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Together we can make it work! Towards a design framework for inclusive and participatory city-making of playable cities

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ABSTRACT

Making it work together can be challenging when various stakeholders are involved. Given the context of neighbourhoods and cities specifically, stakeholders values and interests are not always aligned. In these settings, to construct long term and sustaining participatory city-making projects, to make it work together, is demanding. To address this challenge, this paper proposes a design framework for inclusive and participatory city-making. This framework is inspired by the playable city perspective in that it endorses an open, exploratory, and interactive mindset of city actors. An extensive literature review on approaches taken for playful and participatory interventions in local communities provides the foundations for the framework. The review brings forward four pillars on which the framework is grounded and four activities for exploration of the design space for participatory city-making. A case study from The Hague (NL) is used to demonstrate how the framework can be applied to design and analyse processes in which city stakeholders together make it work. The case study analysis complements the framework with various research methods to support researchers, urban planners, and designers to engage with all city stakeholders to create playful and participatory interventions which are inclusive and meaningful for the local community. The research contributions of this paper are the proposed framework and informed suggestions on how this framework in practice assists city stakeholders to together make it work.

Keywords: Design framework, Participatory design, Playable city, Neighbourhoods, Design spaces, City-making

1 INTRODUCTION

Active citizenship, self-organisation and engagement are high on the agenda of governments world-wide (Certomà et al., 2017; Kleinhans et al., 2015). Engaging citizens in city-making has time and again shown to have positive outcomes on city life in terms of increased trust in government (Cooper et al., 2006) and raised community cohesion (Gaventa, 2004). Citizens are motivated to participate in shaping their environments (Juujärvi and Pesso, 2013; Mulder, 2015) and are more and more included as partners in

26   co-creation of their cities (Dörk and Monteye, 2011; de Lange and de Waal, 2013). Contemporary cities
27   ultimately strive to be designed with contributions of many different city stakeholders (Custers et al., 2020;
28   Golsteijn et al., 2016; Fredericks et al., 2015; Schroeter, 2012; Palacin et al., 2020), often embracing the
29   notion of a *smart city* with a technology-push in city-making (Nam and Pardo, 2011; Nijholt, 2017).

30   Whereas the technology in top-down smart city design regularly focuses on making city life more efficient
31   (Nam and Pardo, 2011), Playable City (Nijholt, 2017) design focuses on the use of smart city technology
32   to engage citizens with their physical space to increase participation in their neighbourhood community
33   (Nijholt, 2020). (Serious) games (Schouten et al., 2017) have successfully been used as a talking tool
34   to facilitate discussion between different stakeholders (Tan and Portugali, 2012) or to include citizens
35   in city-making (Stokes, 2020). Citizens can play an urban planning game to experience decisions and
36   considerations that city planners have to make (Ashtari and de Lange, 2019). Another succesful approach
37   has been to place playful interventions in neighbourhoods to gather citizen input on city life (Claes and
38   Moere, 2017; Claes et al., 2017; Golsteijn et al., 2016), create discussion on local issues (Hespanhol et al.,
39   2015; Schroeter, 2012; Wouters et al., 2014), or explore alternate designs of the physical space (Golsteijn
40   et al., 2016; Fredericks et al., 2015; Custers et al., 2020). Consideration of the technological, social, and
41   physical structure and networks between people, and of the city, are key to the design of such interventions
42   (Brazier and Nevejan, 2014). These structures and networks define the design space to be considered by all
43   city stakeholders in participatory design of a Playable City.

44   For people, social and physical, and on- and offline realities merge into one experience and understanding
45   of the world (Nevejan, 2007; Nevejan et al., 2018). A clear need exists to include the perspectives of
46   all stakeholders in city-making (Juujärvi and Pesso, 2013; Harding et al., 2015) and the Playable City
47   provides a promising perspective, as it aims to exploit the physical, digital, and social layers of the city
48   to foster citizen engagement (Stokes, 2020). This paper combines insights from these fields to develop a
49   design framework to foster collaboration between stakeholders and integrate digital and physical forms
50   of participation. This framework fills the gap of a city-making design approach in which all stakeholders
51   are able to contribute and their input is equally valued (Harding et al., 2015). Bringing these perspectives
52   together creates a complete picture of a neighbourhood with its social and physical structure and networks
53   (Innocent, 2018; Schroeter, 2012). This paper focuses primarily on the physical and social structure of
54   and networks in the neighbourhood, as these elements provide starting points for a design that supports
55   presence and trust between city actors (Nevejan and Brazier, 2015b,a). When playful interventions are
56   informed by these social structures and networks, they will better suit the local context and answer the
57   wishes and needs of a neighbourhood's inhabitants (Schroeter, 2012; Hespanhol et al., 2015; Cila et al.,
58   2016; Stokes, 2020).

59   While the importance of including the local community and stakeholders is widely acknowledged, it
60   remains a challenge how to organise such processes (Harding et al., 2015; Leminen et al., 2012; Stokes,
61   2020). This paper addresses this challenge by developing a framework for inclusive and participatory
62   city-making. The next section further elaborates the gap addressed in this paper: namely the need for a
63   participatory design process in which stakeholders can jointly explore their playable city. A literature
64   review follows and provides the basis for the design framework. This framework distinguishes four types of
65   activities with which to engage all stakeholders in the exploration of the design space of their playable city.
66   Next, the framework is applied to a case-study in Bouwlust, a neighbourhood in The Hague (NL), where
67   citizens and professionals are looking for ways to work together to improve liveability and safety. Insights
68   from this case study shed light on the applicability of specific methods for the four types of activities in the

69 framework. The final section of this paper discusses insights from this practical application and directions
70 for future research.

2 RELATED WORK

71 The notion of the Playable City was introduced as a novel perspective on the city: one that is playful, open,
72 exploratory, interactive, and participatory. While several books (e.g. Stokes (2020); Nijholt (2017, 2020))
73 and many research articles have been published on this playful perspective, the field is still developing and
74 exploring the notion of a Playable City (Nijholt, 2017, p. 6), its contribution to current thinking (Nijholt,
75 2017, p. 9), and how the success of Playable Cities can be evaluated (Nijholt, 2017; Fisher and Hornecker,
76 2017, p. 17). In other words, much work is being (and has still to be) done. Earlier work introduced the
77 notion of *playgrounds*; physical places in the city where citizens interact on the streets in fun, open, and
78 spontaneous ways (Slingerland et al., 2019a, 2020b). These playful environments, potentially mediated
79 by technology, were designed to create safe spaces for citizens to explore, experience, and reflect on city
80 life (Ferreira et al., 2017). In these spaces, citizens need to trust each other and experience each other's
81 presence (Harding et al., 2015; Brazier and Nevejan, 2014).

82   To be successful at fostering participation, these spaces need to be designed to embrace the technological,
83 physical, and social aspects of the city (Brazier and Nevejan, 2014). The use of technology in the city
84 seems to become more apparent now that many cities label their city as 'smart' (Nijholt, 2017). Technology
85 also plays an important role to mediate the Playable City. Researchers question who should design and use
86 this technology, hence the Playable City (Nijholt, 2017, p. 3). While some research focuses on processes
87 to engage and co-create with city professionals (Tan and Portugali, 2012; Ashtari and de Lange, 2019),
88 other research specifically studies how citizens can be mobilised around local issues to explore possible
89 solutions (Disalvo et al., 2009; Innocent, 2018; Voida et al., 2015; Crivellaro et al., 2015). When local
90 governments design these technologies on their own, citizens have little influence on the design and
91 outcome (Le Dantec and Fox, 2015; Erete, 2015). Technologies created from bottom up, on the other
92 hand, need city resources to scale and sustain (De Koning et al., 2018). Both streams acknowledge that
93 citizens as well as neighbourhood professionals, such as community police officers or community workers,
94 possess unique knowledge about the neighbourhood and have a solitary perspective on what would be an
95 appropriate intervention (Nelson and Baldwin, 2002; Bowles and Gintis, 2002; Cila et al., 2016; Erete,
96 2015; Custers et al., 2020; Chisholm et al., 2020). Very few interventions are nevertheless the result of
97 joint efforts between these different neighbourhood stakeholders (De Koning et al., 2018; Harding et al.,
98 2015) or focus on a long-term transition (De Koning et al., 2017).

99   Meanwhile, the whole social, physical, and technological structure of a neighbourhood needs to be
100 taken into account to reconsider roles and responsibilities when city actors work together (Nevejan and
101 Brazier, 2015b,a; Golsteijn et al., 2016). Research into living labs provides some insight into how city
102 stakeholders can co-create and which different roles apply (Nyström et al., 2014; Leminen et al., 2012;
103 Mulder, 2012). While this is a good start, living labs are often focused on innovation of public services
104 (Mulder, 2012; Leminen, 2013), not necessarily concerning play or interventions for the urban space. An
105 exception is the work of Juujärvi and Pesso (2013) on *urban* living labs, that takes the neighbourhood as the
106 place for developing local solutions. Their work describes how four city actors (civil servants, educational
107 institutions, local firms, and citizens) contribute to urban living labs, and concludes that new methods
108 of co-creation need to be developed (Juujärvi and Pesso, 2013). Research on living labs in general put
109 forward the question of how participation is best facilitated within those labs and how all stakeholders can
110 be included (Leminen, 2013; Leminen et al., 2012; Puerari et al., 2018).

111 The question remains how a Playable City can be co-created in collaboration with all city stakeholders,
112 resulting in an engaging and empowering participatory place to live. Prior work argues for the need of city
113 actors for increased transparency, influence, and exchange when working together on city-making (De
114 Koning et al., 2018). To our knowledge, current literature lacks overarching guidelines or frameworks for
115 participatory design processes in which multiple stakeholders jointly explore their playable city. Therefore,
116 this paper addresses the following research question: *How can all stakeholders be included in exploring*
117 *the design space of their playable city?* The method to answer this question is explained below, after which
118 a framework is presented from literature insights.

3 METHOD

119 The research question is answered by building theory based on a literature study and a case study. The
120 literature study concludes with a design framework that is further grounded by case study research in The
121 Hague (NL).

3.1 Literature study

123 The literature study was performed by selecting and reviewing papers on urban (playful) interventions
124 from the fields of Human-Computer Interaction and Participatory Design. The review focuses on generating
125 insights on how multiple stakeholders can jointly explore the design space of their (playable) city. This
126 analysis uses the structure proposed by Hansen et al. (2019), who view participatory design processes
127 through the lens of program theory. For each paper the following elements are identified: which (co-)design
128 and research *activities* were used during the research, which *actors* were included, what was their *level*
129 *of involvement* (resonating with mechanisms from Hansen et al. (2019)), and which type of *effect* the
130 research evoked. The types of effect are categorised as outputs, outcomes and/or impact. Examples of
131 effects that are categorised as output are design requirements or evaluation results; examples of outcomes
132 are participants gaining new competence or identifying new ways of working; finally, an example of
133 achieved impact is when long term networks are created or the research results in democratic influence
134 (Hansen et al., 2019). Papers were selected for the review based on the following three criteria: 1) the paper
135 describes an intervention aiming to include citizen opinion; 2) one or multiple actors is involved in the
136 design and/or evaluation of the intervention; 3) the paper describes enough detail of the design and/or
137 evaluation process such that the *activities*, *actors*, *level of involvement*, and *effects* can be analysed. The
138 insights of the literature study are integrated in a design framework for participatory city-making presented
139 below in Section 5.

3.2 Case study

141 To demonstrate and further understand how this framework can guide designing inclusive processes with
142 city stakeholders, the framework is used to analyse a research project that was executed in Bouwlust, a
143 neighbourhood in The Hague (NL). The study setup is an embedded, single-case study design, as just one
144 neighbourhood is studied and several units of analysis are involved (varying from Bouwlust as a whole to
145 individual citizens) (Yin, 2003). The research in The Hague provides both a unique and representative case.
146 It is unique, due to the research setting in which a large variety of methods were used, both digital and
147 face-to-face, to engage different city stakeholders. This unique setting is of interest, even as a single-case
148 (Yin, 2003). At the same time, the case is representative because the liveability and safety challenges with
149 which Bouwlust is faced, are common for urban socially-mixed neighbourhoods. Representative cases are
150 relevant to study everyday situations and the resulting insights are assumed to be explanatory for situations
151 in other similar neighbourhoods (Yin, 2003). Due to these specific characteristics, this case was selected
152 and found suitable to further inform the theory built from the literature study.

3.3 Framework analysis

The Bouwlust case was analysed by first collecting all available documentation and data on the research project. These were reports and slide decks used to present the research to stakeholders, transcripts and survey data which were collected during the research, and the project website[1] that was used to keep local actors informed about the research. The last three authors of this paper were involved in the research project in Bouwlust and hence their experiences also informed the analysis. Each of the research methods used in Bouwlust were described as a first step in the analysis. Following, the first author made an initial analysis by reflecting on the contribution of each of the methods to the aims of the four activities in the framework and determining to which extent the methods fit the four pillars. As a result, the methods were sorted and mapped on each of the activities to which they contributed. This initial outcome was discussed amongst all authors and further iterated by adding reflections and experiences of the other authors, leading towards the analysis presented in Section 6.

4 LITERATURE STUDY

Fourteen papers were selected from the literature search and included in the analysis as shown in Table 1. They are analysed using the structure explained before, considering which *Activities*, *Actors*, *Level of involvement*, and *Effects* are described in the papers.

4.1 Activities

A common activity mentioned in all papers is identification of a topic that is of interest to the community involved that is used to mobilise people to participate. In some cases this so-called *matter of concern* (Bjögvinsson et al., 2012) is already known to the researchers because of previous engagement with a community (e.g. Vlachokyriakos et al. (2014)). In other cases, researchers start with field work to identify a matter of concern for the local community. Researchers explore the area with field visits, desk research, and interviews to discover a topic of concern for the local community and for which they can be mobilised. For example, Crivellaro et al. (2015) started with desk research on the city and then moved into the neighbourhoods to contact locals, build relationships, identify issues and involve professional stakeholders to move forward in addressing those issues. Fieldwork to connect with the context and community is an essential activity in this type of research (Slingerland et al., 2020a).

After the essential fieldwork, different paths unfold depending on the interest and purpose of the research. Four papers test an existing participation tool using the identified matter of concern (e.g. Schroeter (2012); Fredericks et al. (2015); Valkanova et al. (2014)). The main activities then comprise of field user tests and focus groups to discuss the results. Other papers (e.g. Harding et al. (2015); Hosio et al. (2012); Claes et al. (2017); Wouters et al. (2014); Cila et al. (2016)) deploy co-design activities with city stakeholders before implementing and testing an installation. Playful approaches are introduced as part of the co-design, to create an open and creative mindset of the engaged partners. Hespanhol et al. (2015) consider play to be an essential aspect of eliciting community engagement and Brandt (2006) mentions it explicitly as a framework for participation. One step further is to include stakeholders in the evaluation as well (e.g. Custers et al. (2020); Harding et al. (2015); Aoki et al. (2009); Parraagudelo et al. (2018)), for them to be able to continue the design process independent of the researchers. Play and games can be used to support these processes, and help stakeholders understand different perspectives (Ashtari and de Lange, 2019).

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[1] See http://vital.gingerresearch.net (last visited October 5, 2020).

Paper	Activities	Actors	Level of involvement	Effect(s)
Schroeter (2012)	Field user tests, focus groups	Urban planners, citizens, researchers	Citizens as testers	Output
Custers et al. (2020)	Work sessions, scenario selection, scenario testing, evaluation	Urban planners, policy makers, citizens, researchers	Actors co-create scenario interventions and evaluation setup	Output, outcome, impact
Fredericks et al. (2015)	Field user tests, focus group	Representatives of local government, citizens, researchers	Citizens as testers	Output
Golsteijn et al. (2016)	Design of intervention, Field user test	Local government, citizens, researchers	Citizens as testers	Output
Hosio et al. (2012)	Focus groups, prototype design, field user tests, feedback sessions	Youth workers, youth, researchers	Actors are consulted	Output, outcome
Crivellaro et al. (2015)	City walks	Citizens, researchers	Citizen input informs the next walk	Output, outcome, impact
Claes and Moere (2017)	Co-design, deployment of prototype	Citizens, shopkeepers, researchers	Citizens as co-designers, shopkeepers as testers	Output
Harding et al. (2015)	Stakeholder workshops, iterative co-design, field user tests, focus groups	Citizens, private workers, local government, researchers	Actors as informants	Output, outcome, impact
Aoki et al. (2009)	Ethnographic work, workshop, system design, deployment	Consultants, citizens, urban planners, NGOs, researchers	Actors as informants and data collectors	Output, outcome, impact
Parraagudelo et al. (2018)	Creative activities and workshops	Grassroots communities, researchers	Communities drive the research	Output, outcome, impact
Vlachokyriakos et al. (2014)	Field user tests	Citizens, grassroots, researchers	Citizens as testers	Output
Valkanova et al. (2014)	Field user tests	Citizens, researchers	Citizens as testers	Output
Wouters et al. (2014)	Co-design, concept selection, deployment	Families, researchers	Citizens as co-designers	Output, outcome
Cila et al. (2016)	Citizen science, prototyping, focus groups	Health organisations, citizens, local government, researchers	Citizens as informants	Output

Table 1. Fourteen research projects are analysed to understand how stakeholders are involved to jointly explore city-making.

4.2 Actors and their level of involvement

The extent to which a city community, either citizens or professional, are involved in the research and design varies considerably between papers. In five papers (Schroeter (2012); Fredericks et al. (2015); Golsteijn et al. (2016); Vlachokyriakos et al. (2014); Valkanova et al. (2014)), citizens are only involved as testers and professional actors are consulted for the context and content. In the cases of Golsteijn et al.

196   (2016) and Fredericks et al. (2015), the performance installations were designed by the researchers, and
197   citizens tested them during the field study. The (playful) installations gather citizen input on a specific
198   topic. In some cases, researchers feed these results back to the local organisation with whom they partnered
199   (Golsteijn et al., 2016; Fredericks et al., 2015). Citizens often do not receive feedback on what happened
200   with their input, although they do express this need (Hespanhol et al., 2015; Vlachokyriakos et al., 2014).

201   In five papers (Custers et al. (2020); Claes and Moere (2017); Harding et al. (2015); Wouters et al.
202   (2014); Hosio et al. (2012)), local organisations and citizens are involved as co-designers of a city-making
203   intervention. For example, Hosio et al. (2012) organised several sessions with youngsters to collect
204   requirements for an installation and social networking service to engage youth in city-making. The youth
205   and youth organisation were involved in the design process and gave feedback after using the resulting
206   design. Custers et al. (2020) applied a similar approach named 'Experimental Evaluation', in which city
207   stakeholders collectively design, implement, and evaluate improvements for the city. This process not only
208   focuses on co-producing interventions, but also on establishing collective learning with all stakeholders.

4.3   Effects

210   The effects these projects can have are categorised into three different levels: *output*, *outcome*, and *impact*.
211   Seven papers remain in the *output* level, producing insights for designing participation tools. In these cases,
212   the feedback citizens provided in the installation is shared and discussed with the local organisation, and in
213   some cases is sometimes visible to citizens themselves. Researchers also reflect with co-design participants
214   on the outcome of the intervention (Hosio et al., 2012). The results are focused on how the installation
215   enabled citizens to participate (Valkanova et al., 2014). Two papers also produce *outcomes* as a result of
216   the co-design: actors learn new skills and develop competences.

217   Five paper show examples of participatory processes with effects on the level of *impact* (Custers et al.
218   (2020); Crivellaro et al. (2015); Harding et al. (2015); Aoki et al. (2009); Parraagudelo et al. (2018). The
219   research of Parraagudelo et al. (2018), for example, has a strong people-centred focus and started with
220   ethnographic work in Colombia to get in contact with community organisations. They slowly built up
221   relationships with formal institutions as well and aimed to help these organisations to co-design on the
222   streets to advance the community. These papers focus on community empowerment and researchers act
223   as facilitators to provide citizens and professionals with the tools and skills to collaborate, identify and
224   discuss local issues, and work towards solutions. Such focus on building capacity and mutual learning is an
225   essential aspect in participatory design work (Halskov and Hansen, 2015; Bo Andersen et al., 2015).

4.4   Take-aways towards the framework

227   The literature informs the design framework presented in the next section. The first take-away from the
228   literature review is that all papers report on activities to get to know the local context and to connect with
229   key actors. As shown in Table 1 and the analysis, there are significant differences in the extent to which
230   citizens and other stakeholders are involved in city-making processes and the effects these projects have on
231   the local community.

232   Some papers show examples of participatory processes in which different stakeholders are brought
233   together, treated equally, and given influence on the design process (e.g. Crivellaro et al. (2015);
234   Parraagudelo et al. (2018); Custers et al. (2020); Aoki et al. (2009)). These papers affect the community
235   at the level of impact: the local community engages in new relationships and practices, and researchers
236   aim for the community to self-sustain these collaborations. In these cases the focus of the activities is to
237   facilitate the collaboration process between all actors. This explicitly entails including the stakeholders in
238   the evaluation of these processes and to collectively reflect on the outcomes and next steps.

5   A DESIGN FRAMEWORK FOR PARTICIPATORY CITY-MAKING

Based on insights from the literature discussed above, the design framework is proposed as depicted in Figure 1. Four types of activities researchers can deploy to explore the design space of a participatory playable city are grounded in four pillars.

5.1   Framework foundation: Pillars for participatory playable city-making
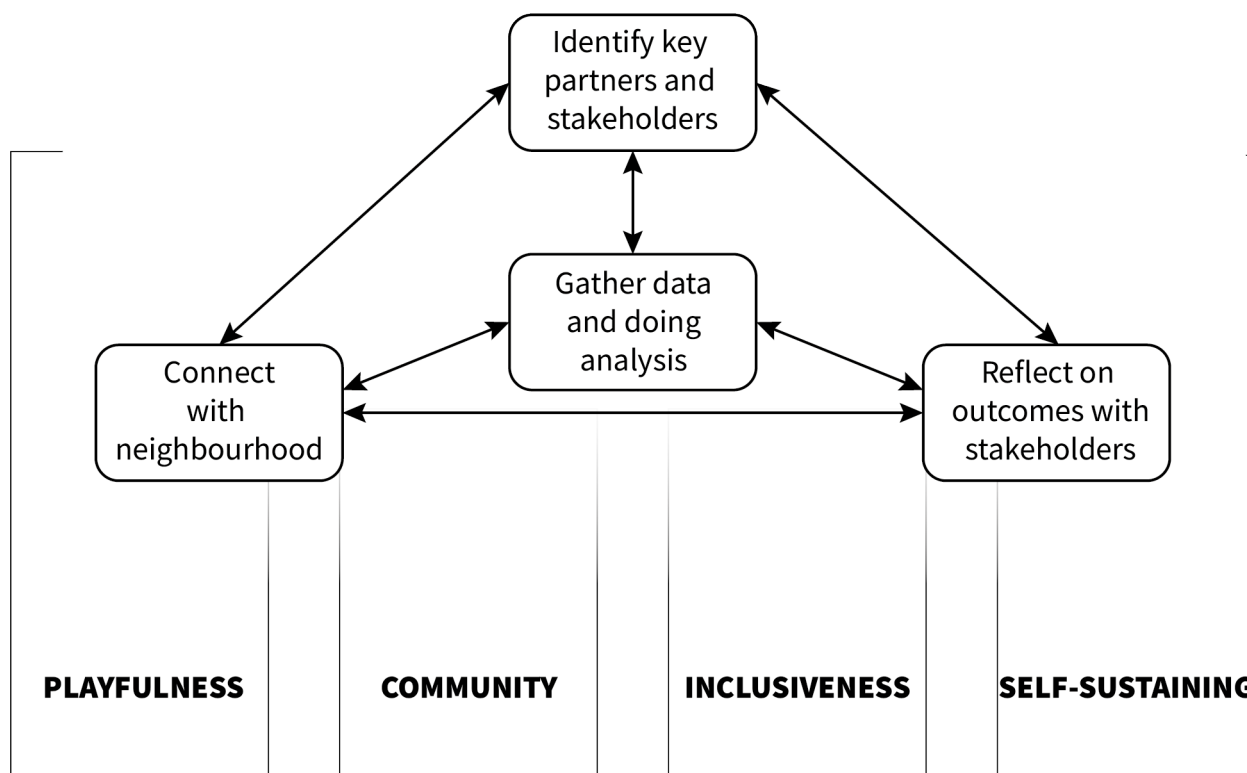
The literature review was structured around 'activities', 'actors', 'level of involvement', and 'effects', providing the foundation for the four pillars of the framework. The pillars are presented in a random order, they are all of equal importance:

- The first pillar is *Playfulness*, directly related to 'Activities'. A playful mindset and setting during (research) activities enable open discussions and exploration between stakeholders.

- The second pillar is *Community*, directly related to the 'Actors' involved, highlighting the central position of local community and context.

- The third pillar is *Inclusiveness*, directly related to 'level of involvement'. Analysis on the 'level of involvement' indicated that all actors should be involved and treated equally, and be able to influence the design process.

- The fourth pillar is *Self-sustaining*, directly related to 'Effects'. Analysis of 'Effects' showed that a focus on building community capacity enables local actors to continue the initiated design process and related discussions.

5.2   Framework content: Activities to explore the design space of the playable city

The activities analysed in the literature review are condensed to four activities for inclusive and participatory city-making in the framework (see the boxes in Figure 1):

- **Connect with the neighbourhood**: The purpose of this activity is to understand the social, physical, and technological structure of, and the networks within, an area. Becoming familiar with the local context also provides input to identify key partners, build relationships with them, and understand how outcomes of the research can be best brought back to the local community for reflection and evaluation. Methods in this activity include, for example, desk research, observations, neighbourhood walks, and interviews.

- **Identify key partners and stakeholders**: In this activity, key partners and stakeholders are identified in terms of playable city design. Examples of potential partners and stakeholders are local enterprises, police officers, community centres, and grassroots communities, because of their perspective on what a playable city should be. Field work is a method to execute this activity: starting by approaching obvious partners and interviewing them to create an overview of social structures and networks within a neighbourhood. During such field work researchers become further acquainted with the area, start to build relationships, and identify opportunities for reflection and discussion on the intermediate outcomes.

- **Gather data and doing analysis**: This activity is placed in the middle in Figure 1 because it is considered to be the core activity in this framework. Building relationships with all stakeholders is essential to be able to create a fruitful participatory process to design playable cities. The methods used in this activity to collect data should contribute to relationships between city stakeholders and the researchers, but also relationships between the various stakeholders themselves. In this activity, methods include interviews, focus groups, workshops, and prototyping to explore the roles and responsibilities of each stakeholder in the city. The results of this activity are input for the other three.

Figure 1. The design framework proposed in this paper comprises of four activities grounded on four pillars.

280 • **Reflect on outcomes with stakeholders**: To create a continuous and sustaining participatory practice
281 between city stakeholders, outcomes of the design processes should be made visible and accessible for
282 the community to reflect and discuss. This activity ensures that this happens, making use of physical
283 and digital options to increase accessibility for as many people as possible not only when outcomes are
284 communicated, but also thereafter. Methods and tools used in this activity can be prototypes, interactive
285 installations, digital platforms and workshops. Communicating the outcomes, making them accessible,
286 and reflecting on them will also contribute to the other activities, possibly triggering new activities.

287 The order of the activities presented above is not necessarily the order in which they need to be executed:
288 each activity contributes to the other activities and depending on the research aims and resources, multiple
289 iterations of activities may be involved. As shown in Figure 1, these activities are grounded on the four
290 pillars. Communities and inclusiveness play a central role: activities always include stakeholders. Activities
291 should be playful and aim for outcomes that can be self-sustained by the local community. As mentioned
292 before, all activities should consider the technological, social, and physical structures of, and networks
293 within, the local context in design space exploration. This means for the *connect with the neighbourhood*
294 activity, for example, looking at digital platforms the local community uses such as Facebook groups
295 (technological layer), considering the formal and informal (citizen) groups and initiatives (social layer),
296 and analysing the physical environment of the local context (physical layer). While these activities in the
297 framework seem to be separate entities, they inform each other as reflected by the arrows between them.
298 As explained below, activities can be fulfilled by multiple methods: interviews can, for example, both be
299 used to become acquainted with a neighbourhood as well as to identify key partners and stakeholders.

300 The next part of this paper uses this framework to analyse the case study presented below. The aim of
301 this analysis is to acquire further understanding of the applicability of the framework, in particular in the
302 applicability of research methods used in each activity. The value of the outcomes of the activities and the
303 extent to which they fulfil the four pillars this framework are evaluated.

6 CASE STUDY: PLAYABLE BOUWLUST

304 The case selected for this paper is a research project that explored the design space for liveability and safety
305 in a participatory process in a neighbourhood in The Hague (NL). The local government and police of
306 The Hague identified the neighbourhood of Bouwlust as one with a low level of citizen participation for
307 which a new approach was needed. The liveability and safety issues with which citizens are confronted
308 include drug abuse, litter, and youth gangs. Several initiatives have been started in the past by both the local
309 government, the police and citizens to address these issues, often initiated and executed by one of these
310 actors, often for a designated period of time. The research programme this paper analyses was initiated by
311 these parties to together explore options for inclusive participation to address liveability and safety issues.
312 A research team of Delft University of Technology was invited in this context to, jointly with citizens and
313 other partners, explore the design space of participation in Bouwlust. These methods are outlined in the
314 next section after which the contribution of the methods in each activity is analysed.

6.1 Case study methods

316 To identify the design space for participation, key actors, their relationships and their view on participation
317 were explored using eight different methods explained below.

6.1.1 Artistic research

319 Architect Afaina de Jong[2] made an architectural visual analysis of the neighbourhood. At different
320 moments during the week she visited Bouwlust and took photographs of the physical environment and
321 the buildings. The architect walked through the neighbourhood and explored if and how the physical
322 environment supports social interaction and community building. The architect used the YUTPA framework
323 (Nevejan, 2009) to do her architectural and artistic analyses. YUTPA is the acronym for 'being with You in
324 Unity of Time, Place and Action'. The YUTPA framework has been developed to analyse trade-offs in
325 presence design and facilitate discussion about different presence configurations (Nevejan and Brazier,
326 2015a). To this purpose, each presence design is analysed along four dimensions: time, place, action, and
327 relation (Nevejan and Brazier, 2011). Different underlying factors are specified for each dimension. The
328 YUTPA dimensions resonate well with the need to acquire insight into the physical (dimensions place
329 and time) and social (dimensions relation and action) structure of and networks within Bouwlust. This
330 framework has also been used in other settings (e.g. (Nevejan and Brazier, 2012)) to understand the design
331 space for participation. In Bouwlust, the YUTPA analysis, for example, revealed that there are many green
332 areas, such as small parks and playgrounds, but that those are rarely used. Such insights were documented
333 by the architect using photographs taken, and notes made, during the site visits.

6.1.2 Desk research

335 For desk research the team relied highly on municipal documentation, such as urban district plans, safety
336 and security reports, and neighbourhood monitors. The Municipality provided reports with evaluations of
337 different participation initiatives that had been performed in the past. The Police provided crime reports
338 on, for example, burglaries, robberies, and (domestic) violence. Furthermore, the results of two surveys
339 were provided, one of liveability and safety issues according to the citizens, and one on the digital means

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[2] Afaina was part of the research team.

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340 available to the citizens. The researchers themselves also analysed several citizen participation initiatives
341 they found on the internet through, for example, Facebook accounts of the neighbourhood and of the
342 community police officer.

6.1.3   Neighbourhood mapping

344   Two student groups from three different universities following an MSc programme on Responsible
345 Innovation engaged in a mapping exercise in Bouwlust. They visited Bouwlust for two days and asked
346 citizens to map places in the neighbourhood where they feel happy. The collected locations and stories of
347 citizens were put on an interactive digital map by the students for everyone to access.

6.1.4   Interviews with community officers

349   One of the first engagements with the community of Bouwlust were interviews held with five community
350 professionals (four community police officers, one community worker). They played an important role in
351 building up rapport with citizens in Bouwlust. The interviews were semi-structured and focused on three
352 main topics. The first topic was the tasks of the police officer and community worker: their daily routines,
353 which tasks lead to a good feeling (under which circumstances) and which ones cause frustration (under
354 what circumstances). The second topic concerned the interaction and collaboration between professional
355 partners, within the police force and outside with, for example, the Municipality and housing associations
356 with questions such as: How do you negotiate and tune activities?, How do you support each other?, How
357 do you receive and show appreciation? The third topic was about the way interaction and collaboration
358 with citizens was organised, and its importance with questions such as: How do you interact with citizens?
359 What is important in your work for citizens?

6.1.5   Citizen questionnaire and interviews

361   Following the interviews with community professionals, a questionnaire and semi-structured interview
362 guide were developed to address the perspective of citizens. Again, the YUTPA framework (Nevejan, 2009)
363 was used to structure and analyse the interviews with citizens. The questionnaire included one question for
364 each of the factors underlying the four dimensions of the YUTPA framework, resulting in a questionnaire
365 with 16 questions in total. For example, the 'duration of engagement' factor was translated to the question
366 'How long do you live here?'. The factor 'body sense' resulted in the question 'Do you feel connected with
367 the people in the neighbourhood?'. A question about the factor 'reciprocity' was rephrased as 'Do people
368 help each other in this neighbourhood?'. As a final example, the 'role' factor was translated to the question
369 'Are you as a citizen important for actions that happen in the neighbourhood?'. The questionnaire addressed
370 the social infrastructure in Bouwlust, to which extent citizens enjoy living in Bouwlust, whether they can
371 take responsibility for the neighbourhood, and how much they feel they can collaborate with other citizens
372 or community professionals. Each question required an answer on a scale of 1 (hardly) to 10 (very much).

373   In a similar vain were questions formulated for the semi-structured interview, using the YUTPA
374 framework, to trigger the respondents to express their experiences of living and participating in the
375 neighbourhood. Citizens were informed about the research project and the option to participate, by leaflets
376 that researchers distributed in the neighbourhood, in physical mailboxes. These leaflets also offered the
377 option for citizens to go to a website and answer some questions, instead of having a physical interview.
378 The researchers set themselves up in a mobile unit for a few days near the shopping centre in Bouwlust and
379 approached citizens on the street inviting them to either fill out the questionnaire on paper or to participate
380 in a more elaborate interview. This setting is shown in Figure 2. In total 22 citizens participated in the
381 physical interview which resulted in rich qualitative stories and experiences of citizens to complement the
382 questionnaire outcomes. The questionnaire was filled in by 72 citizens.

Figure 2. The researchers invited citizens for an interview or to fill out the questionnaire in the mobile unit.

6.1.6   Citizen focus groups

Participants for the citizen focus groups were recruited by visiting locations where citizens come together and approaching citizens to participate. For the focus groups, primary schools were visited to invite mothers to discuss their situations with the researchers. The researchers also visited the community centre to talk to other citizens. In total 11 persons participated in the discussions. The topics addressed, and questions asked, were similar to the semi-structured interviews with citizens in the mobile unit.
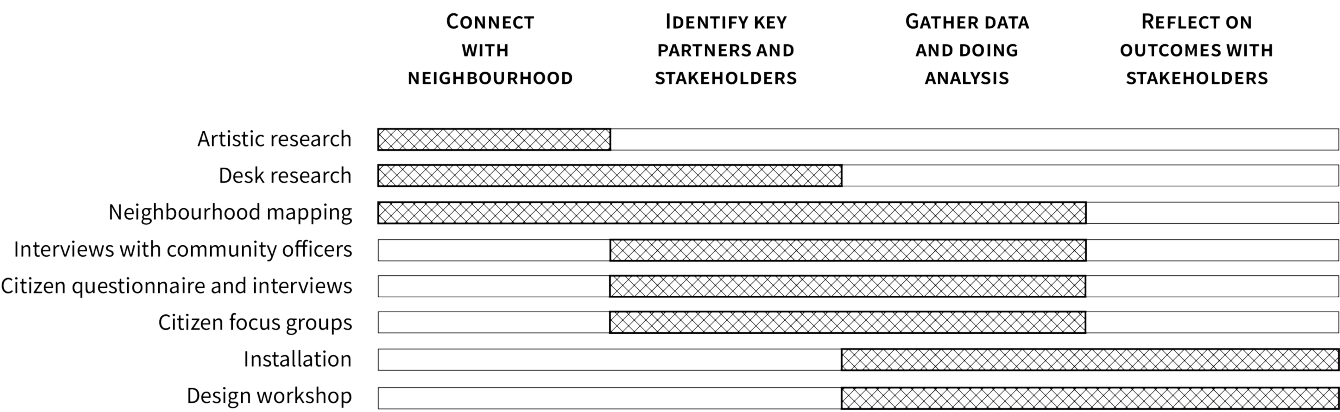
6.1.7   Installation

To understand which circumstances in Bouwlust (e.g. emerging safety issues) could foster citizens to connect with each other and community professionals, an installation was setup for two days in the neighbourhood, one day close to a mosque, and one day near the shopping centre. This installation confronted citizens with specific circumstances, for example an increase of burglaries, and researchers asked citizens to respond, in terms of whom they would contact and in what way (face-to-face, email, phone, etc.). The answers provided by citizens gave further insight into the social structure of, and networks within Bouwlust and the possibilities to build and extend relationships between the various stakeholders.

6.1.8   Design workshop

As a final activity, a design workshop was organised in which citizens and community police officers discussed the outcomes of the other activities and explored design options for Bouwlust. Twelve citizens, two community police officers and a community worker gathered on an evening in the community centre to co-design solutions for the three problems most frequently addressed in earlier activities: loiterers, litter and burglaries. The participants were triggered to think of solutions from three perspectives, from the perspective of the most likely responsible stakeholder, such as the police or city council, from the perspective of social institutions such as schools, mosques, health care and shops, and from the perspective of physical and digital installations, such as apps, sensors and street light. Solutions varied from larger garbage bins, improving locks on houses, via social influencing through school, church and mosque, understanding what loiterers need, to digital apps to report and inform citizens and government, and placing cameras and sensors at crucial places.

Figure 3. An overview of how the applied methods in Bouwlust fit within the four activities from the proposed framework.

6.2 Results of case study analysis

409

410   This section analyses and outlines to what extent the methods helped to fulfil the aim of each of the
411   activities, grounded on the four pillars. An overview of this analysis is shown in Figure 3. It depicts the
412   relation between the research methods used during this case study and the activities of the earlier proposed
413   design framework.

6.2.1 Connect with the neighbourhood

414

415   The aim of this activity is to acquire insight into the social, physical, and technological structure of
416   the neighbourhood. Initial involvement with the field through the artistic research, desk research, and
417   neighbourhood mapping was used in the case study as part of this activity. The artistic research was
418   valuable for the researchers to develop a sense for Bouwlust, mostly in terms of the physical structure.
419   For example, one observation was that many signs and fences restrict how public places are used in the
420   neighbourhood and that the community centre building itself is visually closed off from the street (see
421   Figure 4). As in the previous activities, the YUTPA framework (Nevejan, 2009) was used to structure the
422   analysis of the observations and to interpret the photographs taken.

423   The desk research provided insight into demographics of Bouwlust, participation initiatives, and the
424   liveability and safety problems citizens experience. The documents helped to understand the history of
425   the neighbourhood; how it has developed over the years into the very diverse and dynamic community it
426   now is. An important insight in terms of social structure was, for example, that citizens, on average, live in
427   Bouwlust for just three years. This high turnover of citizens complicates a general neighbourhood sense of
428   community. There is, however, a huge variation in the number of years citizens live in Bouwlust: from just
429   one year to extremes up to 40 years. In terms of becoming acquainted with Bouwlust, the field visits were
430   useful to get to know the important places in the neighbourhood (such as the community centre), while
431   the desk research provided insights on what people in Bouwlust care about, which participation initiatives
432   exist(ed), and the way the neighbourhood is structured in terms of demographics. The methods helped to
433   paint a rather conceptual picture of Bouwlust as there was limited engagement with the people whom live
434   or work in Bouwlust. The interviews, focus groups, and installation used in the other activities provided
435   much more insight into the social structure of, and networks in the neighbourhood.

6.2.2 Identify key partners and stakeholders

436

437   The aim of this activity is to acquire insight into the main actors in a neighbourhood in terms
438   of participation. The desk research contributed to this activity, complemented with the interviews,

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Figure 4. The community centre in Bouwlust has a rather closed appearance.

439 questionnaires, and focus groups with several of the obvious stakeholders. As in this research programme,
440 the researchers were invited by the local police and government to explore citizen participation, these three
441 stakeholders were an obvious starting point to identify other actors. The four methods used in this activity
442 (see Figure 3) allowed to identify actors from different perspectives. Throughout these four methods,
443 and the ones used beyond this activity, other key actors were identified. Insights in Bouwlust became
444 more detailed and nuanced. This resulted in the notable insight that the notion of a *key stakeholder* is
445 very dependent on context. For example, in some cases citizens are considered to be a single (type of)
446 stakeholder in this context, while the desk research documents, citizen interviews and questionnaire showed
447 that citizens organise themselves in communities according to cultural or ethnic background. For example
448 one citizen said: *"Everybody is only connected to their own group, their own culture, and not with other*
449 *people."* Citizens can, in this context, not be considered to be a single stakeholder, but rather as multiple
450 stakeholders who are organised based on culture. People are part of different cultures, around schools,
451 religion, sports, housing blocks for example. Culture is used here in a broad sense and reflects a multiplicity
452 of identities (de Jong, 2020).

453   The key stakeholders identified by the community police officers included the municipality, local care
454 institutions, and housing corporations. Citizens did not make this distinction: they grouped these various
455 governmental actors together as the community police officer stakeholder. This became clear during the
456 focus groups and citizen interviews, in which citizens indicated that they reach out to their community
457 police officers when they need help, independent of the issue. One of the community police officers stated:
458 *"We fill many gaps. We are in contact with schools, shops, care institutions and youth work."* Another one
459 said: *"These professional partners come to me, [...] They call me to ask to go by one of their clients from*
460 *which they haven't heard in a while. In these cases I decide if this is part of my job or if it's the partner's*
461 *responsibility."* The officer is the first contact point for most citizens when they need help and also for

462 the professional organisations when they want to reach citizens. The three methods in this activity taught
463 that there are different perceptions on key stakeholders and that for Bouwlust, the main interaction is
464 between the community police officer and different groups of citizens. The focus groups stimulated an
465 open and exploratory discussion between different citizens. The discussions were dynamic and interactive,
466 contributing to a playful ambience. The research showed every specific and important social role these
467 community police officers have, according to the interviewed residents.

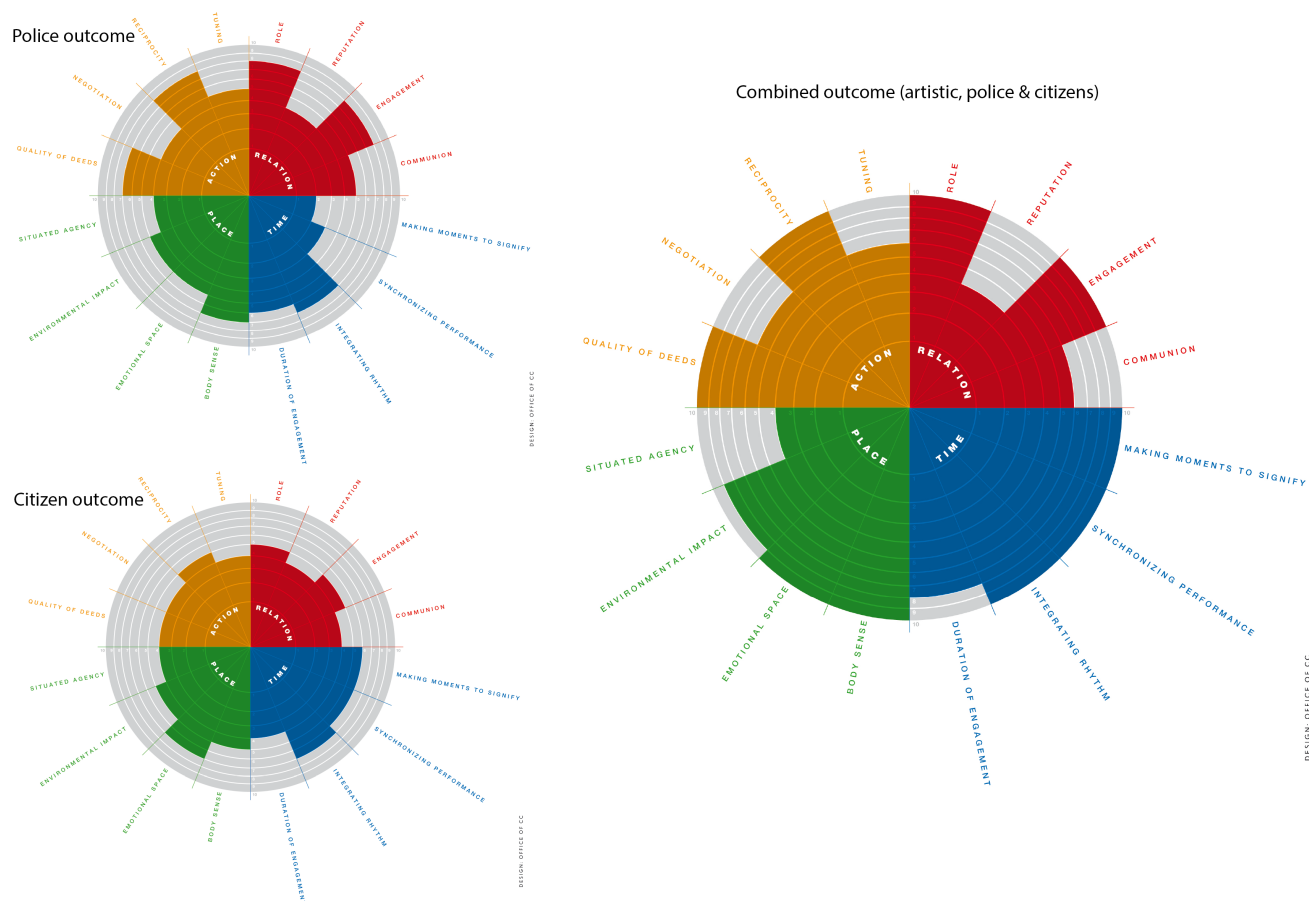468 ### 6.2.3   Gather data and doing analysis

469   This activity comprised of many methods as shown in Figure 3. The interviews, questionnaires, and focus
470 groups with citizens and community officers contributed to building relationships needed to gather data and
471 analyse Bouwlust. Neighbourhood mapping, the installation, and design workshop supported this activity
472 as well. This variation of methods enables city stakeholders to engage at different moments, as it suits them.
473 They were playful in the way data was collected, using traditional methods (interviews, questionnaires,
474 focus groups) and methods that fostered creativity, openness, and interaction (neighbourhood mapping,
475 installation, design workshop). These methods created an iterative cycle to connect more and more with the
476 neighbourhood and deepen the relationships with stakeholders. City stakeholders simultaneously became
477 familiar with the research project, decreasing the effort to convince stakeholders to participate. Strategic
478 locations to attract a variety of citizen groups were selected: visiting schools, shopping areas, mosques, and
479 playgrounds. The fact that these methods were mainly conducted out on the streets, using a visible mobile
480 unit or installation, lowered the barrier for stakeholders to talk to the researchers and thus relaxed the effort
481 to collect data.

482   On the other hand, this activity aims to invest in the relationships between the city stakeholders themselves.
483 The design workshop brought citizens, police officers and community workers together to discuss outcomes
484 and collaboratively design solutions for three frequently mentioned problems in the neighbourhood.
485 Different stakeholders collaborated on a commonly felt problem, which contributed to their shared feeling
486 and relationship. The design workshop was playful because it fostered an open and exploratory mindset
487 of participants, as they were asked to consider perspectives of other stakeholders, social institutions, and
488 physical/digital installations when coming up with solutions.

489 ### 6.2.4   Reflect on outcomes with stakeholders

490   The aim of this activity is to find out where and how outcomes of the other activities can be fed back to the
491 city stakeholders for reflection and discussion. In the design workshop the results so far were summarised
492 and presented to the participants. The main reason for this is to validate whether the participants recognise
493 these results and are willing to adopt them further on in the process. To this end, the outcomes of the
494 interviews and questionnaires were mapped on the YUTPA framework to understand the relationships
495 between the different actors and how they perceive each other. This is illustrated in Figure 5, showing
496 the YUTPA outcomes for citizens and community police officers. These graphs highlight which factors
497 are supported, for which support is lacking, and how this differs between citizens and community police
498 officers. This tool illuminates which factors have a basis and which relationships between the various city
499 stakeholders can be developed. The right graph shows the YUTPA result when all graphs are combined,
500 visualising the potential design spaces for participation in Bouwlust. The factors that score higher than 5
501 on this combined graph are considered to indicate a potential design space.

502   In Bouwlust, neighbourhood mapping, an installation, and the design workshop were used to fulfil this
503 aim. In addition, a website was made available for citizens and other stakeholders to be informed on the

Figure 5. Left part shows the difference between the YUTPA outcomes for citizens and police officers. Right graph is the result of combing all YUTPA analyses to identify possible design spaces. Scores higher than 5 show potential for design.

progress of the research and intermediate results[3]. Asking citizens to indicate which places in Bouwlust make them happy resulted in a list of locations that might be appropriate to disseminate outcomes. The installation provided insight into motivators for citizens to engage with their neighbours and neighbourhood and other city stakeholders. The topic of safety in Bouwlust was identified as a topic that motivates citizens to contribute to neighbourhood initiatives for a longer period of time.

As result of the research it became apparent that the time dimension of the YUTPA framework offers the best design solution space for enhancing social safety in Bouwlust. The first factor that can be enhanced in the time dimension is *integrating rhythm*. Many residents have reported that sharing activities like walking the dog, meeting at the school yard, shopping at the same time, makes it easier to engage with a basic trust among one another. Rhythms of daily life affect the sense of social safety in a neighbourhood. The second factor that many residents agreed upon is the fact that the Bouwlust lost 'moments to signify'. In a neighbourhood both the history of the place as well as a yearly festival for example, or a monthly newsletter give people a shared sense of where they are. The sharing of meaning, the actively being involved with contributing to this meaning of and in a neighbourhood, enhances the sense of social cohesion and the

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3   See http://vital.gingerresearch.net. (last visited October 6, 2020)

518 sense of social safety as result. The longing for more meaning and active engagement with neighbourhood
519 histories is visible in local social media activities, but is not yet visible in the physical environment.

7 DISCUSSION

520 Analysis of the case study in Bouwlust provides insight into which methods are essential within the design
521 framework proposed in this paper. To untangle participatory design processes and methods is a challenge
522 (Sawhney and Tran, 2020): they are not easily separated because they influence each other constantly. To
523 this end, researchers can move back and forth between the four activities of our framework using methods
524 that can contribute to multiple activities at the same time as depicted in Figure 6. Such an iterative process
525 is needed as the neighbourhood is also continually changing. For example, the analysis showed that key
526 partners and stakeholders are fluid, depending on who and when you ask. Going through multiple iterations
527 using various methods also allows to step by step deepen the understanding and connection with the context,
528 and to continuously inform next steps on what was learned. The resulting account to use different types of
529 methods and to iterate within and between the four activities are the two main topics for discussing the
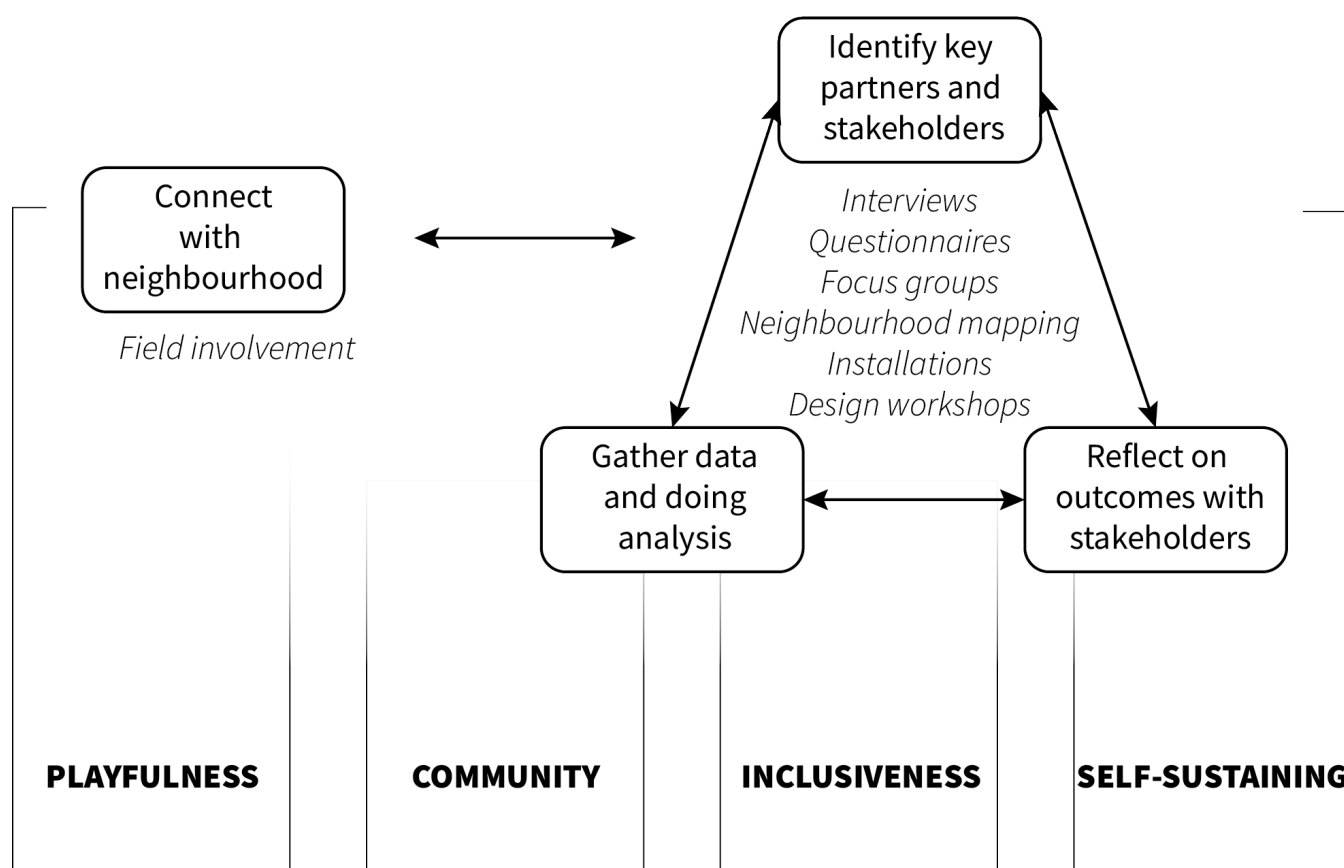530 analysis.

7.1 Method variety in each of the activities

531 Eight different methods were used to explore participation with various stakeholders in Bouwlust.
532 These methods purposefully offered neighbourhood actors multiple ways to participate in the research.
533 Citizens could engage in a way that suited their availability and commitment. The benefit of providing
534 different modes or mediums to tailor participation was also highlighted in case studies on grassroots citizen
535 communities (Slingerland et al., 2019b). The findings in Bouwlust show as well that multiple methods
536 should be used in this kind of work to provide actors distinct ways to be involved and provide input to the
537 research.

538 One activity in which many distinct methods were used was *gather data and doing analysis*. While the
539 mobile unit for the citizen interviews received a lot of attention because it was placed at a strategic location
540 where many people frequent, digital engagement on the website was considerably lower. Engagement, in
541 this case, was measured in terms of how many citizens responded. These two channels nonetheless enabled
542 different types of citizens to participate: ones whom do not find their way to a website or app and enjoy
543 talking to a researcher, and ones whom prefer to give their feedback at home using their computer at a time
544 that suits them. The YUTPA framework was helpful to integrate the insights from the various methods
545 providing a generic coding scheme for the analysis of the variety of results, enabling comparison needed to
546 identify design spaces for participation in the neighbourhood.

7.2 Timing and sequence of methods and activities

548 The four activities of the proposed framework were initially introduced without a pre-defined order. The
549 case study in Bouwlust, however, suggests a preferred sequence of activities and methods. This sequence
550 suggestion is added to Figure 6. Initial field involvement is an essential first step before any of the other
551 methods can be applied. This initial step informs the researchers on which locations in the neighbourhood
552 people can be found and which people or parties should be considered in the furthering research. Interviews
553 with citizens or city officials, for example, will not be less informative to researchers if they do not first
554 engage with desk research and field visits to know which topics to address in the interviews. Interactive
555 installations could also be used to become acquainted with the neighbourhood, but researchers first need to
556 know which are crowded locations to strategically place an installation. The prominent presence of such
557 initial field work in seminal literature (e.g. Crivellaro et al. (2015); Parraagudelo et al. (2018); Custers et al.

Figure 6. The design framework suggests a sequence of activities and which methods to be used in them.

559 (2020); Aoki et al. (2009)) confirms that field involvement as part of *connecting with the neighbourhood* is
560 a critical first step in the proposed framework.

561 Following the case study analysis, *connecting with the neighbourhood* seems to be the activity that needs
562 to be executed first before the other three activities can be done. In contrast, the other three activities do not
563 presume a specific sequence and continue to inform each other and the first activity as well. In the case of
564 Bouwlust, results were mostly made visible to the community during the final stages of the research. Some
565 methods (e.g. the installation) could have been applied already earlier to visualise intermediate outcomes.
566 At the same time, the installation in Bouwlust was, for example, designed using insights from the interviews
567 and questionnaire. The method sequence needs to be carefully considered, to find an appropriate chain of
568 activities that build on each other's outcomes and disseminates these outcomes to the local community. A
569 method such as focus groups is also suitable to feed results back and discuss them with the community to
570 inform further research activities (Pickering et al., 2012). Such a process, where directions and outcomes
571 become apparent on the go, requires a lot of flexibility from researchers, participants and funders, which is
572 not always an option.

7.3 Fulfilling the four pillars

574 The design framework presented in this paper requires all activities to build on the four pillars: community,
575 self-sustaining, inclusiveness, and playfulness. These pillars serve as a checklist when researchers are
576 setting up their research design, selecting their methods for engaging with the various stakeholders. For the
577 *community* pillar, this requires researchers to keep the local community in mind, even when they do not
578 directly engage with them. When starting with desk research, for example, researchers should not only

579 consider formal documents produced by professional actors, but also check for informal citizen networks
580 and platforms where the local community might meet. In terms of *self-sustaining*, the methods selected
581 should contribute to the local actors being able to independently continue exploration of participation in
582 the neighbourhood. To this end, researchers should not aim to solve problems of the community, but rather
583 support the various stakeholders in collaboratively taking this up. The pillar of *inclusiveness* is fulfilled
584 when researchers use different kinds of methods for people to participate on their terms and in a way that
585 suits them. Method variety in terms of digital or physical participation as well as required time commitment
586 are ways of achieving this. The *playfulness* pillar entails the need for researchers to offer creative and
587 open-ended ways of engaging with the local community. This increases pleasure for participants, but also
588 creates an environment for exploration and reflection with stakeholders.

8 CONCLUSION

589 This paper proposes a design framework to support city actors to make it work together, despite their
590 sometimes conflicting values and interests. The framework is inspired by the playable city perspective.
591 Based on insights from literature, the framework enables the construction of long term and sustaining
592 participatory city-making projects, in which all stakeholders are able to contribute and their input is equally
593 valued. The foundation of the framework ensures an open and exploratory mindset of all actors through four
594 pillars: *community*, *self-sustaining*, *inclusiveness*, and *playfulness*. Furthermore, the framework suggests
595 to structure an exploration of the design space for participatory city-making around four activities. The
596 value of the framework is demonstrated through a case study, in which further insights are gathered on
597 the four activities and possible corresponding methods. The case study in Bouwlust (a neighbourhood in
598 The Hague, NL) was analysed using the framework, to understand which methods support city actors to
599 together make it work.

600 The case study lasted in Bouwlust for two years in collaboration with the police and local government.
601 Eight different methods were part of the study, to involve community professionals and citizens in thinking
602 about improving the liveability and safety in Bouwlust. Using the framework to analyse the city-making
603 process in Bouwlust resulted in valuable and relevant insights into how such processes can be best organised.
604 The first insight was that method variety in each of the activities is needed to offer city stakeholders multiple
605 ways to get involved, using digital channels or real-life engagements, with various levels of commitment.
606 The second insight was the activity *connect with the neighbourhood* needs to be done before the other
607 three. The outcome from this activity informs the activities to *identify key partners*, *gather data and doing*
608 *analysis*, and *make outcomes visible and accessible*. While untangling participatory design processes can
609 be difficult (Sawhney and Tran, 2020), the framework presented in this paper demonstrated its value to do
610 just that, to fill the gap of developing playable city design approaches that are inclusive and meaningful for
611 the local community. Current research extends this research to focus on the development of a data approach
612 to enhance rhythms in neighbourhoods (2018-2023) in urban environments (Nevejan et al., 2018). Current
613 research also explores a variety of interfaces in which online local activity becomes visible in the physical
614 environment where the stories and data are gathered in a playful endeavour (Suurenbroek et al., 2019).
615 Further analysis of other playable participatory case studies using this framework is one of the directions of
616 our future work and aims to strengthen the contribution of this promising framework to the field of playable
617 cities.

CONFLICT OF INTEREST STATEMENT

618 The authors declare that the research was conducted in the absence of any commercial or financial
619 relationships that could be construed as a potential conflict of interest.

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