' and 'natural' is not so straightforward to make. In fact, cities are described by ecologists as eco-systems in and of themselves; they offer a range of biotopes in which a diversity of flora and fauna can settle. For example, roofs of buildings offer safe nesting sites, walls provide cavities and surfaces to which ferns and other plants can anchor themselves, and vacant lots create the opportunity for a variety of pioneer plants to flower, providing valuable feeding grounds for insects, birds, and other non-humans (Reumer, 2014). An urban neighborhood thus houses not only a human, but also a non-human community. Strengthening such non-human communities is important for the following reasons:

- **Non-humans provide valuable 'eco-system services'**
  Social-ecological theories of resilience show how humans are fundamentally dependent on non-humans. This dependency is well captured in the notion of 'eco-system services' – i.e., the benefits that humans gain from the natural environment. There is a variety of these services ascribed to non-humans in an urban context, including air filtration, micro climate regulation, noise reduction, rainwater drainage as well as recreational and cultural services (Bolund & Hunhammar, 1999). Some of these services are crucial for climate adaptation in cities. Urban green spaces, and the plants and trees that they comprise, also contribute to the physical and mental health of human residents (Maller, 2018).

- **Urban environments are (potential) hotspots for biodiversity**
  Urban development often negatively impacts local eco-systems, and as a result, biodiversity. Surprisingly, however, is that cities can also play an important role in countering biodiversity loss (Ives et al., 2016; Spotswood et al., 2021). Efforts to address climate adaptation in cities hold potential to contribute to such regeneration, although this potential often remains unfulfilled (Butt et al., 2018). By placing non-humans in focus, local initiatives to support resilience in non-human communities can contribute to countering the impending biodiversity crisis.

- **(Re)connecting humans with non-humans**
  Regenerating non-human communities in urban neighborhoods increases the chances for humans to reconnect with non-humans, by encountering them, getting familiar with them, and in some cases building meaningful relations with them. This, in turn, can result in better practices of care and stewardship for non-humans in the neighborhood, and potentially beyond the city boundaries. Moreover, connections between humans and non-humans can potentially solve pressing social issues in the human community of the neighborhood.

While urban neighborhoods may be considered a valuable habitat for non-humans, they remain dominated and managed by humans. This means that choices need to be made about which parts of the non-human community humans wish to support. Some choices are obvious; for example, garbage disposal systems should be designed so that rat populations do not explode, as these form a risk for buildings and public health. From the perspective of resilience and biodiversity, deciding what is desirable is often less evident. Careful consideration should be given to what non-humans contribute to biodiversity and resilience in their community, neighborhood, city and surrounding regions.

When designing for neighborhood resilience, we therefore consider it fruitful to move beyond a human-centered focus, to include non-humans within the scope of consideration. We see increasing attention to what is called 'nature-based solutions' and 'nature-inclusive design', referring to approaches that use natural elements to solve urban problems. These developments hint at the importance of non-humans in our cities, as they provide valuable eco-system services to humans. However, design efforts that align with such concepts tend to prioritize human needs over those of non-humans (Maller, 2021). What would it mean to equally consider humans and non-humans when designing for neighborhood resilience?

To explore this question, we initially set out to seek relevant theories and concepts in the literature, in order to learn what makes a resilient neighborhood or community. Simultaneously, we collected design examples that we considered as having the potential to promote neighborhood resilience. Driving this process was the goal to develop a 'design perspective' – i.e., a conceptual framework can serve as a form of guidance to designers, not only in how they *think* about neighborhood resilience, but also how to *act* accordingly (see Boon, 2020, Chapter 2). The design perspective was developed in an iterative way and, as a result, has carried different names and taken different forms throughout its development. An important step was to test a preliminary version of the design perspective in three design explorations, in which design agencies and professionals with various backgrounds applied the perspective in different urban neighborhoods. The outcomes of these three design experiments resulted in the final version, which we present with this publication.

Human / Non-Human Public Spaces:

A design perspective on neighborhood resilience

Human / Non-Human **Public Spaces is a design perspective that aims to support designers, policymakers, community organizers and citizens in building resilient human and non-human communities in urban neighborhoods. It particularly focuses on design interventions in public space and supporting local action.**

Three conditions for resilience to emerge

Neighborhood resilience is an emergent property, which means it cannot be achieved by a single intervention. An intervention can, however, contribute to conditions for resilience to emerge and grow. Multiple, and preferably, combined efforts can establish and secure these conditions. *The Human / Non-Human* design perspective proposes three such conditions, each referring to qualities that are important for the resilience of both human and non-human communities: agency, connectedness, and diversity. Below we elaborate on these three qualities and ground them theoretically. While the three qualities are not intended as an exhaustive set of conditions for neighborhood resilience, we do suggest they are key for human and non-human communities to become more resilient. Together, these three conditions invite designers to address neighborhood resilience from a particular angle. Applying the design perspective will thus result in particular kinds of solutions, different from, and hopefully of added value to, solutions resulting from more traditional frameworks and perspectives.

Agency

A community can only be resilient if its members have agency – they need to have the capacities, skills, and opportunities to act in line with their needs and concerns. It is also important that the various voices and perspectives within a community are heard in local design and decision-making processes.

Human agency refers to having the skills, knowledge, opportunity, and motivation to act individually or collectively in order to improve the neighborhood. It involves the ability to self-organize in the face of shocks and stressors, whether by anticipating them or responding to them as they abruptly emerge. Human agency can be driven by autonomous and able individuals within a community, but also rests on the cultural and communicative resources of the community as a whole (Davidson, 2010). While certain individuals may come to play important roles in human agency, the community should make sure not to rely too much upon them, making sure others can fulfil the same or similar roles in driving local initiatives.

Non-human agency means having a place to settle, to display natural behaviors, and to receive the right forms of care in a human-dominated eco-system. In order to establish this in urban neighborhoods, human actors need to develop a level of understanding and acceptance of non-humans. Non-humans' interests and agency need to be recognized and interpreted by human actors in the neighborhood, so that it can inform design and decision-making processes as well as appropriate forms of care for non-humans (Meijer, 2020). When non-human agency is recognized and given space, humans and non-humans can come to actively co-produce neighborhood resilience (F. Stevenson & Petrescu, 2016).

Connectedness

A community can only be resilient if its members have relevant connections to one another and with other networks. For these connections or ties to grow, it is important that various actors can encounter one another over longer periods of time.

Human connectedness means having access to places and activities in which members of the community can encounter one another, get to know each other, to identify shared interests and concerns, and to build longer-term relations and trust. Both weak and strong ties are valuable. Strong ties, or 'bonding ties', are ties between family members, good friends, and close neighbors often in tightly connected networks characterized by strong localized trust. While these ties are important, the weak ties, or 'bridging ties', enable resources to be shared with members of other networks, promoting diversity and room for experimentation (Newman & Dale, 2005). Bridging ties are likely to emerge in civic institutions, sports clubs, schools and religious groups, (Aldrich & Meyer, 2015), but also in shared public spaces with symbolic and functional meaning (Nio, Suurenbroek, Treffers 2020). Finally, a community benefits from 'linking ties' between citizens and those in power, which can bring in relevant resources (Aldrich & Meyer, 2015). These various ties form the basis for organizing collective action in immediate response to crises (e.g., Boonstra & Claessens, 2021), or in anticipation of future crises.

Non-human connectedness means having the possibility to disperse or migrate, to encounter one another, and to exchange and communicate. Requirements for connection differ among non-human species. Some rely on landscape connectivity, such as ground- and rove beetles, who are sensitive to physical barriers such as roads (Vergnes et al., 2012). Other animals, such as amphibians, rely on a network of connected breeding ponds to form a resilient community (Lee et al., 2022). Bee species, on the other hand, rely more on the quality of habitats, which should provide sufficient food plants and nesting sites (Kearns & Oliveras, 2009). Connections of plants and other non-humans work in other ways; for example, it is important to consider above-ground interactions with pollinators and interactions with fungi, in order to ensure eco-system longevity (P. C. Stevenson et al., 2020). Non-humans thus interact and connect in a wide variety of ways, and the richer these interactions and connections, the more resilient a community can become.

Diversity

A community can only be resilient if it can rely on the diverse contributions made by a variety of actors. To identify and benefit from this diversity, it is important for design and decision-making processes to be inclusive.

Human diversity refers to the variety of resources and capacities that a human community has at its disposal, including skills, infrastructures, networks, knowledges, and perspectives, as well as diverse forms of social, cultural, political, and spiritual capital (Fazey et al., 2018). A diverse community has a range of response options that can help to adapt in times of crisis and is able to take lessons for future use (Fazey et al., 2018; Hananel et al., 2022). It requires people from different groups to connect and be open for diversity. When people from different groups work together, collective action is more effective (Magis, 2010). The spatial configuration of a neighborhood's public spaces and buildings can facilitate these processes. Identifying common issues among diverse groups is an important driver for such processes (Hananel et al., 2022). This means diversity is not only about utilizing diverse resources and capacities, but also about having an open and inclusive mindset that embraces dialogue and collaboration.

Non-human diversity refers to the variety of species in a community and the contributions they make within that community. Diversity contributes to resilient non-human communities, in particular when species are sufficiently present and when contributions (e.g., pollination or predation) do not rely on a single species. Simplistic interventions that overlook diversity can be harmful; tree planting actions, for example, are often focused on numbers rather than local biodiversity, and the call for 'saving the bees' has stimulated urban beekeeping and the proliferation of honeybees at the expense of wild bee populations (P. C. Stevenson et al., 2020). Non-human diversity relies predominantly on the presence of locally native species, which have developed mutually beneficial relations with other non-native species that they co-evolved with. However, in an urban context and in the face of climate change, it is now increasingly argued that the aim should not be to 'restore' old eco-systems, but to promote novel eco-systems composed of new assemblages of non-human species that are better equipped to adapt to the changing climate (Montoya & Raffaelli, 2010; Oke et al., 2021).

Seeking synergies

The *Human / Non-Human* design perspective encourages designers of various disciplines to design for both human and non-human communities, and in doing so, it steers towards integral and synergistic solutions. Integral, in the sense that solutions address both human and non-human communities and synergistic in that serving one community also creates benefits for the other.

Research has shown several of such synergies. Already mentioned are several of the eco-system services that the non-human communities can provide to human communities in cities (see text box page 08-09). Another example is how increased urban biodiversity – i.e., non-human diversity – is associated with greater health and wellbeing among humans (Aerts et al., 2018; Hedblom et al., 2017). Or consider intensive green roofs and living walls, which potentially enrich the non-human community while also providing a solution for climate adaptation (e.g., Herath et al., 2018) as well as creating energy savings for human residents (Manso et al., 2021).

The above examples show the possibility of integration and synergy on a generic level. In the cards attached to this booklet, projects are described in more detail, giving more concrete and specific leads to how design can integrally address human and non-human communities.

To conclude...

Applying the *Human / Non-Human Public Spaces* perspective in practice will challenge designers, policymakers and citizens to explore new territory and bridge disciplinary, cultural, as well as interspecies boundaries. While we hope to have demonstrated sufficiently that integral and synergistic solutions are possible to achieve, by no means we claim that realizing them will be straightforward. With this booklet we propose no silver bullet; rather, it is a call to think and act in a way that is inclusive to the non-human communities we share our neighborhoods and planet with.

From our own research with human-centered design agencies, for example, human issues were in some cases considered too urgent to be also designing for non-humans, and expertise concerning non-humans was often lacking. But even with equal consideration for human and non-human communities, and with the right expertise, tensions and conflicts between both communities may arise: street lighting may be considered important by humans for a safe neighborhood, but may be detrimental for insects and mammals that are active during the night; a domestic cat population valued by the human community may put the local bird population under pressure; aphids may be considered by humans as destructive for garden plants, but provide an important food source for a variety of arthropods, including hover flies and ladybugs; and the list could go on. Overcoming such hurdles can only be done by taking explorative action in real-world contexts, and in this action lie exciting pathways for practitioners and action-oriented researchers to move forward.

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