Using an urban futures design tool to reclaim spaces for citizen participation in pre-structured transformation processes

Astrid C. Mangnus[1,2], Joost M. Vervoort[1,2,3], Willem-Jan Renger[4]

[1] Copernicus Institute of Sustainable Development, Utrecht University
[2] Urban Futures Studio, Utrecht University
[3] Environmental Change Institute, University of Oxford
[4] Innovation Studio, HKU University of the Arts Utrecht

Abstract

In the complex systems of cities, it is often difficult to strike a balance between creating space for citizen engagement and the top-down implementation of urgent sustainability transformations. This is known as the participation-prescription tension. This paper aims to test how futures interventions can be used to create space for the participative imagining of transformative futures in top-down transformation initiatives that are framed by pre-determined agendas and priorities. We distinguish four pre-conditions that shape the impact of participatory future design methods: 1) the space in the institutional landscape of a multi-stakeholder project; 2) the participation culture within the project; 3) the project design; 4) and the futures design intervention itself. We assess these pre-conditions in four city cases within the international, multi-city H2020 IRIS Smart Cities project that comprises a variety of stakeholders with diverging interests and levels of power. These cities each reflect a different combination of the pre-conditions. The Scope Model that is applied in this paper allows participants to map out the entire project in separate blocks, in order to reflect critically on the possibilities for and limitations to breaking open the process and enable the participatory planning of transformative futures. A comparison of the cases resulted in a set of recommendations for different actor roles in change processes, applicable to a hierarchy of situations that go from more to less control over the pre-conditions of future design methods.

Key words: *Multi-stakeholder project; design tool; futures; urban systems; citizen engagement*

Introduction

Cities are complex systems that are composed of a multitude of physical sub-systems, environments, people and interests. In these modern multi-stakeholder realities, policymakers set up multi-stakeholder processes in which they aim to bring together all of a city's major stakeholders in a new form of communication, decision finding and -making on sustainability issues (Hemmati 2002). Naturally, a key group in any such process consists of the city's inhabitants. A variety of recent case studies on citizen engagement illustrate its rise in prominence in

urban sustainability issues ranging from food to energy to public health (De Zeeuw & Dubbeling 2015; Pidgeon et al. 2014; French, Teal & Rahman 2016). The motivations behind citizen engagement practices range from ideological desires (e.g. for legitimacy, transparency and accountability) to pragmatic aims (e.g. for popular support for potentially unpopular decisions) to a desire for new modes of governance or for building social capital (Abelson et al. 2003).

Societal transformations emerge from a complex, co-evolutionary interplay between and across top-down governance and bottom-up processes (Patterson et al. 2016). At the same time, present-day global environmental change is threatening systems at every level of ecology and society and requires urgent interventions (IPCC 2018). This sense of urgency, coupled with the inclusion of a few large powerful stakeholders pursuing their own interests can push the space for citizen engagement out of a process. Waylen et al. (2015) refer to this as the "*'participation–prescription tension': a potential tension in attempts to simultaneously encourage participation and achieve prescribed goals or targets".* With the right tools and techniques, citizen engagement processes can open up space for observation, reflection, interpretation, discussion and expression for all parties involved. In a well-designed process, 'making activities' can become explorations of future worlds and explore possible or desirable ways of living in these worlds (Sanders & Stappers 2014). The main risk in setting up a co-design process supported by tools, is that at these tools lose much of their effect if they are not backed by a "participatory mindset" (Brandt, Binder & Sanders 2012: 177). This mindset is what decides the difference between participation as an empty ritual or real power to affect the outcome of the process, as Arnstein (1969) wrote in her seminal article on the topic.

In this paper, we will investigate the dynamics of co-design and citizen engagement in one large, multi-stakeholder urban transformation project implemented across multiple cities in Europe. We aim to test how futures interventions can be used to create space for participative imagining of transformative futures in top-down transformation initiatives that are framed by pre-determined agendas and priorities – in other words, in transformation contexts where the starting conditions for citizen engagement are limited. To what degree and how can futures interventions re-claim the space for citizen engagements in such top-down transformation contexts; and what constraints limit the use of futures interventions in terms of the reclamation of such space for participation? We aim to answer these questions by investigating the -intended and actual- space for citizen engagement within the international, multi-city H2020 IRIS Smart Cities project that comprises a variety of stakeholders with diverging interests and levels of power. This article assesses the limits and possibilities for the use of one urban futures design tool, designed by project member HKU (Utrecht School of the Arts), to open up this space. The next section of this paper consists of a conceptual framework drawn up from a literature review, followed by a description of the case and methodology. The results from the different cities are presented in the fourth section, and the fifth section discusses these results in context in order to formulate a set of recommendations. The final section of the paper summarizes the findings in a conclusion.

Citizen engagement and the participation-prescription-tension

Citizen engagement can be defined as *"the involvement of citizens in a wide range of administrative policy-making activities including the determination of levels of service, budget priorities, and the acceptability of physical construction projects in order to orient government programmes toward community needs, build public support and encourage a sense of cohesiveness within society"* (Fox & Meyer 1995: 20). However, not all citizen engagement practices are created equal. In her ladder model, Arnstein (1969) distinguishes eight levels of citizen engagement. The lowest two levels, "manipulation" and "therapy" do not provide citizens any real power or benefits: they place citizens in powerless advisory committees or use meetings to change people's minds, respectively. Arnstein (1969) refers to this as non-participation. The third level is "informing", when citizens are informed of their rights, responsibilities and options. This is the first level with any benefit to the citizens, and is followed by increased power and responsibility for the citizens in the consecutive levels of "consultation" and "placation". However, the citizens still do not have an active mandate, which is why this level is branded "tokenism". In the last three levels, "partnership", "delegated power" and "citizen control", citizens get an active responsibility in the process. Arnstein (1969) calls this "citizen power". Generally, the expectations for the participation processes fall into one of the following three categories: (1) 'substantive' benefits, an improvement of decision making through citizens place-based knowledge and values; (2) 'instrumental' benefits, an improvement of acceptability and transparency of a plan, and thus its implementation; (3) 'normative' benefits, where inviting stakeholders into decision- making increases the decision legitimacy and supports democracy (Waylen et al. 2015).

In practice, whether and how these benefits arise is often unclear (Ibid.). Head (2008) notes that while many multi-stakeholder governance initiatives advocate for and adopt the idea of citizen engagement, evidence for subsequent substantial power sharing is lacking. He argues that there are two main causes for this gap. The first is the fact that governments hold on to their share of the power by allocation of funding, service contracts and regulation. It remains difficult for government institutions to devolve power and control. The second cause is the capacity or, motivation of citizens to participate in an effective way or though other forums. In large, international multi-stakeholder groups, Truex and Søreide (2010) argue that the realities of the funding process dictate the timeline of the process, which members in their study often reported as insufficient. Moreover, Waylen et al. (2015) describe how the goals or targets are also often pre-described, which creates the aforementioned "participation–prescription tension". They found significant levels of these tensions in their case study of the implementation of the European Water Framework Directive (WFD), which sets goals but simultaneously describes that "interested parties" must be involved in the development of local WFD implementation plans. The authors did find opportunities to create citizen engagement within the constraints of the directive, but called it an "imperfect process" (Ibid.: 111).

Over the past 15 years, the moment in which citizens or other stakeholders are engaged has shifted toward the beginning of projects in many multi-stakeholder processes. This means that the output of these processes is less a finished

product (Sanders & Stappers 2014). These findings suggest that there is room for improvement in the design of citizen engagement practices, in order to realize the potential of the current attention for the topic. Increasingly, citizen engagement initiatives have turned to design practices to support their process. Such practices are characterized by a participatory nature, a focus on the end-user, multi-disciplinary collaboration and iteration (Lockwood 2009). Over time, researchers have developed a variety of methods, tools and techniques for stakeholder deliberation and engagement. The tools have become increasingly material and focused on the act of making (Broadley, Champion & Mchattie 2017). Methods like collaging, prototypes and design games, function as ways to engage with participants and create images of the future through telling, making and enacting (Brandt Binder & Sanders 2012). Since these tools are specific to their purpose, creating them is a separate design process in itself, which needs time and attention to tailor and refine (Sanders 2000).

Conceptual framework: from tool and process to space for citizen engagement

Tools, techniques and toolkits are terms that are defined in slightly different ways depending on authors and disciplines. For the intents and purposes of this article, we follow the distinction of Brandt, Binder & Sanders (2012), who define a technique as a direction for performing a specific activity (e.g. prototyping), and a tool as something that can support the processing and presentation of knowledge that is generated by a technique (e.g. a game). The materiality of tools can add an experiential element to citizen engagement processes. This is a valuable addition to more common analytical information in such processes, as striking a balance between both can stimulate active and involved governance processes (Davies et al. 2012; Vervoort et al. 2012). Another reason for the popularity of design tools in governance processes are the possibilities for negotiation, experimentation and iteration that are inherent in a design thinking process in a group that is set around a material artifact (Tan 2014; Broadley 2017). This can aid in specifying or targeting proposed interventions, redesign these interventions and tailor the interventions to fit citizens' needs and be more inclusive (Spante & Alfredsson 2016).

However, citizen participation can only be effective when it receives an appropriate amount of space in a carefully designed multi-stakeholder process. Such a process is made by careful attention to representation, the structure of the process, the information that is used in the process, and the purpose of the outcomes of the process (Abelson et al. 2003). As mentioned before, in situations of participation-prescription tension, much of the process is pre-structured and pre-set objectives and citizen engagement have to compete. In such a situation, a methods and the accompanying tool have to accommodate various levels of competing powers: international pressures from donors, country-specific national contexts, stakeholder roles and interactions and personal motivations of stakeholders and citizens (Truex & Søreide 2012). A collaborative method using a tool could bring these interests together, but there should be a certain level of interest in citizen engagement. Prior experience and knowledge could also contribute to a successful process. Finally, the group composition is crucial for a successful process.

Following from the literature, we distinguish four pre-conditions that shape the impact of participatory future design methods. We build on Hebinck et al. (2018), who recognize three main elements: governance context, social dynamics and methodological design, We have adapted those three key aspects to the case of this research paper, and added a fourth: participatory culture.

1. Space in the institutional context of the design process. If the intervention plan has already been pre-determined in terms of actions and timing, there will be very little perceived scope and time for participatory future design processes to shape the intervention (Hebinck et al. 2018).
2. Participatory culture. If many stakeholders involved have experience with participatory processes and are working in a culture that encourages participation, the role of participatory futures design processes in influencing change may be easier to achieve. (Truex & Søreide 2012)
3. Stakeholders involved, and the governance of the project. Stakeholders key to the envisioned change process should be involved; and there should be clear governance of their interests to ensure collective action. (Truex & Søreide 2012; Hebinck et al. 2018)
4. The level to which the futures design process, and those who lead it, are embedded in the local context. A strong embeddedness of process leaders and methods creates possibilities for continual engagement, the building of trust and mutual understanding, and adaptation to changing conditions as needed. (Davies et al. 2012; Vervoort et al. 2012; Hebinck et al. 2018)

In terms of outcomes with regard to citizen engagement, there are a number of factors, which determine the success of using a design tool to create space for citizen engagement in a large multi-stakeholder process with many pre-set objectives. Firstly, the method and tool and the accompanying process of knowledge exchange can broaden stakeholders' knowledge of methods for citizen engagement and process design. This can open up new ways of structuring such processes, and also give policymakers guidance on whether these methods should be used at all (Abelson et al. 2003). A second factor is whether stakeholders have gained a new perspective on citizen engagement. Arnstein's (1969) framework already shows that citizen engagement can be constructed and understood in various ways. There is confusion among policymakers over its meaning and use. Space for citizen engagement should thus also contain a change in understanding on the part of policymakers. Finally, the effectiveness of the plans resulting from the interventions with the tool can be measured by the degree to which they bring multiplicity of futures and open-endedness of processes into the planning (Pidgeon et al. 2014).

Figure 1 provides a visual synthesis of the various elements of the conceptual framework.

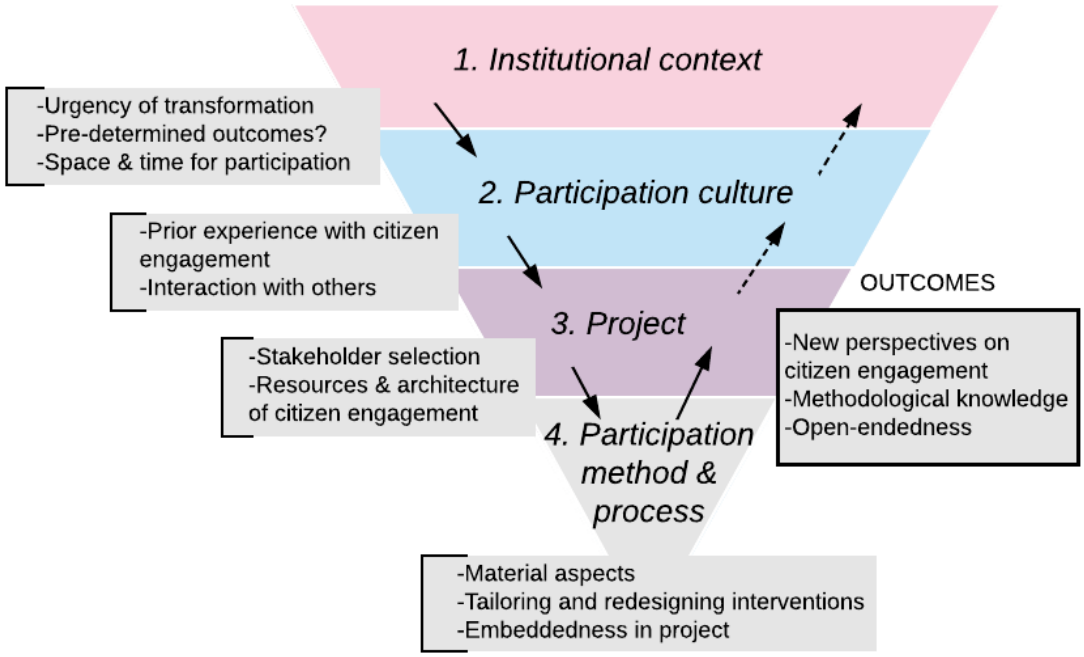

Figure 1. Conceptual framework

Methodology

Case description

This paper examines four cities within a European network of cities: Nice in France, Gothenburg in Sweden, Utrecht in the Netherlands and Vaasa in Finland. All are members of the H2020 IRIS Smart Cities research project, with the first three carrying the title of leading "lighthouse" cities and the latter a "follower" city who in the project design should learn from the first movers. One of IRIS's aims is to involve co-creation practices, as formulated in the project description: "*IRIS (**Integrated and Replicable Solutions for Co-Creation** in Sustainable Cities) is a HORIZON 2020 EU funded project beginning October 2017 for a duration of five years. The project has been developed around three lighthouse cities - Utrecht (The Netherlands, coordinator), Nice (France), and Gothenburg (Sweden) - who will work as **collaborators and test-beds** for follower cities Vaasa (Finland), Alexandroupolis (Greece), Santa Cruz de Tenerife (Spain) and Focsani (Romania). Each city will draw upon **a mix of universities and research organisations, local authorities, innovation agencies and private expertise** to accelerate entire communities to adopt ambitious energy, mobility and ICT initiatives."* (IRIS Smart Cities 2018 [emphasis added]). One of the project's eight objectives is the following: *"Demonstrate active citizen engagement solutions providing an enabling environment for citizens to participate in co-creation, decision making, planning and problem solving with the Smart Cities"* (Ibid.).

While the aims are ambitious and strive for an answer to the present-day problem of adequate citizen representation and engagement, the number of actors and the variety of (fixed) project aims indicate inherent participation-prescription tensions in the project design that work against co-design practices. The challenge in this case is twofold: there is the question how to choose the

appropriate urban futures tools for specific cases on the one hand; and how to create space for the methods in the context imposed by a large project with diverging vested interests on the other. The four cities all have different configurations of the elements in the conceptual model. All are characterized by a rigid, pre-structured institutional context within the project. However, Utrecht knows a strong participatory culture and is also the place where the initiators of the design tool intervention are based. This gives a high level of embeddedness in the overall project and its rollout in the city. In Gothenburg there is a strong participatory culture as well, but the intervention is one-off and the initiators are located further away. Nice knows citizen engagement practices that score in the communication-range of Arnstein's (1969) ladder, and is also far removed form the design intervention initiators. Finally, Vaasa belongs to a second cohort in which the process has not started yet. This opens up the rigidity of the institutional context, if the design intervention is done in an earlier stage. The application of futures methods to this case can assess their value for transformation processes that are searching for a balance between the juxtaposed forces of top-down change, citizen engagement participation and the involvement of multiple cities.

Intervention: The Scope Model

Within the IRIS project, one of the five "Transition Tracks" is entirely dedicated to citizen engagement (IRIS Smart Cities 2018). For this purpose, the Innovation Studio, based at Utrecht University of the Arts (HKU - a project member) has designed and set up the futures interventions that it comprises. The Innovation Studio developed a citizen engagement-mapping tool based on the principle that citizen engagement should include possibilities for citizens to influence decision-making, as well as to articulate their needs, challenges and problems. The designers argue that whenever integrated solutions are planned to be implemented out of necessity without possibilities for citizens to influence its arrival, outcome or master its use, its is relayed to communication. They define four distinct levels of possible citizen involvement, that reflect Arnstein's (1968) ladder but are simplified and tailored to fit the needs of the IRIS workshops:

1. Informed: Citizens are transparently informed and aware of impending actions and changes in their neighbourhood
2. Involved: (Some) citizens are actively engaged in storytelling about the impending actions and changes in their neighbourhood
3. Contributing: Citizens help create active ownership of existing touchpoints to positively contribute to KPI's in the IRIS project
4. Creating: Citizens help to create new products, services and initiatives to meet the project's KPI's

In this ladder, the first two levels are forms of communication towards or between citizens. The last two levels are forms of citizen engagement or co-creation. The IRIS project members participating in the workshop are asked to rank their interventions on this ladder. In assessing their projects with regard to these levels, special attention needs to be paid to all *touchpoints* within the intervention. The term touchpoint refers to all of the contact points between the customer and the service provider, which involves an interaction with a human need in specific time and place (Risdon 2013). Touchpoints can either be passive

or active. Passive touchpoints are those where citizens can learn about a measure, and be informed or instructed. Users are not put in active control of a measure. Examples of these are information letters, leaflets, meetings, blogposts and articles. Active touchpoints are those where citizens can take active control of a measure and use it, configure it, change it or adopt it. Usually this implies some kind of interface. Examples are a physical object, a controller, an interactive display, an app or an interactive web interface.

To standardize the intervention and citizen engagement practices across the different cities in the project, the HKU project members developed a design tool: the Scope Model. This design tool is aimed at mapping existing habits (fiche) and the necessary time investment (block) for each habit. Mapping out the entire project in this way is a first step towards reflecting critically on the possibilities and limitations relevant for the ability of this approach to break open the process and enable the participatory planning of transformative futures.

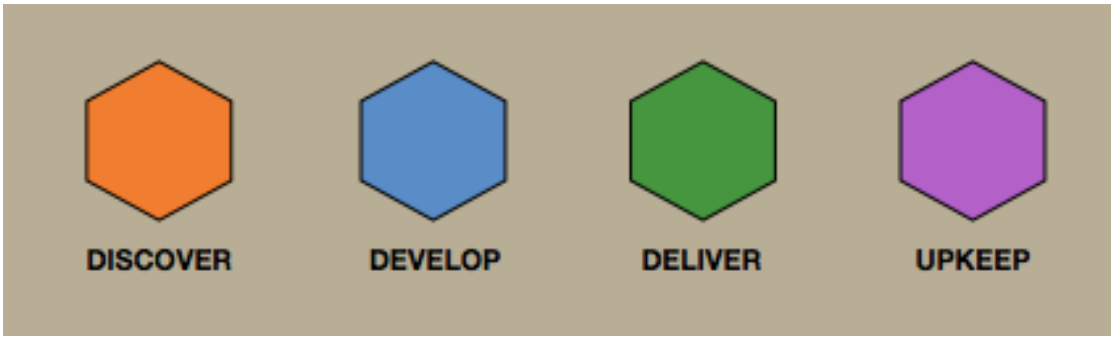

Figure 2. The Scope Model elements

Data collection

The interventions took place in the cities of Gothenburg and Nice in two respective workshops. The workshops were set up and hosted by the local project officer. To measure the workshop outcomes, pre- and post-test questionnaires were distributed among all participants. The questionnaires consisted of open questions that assessed the participants' prior experience with design tools, their current projects and their takeaways from the workshop and the use of the Scope Model. In addition to this, in each workshop a selection of the participants was invited for a brief semi-structured interview. These interviews were meant to provide further in-depth insights into the citizen engagement practices they described in their surveys.

1. Pre-test survey
    - Previous citizen engagement experience
    - Current citizen engagement practices
    - Expectations of workshop
2. Post-test survey
    - Scope model
    - Ladder model
    - Points for improvement
    - Future citizen engagement practices and take-aways
3. Interviews

4. Tool outcomes: 2 interventions mapped out in Scope Model

In Utrecht and Vaasa, the main data was collected through desk research and documents and observation noted obtained from the Innovation Studio. These are therefore considered secondary case studies. The findings will be presented briefly at the end of the results section and serve to sharpen the discussion section.

Results

Participants

The workshops involved local project members from each work package. These members were stakeholders representing government, private or semi-public companies and academia. Table 1 contains the number of participants per city.

Table 1. Participant numbers

City	Female	Male	Total
Gothenburg			11*
Nice	3	8	11**

*2 participants had to leave early
*4 participants had to leave early

Pre-test outcomes

The pre-test survey inquired about participants' prior experience with citizen engagement. There was a string existing participation culture, since the majority of participants had at least some experience with citizen engagement practices. The experiences varied from theoretical knowledge encountered in university to co-designed products, budgets and governance mechanisms. Presently however, many people were also not engaging in citizen engagement activities. The findings from the survey were supplemented with a scan of the cities' communication outings on citizen engagement. For Gothenburg, the news section of their website lists a wide range of citizen engagement practices, many of which are also mentioned in the survey results. Examples are a participatory democracy tool and participatory council meetings (Göteborgs Stad 2018). On Arnstein's (1969) ladder, the citizen engagement practices range from the informing to partnership levels. For Nice, their public communication does not include a central messaging board or news section. There is one citizen engagement tool on the city's website: Services Bleues. This is a portal where citizens can submit complains or defects of the electric bike and car network in the city (Ville de Nice 2018). It is not specified how the input is handles after that and whether there is a feedback system in place. This practice would either rank as consultation or placation. The workshop survey revealed more citizen engagement experience in selected participants, such as a collaborative democracy or design thinking with end-users of public transport.

Table 2 contains all previous and current citizen engagement practices listed by the participants of the two workshops.

Table 2. Pre-test survey: participation culture

	Previous citizen engagement experience	**Current citizen engagement practices**
G1	None	Energy saving app Ero within project PET
G2	City planning - open meetings, open space, focus groups, etc.	City planning with citizens participating
G3	Workshops and focus groups, as a consultant, often in projects led by municipalities.	Focus group in IRIS with future users of the e-mobility service we will be implementing. Has met 3 times so far.
G4	I've worked since 2002 with citizen engagement, participatory budgeting, citizen panels, e-petitions.	Democracy ambassadors - a project within the city of Likbeorg. E-petitions, a digital democracy tool that made it possible.
G5	Brand journalism in projects focused on impact, competitions to N3C awareness.	None.
G6	As a researcher using qualitative methods for collecting dat from users	None
G7	None with tools. However, citizen engagement is an important part in all EU-projects we're involved in. We work with innovation management and experts on citizen engagement.	Several projects where citzien engagement plays an important part. I'm not in charge of it, but involved.
G8	I am a design thinking instructor and coach. I have been working on DT for the past 4 years.	None
G9	Working with broadcast news, we create a persona that was typical viewer	None
G10	A small number of dialogue tools learn and applied during architecture studies	None
G11	Gothenburg Cities project regarding citzens proposals called Goteborgforslaget. A tool where can leave proposals to politicians online	Democracy-engagement projects in Gothenburg City like democracy-ambassadors for example
N1	Social media surveys	None
N2	Theorethical knowledge only	ICT-based feedback tools
N3	Design thinking questionnaires	None
N4	Citizen council; collaborative democracy web-tool	None
N5	Start-up support	As IRIS project manager: using the tools of the IRIS project
N6	Design thinking with Veolia end users; Citizen Utilities Savings Awareness (CUSA) with various landlords; App for real time power	I am still involved in CUSA at the moment.

	measuring by citizens	
N7	Peak load reduction project with 140 participants in Nice area. Households receive points for good performance.	Projects on the left still ongoing.

With regards to expectations about the content of the workshop and the tools in contained, people mainly expected to learn about new tools. People understood the workshop aim relatively well in that regard. One person in Gothenburg pointed out that he or she thought that there should have been one person representing each measure at the workshop. With regards to expectations of the workshop in terms of interpersonal contact, participants in both cities were hoping for and expecting a lot of interpersonal learning and sharing of best practices. Figure 3 provides an overview per city.

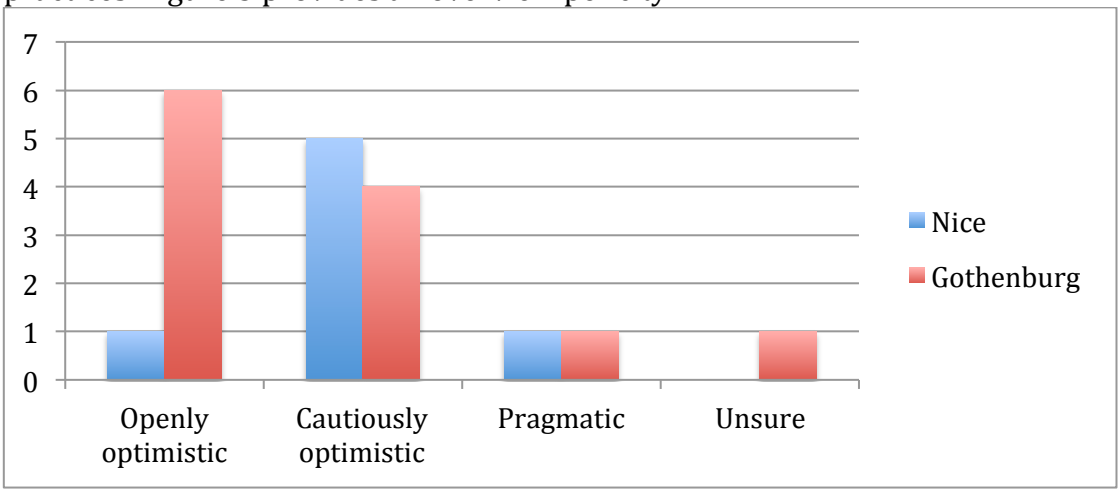

Figure 3. Expectations of workshop

Post-test outcomes

In the post-test, the first variable surveyed was the participants' experience of the tools. The perception of the Ladder exercise and Scope Model were largely positive, although some participants were unsure about the use or applicability. When asked to elaborate, some participants gave some possible use for the tools. For the Ladder exercise, participants cited the use as a classification tool as well as a discussion vehicle as its main positive aspects. The main difficulty for the participants was distinguishing between the different levels. For the Scope Model, multiple participants indicated that they would like to see the model applied 'in practice': map out an intervention together with the relevant citizens. Another comment was that the model was too detailed, and that too many questions needed to be answered to get a good picture of the intervention. To some other participants, this was actually a point of praise.

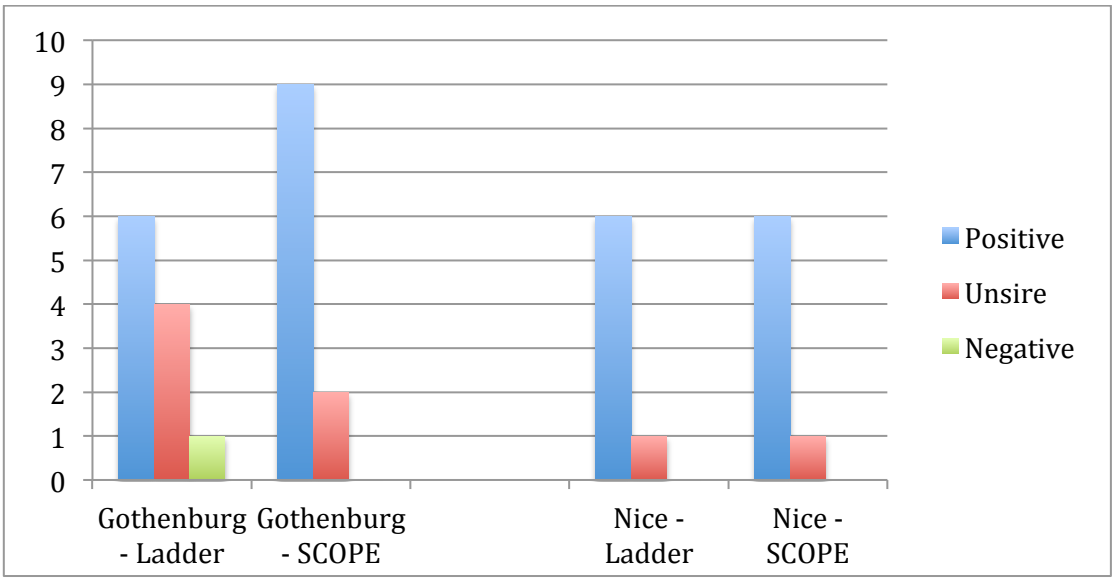

Figure 4. Experience of material aspects per city

The final element of the post-test survey was the set of take-aways form the tool and the elements of it that participants would take forward in their work. Some cited the tool itself, while others mentioned paper prototyping or contact HKU for more information. Table 3 contains the main take-aways per participant.

Table 3. Post-test survey: material aspects

	Take-aways
G1	Contact HKU for help/input about KPIs and Gothenburg about goals
G2	Set up a "board of expertise"- work with paper prototypes
G3	Paper prototype was an nice one!
G4	Ask more questions before we decide and do
G5	Engage in Min Stad and Mine Craft!
G6	Will have this model in mind. it's easy to explain to others as well
G7	None
G8	However, our solutions might not be timed right to start applying these models within IRIS
G9	I'm going to bring this knowledge in future projects.
N1	Not working on this. But I'll now be able to discuss it with other people included in the project!
N2	Still need to think about it
N3	I will incorporate in the global workplan of the workpackage in which I'm involved in the citizen engagement process.
N4	Use the model template to map our use cases of the Nice site demonstrations
N5	As workpackage leader, focusing on D6:1 . Assessing all IS (Level 3 and/or 4) according to LADDER approach. Ensuring smooth implementation of the plan defined
N6	I will use the both methodologies, both SCOPE and LADDER, for the two pilots I am in charge of WSA, and Smart management of [illegible]
N7	Retrospectively compare this approach with what we did for the CityOpt project.

Urban interventions in the Scope Model

Gothenburg: Min Stad

The City of Gothenburg has developed Min Stad, a Minecraft-inspired app that allows citizens to alter their environment and give feedback to local decision makers directly though the app. Minecraft as a tool for education and co-creation for children of their city. In the app, the entire city is mapped out into Minecraft, and students get to play and explore. It exists for mobile and desktop. In the present, it is not accessible enough, as maps are sometimes missing. Citizen co-creation is new to the city, so there is no designated place that the feedback from the app goes to. In the Scope Model, the appropriate points for citizen engagement in this co-design process were mapped

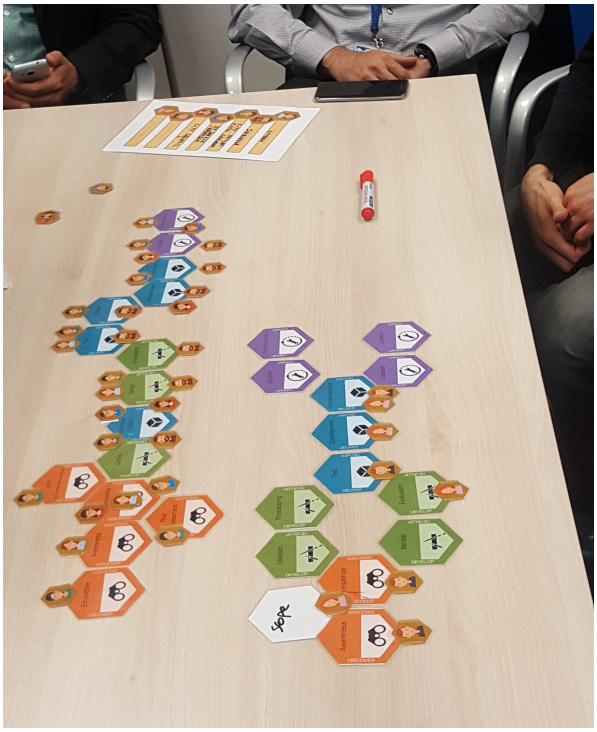

Figure 5. Scope Model workshop in Nice. Photo: Astrid Mangnus

Nice: Services Bleues

In Nice, the Services Bleues is a system of "smart" shared mobility such as bicycle and car sharing. Key project members are updating and expanding the existing infrastructure in Nice and much of the Cote d'Azur region. Since this was the most developed intervention that emerged from the ladder exercise, it was selected to be subject of the Scope Model. The model showed that currently, there was little room for adding on citizen engagement with regards to the Services Bleues. However, it became clear that there by testing halfway through the implementation, there was room further in the timeline of the intervention for some design iterations (Figure 5).

Utrecht and Vaasa

The cities of Utrecht and Vaasa were added to this paper as secondary case studies. Utrecht was selected because the process of the design tool was more embedded there. Vaasa was selected as a follower city where the Since there were no single workshops in these two cities, an elementary desk research supplied anecdotal data.

A scan of the City of Utrecht's website demonstrates many ways in which the city has institutionalized citizen engagement. Every neighbourhood has a board of advice. These boards regularly survey the inhabitants of their neighbourhoods, and regularly meet with the aldermen and major to point out points of opportunity or threat (Gemeente Utrecht 2018). This responsibility for the neighbourhood boards as the eyes and ears of the city government in a certain neighbourhood can be considered delegated power in Arnstein's (1969) ladder. With regards to the intervention, the Innovation Studio was based in Utrecht, attended their monthly meetings and organized a series of workshops and

sessions on citizen engagement, rather than one workshop. This made the embeddedness of the intervention very high, and made sure all local stakeholders in the project were exposed to these ideas.

In Vaasa, a follower city, the process of urban sustainability interventions has not started yet. This opens up the institutional landscape, since the policymakers and large actors might have their own goals and interests, but they are not yet in the implementation phase and so there potentially is room for a citizen engagement phase or a series of sessions at the beginning of the process. This means there is also a potential for citizen engagement practices to be built into the project architecture and its implementation. While the initiators of the design interventions are not spatially embedded in the local project, they is an opening for them to help structure the process so that the practices will become internalized and standardized. The public communications on Vaasa's website show that the city has a citizen engagement page where citizens can freely give input on every aspect of urban policy and planning, from green space to elderly care. The feedback is public, so other citizens can see on a map where feedback was given and what the government's response has been (Vaasan Kaupunki 2018).

Discussion

This research article investigated a number of cases where the same future design method was adapted to different contexts – each reflecting different combinations of the factors outlined in the conceptual model. The model is the main contributions of this paper, and is tested empirically by applying it to the different cases. In this section, the outcomes of the four case cities are translated into a set of recommendations for the different roles in change processes. The recommendations represent a hierarchy of situations that go from more to less control over the pre-conditions of future design methods. The case studies in this paper represent those four main situations. For each of these types of conditions, we provide recommendations for project funders/donors, for leaders of the overall change process or project, and for leaders of specific future design interventions.

1. *Change processes where all four factors are present.* In the IRIS project, the non-Lighthouse cities such as Vaasa offer a chance to design the change process with ample space for participatory planning. This means that, for instance, a significant first period of a multi-year change project is dedicated to stakeholders working together to integrate their visions and plans. There is a significant body of literature that supports the need for early involvement of stakeholders in change processes (Edelenbos & Klijn 2006; Berner, Amos & Morse 2011); alternatively, if for certain elements of a change process stakeholder involvement is not considered relevant, this should be clearly defined and explained. Interviews in the Vaasa case indicate that this means the attitude among stakeholders is much more supportive to participatory process design as a result.

   Recommendation:

- For funders of change processes, such as the European Commission for the project described in this paper, national funding, private foundations and funds, civil society networks and others, this means that funding call parameters and terms of reference should encourage openness to futures-oriented participation at the beginning of the time line of a change process.
- For leaders/organizers of a given change project, this means that they should work to make very clear that projects that aspire to co-design should avoid 'putting the car before the horse' and create ample space in the beginning of their projects.
- Under such open conditions, futures design interventions are expected to have the most beneficial results for transformation processes. Futures intervention leaders should be aware of these conditions for success, and stress their significance for successful citizen engagement within the project.

2. *Change processes where plans have been pre-designed and allow for little formal space for process co-design, but where there is good involvement and governance of stakeholders, a strong culture of participation, and strong embeddedness of the future design process and its organizers.* The Utrecht case in the IRIS project is an example of this set of conditions. As a result, because of strong stakeholder governance, experience with participatory processes among stakeholders, and strong embeddedness of the method and those who led it, significant changes could be made to the planning of the change process, retroactively creating space for process co-design using design futures approaches.

   Recommendation:
   - For the funders, and specifically for those roles within funding bodies such as project officers within the European Commission responsible for liaising with change projects, it is important to pay attention to signals from project leaders and futures intervention leaders throughout the project. When there are signals that the project needs to be amended, the funders should accommodate this.
   - When a change process has been designed in a way that limits desired co-design through multi-stakeholder methods, the three above factors should be identified and leveraged by project organizers to retroactively create this space in the process.
   - This has consequences for the futures intervention leaders working as part of the project they should be experienced within the local context to ensure clarity about process governance and stakeholder involvement, and have experience with participatory methods among local stakeholders.

3. *Change processes where plans have been pre-designed and allow for little formal space for process co-design, where the futures method and its leaders are not yet embedded in the larger process, but where there is good involvement and governance of stakeholders; and a culture of participation.* The Gothenburg case is an example of these conditions – where the future

design intervention was led by outside facilitators and in a single event rather than through a process of continual engagement. As a result, the influence of the future design intervention on the change process can be characterized more as a general opening of space (for instance, extending the scheduling of the project) rather than more extensive changes to planning in the present such as those seen in the Utrecht case.

Recommendation:

- Funders of large sustainability transformation projects should pay attention to writing calls for proposals in a way that encourages consortium members to collaborate, and to select futures experts with locally relevant experience and connections if possible, or at least include deliverables for local capacity building with international experts if this is not possible.
- Futures design methods can be combined with continual engagement to create mutual trust, understand local leverage points and adapt the process as necessary. If such locally embedded co-leadership is not possible, the next best thing for project leaders is to take special care to come to very concrete proposed changes to the planning process, for which champions are identified to help make their implementation more likely.
- External experts leading the use of future design methods should collaborate extensively with process co-leaders who are more embedded in the local context, and focus on building local capacity for citizen engagement by developing local future design expertise among their partners.

4. *Change processes have been pre-designed; the futures method and its leaders are not yet embedded in the larger process; governance of the process and stakeholders is fragmented; and there is no pre-existing culture of participation.* The Nice case is an example of the above conditions. In the absence of these enabling conditions, however, the future design method has still been valuable to outline the participation challenge and get stakeholder inputs in a consultative mode.

   Recommendation:

   - The funders of large sustainability transformation projects should allow space for futures work that is critical of its context if that context proves to be limited in important ways, in order to highlight challenges and avoid allowing only positive messages to come through. That way, the project funders can benefit from the insights coming out of such critical futures work by using these insights as learning experiences and input for the design of next funding round.
   - For the leaders of change processes and projects, it is important to clearly identify the presence or absence of the above pre-conditions, and adjust the ambitions of the process to what is feasible in the context.
   - In the absence of all enabling conditions, future design leaders can use their methods to highlight the challenges of the project and

gather stakeholder perspectives that can still inform the change process later on, but in a consultative mode rather than a co-design mode.

Limitations and future research

To put the results and discussions of this paper into perspective, a few limitations to our research should be noted. The empirical base for the study was relatively small. However, it indicates that the futures intervention and the conceptual model were appropriate and apply to various multi-stakeholder change processes. Applying the model to a larger case or project is an opportunity for future research. This larger empirical case could also serve to balance control and effect, which is a recurrent challenge in action research like this.

Conclusion

The aim of this paper was to test how futures interventions can be used to create space for participative imagining of transformative futures in top-down transformation initiatives that are framed by pre-determined agendas and priorities. We introduced a new model comprising the four pre-conditions that shape the impact of participatory future design methods: the space in the institutional landscape of a multi-stakeholder project; the participation culture within the project; the project design; and the design intervention itself. We selected four cities within the international, multi-city H2020 IRIS Smart Cities project as case studies: Utrecht, Gothenburg, Nice and Vaasa. The project comprises a variety of stakeholders with diverging interests and levels of power, and the four cities each reflect a different combination of the aforementioned pre-conditions. One futures design tool, the Scope Model, was applied to the main cases in Gothenburg and Nice. The model allows participants to map out the entire project in separate blocks, in order to reflect critically on the possibilities for and limitations to breaking open the process and enable the participatory planning of transformative futures. A comparison of the cases resulted in a set of recommendations for different roles in change processes, applicable to a hierarchy of situations that go from more to less control over the pre-conditions of future design methods.

References

Abelson, J., Forest, P., Eyles, J., Smith, P., Martin, E., & Gauvin, F. (2003). Deliberations about deliberative methods: issues in the design and evaluation of public participation processes. *Social Science & Medicine*, *57*, 239–251.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224.

Berner, M. M., Amos, J. M., & Morse, R. S. (2011). What consitutes effective citizen participation in local government? Views from city stakeholders. *Public Administration Quarterly*, *35*(1), 128–163.

Bibri, S. E., & Krogstie, J. (2017). Smart sustainable cities of the future: An extensive interdisciplinary literature review. *Sustainable Cities and Society*, *31*, 183–212. http://doi.org/10.1016/j.scs.2017.02.016

Brandt, E., Binder, T., & Sanders, E. B.-N. (2012). Tools and techniques: ways to engage telling, making and enacting. In J. Simonsen & T. Robertson (Eds.), *Routledge International Handbook of Participatory Design*. Abingdon-on-Thames: Routledge. Retrieved from https://books.google.nl/books?hl=nl&lr=&id=l29JFCmqFikC&oi=fnd&pg=PA145&ots=VqbkUwmXJY&sig=8SrGPaW1hflXS0Pd-z5r-cZofyw#v=onepage&q&f=false

Broadley, C., Champion, K., & Mchattie, L. (2017). Materiality Matters: Exploring the use of design tools in innovation workshops with the craft and creative sector in the Northern Isles of Scotland. *The Design Journal*, *20*(sup1), S550–S565. http://doi.org/10.1080/14606925.2017.1353003

Davies, S. R., Selin, C., Gano, G., & Pereira, Â. G. (2012). Citizen engagement and urban change: Three case studies of material deliberation. *Cities*, *29*(6), 351–357. http://doi.org/10.1016/j.cities.2011.11.012

Edelenbos, J., & Klijn, E. H. (2006). Managing stakeholder involvement in decision making: A comparative analysis of six interactive processes in the Netherlands. *Journal of Public Administration Research and Theory*, *16*(3), 417–446.

Fox, W., & Meyer, I. H. (1995). *Public Administration Dictionary*. Cape Town: Juta and Company Ltd.

French, T., Teal, G., & Raman, S. (2016). Experience Labs: co-creating health and care innovations using design tools and artefacts. In *DRS2016: Future Focused Thinking* (pp. 1–15). Brighton: Design research society.

Gemeente Utrecht. (2018). Initiatief en Invloed Participatie. Retrieved November 5, 2018, from https://www.utrecht.nl/bestuur-en-organisatie/initiatief-en-invloed/participatie/

Göteborgs Stad. (2018). Aktuelltarkiv. Retrieved November 5, 2018, from https://goteborg.se/wps/portal/press-och-media/aktuelltarkivet/!ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfIjo8zijZwMAi2cDB0N_MMCXA08fbxNjIKDjI3cvQ31w8EKQg1hCvwDzAw8vQKMQv18HY3NLAz1oyjQbxhsSpx-AxTgaOAUZORkbGDg7m9EnH48CqIwjEe2SL8gNxQIHBUBUmhbNg!!/dz/d5/L2dBISEvZ0FBIS9nQSEh/

Head, B. W. (2008). Community engagement: Participation on whose terms? *Australian Journal of Political Science*, *42*(3), 441–454. http://doi.org/10.1080/10361140701513570

Hebinck, A., Vervoort, J. M., Hebinck, P., Rutting, L., & Galli, F. (2018). Imagining transformative futures: participatory foresight for food systems change. *Ecology and Society*, *23*(2), 16.

Hemmati, M. (2002). *Multi-stakeholder processes for governance and sustainability*. London: Earthscan.

IPCC (2018). *IPCC special report on the impacts of global warming of 1.5 °C*. Incheon. Retrieved November 5, 2018, from http://www.ipcc.ch/report/sr15/

IRIS Smart Cities. (2018). Home. Retrieved November 5, 2018, from https://irissmartcities.eu/

Lockwood, T. (2009). Transition: How to Become a More Organization. *Design Management Review*, *20*(3), 11.

Patterson, J., Schulz, K., Vervoort, J., van der Hel, S., Widerberg, O., Adler, C., … Barau, A. (2017). Exploring the governance and politics of transformations towards sustainability. *Environmental Innovation and Societal Transitions*, *24*, 1–16. http://doi.org/10.1016/j.eist.2016.09.001

Pidgeon, N., Demski, C., Butler, C., Parkhill, K., & Spence, A. (2014). Creating a national citizen engagement process for energy policy. *PNAS*, 1–8. http://doi.org/10.1073/pnas.1317512111

Sanders, E. B., & Stappers, P. J. (2014). Probes, toolkits and prototypes: three approaches to making in codesigning. *CoDesign*. Taylor & Francis. http://doi.org/10.1080/15710882.2014.888183

Sanders, E. B.-N. (2000). Generative Tools for CoDesigning. In *Collaborative Design*). London: Springer-Verlag.

Spante, M., & Alfredsson, K. (2016). Cross Competence Collaboration to Design for Inclusion. *Proceedings of the 9th Nordic Conference on Human-Computer Interaction - NordiCHI '16*, 1–3. http://doi.org/10.1145/2971485.2987672

Tan, E. (2014). *Negotiation and design for the self-organizing city: Gaming as a method for Urban Design*. Delft University of Technology.

Truex, R., & Søreide, T. (2010). *Why multi-stakeholder groups succeed and fail* (Policy reseacrh working paper series No. 5495).

Vervoort, J. M., Kok, K., Beers, P. J., Van Lammeren, R., & Janssen, R. (2012). Combining analytic and experiential communication in participatory scenario development. *Landscape and Urban Planning*, *107*(3), 203–213. http://doi.org/10.1016/j.landurbplan.2012.06.011

Vaasan Kaupunki. (2018). Anna palautetta. Retrieved November 5, 2018, from https://feedback.vaasa.fi/eFeedback/fi/PublicSearch

Ville de Nice. (2018). Mes Demarches en Ligne. Retrieved November 5, 2018, from https://citoyens.nice.fr/espace-demarches/#!/demarches

Waylen, K. A., Blackstock, K. L., Marshall, K. B., & Dunglinson, J. (2015). Participation–Prescription tension in natural resource management: The case of diffuse pollution in Scottish water management. *Environmental Policy and Governance*, *25*, 111–124. http://doi.org/10.1002/eet.1666

Zeeuw, H. De, & Dubbeling, M. (2015). Process and tools for multi-stakeholder planning of the urban agro-food system. In H. De Zeeuw & P. Drechsel (Eds.), *Cities and Agriculture: Developing resilient urban food systems*. London: Routledge.