

Buur Natuur - Collaborative Citymaking for Greener Cities

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ABSTRACT

We present Buur Natuur, a design approach to empowering residents to make their neighbourhood greener by adding for instance wildflowers to verges, or establishing communal gardens. Residents are empowered by the deployment of physical artifacts in urban space, offering inspiration and knowledge through a AR interface, as well as by a website, providing a process and platform that facilitates the creation of temporary alliances for a greener neighborhood between citizens, municipalities, NGOs and businesses in the local area.

KEYWORDS

Urban gardening, digital civics, citizen empowerment

1 INTRODUCTION

In HCI there is a strong and growing interest in civic empowerment [11], be that through digital platforms (e.g. [15]), maker technologies (e.g. [13]) or even playful empowerment (e.g. [6,12]), as well as directly involving and engaging communities [14].

In this paper we present Buur Natuur (a Dutch language play on the word for neighborhood and nature), an experimental design concept that combines systems placed around the neighborhood with an online platform. The idea of Buur Natuur is to empower citizens by providing them with a process for increasing nature in their neighborhood (e.g. adding wildflowers to the verges or setting up a communal garden). It specifically aims to make the public space greener. Locally placed artifacts inspire and inform citizens about possible action. An online platform allows citizens to connect with each other and with local organizations to share knowledge, skills and ideas, in order to join forces and create a more livable and pleasant neighborhood. At the same time, this platform offers a medium for organizations and institutions to contribute knowledge and inspiration to the citizens, while simultaneously

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C&T 2019, June 2019, Vienna, Austria,

Demos and Posters, Reports of the European Society for Socially Embedded Technologies

gaining unique insights in what is going on in the neighborhood. The Buur Natuur concept therefore aims to inspire and inform citizens to gather in a community and take joined action, supported by local organizations and institutions who have an interest in enhancing urban nature.

Buur Natuur is developed for Geestenberg, a neighborhood on the outskirts of Eindhoven, the Netherlands. This neighborhood has been appointed as a pilot area for green initiatives and accommodates some lasting citizen initiatives, like a vegetable garden and an herb garden. Nevertheless, the neighborhood is poorly adapted to the influences of climate change and could play a much bigger role in local biodiversity conservation, being situated next to a natural area. Multiple parties aim to capitalize on this potential and make the neighborhood more climate resilient. Table 1 outlines the stakeholders that are involved in Buur Natuur.

We show how the Buur Natuur concept changes the relationship between the stakeholders and enables them to act together. We do this by analyzing the deployed designs using a well-established model of collaborative citymaking, the Hackable Cities model [15]. Based on this analysis, we show how Buur Natuur tries to solve the wicked problem of grassroots urban transformation by motivating residents to act, helping them organize with other stakeholders to create temporary alliances, and finally bring them all together to collaborate around green projects in the neighborhood.

2 RELATED WORK

Our work is based on two streams of research within HCI: nature related projects in urban space and collaborative citymaking.

Nature and urban space

The growth of cities on fertile grounds have a big impact on its inherent local biodiversity. According to Ehrenfeld [5] “the dominant economic realities of our time are responsible for most of the loss of biological diversity”. Other researchers point at urbanization as the only cause of biodiversity loss [2]. For example, urbanization caused a decrease in diversity of native species by about two thirds on the island of Singapore. This decrease is estimated to continue, causing species to become extinct [1]. Introducing nature and biodiversity into urban spaces is motivated by how plants, trees and other greens might increase the liveability

Table 1 - The stakeholders in Buur Natuur and their interest in the concept

| | |
|---------------------------------|--|
| Residents | Geestenberg feels like a quite barren and unwelcoming neighborhood. Adding greenery would make the neighborhood more welcoming. Residents already have ideas for this, yet lack the proper knowledge and social contacts to start initiatives. |
| Municipality | The municipality wants to live up to their vision on becoming a green, sustainable and climate resilient city. Next to this, they want to decentralize maintenance of green areas and stimulate resident participation. |
| Housing association | The housing association starts to feel responsible for the area surrounding the properties they rent out. They want to explore what they can do to contribute to a more sustainable city. |
| Non-profit organizations | The two involved non-profit organizations want to enhance local biodiversity and the amount of nature. They aim to make people more aware of their possible role in this, as residents are often not aware of their impact on the nature in their neighborhood. Nevertheless, they lack direct channels to be in contact with citizens |
| Company | A local gardening center joined the project, as they are intrinsically motivated to support local greenery and support the citizens in doing so. Next to this, they like to discover new ways of interacting with residents. |

for the individual citizen, as well as by more systemic questions of sustainability. In their landmark literature review of the sustainability agenda in HCI, Di Salvo et al. [3] identify that sustainability might be discussed both from a question of how we might design more sustainable products, but also from how design might support transformations towards more sustainable ways of living. Strong examples of this include technological solutions [4,10,16], as well as design processes and approaches [8,9]. Our work here combines these two approaches by using a design approach to begin to unravel what requirements and designs might be useful for intervening in this emerging research space.

Collaborative citymaking

Cities are increasingly focusing on collaborative citymaking as a new model of citizen empowerment [15]. Collaborative citymaking has come to the fore in recent years as a way of solving a range of civic issues, and means that municipalities provide opportunities for citizens, stakeholders and institutions to create bottom up initiatives within the frames of the city. However collaborative citymaking is an incredibly complex endeavor, as ownership of existing urban areas is divided among a diverse group of stakeholders: residents, local businesses, real estate developers and municipalities, as well as happening within political and economic constraints. To resolve this issue, there is a strong need for tools and processes that can act as a bridge between these stakeholders, and enable them to draw on each other's resources, act within the ownership of each other's arenas, and form collectives of action. De Waal et al. [15] offers up a model for collaborative citymaking that highlights how bottom-up and top-down are not exclusive or contradictory concepts. Rather, in collaborative citymaking bottom-up and top-down work together: individual citizens and governmental institutions are brought together by citizens being organized into collectives, organized around a particular theme or issue.

Below we first introduce and discuss the Buur Natuur case, before returning to this model of collaborative citymaking to analyze how Buur Natuur works as a platform that facilitates the meeting between individual citizens and other stakeholders.

3 DESIGN PROCESS

Based on Hummels and Frens [7], we used the reflective transformative design process (RTDP) to simultaneously explore the design space and create a suitable concept. The RTDP is an iterative design practice, in which design activities don't have a predefined order, but are based on reflection. We explored the context through conversations with local citizens and experts and got a feel for residents' motivation and interest in nature. The conversations were guided by a designed probe that made the current- and preferred experience of nature the starting point of the conversation. Interviews with various industrial- and non-profit stakeholders and in a co-creation session with the residents uncovered more of the design challenge. During the same co-creation session, residents discussed current neighborhood nature, their ideas and the evolving concept. Afterwards, various long- and short-term tests were carried out to study utilization and further develop the concept. A focus group dedicated to testing and discussing the whole idea concluded the testing period.

Insights from the design process

The design process of Buur Natuur yielded several insights.

Supporting civic action

Enthusiasm amongst residents in the Geestenberg area is high, yet eliciting applied action proves to be more challenging than only bringing people together. We found that a) some sort of inspirator or leader is necessary to guide the process and that b) people are inspired by example actions and pictures of adapted neighborhood settings, followed by group ideation. Furthermore, we found that c) citizens prefer to team up with others and d) support from

organizations on a legislation- and knowledge base is paramount for citizens to start an initiative in public space.

Supporting multi-stakeholder collaboration

The involved stakeholders turn out to be (partly) dependent on each other to reach their green objectives. They might not share the same incentives, yet their shared goals allow them to team up, increase their thoroughness and decreases their efforts. Nevertheless, teaming up stakeholders proved to be a hard process, as none of the parties stepped forward to take the lead.

4 THE BUUR NATUUR CONCEPT

Buur Natuur supports citizens and local institutions to unite and contribute to the local ecosystem, each from their values and expertise. It consists of an online platform and onsite inspirational artifacts. The platform is a virtual place where citizens can meet and be further inspired. Institutional stakeholders can share expertise and means, supporting the residents to take charge of the public space in their neighborhood. When looking at the process a citizen goes through when using Buur Natuur a typical flow looks like this: being inspired or encountering a problem; finding more information; presenting an idea or joining an initiative; elaborating the idea; realizing the initiative.

Buur Natuur supports a process for residents

The first encounter with Buur Natuur is probably at one of the locally placed artifacts. They offer inspiration by presenting examples and information about what could be done. Furthermore, they direct to the online platform, for example via Augmented Reality (AR).



Figure 1 - Two of the local artifacts working with augmented reality. To the left figure 1.1 and to the right figure 1.2

Figure 1.1 offers an example of a locally placed artifact. This insect hotel was placed in the neighborhood during the fall, which is the best time of the year to place one. Citizens find short information and surprising details via AR. Figure 1.2 shows part of three birdhouses. Again, AR is used to share information about the birds and to gain feedback on the concept.

The platform (Figure 2) fosters initial inspiration. Residents find a map of their neighborhood where they can add ideas and join

initiatives of others. By filling out their profile, others will be able to see their interests and skills, enabling them to connect. The platform offers an inspirational calendar, pointing out what can be done at that moment in time and it presents insights in legislation. Buur Natuur allows the residents to directly contact the connected stakeholders when questions arise.

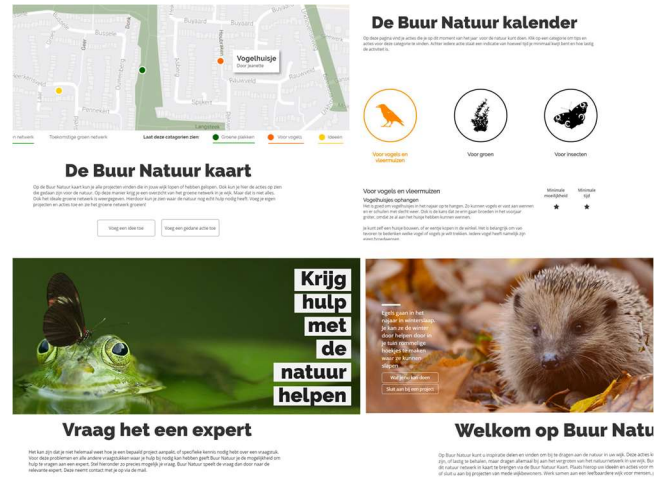


Figure 2 - Top row shows the map and calendar of the Buur Natuur online platform, while the bottom row shows the ability to draw on expert and organisational knowledge in projects

Buur Natuur is an interface for stakeholders

Institutional stakeholders contribute to the process by supplying content to the platform. For example, a butterfly association can share tips on planting flowers. The map provides insight in neighborhood initiatives and allows to contribute to these developments (e.g. by providing tools or pointing at unseen opportunities) and connect with the initiators. The platform can function as a means for active communication between residents and the institutional partners.

5 BUUR NATUUR AS COLLABORATIVE CITYMAKING

The process the residents go through while using Buur Natuur resembles the Hackable Cities process outlined by De Waal et al. [15]. Figure 3 visualizes Buur Natuur according to their model of collaborative citymaking [15]. Citizens invest time, knowledge and money to earn more control over their living environment and to be part of a collective. Institutions trade monetary and intellectual means for a participatory relationship with residents, an enhanced feeling of ownership within the neighborhood and an increase of local nature. This process redefines the relationship between residents and organizations in the sense that it lowers the barriers for communication and allows collaboration on a more equal level.

The outcomes of initiatives like Buur Natuur are twofold: First, they add to the liveability of a neighborhood by making it greener, thereby making the neighborhoods both healthier and more

pleasant to live in. It also adds to the biodiversity of our cities, thus helping to counter the detrimental effect that urbanization might have on the environment. Second, neighborhood collaborations such as the Buur Natuur help to make the neighborhood more social and decrease the distance between citizens and organizations. By doing so, Buur Natuur contributes to building urban resilience: the ability of neighborhoods to adapt and change on their own to changing conditions and needs. Urban resilience requires a range of things such as knowledge, platforms and community. Part of the argument for the Buur Natuur concept is precisely that it facilitates collaborations across individuals and organizations, and thus supports building up vital infrastructures that might extend beyond planting trees and bushes.

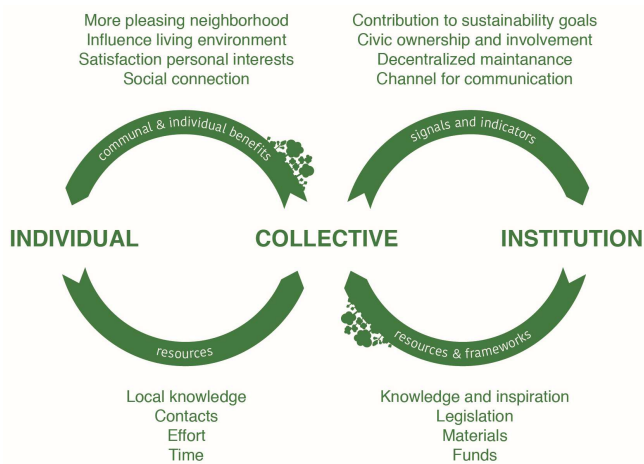


Figure 3 - Buur Natuur in the Hackable Cities model from De Waal et al. [15]

6 CONCLUSION

We have presented Buur Natuur, a concept illustrating how collaborative citymaking might be supported by technology, as well as analyzed how it empowers citizen and institutions through employing the model of De Waal et al. [15]. Our main claim is that concepts like Buur Natuur, difficult as they are to realise, pose a possible new way of collaborative citymaking that redefines the relationship between residents and local organizations, by utilizing the affordances of new technology. By establishing concrete collaborations and building networks, the very effort of collaborative citymaking might contribute to overall agendas of building and empowering communities in cities.

As Hummels & Frens [7] explain, "*a designer gains insight into the design opportunities*" when going through the reflective transformative design process. This is a continuous process, which means that we have to leave some questions unanswered. For example, we have mainly worked with people who are already dedicated to nature. How could a concept also motivate people with less intrinsic drive? And if people are motivated, how do you trigger them to use the online platform actively? Furthermore, we found a great potential for the various stakeholders to work together, as they have the same overall goal. Yet how do you get

them together and sustain interaction over time? The above questions are relevant not only to Buur Natuur, but also point at larger themes of collaborative citymaking, and will continue to guide our work going forward.

ACKNOWLEDGEMENTS

This research has been partly funded by the NWO through the research programme 'STEC: Smart Technologies, Empowered Citizens' number 652.001.005. We also thank Caroline Hummels for careful guidance during the design process.

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