# Collaborative design tools

City and building design have traditionally been regarded as the exclusive domain of architects and urban planners. These professionals are seen as experts who hold the knowledge and authority to design spaces that shape people's daily lives. However, in practice, many spaces are created without the direct involvement of these so-called experts. Communities often engage in self-built, informal construction, shaping their own environments based on immediate needs, resources and cultural contexts. This reality challenges the conventional view of design as something that can only be dictated by trained professionals and highlights the importance of recognising the expertise and agency of local communities in the design process. Architects and urbanists must acknowledge the legitimacy of self-built spaces and their potential to inform professional practices.

To understand our role as co-producers of spaces, it is essential not only to recognise the value of self-built environments but also to reconsider the tools and methods we use in design. Traditional design tools have often been top-down, hierarchical and disconnected from the realities of the people who live and work in these spaces. Moving away from this model requires rethinking the very nature of design. Instead of viewing design as a product or a prescriptive vision of the future, we must shift our perspective and see it as a tool for dialogue. Design should not merely anticipate what a space will look like but rather serve as a platform for collaborative exchange where multiple voices, ideas and experiences are woven together. This requires a more inclusive approach in which residents and users are empowered to shape their own environments.

This section focuses on presenting tools that enable a horizontal and collective approach to the design process. These tools aim to facilitate the democratic exchange of ideas, allowing participants to co-create a vision for their spaces. Beyond simply understanding the demands and needs of the residents,

the dynamic tools presented here seek to foster a shared imagination of the space – one that emerges through collaborative engagement rather than expert-driven prescriptions. These tools, such as the utopian map, design from elements, urban games and collaborative 3D models, encourage participants to actively contribute to the creation of their environment. Each tool facilitates a different aspect of the collaborative process, encouraging users to map their aspirations, experiment with materials and forms or engage in playful design exercises.

The dynamic tools presented in this section are not only about creating physical spaces but also about shifting the mindsets of both designers and residents. The collaborative process encourages active participation, where everyone's input is valued and contributes to a collective vision. By using these tools, participants can break away from traditional expert-driven design models and move towards a more inclusive, open-ended process that embraces the creativity and agency of all stakeholders. This approach aligns with the idea of designing spaces as a shared experience, where the lines between 'designer' and 'user' are blurred and everyone involved plays an equal role in co-producing the built environment. Ultimately, these methods encourage a new form of design practice where the power of collaboration is recognised – the dialogue in creating more inclusive, sustainable and meaningful urban spaces is particularly important.

## Utopian map

As a tool to foster the community's imagining of ideal spaces, the utopian map corresponds to a collective projection of what the community considers important, necessary and desired in a given space. The utopian map aims to go beyond the materiality and physical dimension of the discussed area by incorporating additional aspects that might not be solved by the design but can contribute to the organisation of the community towards a common good. These outcomes can help to form an agenda of community demands that can be used by citizens or organised through social movements.

The main goal of the utopian map is to generate a discussion about what should be done to improve living conditions in the neighbourhood and to propose built solutions. The map also aims to encourage different experiments exploring possible implementations of urban projects and promote discussion about the results of the different spatial arrangements and elements. Follow-

ing these discussions, it will be possible to choose a spatial model that should be developed.

This method is a second step after the current situation of the area is collaboratively mapped through one of the previously described activities or other activities not mentioned in this book. Following the results of those previous activities, the idea is to formulate reflections on what should be done and improved in the neighbourhood in question. If the previous activities involve the production of a map or a model, these can be used in this dynamic tool. If no models or maps are available, a street map of the area can serve as the basis for spatial discussions of the utopian map.

In addressing the key issues that emerged from the earlier mapping activities, the participants were asked to imagine and simulate solutions to these problems. It is important that the proposals be spatialised properly. The facilitator can incorporate various questions (Burguière et al. 2016): What should be on the streets? Where should the school be located? What should the houses look like? What actions are necessary to achieve these utopian ideals?

In 2014, we used this tool during our work with a favela threatened with eviction, developing a utopian master plan based on the residents' wishes and the students' technical suggestions[1]. Instead of just aiming to be built as planned, this tool not only supported the favela in the legal process of resisting eviction (see Canedo 2017) but also created an environment of mutual and collective imagination for the potential developments for the area. It became clear from this experience that the favela residents had concrete and creative ideas for improving and further developing their neighbourhoods.

The utopian map activity usually starts with a large blank piece of paper, with which participants are invited to represent the meeting place located in the area where they would like to develop their ideas, such as a space well known by all participants, a school, the residents' association, a church or the main square. From this starting point, using our knowledge of the earlier activities to generate a collaborative understanding of the space, we invite participants to imagine and draw their ideal spaces for the area or interventions to improve existing spaces. We encourage the participants to represent elements beyond material objects, such as feelings, stories or actions.

The concept of the utopian map is designed to free the residents' imagination from preconceived structures and constraints. Therefore, using tradi-

1 In the context of the course Transformação do espaço construído (Juliana Canedo, Maria Paula Albernaz, Abricó), UFRJ 2014.

tional maps or worrying about scale and accuracy should not be part of this activity. The goal is to create a shared, collaborative view of the future of the area; however, this does not mean that consensus is an aim. Conflicting ideals should be embraced, discussed and represented. The utopian map can be an initial method for brainstorming ideas that could lead to more concrete, tangible and viable solutions.

## Dream journey

In contrast to the utopian map, which is essentially a collective action, the use of imaginative interviews or dialogues can be a powerful tool in contexts in which the community may be dispersed and has not previously been organised. This was the case with a group of students who were attempting to collaborate with a group of women living in refugee accommodations in Marzahn, Berlin. After several attempts to organise a meeting with them, the students realised that the women didn't feel comfortable in the proposed collective set-ups. Instead, they began exploring one-to-one interactive methods. From these attempts, they developed a method they called the 'dream journey':

> To gather more in-depth information, we introduced the 'dream journey' method to envision their wishes and demands in a more utopian spatial context. Conducting this journey with one woman revealed that general questions could elicit deeply personal and emotional responses, often linked to past experiences and shaping their vision for ideal future spaces.[2]

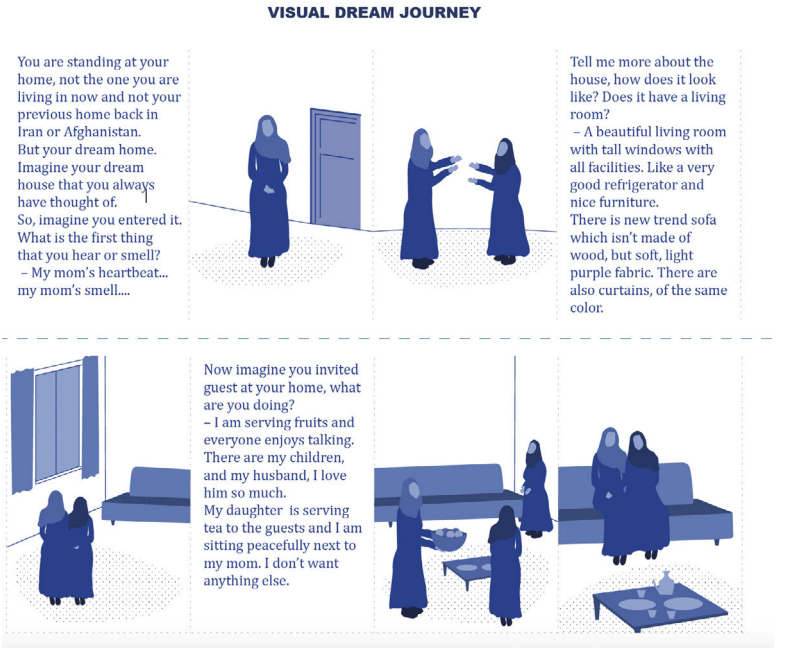
The dream journey method began with asking each woman to close her eyes; the interviewer would then ask questions, such as how do you imagine your ideal private and communal spaces? The idea was to encourage each woman to focus on her vision of a utopian communal space through a guided dream journey that could help them visualise their wishes:

2 Extract from the Ebook of the Studio Insurgent Design: unlearning practices through marginalized spaces (Juliana Canedo, Tuanne Monteiro, Qusay Amer, Maureen Abi-Ghanem and Francesca Ceola), TU Berlin 2024. Students: Elena Spatz, Pietro Mellano, Eloise Luzieux, Jun Yamawaki, Maryam Mousavi Gharavi.

> Close your eyes and try to imagine what I will tell you: You are standing at the door of your house, not your current one, not one from the past, but the one you would like, the one you dream of. Enter. Who is inside? Who lives with you? The first thing you feel is the smell. what does it smell like? Does it have a space to receive guests? What does it look like? Who would you like to host and what would you like to do?

Through these dream journeys, many emotional and symbolic aspects of the women's lives appeared. When some women talked about their utopian imaginary places, they used references to their past lives and shared memories of people, places and objects.

*Figure 20: Studio Insurgent Design, Berlin, 2024. Source: Elena Spatz, Pietro Mellano, Eloise Luzieux, Jun Yamawaki, Maryam Mousavi Gharavi*



Using the women's spatial descriptions, the students produced illustrated scenarios intended to represent the symbolic and extrasensory aspects of the women's journeys. The students described the results of one woman's dream journey as capturing 'the complexity and poetry of her testimony, reflecting the depth and nuance of her shared experiences'.

These in-depth conversations produced information that could be translated into guidelines and design solutions. The challenging aspect of developing such activities lies in extracting information from individual perceptions and experiences that can be transformed into proposals that could benefit the group and not just address individuals' specific ideas and demands. It is important to understand this dynamic tool as providing a starting point for further discussion with the wider community. In the case of the students' work, the illustrated scenarios aimed to bring these conversations from individuals' visualised imaginations to the wider community.

## Co-design

Co-design refers to the joint development of concrete spatial solutions by architects and planners and with relevant communities, among other local actors. The scale of co-design can vary, from projects as small as the interior layout of a house to those as large as the planning of a neighbourhood or city. Of course, the complexity and choice of tools should vary according to the scale of the project.

On one hand, this dynamic tool aims to understand residents' daily habits and customs and how they can be accommodated within the built environment. By engaging in dialogue with the community, we gain insight into their needs and aspirations. On the other, this activity allows the residents to visualise key spatial implications of the proposed development, such as its density, vertical growth, open areas and communal spaces, fostering a collaborative approach to planning and design.

> Moreover, in urban co-design processes, participants should feel comfortable expressing their points of view and being flexible to change their minds (Gaete Cruz et al., 2021). In collective decision-making settings, participants should be available to deliberate or negotiate when necessary (Castro, 2021). This may not be the case when actors come from diverse sectors and backgrounds or are unacquainted with design practice (Enserink et al., 2003). But

> when some forms of collaboration are achieved in urban design processes, outcomes are more likely to be more appropriate and locally suitable (Ersoy & Yeoman, 2020; Smaniotto Costa et al., 2020 (Gaete Cruz et al. 2022: 2)

In one experience developed by students for a refugee shelter in Berlin, where they engaged with a group of women during their mapping activities, it was highlighted that one of the women's interests was to operate a collective bazaar in the neighbourhood. The students then decided to co-design and plan the bazaar as a tool for neighbourhood networking.

Their first co-design activity, which the students named Ideation, was aimed at brainstorming about the potential activities of and products to be sold at the bazaar. The refugee women divided themselves into smaller groups based on their different nationalities and discussed what they could offer in the bazaar and what activities they would like to hold during the bazaar.

In the second activity, which the students entitled Spatial Imagination, they used pictures of objects, markets and bazaars from different cultures as well as figures representing people and activities to conceptualise the future market. The women could recognise common aspects of the street markets from their home countries in the pictures, even when they came from very different places around the world. This was a particularly important trust-building activity in which the students helped create a shared vision of what a bazaar could look like for this group of refugee women.

After this activity, the group planned a final workshop in which they brought different elements to build 3D models of the bazaar and experimented with different spatial organisations and additional elements that could be incorporated to create spaces shaded from the sun and privacy, among others. The students and refugee women created what they called a neighbourhood pavilion during this workshop:

> From the workshops emerged the idea of a simple, physical structure as a tool for future neighborhood market events that could be used and adapted without the need for any curator. … Prefabricated simple modules in various shapes were used, along with basic modelling tools. The women showed great interest in detailing stalls, abstract examples encouraged them to design beyond referencing traditional structures. Summing up the workshop outcomes and the women's ideas of individually detailed stalls, we propose a

modular, flexible furniture-like structure as a base for further development, individual design and multi-use. [3]

*Figure 21: Studio Insurgent Design, Berlin, 2024. Source: Nadine Abdelghani, Daria Kurbatova, Emilia Lienhard, Alina Molavi, Anushka Anand*

As shown in this example, using multiple co-design approaches, materials and scales can lead to diverse outcomes. Using concrete elements to discuss spatial arrangements, uses and shapes can be a powerful tool to incorporate

3 Extract from the Ebook of the Studio Insurgent Design: unlearning practices through marginalized spaces (Juliana Canedo, Tuanne Monteiro, Qusay Amer, Maureen Abi-Ghanem and Francesca Ceola), TU Berlin 2024. Students: Nadine Abdelghani, Daria Kurbatova, Emilia Lienhard, Alina Molavi, Anushka Anand.

different formats of spatial use and appropriation, which can be especially relevant when working with silenced and marginalised communities, such as in the presented case of the refugee women, in addition to many other contexts.

## Urban games

Games that have been used to mirror society and experiment with different ways of behaving and relating can be traced back to ancient times. For example, in war games, battles and military exercises were tested to predict potential strategies and solutions. By exploring the development of strategies through role-playing, games can be a powerful tool to establish debate, share ideas and visualise them (Tewdwr-Jones and Wilson 2022).

In the field of urban planning and design, urban games have emerged as an innovative strategy to enhance community engagement and foster participation through creative and interactive formats. These games leverage playful approaches to break down barriers between planners, designers and residents, making the planning process more accessible and inclusive (Gugerell and Zuidema 2017). By translating complex planning concepts into engaging activities, urban games encourage the participants to explore, discuss and reimagine their environments in ways that traditional planning meetings often fail to achieve (Brandt et al. 2008; Muehlhaus et al. 2023; Reinart and Poplin 2014; Poplin 2012).

Urban games not only stimulate interest but also serve as tools for gathering valuable input from diverse stakeholders, including those who might otherwise be excluded from conventional planning processes. For instance, games such as *Participatory City* and *Block by Block* use collaborative play to enable citizens to express their needs, priorities and aspirations for their neighbourhoods. This interactive format helps to democratise the design process, giving voice to community members who are often under-represented in the design process, such as youth, older residents or non-native speakers (Gordon and Schirra 2011). Through playful experimentation, the participants can visualise different futures, test out potential solutions and collectively develop a shared vision for their community.

The potential of urban games extends beyond mere engagement, as they can also reveal new insights into the social dynamics and spatial challenges of a given area. By simulating real-life urban scenarios, these games allow participants to identify issues and opportunities that might not be immediately

visible through traditional surveys or workshops. As noted by Salen and Zimmerman (2004), games have the capacity to generate a safe space for experimentation where participants can take risks, think creatively and collaboratively solve problems without the constraints of real-world consequences. This environment fosters a deep level of engagement and encourages participants to freely share their ideas, leading to innovative and context-sensitive design solutions.

The integration of urban games into planning and design processes can ultimately transform how cities are shaped by promoting resilient, inclusive and community-driven urban spaces. By bridging the gap between formal planning processes and the lived experiences of residents, urban games contribute to the co-creation of cities that better reflect the diverse needs of their inhabitants. As the challenges of urbanisation and climate change intensify, these playful methodologies offer a powerful means of involving communities in the co-design of their futures, thus fostering greater ownership, collaboration and long-term sustainability in urban development.

In Part 1, we explored the use of games to engage with children and map socio-spatial practices and perspectives. Here, we would like to explore different uses of urban games to develop ideas, imaginations and visualisations of urban spaces.

I present two experiences that exemplify this process. The first involved a game that was developed by the initiative Platz für Wien[4] and tested during the 2021 Urbanize! conference. I experienced this game as a participant and not as one of the developers; thus, my report is from the perspective of a user, not a designer. This game was part of the political action '[Ein]Mischen', which was conducted in a public space in a peripheral area of Vienna, close to where the conference would take place. The chosen space was usually car dominated, and the aim of the game was to role-play discussions that critically reflect on mobility, green spaces, social activities, and other concerns.

This particular urban game comprised a field made with a plastic mat using chequered markings like those of a chessboard, which aimed to represent a city or neighbourhood. The game also included several items that represented different spaces and elements in the urban setting. Vases of plants represented

4 Platz für Wien: Die Initiative für eine klimagerechte, verkehrssichere Stadt mit hoher Lebensqualität [Space for Vienna: The initiative for a climate-friendly, traffic-safe city with a high quality of life'. https://platzfuer.wien/

parks or green spaces, shoes represented pedestrian lanes, traffic cones represented bicycle lanes and construction helmets represented housing or other private developments.

Each person received different cards with goals to achieve in the game, such as 'build a new bicycle lane from the south to north end of the game field' (5 points) or 'fight for a section of the street' (2 points). The players could also adopt distinct roles, such as being in favour of real estate market developers or being connected to a green party. When each person played their round, they could place one of the available objects on an empty square or decide to fight for a square that already had an object. For example, to build a north–south bicycle lane, a player may have to argue with another about a housing project interrupting their path. When these situations arise, the two players argue why their claim to the land is more relevant to and better for the city, and a third player assumes the role of mediator. Following these debates, the mediator decides who had the better argument, and the winning object is placed on the square. The debates and conversations of the game were interesting because they pushed people to develop strategies and discuss conflicting interests in the urban sphere. The fact that the game involved an environment where people needed to move on the game field also created a sense of reality for the game.

When talking to the game developers, I discovered that the game concept was derived from their experiences in urban political activism. This game was their attempt to approach the topic of spatial planning through a fun activity that doesn't require much technical knowledge.

The second example is the use of online digital games, specifically Minecraft, a video game also known as 'digital LEGO', where the players can build different scenarios and recreate real-life experiences. Minecraft is mostly aimed at young people. However, several projects around the world have made use of such video games because they are effective tools for visualising and intervening in urban spaces. One such project is Block by Block, which was developed by the Block by Block Foundation and applied by UN-Habitat as a strategy to increase vulnerable groups' participation in urban planning processes (United Nations Human Settlements Programme UN-Habitat 2021). In this methodology, community members can participate in workshops where they will plan and model a site using Minecraft and later design, develop, operate and monitor their own neighbourhoods.

In 2021, we attempted to recreate this activity in a refugee shelter in Berlin with a master's student who was developing his thesis on this topic. We in-

vited the children living in the shelter to represent their ideal spaces using Minecraft.

The activity lasted only a couple of hours and was part of a bigger workshop that we planned in parallel; independently, it was not a very successful activity. One reason for this lack of success was that there were no prepared elements in the game that the children could use as references to produce their designs. It was too abstract for them to start planning their neighbourhood from scratch or to explore what they would like to have in their Minecraft build. In a later reflection, we considered that it could be useful to plan some elements beforehand so that participants could interact with them and even change them as desired.

Another concern was the children's great interest in playing the game versus the lack of available equipment (e.g. computers, tablets). As this created frustration, the children eventually lost interest. Therefore, when setting up this activity, it is crucial to plan how, where and when the appropriate groups will use these tools.

We also considered how to better engage the children in planning their own spaces. In our experience, many children didn't understand the task very well and were more interested in just playing the game than in designing their own spaces.

Despite these challenges, the potential of using these gaming tools to develop creative ways of participation and collaboration is enormous. In both cases of on-site and real-life exchanges, such as the game in Vienna and the use of Minecraft, thinking about urban planning, design, policies, strategies and negotiations can become a fun pedagogical method for engaging different communities in decision-making processes.