Playful architecture

Discussion on incorporating end-users
in architectural design
and using game as a method

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Research question

What are the benefits that we can obtain from making a design process participatory? What are the reasons to engage with participatory design connected to the theory of design, and what are the special issues and obstacles when it is applied in architecture? Can the framework of game be a suitable method to facilitate participatory design in architecture?

Abstract

Theoretical understanding of the design process is a necessary prerequisite for turning the popular idea of participatory architectural design into a successful practice. Since the link between the theory of architectural design and the notion of laymen participation has not been well analyzed and documented yet, the first part of this paper tries to establish such relationship through the thoughts of Christopher Alexander. Moreover, the first chapter offers possible explanations of the uncertain development that participatory design has experienced in the field of architecture so far.
The second part of the report introduces the practical experiment that was developed during the first months of the research and contributed to the research by a substantial practical insight. The subject of this experiment was to design a game as a vehicle for a participatory architectural project, and through a thorough reflection gain more knowledge about this topic. The final game design was developed through a series of less complex preliminary game designs, which are described as the different phases of the experiment.
For a relevant reflection on the experiment, that was developed on a more intuitive knowledge base, more literature study on games and game-like participatory projects was needed. These topics are briefly introduced on the beginning of the third chapter, together with a description of two case studies and one example of game-like participatory projects realized in urban planning. This knowledge is used in the subsequent reflection on the proper experiment, which raises mainly practical questions about participatory practice in architecture, detects the problematic aspects of this approach and suggest several topics were more knowledge needs to be produced.

Key words

participation
participatory design
design theory
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game

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Preface

In the beginning, there was a concern and a hobby.

In all the school projects that I have worked on, I have been told to 'define the targeted group of my project' and 'determine the program according to that'. Although I always obeyed such order, I never felt comfortable doing it. It felt somewhat artificial to assume what someone will want to do in her living room based on the fact that she is a 30-year old female teacher in the kindergarden. And what if this teacher turns 35, decides that she had enough of kids and starts a new career in a nearby slaughterhouse? It all seemed too complex to figure out without meeting this teacher and shaping her environment together with her. That was the concern - the degree to which many decisions of an architect are based on his mere assumption of how the world around him works.

The other ingredient to this research has its origin in the world of my hobbies. I have always liked playing games, with my grandmother the most, as she always let me win. From the age of 15, I started attending summer and winter camps for high-school students interested in mathematics, physics and information technology, and later became a member of the organizing team. I enjoyed the challenge of organizing all sorts of games for them, as they naturally demanded for high level of sophistication and elaboration. I had never studied games in literature or gained much of a theoretical understanding of them; however, from the practical training I knew what the interesting elements are that can be beneficial when applied in more serious ways than solely for entertainment.

Approximately a year ago, I attended a lecture by Studio Papaver and learned about their alternate reality game Leve de Krimp!, a participatory project that tries to find solutions for population decline in the Netherlands. I was pleased to see that my hobby could become a means to sooth my previously addressed concern.

I started this graduation project without knowing much about the topics I wanted to engage with, I therefore spent a lot of time reading texts about participatory design and community involvement,

about games used in participatory processes, or just games in general. The volume of literature produced on each of these topics is huge, which is not surprising, concerning how broad these topics are. Among these piles of texts I was vainly looking for a document that would explain to me the basics of participatory design in the field of architecture, such as those written for the field of urban planning or technology design - summarizing the historical background, motivations and reasons why to engage with it, or practically proposing certain general guidelines for a successful participatory architectural practice.

The lack of such literature caused that the search for a well-grounded reasoning for my intuitive and somewhat naïve belief in participatory processes in itself became a considerable part of the whole research. I found the logic of Christopher Alexander quite accommodating for the firm theoretical base that I needed to establish for myself. The first chapter of this report therefore serves rather as an extended introduction into the participatory processes in architecture, elaborating on the benefits that participation of laymen brings to architectural design as well as detecting the main obstacles that prevented architectural design prom smoothly adopting the participatory approach. In fact, I am attempting to compose the sort of document that I initially lacked.

Being more of an impulsive and creative person than a patient analyst, my mind was, from the beginning, busy with wondering about how I could make a game that would fill the gap between the architect and the ones who he designs for. After a series of unsatisfactory results of game designs and subsequent reflections I arrived to one that seemed to make sense to me, although at that point I had read too little to be able to describe this sense anyhow else than as highly intuitive. Nevertheless, I tested this game in quite a formal manner with my fellow architectural students. I again received a valuable reflection based on the experience of the players as well as on my own observation. Finally, after taking more time to read about games and understand them more deeply, I was able to reflect on this experiment more knowledgeably, and deliver impressions and conclusions that can contribute to the discourse of using a game as a framework for participatory architectural practices.

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Thank you.

Introduction

Although the term *participatory design* was established only in the 1970s, the idea of citizen involvement in the design processes that shape their environment is much older. Already the principles of Plato's Republic involved the freedom of speech or public voting, which later became the principles that American democracy is constituted on. No wonder that American society was a fertile environment to develop a sense for community involvement, and is still a country where citizen participation has its firm place. Next to this democratically driven participatory approach, the advent of technology brought about another motivation for end-user engagement in the design process. In Scandinavia in 1970s, designers developing technologies for workplaces lacked essential practical knowledge about the work processes that these technologies needed to be fitted on, which resulted in a new design approach uniting the workers and the designers in a strive for a well performing technological product. While in America, the approach was more bottom-up and process-oriented, the Scandinavian one can better be characterized as a top-down approach oriented on the product.

These two directions have gained quite some attention throughout the past decades and were elaborated on in both theoretically and practically oriented literature. Concerning the democratically motivated stream, American professor Henry Sanoff has produced numerous publications about community involvement already since the 1960s. This concept has evolved since then, following the political, economical and technological development; however, even in the recent works, such as Ekim Tan's Play the city, we still recognize the original motives and principles.

Professors Olivegren and Granath were pioneers on the participatory approach in architecture that arose from the events in Scandinavia in 1970s and published several papers, that were, however, too empirical to establish a firm theoretical base for participatory design. Regarding the Scandinavian stream, a category for itself, that can eventually serve well for understanding the Scandinavian motives, is end-user involvement in the field of technology design and human-computer interaction. In this field, extensive research was carried out and documented already at its origin and still attracts many theorists and practitioners across the world. It is also the only field where participatory approach was applied, in which a thorough handbook was delivered, mapping the history as well as main principles and possible methods and tools suitable for involving laymen in the design process.

Architecture seems to be a special case among the other fields. It is a practice engaged with producing physical components of urban environment that have a big influence on the lives of those who come in contact with them. It is therefore a practice where the two directions come together, giving a meaning to citizen empowerment as well as a necessary demand for a high quality product that must respond to the living processes of those who will inhabit it. For some reason, this potential double motivation has not been resonating in any enthusiasm to establish for participatory practices a firm architectural base.

Making architectural design participatory seems to make sense, but in many cases does not work. To make it work, we need to find and understand the reasons that make participatory approaches in architecture fail.

Discovering the ways how can laymen participation contribute to the quality of architectural design, as well as the reasons why were its potential benefits recognized by relatively few people, constitutes one part of this report. It investigates the benefits through the theory of design, building on the understanding of the design process proper to Christopher Alexander, as depicted in his Notes on the Synthesis of Form (1964). In his works he often touches upon the core principles of laymen participation in design, and therefore offers a suitable framework for understanding the notion of participation within the process of design as such. The following section then applies this understanding on the field of architecture and tries to find the reasons why participatory architectural design has not been successful.

After having understood what are the main issues of participatory architectural design, the focus of the research moves to the other part of the research question, that asks for a discussion about the notion of game as a possible vehicle for conducting participatory architectural projects. The history of using games for serious tasks is quite rich, as well as the literature base that this idea stands on. Thanks to the similarity of the nature of play with situations that we experience in real life, philosophical understanding of play and game has been elaborated on by many thinkers. Publications such as Homo Ludens (1938) by Johan Huizinga, Man, Play and Games (1961) by Roger Caillois, or Play, Dreams and Immitation (1962) by Jean Piaget offer look at games in perspectives of philosophy, sociology or psychology and open a whole field of possibilities how can the framework of game complement our real-life tasks.

Architecture and urban planning mostly profit from certain structural elements of game, such as the

presence of conflict, need for collaboration or its suitability to accommodate large number of players. Moreover, the potential of play to be a powerful learning tool complements the essence of participatory practices, aiming at mutual exchange of knowledge between the designer and the user.

With a reference to several game-like participatory projects in urban planning, such as 'Leve de Krimp!' by Studio Papaver or 'Play the City' by Ekim Tan, I decided to research the fusion between participatory practices and the framework of game through more experimental approach. I devoted several weeks to designing a game that would house a participatory architectural happening, and conducted a practical try-out at the end of this design process. The essential part of this paper therefore describes the experiment as it unrolled from preliminary game designs, over the testing of the final game, to the reflection on the whole process. The final reflection embeds the understanding of the notion of participation as described in the first part of this report, and further builds on literature study about theory of games and three examples of projects that applied the framework of game in the field of urban planning. With such a knowledge base, the lessons we learned from the experiment and that are revealed in the final reflection can be taken as relevant contributions to the research of untraditional design methods, that seem to be in our quickly developing world increasingly required.

Methods of investigation

The focus of this research is, firstly, to understand the issues and motivations behind the participatory approach in design, first generally and then applied on architectural design. Secondly, it focuses on the notion of game and its essential elements, that proved to be complementing for the participatory processes, and discusses game as a possible framework that can accommodate participatory design in practice. The nature of this research is therefore qualitative.

The understanding of the participatory design is gained exclusively from literature. While participatory design in urban planning (UP) and information and communication technology (ICT) received enough attention to be described both in theoretical and more empirical literature, resources discussing participatory approach in architecture mostly focus on a description of a particular projects. Even though they often do include parts with more theoretical view of the approach, they mostly serve for justification of the methods used, and therefore stay rather one-sided and uncritical. The literature about UP and ICT is therefore used to give a general overview of the historical background and main features of participatory design, while the architectural publications offer an insight in the current stage of development of participatory practices in architecture. Furthermore, literature discussing the theory of design was used to understand the benefits of participation within the design process as such. Particularly the works of Christopher Alexander serves as a theoretical base for this discussion.

As I premised, an essential part of the study on potential use of game as a method for participatory design was a series of practical experiments carried out in the first months of this project. As they were conducted before the major part of the literature study was done, they are described through the context in which they were designed, in order to stay authentic. The fundamental reflection of these experiments was gained through presenting them to other architectural students or testing them with both architectural and non-architectural students. The chapter that follows reflects on these experiments through the knowledge that was gained after their testing. The sources of this knowledge were, on one side, publications discussing games, either from more structural level, or revealing the depth of their more philosophical meaning; on the other side, several representative examples of game-like

participatory projects, conducted in urban planning, were selected to offer more practical insight, and were researched through a descriptive literature as well as personal interviews with the authors.

To reflect on the research methodology, I will shortly discuss the pros and cons of the used literature and of the way the experiment to realized. The kind of literature that was used to gain the theoretical understanding of participatory design was often a cause of misinterpretation. The papers and handbooks written by computer scientist are often trying to discuss the topic in a general way; however, the differences between the nature of technology design and architectural design makes their data inapplicable for our purposes. The papers describing participatory projects in architecture then mostly include a part that gives a theoretical background for their approach; however, they do that in order to justify their approach and therefore giving a critical reflection is far from their intention. The literature about games sometimes suffered for similar reasons, mostly giving a misshaped image of the topic due to the authors' professional affection.

Conducting the experiment early in the process brought about advantages as well as disadvantages. Learning through practical experience proved to be very effective in detecting and understanding the main problems that can lead to an unsuccessful practice. The following literature study could then be focused on the issues that were already determined during the practical experiment, which can generally safe a considerable amount of time. On the other hand, conducting a practical experiment without a theoretical preparation naturally results in its lower quality and propensity to fail for reasons that might have been otherwise diminished or removed. To pick from these options, it supposedly depends on the preference of the researcher and the way of working that suits him the best.

1. Understanding the notion of public participation

1.1 Historical background

The notion of participatory design as we nowadays understand it is believed to have two main motivations: one can be seen as a bottom-up oriented incentive connected to democracy and empowerment of citizens, the other is a more top-down oriented strive for a quality design that serves well to its users. Although many today's projects, especially in architecture, embrace both of these reasons, the history of participatory approach is rather torn between them.

From the democratic point of view, participatory approach is based on the belief that people should have a say in the way their environment is being formed. Such thought goes as far back as Plato's Republic and its concepts of freedom of speech, assembly, voting and equal representation. Those have evolved in time to form a basis for establishing United States of America, where the volunteer citizen participation continues to be one of the key concepts of the society. (Sanoff 2006)
With a fast development and population growth of the villages of American frontier, enabling a participation of all the citizens became increasingly difficult. People began to delegate their involvement to a representative, which grew into the system of public elections determining the representative officials.
Within such system, the 1960s community consciousness lead to a direct involvement of public in forming their physical environment and increased sense of social responsibility, growing into a new movement. In USA and UK, new community design centers were established, focusing on enabling the poor to implement their own goals and interests in the was how the city is governed. During this decade, many other planning professionals rejected the traditional practice and began to fight against urban redevelopment, advocating the rights of poor citizens and developing new methods to incorporate them in the process. (Sanoff 2006)
Experiences that arose with time from community participation practices brought an important understanding: not only it is ethical to incorporate the citizens in the process, but the formed

environment works noticeably better if citizens are active and engaged in its creation and management instead of being treated solely as passive consumers. It became clear that without establishing a democratic participatory environment on the level of local and private organizations, a true democracy on the national level will never be reached. Although the 'citizen rule' is (or ought to be) an innate essence of democratic ideology, all modern nations in reality leave the large segments of the population considerably powerless to significantly influence the political decisions and actions, and policies that are being imposed on the societies. The lack of influence, that we are in Europe aware of, proposes the question of how democratic our democracy actually is. Such doubts lead to the introduction of the term 'participatory democracy', defined by the idea of an actual democratic environment where decision-making is highly decentralized throughout the all the sectors of society. (Sanoff 2006)
Despite of frequent criticism pointed at the idea of participatory democracy, this notion has recently invaded numerous areas of social life, such as industry, neighborhoods or race relations. New concepts such as 'collective intelligence' (see Tom Atlee) 'deliberative democracy' (Lyn Carson) or 'Theory Z' (William Ouchi) are conceived, and the importance of the 'sense of community' and bringing its members to a genuine dialog is being further analyzed. Since 1990, community participation has been shielded by The International Association for Public Participation (IAP2) founded in USA. (Sanoff 2006)

While the democratic approach to environmental politics flourished in USA and UK, a more top-down socialistic participatory approach, although ignited by democratic ideas as well, appeared in northern Europe. Particularly, the partnership between academics and trade unions that emerged in Scandinavia in 1970s is believed to be the foundation of hereby motivated participatory design (Spinuzzi 2005). There and then, the introduction of information technology into workplaces brought about the need to incorporate the workers in the design of these new technologies. Since the workers did not know how to design computers themselves, they were put into the position of accepting these new disempowering technologies, or simply rejecting them (Spinuzzi 2005). That resulted in the workplace democracy movement, motivated by a Marxist commitment to democratically empowering workers and fostering democracy in the workplace and later in establishing a set of legislation in Sweden, namely the Co-determination Act in 1976 and the new Environment Act in 1978 (Spinuzzi 2005; Robertson &

Simonsen 2013; Granath 1996).

Several projects were set out in Scandinavia to find the most effective ways for collaboration of computer-system designers and worker organizations, in order to develop systems that most effectively promoted the quality of work life. The 'tool perspective' was a new philosophy conceived by Pelle Ehn, claiming that computer-based tools should be designed as an extension of the traditional understanding of materials and tools being used in a given craft or profession. As the workers have the necessary practical understanding of the work process but lack the insight in the new technical possibilities, the collaboration of these two parties seemed inevitable. (Sanoff 2006)

Such events in Scandinavia inspired other designers and researches of continental Europe to investigate possible applications of this approach to their own practices in different fields. Moreover, the two separately developing streams of participatory approach soon started to mingle and influence each other, and 1971 the idea of participation grew into the theme for the conference of the Design Research Society in Manchester (Robertson & Simonsen 2013). Proceedings from this conference, published as a collection of contributions from experts of various nationalities and fields, such as social technology, participation in planning, adaptable environment, computer aids and design methods, can be found under the title Design Participation: Proceedings of the Design Research Society's Conference (1972), edited by Nigel Cross. In the postface of this book, Robert Jungk reacts on the expected shift from more individual design practice to more participatory one, as addressed at the conference: "As a prognostician, I don't think this change will take place before the end of the century. We will have to suffer first from the lack of foresight of our fathers and forefathers. After that, something radically different can come, but it won't come on its own: it has to be prepared." (Cross 1972) Over 40 years from there, we still do not seem to be prepared, and the belief in this big change seems to be nowadays weaker than then.

However, since the 1970s, participatory design has spread to many different design fields, from technical communication, human-computer interaction and software and hardware design, across industrial design to the architectural and urban shaping of the built environment (Spinuzzi 2005). Depending on the nature of the project, the motivation for user/citizen involvement tilts either towards the bottom-up or the top-down orientation, but often also embraces both of them. This is the case for architecture,

where the two motivations come together in a creation of a design artifact that needs to serve its users well and in the same time significantly shapes the living environment of the citizens.
While the breadth of applications of participatory approach offers a fruitful variety of insights and points of view, it also brings many different views on what actually participatory design is and how it can be defined, and creates considerable puzzlement in the head of whoever tries to get informed. In the next paragraph I will mention several ways how participatory design has been understood.

1.2 What is participatory design?

In more practically oriented literature, participatory design is generally referred to as *design approach* or *design process*, that is simply characterized by involvement of different stakeholders (Johnson 1998; Granath 1996). In the field of technical communication and human-computer interaction, participatory design is often discussed as a *research orientation* or even a *field*.
Spinuzzi (2005) opposes such interpretation and proposes a more theoretical, *methodological* explanation of participatory design. "The distinction may be important in principle, but in practice, it has become an escape hatch that allows practitioners to label their work 'participatory design' without being accountable to established, grounded precedent. By looking at that established precedent, we can define participatory design as a methodology, even if it's a loose one." (Spinuzzi 2005) He understands participatory design as *being research,* and discusses the methodology as a way to understand *knowledge by doing* - the tacit and often invisible ways that people perform their activities (Nardi & Engestrӧm 1999, Spinuzzi, 2005).
Robertson and Simonsen in the newest handbook for designers of participatory processes in ICT world (2013) open-up the definition of the essence of participatory design and refer to it, as to a *process*: "process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective 'reflection-in-action'. The participants typically undertake the two principal roles of users and designers where the designers strive to learn the realities of the users' situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them." (Robertson & Simonsen 2013)

It is not my role to wonder which of these explanations and approaches is the correct one, but rather to give an insight to the complexity and perhaps certain immaturity of participatory design, attracting many researches and practitioners, yet resisting to be tamed and rigorously defined. Robertson and Simonsen (2013) see it as defined by a commitment to core principles of participation in design, rather than by any formulas, rules or strict definition, where these principles are, in turn, informed by different projects, methods and tools specifically for the design context in which we participate. Through the knowledge of different literature, we can supposedly articulate these principles as a *commitment to ensuring that those inhabitants will play a critical role in the design of the environments without having to speak the language of the profession, finding the way to their need and shaping the product according to them while being aware that the lack of professional knowledge may disable them in defining what they want and what is possible, and by the process of participatory design developing a sense of ownership and engagement with the final product and the way it serves and is being operated.* (Granath 2001; Woolner 2009; Robertson & Simonsen 2013)

If we look at it more practically, participatory design is a mutual exchange of knowledge, steering a course between participants' tacit knowledge and researchers' more abstract, analytical knowledge (Ehn 1989; Spinuzzi 2005). The focus on tacit knowledge has been always very important to understand; while in connection to architecture it seems rather natural to approach the participants' knowledge as rather implicit, in the field of computer technology and those who work with it it can be less obvious. Even there, a large part of workers' knowledge is difficult to formalize and describe, and stays often hidden and therefore neglected, as the information processing cognitive science, ignoring this hidden knowledge, tended to dominate the field of human-computer interaction. Such theory then mostly leads to a rationalist approach to design, which generally assumes that there is one best way to perform an activity. (Winograd & Flores 1986, Spinuzzi 2005)

Participatory design opposes this rationalist notion of knowledge both politically and theoretically. Politically it departs by committing to the democracy of shaping the environment by its inhabitants, and thus not striving for the most optimized tasks and products. Theoretically, as participatory design is based on constructivism, a theory that explicitly resist the notion of completely formalized and classified knowledge. (Spinuzzi 2005)

Tacit knowledge is implicit and holistic rather than explicit and systematized, it is what people know without being able to interpret it, which opposes the way how knowledge is often being understood. As Heidegger points out the fundamental "difference between involved, practical understanding and detached theoretical reflection"(Ehn, 1989), participatory design alternates between these two by discovering the tacit knowledge and subsequently and repeatedly reflecting on it in a critical way. (Spinuzzi 2005)

As the exchange of the knowledge represents a large part of the process of designing and creates a firm base for the design outcome, it is obvious that not only understanding the notion of knowledge is important in participatory design, but also understanding the notion and nature of design. The Design Research movement, which took inspiration from the Modernist movement, therefore influenced the early development of participatory design. In 1960s in UK, this topic brought together a variety of designers and researchers that tried to create a system in the understanding of design issues and problems. Several books and articles were developed, some trying to formalize design issues, some trying to understand how designers think (Alexander 1964, Cross 1990, Chan 1990). (Robertson & Simonsen 2013)

Analogically to the different interpretation of 'knowledge', we also see two main directions of how to interpret the 'process of design'. The two known rivals in this regard are the rational problem-solving model, represented by the Nobel Prize winner in economics Herbert Simon, and the reflective design paradigm, conceived by Donald Schön. The major difference in these approaches is the way how they treat the complexity of design problems, that are in their nature ill-defined (Robertson & Simonsen 2013; Simon 1990). Simon (and his follower Chan (1990) who applied this theory particularly on architecture) understands the design as a rational search process, in which the designer determines a problem space (the distance between the starting point and the goal) and tries to reduce it and overcome it by using formal methods and standard logic and mathematics (Simon 1990; Chan 1990). The complexity, or perhaps the messiness of the design problem is thus being reduced.

On the other hand, Schön views the designer as a reflective practitioner, which has become an accepted framework for many designers and an important reference in participatory design. He suggests that the

messiness has to be embraced and treated, and attention need to be paid to the way professionals master it, acknowledging that the stable state is an illusion. (Schön 1983, Robertson & Simonsen 2013) Accepting the fact that a designer cannot understand the design problem precisely, he tries to conceive a solution and uses different tools of representation (sketches, models, drawings..) to express it. This new situation brought by modifying the context then 'talks back' to the designer, and he subsequently responds to this reflection again. Through such iteration he eventually arrives to a final solution. (Cross 1990)

Even if we do not fully agree with the notion of reflective practitioner, participatory design certainly clings more to the non-rational way or understanding knowledge and design. It has become clear that understanding the theory of the design process is crucial in bringing the reasonably motivated participatory approach into a successful practice. This applies especially on the more top-down oriented participatory processes motivated by the quality of the design product, where the theoretical knowledge about design becomes essential as the role of the designer must necessarily be redefined. While the reasons and motivations for engaging in participatory design are quite clearly understood, the way how to actually realize a successful project, who to involve, what kind of data to seek for and what methods of representation and communication to use, remains in a highly experimental zone. Publications describing different participatory projects agree that an extensive research on these issues is necessary before participatory design can become a grounded practice (Sanoff 2006, Tan 2014).

The first step is, therefore, to look at what do we actually engage with when we are designing. Christopher Alexander's publications Notes on the Synthesis of Form (1964) and City is not a tree (1965) became recognized as grounding theories elaborating on the complexity of the design context, explaining the meaning of design both as a process and product within this context, and proposing a way how to practically tackle this complexity. Without the intention to approach Alexander's theory as an absolute truth, I use his works as a consistent framework to understand the advantages that participation of layman brings into the design process, and to position this approach with connection to his practical suggestions of how should be design realized.

1.3 Alexander's view on design theory

Alexander's understanding of design is based on the idea that every design problem begins with an effort to achieve fitness between to entities: the 'form' to be created and it's already existing 'context'. The problem is defined by the context, the form is the solution to it. When speaking of design, the subject is never the form alone, but the whole, an ensemble, consisting of these two. When the whole, consisting of form and context, is formed successfully, so called *good fit* is achieved. Alexander (1964) offers few general examples, such as the combination of suit (context) and a tie (form) that goes with it, or the case of the chess game, where certain moves (form) fit the best to the current situation and the moves that preceded (context). Anything in the world that puts demands on the form is context, and the rightness of the form always depends on the degree to which it fits the rest of the ensemble. It is perhaps important to mention that the division of the ensemble into the context and form is not unique; the boundary between the two is being moved by the process of the design. The degree to which this boundary is moved depends on the architect and his intention to transform the context of the environment. (Alexander 1964)

To address the ill-definition of the design tasks, it is important to note that, at least in complex cases, we are not able to give a unitary description of the context. Alexander claims that if we could give this description, there would be no design problems. Such a statement seems to be based on the presumption that there is an unambiguous relationship between the context and the form, that if we would understand the context perfectly, there would be a single design solution that fits it. Such a thought refers rather to the rationalist approach to design and more mathematical understanding of problem solving, as offered by Simon (1987). In the participatory practices we have moved away from such a thought; nevertheless, this inconsistence does not make a difference in the fact that our understanding of the contexts is mostly poor. That is why the process of design have, as Alexander (1964) claims, two related aspects that define the actions performed by the designer: trying to understand the field of context and inventing the form to fit it. Because of the complexity of the context, we cannot determine a specific criteria for the fit we are trying to achieve, which makes arriving to the desired form problematic.

According to Alexander (1964), the complexity of the modern buildings makes it very hard to create a combination of good fit in the ensemble and clarity of organization. Designers seem to be able to organize a form clearly only under a rather simple concept, and consequently tend to develop one part of the functional program for the sake of an other. The only case where the good fit is created together with the clarity seems to be regarding more simple designs: peasant farmhouse, igloo, or African mud hut. The material is local and picked with regard to climate, workability and accessibility, the shape can be justified from the points of view of static, climate and spatial impact. The location is picked considering the natural curves of the landscape, and subsoil that must bear the load well.

If those traditional vernacular builders would face the complex problem, they would probably not make any better a showing then we do; however, we must acknowledge that in their own way the primitive (meant in the best way possible) cultures do their job better than we do ours. Therefore, Alexander follows by examining the way of designing in two different cultures, that differ by the method of making things and buildings. Establishing this difference in 1964, he calls the first culture an unselfconscious one, which in other sources might be referred to as "primitive" or "anonymous" - as opposed to the self-conscious one - a culture of his own, very self-conscious about its architecture, art and engineering. (Alexander 1964) The post-colonial studies, gaining prominence since 1970s, shed light on the mutual influence of cultures during colonization and consequences of the different political and social powers. We can suppose that the cultural distinction proposed by Alexander would look differently if he made it with the post-colonial insight. However, the friction between the two ways of doing can be, with regard to the current topics and terminology of the expertise of built environment, expressed as the difference between *formal* and *informal*, two different components of cultures appearing in tangible and intangible forms in all the places in the world. To stay authentic with his way of thinking, I will keep on using the terms that he suggested, and discuss their validity or relevance when necessary.

Getting back to the matter of Alexander, the two cultures differ most obviously by the way the craft is being taught. As well as a child learns how to ride a bicycle - by first trying randomly and later repeating the actions that lead to a good stability and safe movement - the unselfconscious learner makes mistakes

and next time tries to avoid them. No rules are being formulated, they are only revealed through the correction of mistakes. Building skills are learned informally and stored in unspoken rules, that are of great complexity and rigidly maintained. In the unselfconscious culture, there is a wrong way and a right way of how to practically make buildings, but very little thought of architecture or design as such, and basically no records of the practical knowledge the builders posses. This lack of documented information means that the same experience has to be won by every generation again and again, and therefore there is very little opportunity for any development or change. They simply repeat the patterns of tradition, and they do not mind, because those are the only ones they can imagine. Next to the non-developing structures, the expectations of the performance of these structures does not develop either, and therefore can result in a stably recurrent cycle. An important aspect of the unselfconscious form-producing system is therefore a certain built-in fixity - patterns of tradition and taboos which resist willful change and make the form-builders introduce changes to the existing form only when powerful and obvious irritations appear, demanding for correction. (Alexander 1964)

This correction is carried out immediately, in a direct relationship to the misfit that occurred. This immediacy is conditioned and enabled by several aspects, one of which is the use of material that is at hand, which obviously contributes highly to the good fit in the first place. Another one is the fact that the owner and inhabitant of the house is the builder in the same person - the form-maker not only creates the form, but also lives in it. This special closeness of man and form, the degree to which the man is familiar with how the form works and how it was created, leads to the possibility of constant improvement of the form within a homeostatic self-organizing process, constant re-reaching of good fit. In this way the forms and form-making processes always adapt to the change of culture, thanks to the directness and relative minimality of the changes that happen in the society during one lifetime. (Alexander 1964)

While the craft in the unselfconscious culture is learned informally, through imitation and correction, the form-making in the self-conscious culture is taught academically, according to explicit rules (Alexander 1964). Also in the *formal* way of doing, as we understand it now, we are bound to certain formal principles that are supposed to ensure a good performance of the new form within the complex

environment. Despite Alexander's criticism of this culture, based on the lack of directness and tradition in the form-making and poor relationship between the form and the user, we have to admit that not all components of the built environment can be constructed in an informal way. Noticing that informality can mostly be traced between small-scale forms with a rather simple system of control and more slowly developing culture, we understand that complex large-scale constructions housing a complex social structure that changes with a blink of an eye must be approached in a different way. However, even in the *formal* world, things can be done in different ways with different philosophies. I therefore still believe that it is essential to acknowledge the characteristics of the formal way of doing and the product it delivers as being often the causes of a bad fit, and therefore the aspects that we should focus on while engaging with a design of a complex form.

An important turn in the philosophy of design is depicted by Alexander as one of the further aspects that lead the self-conscious culture to failure of good fit. As the designers in this culture are professional craftsmen, they strive for personal innovation for no other reason than to attract clients, and start to be judged precisely by their inventiveness. The development of the architectural individualism is the clearest manifestation of the moment when architecture, or design in general, turned to the self-conscious way of producing form.
In the unselfconscious culture, the forms are not the work of individuals, but the result of many generations. The artist is only responsible for one place within the process. Self-consciousness, on the other hand, brings the desire to break loose, the escape from tradition and taboo, the will to self-determination. The artist's self-conscious recognition of his individuality has a strong effect on the resulting form, and the potential success is his achievement only, which he feeds on. But the wildness of the desire is moderated by man's limited invention - creating a new form perfectly fitting its complex context is beyond the designer's ability. The designer's attempt becomes highly random and results in a non-adaptable disharmony of the ensemble. (Alexander 1964)

The way how the designer deals with this enormously complex design task is through simplifying it, putting it into categories, encoding them under different terms and concepts, and creating a hierarchy within them. Next to the great complexity of the problem it is also the number of decisions he is

constantly facing - as a consequence of freeing himself from the traditions - in order to create a simplified structure that he will be able to cope with. He, therefore, avoids the decision-making whenever it is possible by turning to rules and general principles, which he formulates in terms of his constructed verbal concepts. The appearance of the concept-determined principles in the training and practice of the architect is the moment where the ill-effect of self-consciousness on form begins to show. (Alexander 1964)

Alexander's Notes make our situation look quite bleak. It is not possible, and also not Alexander's intention, to see the solution in recreating the unselfconsciousness in our self-conscious culture, when the forming of our mind and creation of our ideological concepts began long before we were able to reflect on them. Next to that, Alexander acknowledges that the unselfconscious way of designing would not serve to fulfill the expectations we have for the performance of our complex forms in the complex contexts. Conditioned by his understanding of the relationship between the context and the well-fitting form as being singular and unambiguous, he arrives to an idea of how to structure the design problem to be able to facilitate the multi-scale complexity without having to rely on formalized conventions. Alexander's proposition of synthesis of form is based on structuring the complex design problem through introducing 'sets' - collections of items which, to be able to form a set, must have a common characteristic, but still must allow to be distinguished from each other. In other words, our design problem is a collection of many requirements that have a certain relationship. On the way to a good fit, we should be able to create sets of these requirements according to what they have in common, while every set can have subsets or requirements that are subordinate to them. Like that we arrive to a tree of sets and subsets, as depicted below. (Alexander 1964)

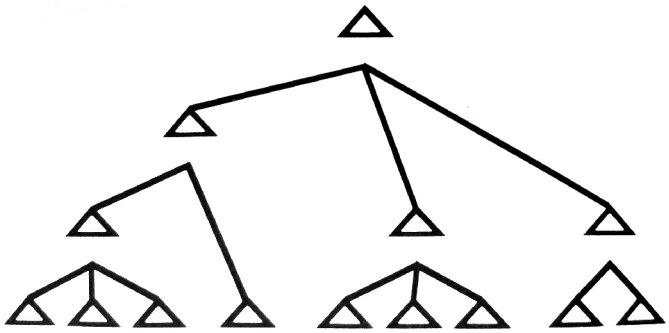


Fig. 1: Sketch of tree-like distribution of sets
credits: Christopher Alexander (1964)

Such a simplification to a tree-like structure was later questioned or reformulated by himself as well as by others. The sketch above and the theory with which he supports this idea again indicates the understanding of problem solving as having a singular solution, perhaps adopted by Alexander due to his mathematical background. I therefore do not intend to implement his propositions literally on our issue; however, it is still valuable to see that after what he had claimed, he still believed that the ill-defined complex design problem must be structured in order to be tackled, and he continues to research this topic in his following publications City is not a tree (1965) and Pattern Language (1977), where he loosely continues on what he has established in the Synthesis of Form (1964).

1.4 Participation between the lines of Christopher Alexander

The general task of a designer is to produce a form that fits well to the existing context (Alexander 1964). As we have learnt in the preceding paragraphs, achieving a good fit is in the complex context of modern cities highly difficult. However, there are few aspects that clearly condition our success in getting as close to the good fit as possible, and that are, furthermore, very interesting for us in connection to our subject of interest.

The more we understand the context, the more likely we are to arrive to a good fit. To retain this good

fit, the performance of the form needs to be adaptable to the constant changes that happen in the context.

Concerning the latter aspect, the term *self-organization* perhaps embraces well what we need to establish as an innate characteristic of the form. Even thought it is used more frequently in connection to whole cities, the notion of *self-organization* follows the principles of closeness between form and its user, directness of change or the user being the one to carry out these changes, as discussed by Alexander. The users have control over the form, which guarantees that every change that happens in the social realm of the users is transferred to the performance of the form, and the good fit becomes stably recurrent. To motivate the users to engage with the form in this manner, they need to have developed a sense of ownership towards it, to feel attached to it, to feel that they care about the form.
In this respect, participatory approach certainly have its place within the design practice. A participatory form can be hardly created without a participatory design process. The idea of users taking control over the form cannot be imposed on them by formal rules, but must be developed and understood by the users themselves. A form that wants to be 'owned' by the users must be shaped according to them. In the end, developing the sense of ownership has always been one the most important motivations for participatory approach, especially connected to community enhancement in urban neighborhoods.

The first aspect, indicating the need to understand the context, does not seem to bring any revolutionary thought. Designers have always devoted some time to researching the context they were designing for, although in some cases it seems to be understood as more of a necessary evil. The less we understand the context, the more ill-defined the design problem becomes. This ill-definition and ungraspable complexity of the problem then makes the designers search for a shelter under the formally imposed design principles. I believe that it is not solely the fact that we do not understand the context perfectly that prevents us from arriving to the good fit; it is the acceptance of these principles that does.
It is therefore essential to try to understand the context as much as possible. This context covers everything in the world that has an influence on the creation of the form, or will have an influence after the form comes to existence. This means that also human beings that come into contact with this form are part of this context, and more specifically the part that makes the context constantly change. In order

to understand the context and its development, we must therefore understand these people, know who they are and what are their values, be familiar with their identity.

This aspect is bound to the understanding of participatory design as a research method. During the participatory activities, the tacit knowledge of the users is being communicated to the designer exclusively with the purpose to make the designer understand better the situation which he designs for. Participatory design therefore becomes a method for both research and design, where the two proceed in parallel, as the preliminary designs alternate with the responses and reflections from the participants.

2. Participation in architectural design

By elaborating on the historical and theoretical background, I tried to move from my intuitive interest in participatory approach to more grounded understanding of the main benefits that we earn by making a design process participatory. We learned that cooperating with the end-users during the design process can lead to a better integration of the form within the context and therefore to its better performance over longer period of time. Based on such assumption, participatory practices were adapted successfully in many fields of design or re-design on all scales. Architecture always seemed to, however, fall behind in the development of the notion of participation. It will be my next task to try to point out the specificities of architectural design that make it less hospitable for participatory approach, and that can be overcome but further extensive research and elaboration.

Participatory architectural projects realized in the past do not seem to earn much publicity or general recognition; however, they do exist. Already in 1960s, prof. Henry Sanoff started to engage with democratically driven community involvement in America, and prof. Johannes Olivegren started to investigate the more product-oriented participatory approach in Scandinavia (North Carolina State University n.d.; Granath 1996). Belgian architect Lucien Kroll embraced the students' call for less monotonous student housing and developed a project in cooperation with them. (Spatial Agency 2014)

Fig. 2 (left): An evolving physical model became a record of the design process.
Fig. 3 (right): M é m é (Maison des M é dicins). The resulting building has a fragmented look, as each part of it was assigned to a different member of Kroll's office.
credits: Spacial Agency (2014)

Austrians Eilfried Huth and Ottokar Uhl dedicated themselves to community enhancement through participation and adaptable dwelling units, respectively. The latter concept, later designated by the term *open construction*, then became a domain of a Dutch architect John Habraken. In UK, Ralph Erskine and the duo Hunt Thomson and Edward Burd attempted to incorporate tenants or whole communities of families in the process of design or re-design of their habitat.
From the recent activities, I should mention trio Jones, Petrescu and Till, who published a book Architecture & Participation (2005) collecting essays of different authors trying to offer different viewpoints on this subject, or German office Baupiloten, who base all of their architectural projects on participatory activities and have recently produced a volume Architecture is Participation (Hofmann, 2014) depicting all their work up to these days.

The fact that there still are architects motivated to explore the participatory architectural realm can be taken as proof that the benefits that it brings are understood by many experts as contributions to a more certain path to a good fit. This is even supported by the fact that many of the realized projects in the past decades were rather unsuccessful, and therefore cannot serve as a motivation or inspiration for others to follow their concepts. Among the most common problems belongs non-adaptability of customized dwellings, poor technical performance of adaptable construction systems, or time consumption of the participatory activities, demonstrable on the case of Eilfried Huth, whose project of a group of houses

design with tenants took sixteen years to complete. (Woolner 2009; Spacial Agency 2014)

However discouraging might have been the examples of the realized projects, the problems that they faced are certainly not the only reasons why participation in architectural design remains a domain of relatively small number of devoted experts. One such obstacle seems to have originated in the shift in architectural design practice that took place in the last century. Granath (2006) claims that "Architecture and architect's profession embody both an artistic and a social dimension." While the artistic dimension can, by giving space to the satisfaction of architect's desire for individual recognition, inhibit users from involvement, the social dimension constantly encourages architects to recognize end-users as legitimate participants of the design process. Once again, with reference to the notes of Christopher Alexander, we see the architectural individualism, that strengthened over the past century, misdirect us from the path towards good fit. Perhaps we can deduce that to arrive to a good fit, the process of design must become more collective, the responsibilities for different decisions must be shared and distributed according to participant's knowledge base and competence, and that the successful result must be attributed to all those that participated, not only the ones whose contribution was possibly the most tangible.

Another aspect specific to architecture, that can have a discouraging effect on making it more participatory, can be the considerable fragmentation of the architectural scene into different styles and movements. More than the high number itself it is the fact that many of those fields share certain ideas with the notion of participatory design. The lack of a firm theoretical base that would position participatory design within the agendas of different architectural streams then makes it float around rather uncontrollably and incomprehensibly. It is therefore necessary to produce more knowledge focused on the benefits that participation can bring to different branches of architectural design, and by defining the different roles of the participants also shed light on how to bring the idea from theory to practice.

The practical side of this approach represents another vast field of question marks that, at least for it's use in architecture, have not been answered yet. The questions such as who should be the participants, how to motivate them to engage, what kind of methods and tools do we use to bridge the gap of expertise

between the architect and the laymen, or how do we organize the participatory activities to embrace the notion of participation in the actual power to make decisions, need more attention and further extensive research in order to prevent future participatory projects from being unsuccessful. (Sanoff 2006, Woolner 2009, Tan 2014) As they also became the main issues that appeared during the practical experiment, the last chapter reflecting on this experiment will elaborate on them more deeply.

3. The experiment

3.1 Introduction

As I already addressed in the preface, this experiment should not be seen as an example of how an architectural game should look like based on the studied literature. As this practical part of the research took place in the first months of the process, it served rather as a tool to test my ideas based on the intuitive understanding of the participatory design process in architecture and practical know-how about games, that I possessed when I started this project. Only with the insights that I gained from further study of literature or examples of projects, I could make a more knowledge-based sense of which aspects I had achieved and which had remained unaddressed. To remain authentic, I use the same order to document it and pass my findings on. I therefore explain the experiments as I understood them at the time when they were conducted. Only the chapter that follows then gives a reflection based on the current, more profound knowledge of the related issues.

The whole process of the experiment consists of 3 phases, being in fact 3 different games of an increasing complexity, that represent the development of my ideas throughout the process, conditioned by the experience gained in each of the phase. These phases are described separately in a unified outline of chapters, including *the brief, the problem and its representation, game mechanics, outcomes, testing,* and *initial reflections*. After this section, the final reflection comes, discussing the relevance of the games and the lessons we can learn from them.

3.2 Phase 1 - The Octagonal Game

a) Brief

The purpose of this game is to investigate demands for student housing. Players will be forced to make decisions and set priorities between these demands, arriving to a group of most required aspects. Not only will we learn what are the most required aspects overall, but more importantly we will see the way of clustering less important demands around the most important, central ones.

b) The problem and its representation

At first I had the feeling that if I want to make this game meaningful, I should pick a real problem to deal with in the game. I soon understood that the quest to design a game is rather difficult in itself, and bringing in another complex parameter would drive away my focus from my main, already pretty complex interest. I therefore started searching for a more practical theme that I would be already familiar with, that would offer a certain space for questioning and criticism and therefore would be demanding for a change, and that would be an environment of people that would be motivated to engage in such a participatory experiment.

The most natural choice was to pick students as participants, and their dwelling environment as a theme they supposedly care about, and therefore would be motivated to engage in a cooperative project that is aimed in its improvement. Student housing in general tends to be surprisingly uniform compared to the great variety of students' characters, backgrounds and needs. Driven by the necessity to keep the costs of the project affordable for future residents, designers often reach for a standardized form tested by years of practice and assume that a project founded on such form and his assumptions will fulfill end-user's demands to a satisfactory degree.

In this game I will try to examine what would be the requirements students would actually choose for, if they would be forced to pick. Therefore I need to think of a way to force the players to make choices and assign each requirement with a certain priority status. Moreover, we can anticipate that as different aspects of human character mostly have a connection and show certain logic, the requirement picked by

the players will form certain kind of clusters. In another words, requirement #1 will be more likely connected to requirements #2 and #3 then to the rest, as the three requirements fit together in their nature, and thus are more likely to be picked by one player.
In the game, requirements will be represented by wooden pegs mounted on a board. Different priority statuses are indicated by different colors of strings, which will be used to connect different pegs together. In the end, the "popularity" of a requirement will be determinable by the number of strings coming to one peg, and the number of strings forming a connection between two pegs will represent the strength of their relationship. The form of representation is in this case picked with an emphasis on an visual value, enabling us to gain an insight into the development and results of the game by simple observation. This ease of retrieving the data should also serve as a motivations for players to become part of it and contribute to these data themselves.

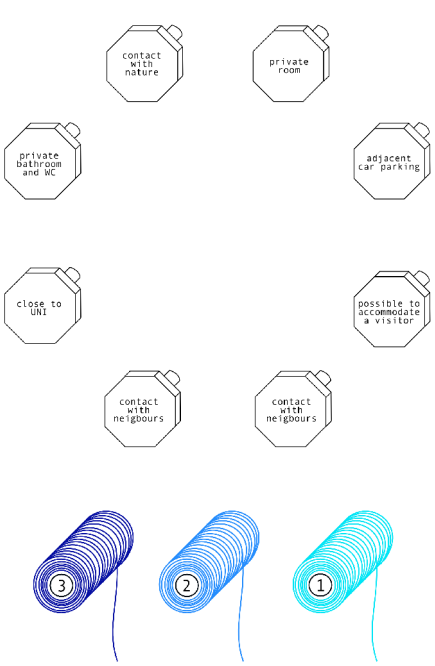
c) Game mechanics

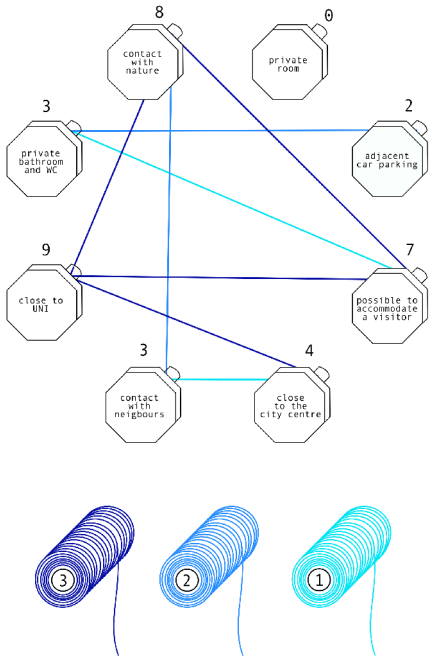
Step 1

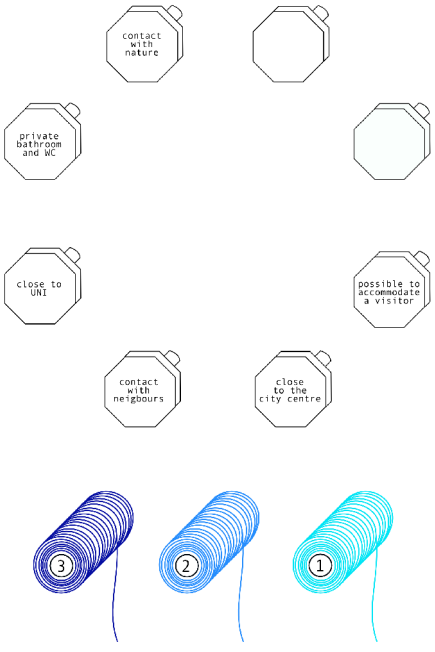
The game designer makes a list of possible requirements that the students might have for student housing, concerning the location, different architectural units or demand for social interaction between the residents. He places eight of these requirements on eight pegs that are mounted to a board in an octagonal shape. Three string spools of different colors are mounted on the board as well; the color of the string indicates a particular value (e.g. from 1 (lowest) to 3 (highest)). (fig. 1)

Step 2

Players are asked to set their priorities within these requirements, forming pairs of the same value 1, 2, and 3. These pairs they consequently connect with the string of the corresponding color. Picking 3-times 2 requirements, they leave 2 of the 8 requirements out completely. After enough players have played to make the results valuable, the game is stopped and the results are counted. For every peg, a cumulative value is counted by adding up all the values of the strings that are attached to the peg. (fig. 2) All the strings can then be taken down. A game master should note down the cumulative values of the pegs; however, it is only the results of the last round of this iterative game that are essential.







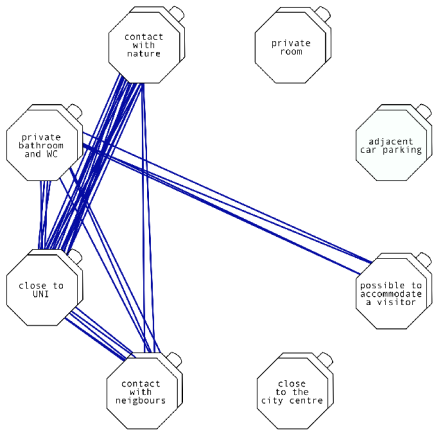


Fig. 4 (top left): illustration to step 1
Fig. 5 (top right): illustration to step 2
Fig. 6 (bottom left): illustration to step 3
Fig. 7 (bottom right): illustration to conclusions
credits: own illustration

Step 3

Two requirements attached to the pins with the lowest cumulative value are removed and replaced by the next two requirements from the list. The game is played again and through such rounds the list of the most valued requirements is optimized. (fig. 4) In the last round, the requirements on the pegs are

supposed to represent the selected group that had been given the most value throughout the whole game. In the end, the game master documents the cumulative value of the individual analysis. Next to that, he documents the pairs that have a strong connection between each other, which is represented by a high number of strings of all colors together.

d) Outcomes

From the final constellation we can derive several types of data. (fig. 4)

1) the cumulative value tells us which of the requirements is overall seen as the most important one.

2) the number of the strings of the highest value tells us which requirement was picked as the most important one the most times.

3) the massiveness of the connection proposes the current trends - show what kind of aspects are usually required in connection to each other. Based on such data we can recognize different groups of end users that are rather disjunctive in their requirements and adapt the architectural concept to it, e.g. proposing different parts of building designed for different groups of end users.

e) Game from a player's perspective

Player's task is in this game, rather easy - all it takes is to read what is written on the pegs and try to think of a way of grouping the requirements according to their importance. Hopefully, every player will arrive to a moment where he has to give up a certain requirement in order to retain another one. Through these situations, players will examine themselves and possibly reflect on the type of housing they currently live in. By making connections with strings of different colors, the graph-like outcome is supposed to hold a certain esthetic value. Next to the short duration and ease of the task, players can be motivated by their own contribution to this practical piece of common art.

f) Testing

This game did not get tested in a traditional sense; however, it was reviewed during conversations with different reviewers.

g) Initial reflections

The most important fault encountered was the lack of conflict. Although a game is not necessarily

defined by the presence of conflict between the players, it brings the simulation closer to the reality and produces more valuable results. The choices are then conditioned not only by the personal hierarchy of requirements, but also by the need of making unions and compromises within them. Without a conflict, a game like this is a mere survey, a tool for collecting data.

3.3 Phase 2 - The Card Game

a) Brief

The purpose of the game is to examine students' requirements for housing. Next to forcing the players to choose a limited number of pre-set requirements that are most important for them, this game also forces them to make compromises with other players and modify the list of preferred requirements in order to win.

b) The problem and its representation

As this game is built on the foundations of the first one, the basic description of the problem would be the same. On the top of that, in a simplified way I try to introduce a topic of sustainability and adaptability. As trying to meet everyone's individual demands would be a highly unpractical and unsustainable strategy in designing a building, I need to find an optimized group of requirements that would satisfy all the inhabitants, having a core of several requirements common for all of them. Such step could have been done after playing the Octagon game as well; however, in that case it would be the designer making the compromise for the participants, whereas it this case I motivate the users to create these semi-homogenous clusters themselves and thereby raise the credibility of the process.

Although the basic idea of the game remains the same, I am using a different representation of the requirements and different system to collect the preferred ones. This time I decided to use cards, being inspired by the card game Kvarteto (in English Quartett). As I remembered well from my childhood, this game's focus is to collect sets of the same cards in the player's hands, that the receives by exchanging with other players for cards he does not need. Although the way of obtaining the cards is designed differently, the idea of focusing on collecting sets of cards remains.

In this game, there is always one requirement written on each of the cards, while every requirement is in the game multiple times. These alike cards form a set. Players collect the ones they prioritize the most by taking them from the table to their hands. The necessity to choose is introduced through a limitation on the number of cards that can be held in one's hands (this number is naturally smaller than the number of different requirements in the game). Furthermore, players are motivated to compromise and cooperate among each other, as the victory condition asks them to create sets of identical requirements with certain number of other players. In other words, a player has to make sure that some of the cards that he holds are also held by other players. That means that a whole team gets to win - a team that was able to agree on determined number of requirements. Such rule brings in the element of conflicting interests of different players, ascribing no significant power to an isolated individual and thus brings the game closer to a real situation. Setting a victory condition to a situation when everyone is a part of certain cluster is a possible extension of the game.

c) Game mechanics

Step 1

The game designer creates cards with possible requirements for student housing written on them. Supposing there are 6 players, I picked 12 different requirements and every requirement is in the game 5 times, so in total we have deck of 12x5=60 cards. These numbers are picked with a certain reasoning[1], although are not necessarily picked well to guarantee a successful play. Cards are shuffled and given out to 8 players, each of which gets 4 cards. The rest of the cards are laid between the players. They can then freely exchange their cards for the ones in the middle, one for one, always holding 4 cards in their hand. Through this repeated exchange they approximate to holding four[2] most important requirements. That

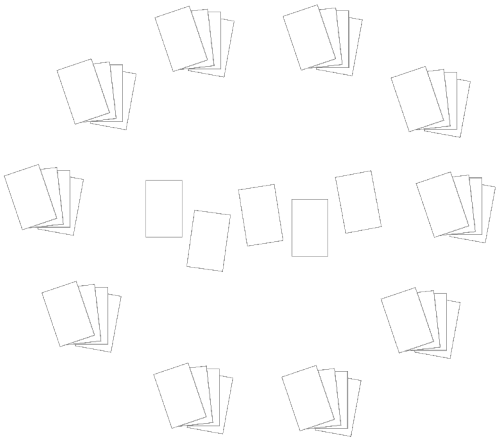
1 The number of requirements should be higher than the the number of players. The number of the copies of one requirement should then be lower than the number of players. These principles should ensure that participants will need to make a choice in picking the requirements, and in the same time prevent a situation that the same requirement will be held by all the players, who will be therefore able to win as one team sharing the required number of requirements. Generally, the number of the cards and players should not be too high the ensure comprehensibility and flow of the game.

2 In this case, 4 is the highest number of cards a player is allowed to hold in his hands. This number is picked with respect to the number of requirements in the game, making sure that the subsequent sets in Step 2 are neither to easy nor too difficult to achieve.

is the final moment of step one.

Step 2

The purpose of the second phase of the game is to arrive to the winning situation. As it was intended to stress the importance of allying and compromising, players are asked to exchange the cards again, yet still trying to keep the most valued requirements, in order to create a matching set of three different requirements with at least three other players. The victory only comes when every player belongs to such group of matching requirements.



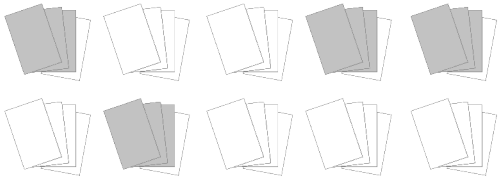


Fig. 8 (left): the game setting
Fig. 9 (above): the winning situation of matching sets
credits: own illustration

d) Outcomes

Unlike the first game, the second one already touches upon the factor of human behavior in decision making and the aspects that influence it. It distinguishes different characters of the players, their ability to cooperate and persuade and above all determines the demands that are most essential for a significant group of end-users. In other words, the step 2 in this case substitutes the step that the architect would have to make himself in the case of game 1 - giving the design constraints (in this case represented by the requirements) a certain priority status in order to be able to fulfill all demands.

e) Game from a player's perspective

By the time duration and the difficulty of the task, the Card Game does not differ much from the Octagonal game. However, entertainment of the players is in the second case raised as it is a group game - players get to compete with one another and come up with simple strategies how to achieve the victory condition. Holding cards in one's hand also plays a psychological role in "giving up" a card in order to collect another one. Players also exercise their memory when they try to remember other people's card, that are naturally hidden from their sight. It is also interesting to see what kind of requirements the others choose for, which ones they are willing to give up in order to arrive to a homogenous set and what would actually be the requirements on which all the players forming a set would be willing to compromise and settle.

f) Testing

This game was first presented to a group of architectural students. Few days after, the game was tested with 5 players, 1 working person and three students, three of which were students of architecture.
The numbers of the cards were modified according to the number of players and further re-thinking of the rules. 15 requirements were printed on cards (fig. 7), each of which was printed 4 times. 60 cards were then given out by 8 for every player. After step 1, everyone showed his hand and looked at what other picked. After that, everyone was supposed to hide his cards again and continue with changing cards, observing the other's actions' and finally speak up if having a suspicion of a matching set. The winning situation was determined by having 5 matching requirements with at least three other players. In the end, the group of players formed two teams, one consisting of two and the other of three players, who managed to agree on a set of 5 cards. However, the high numer of requirements in the game was seen as too puzzling.

Fig. 10, 11 (above): Testing the game with roommates and friends.
credits: own photograph

The game was therefore repeated after reducing the number of requirements to ten and with only 6 cards handed out, out of which 4 had to be matched to a set with other 3 players. In this formation no set was achieved, the game therefore did not have a winner.

The reflection given by the players was conduced as a group discussion with exchange of opinions and ideas, and was documented in written notes. A photographical documentation was made throughout the whole game.

private bedroom	contact with nature	financially affordable	silent study	connection to public transport
close to the UNI	possibility to accommodate a visitor	aesthetic design	adjacent canteen	adjacent car parking
in the city centre	rather private kitchen & bathroom	contact with other residents	gathering room	historical touch

Fig. 12 (left): 15 requirements each of which was printed four times.
credits: own illustration

g) Initial reflections

In the reflection given by the architectural students, the idea of using students as players was positively received, except for the intention to implement the game on student housing, which wasn't seen as entertaining enough. I reacted by the general belief that to motivate students to participate and to collect valid data it is important to pick an issue that touches them closely and about which they have substantial knowledge base. Another student recommended to focus on the social aspects of the housing rather then on the spacial requirements, location and equipment. It became clear that architectural students would like to work with other tools and items then cards, some that make the connection to architecture more tangible and illustrative. The presented requirements were also seen as too real and general, giving little space to fantasy and creativity. One student also proposed to incorporate real developers and officials into the game; however, that leads in many cases to a discouragement of the players to act freely and make mistakes, that can bring substantial insights (Mayer et al. 2005).

After the two testing rounds, more practical observations were mentioned - e.g. how to design the cards for the game to be synoptic, working with colors or categories. It also became clear that the less cards the players can hold, the more interesting and difficult it becomes, although it would be necessary to introduce much less requirements in the first place to reduce the number of cards laid on the table. If we hand out only 4 cards to every player and ask them to match with 3 cards with other players, it is easier to inspect the card distribution among the players and eventually come to the winning situation. However, with decreasing number of cards in the hand, the choice-making of the players becomes more crucial, which results in a high demand on the sophistication with which the requirements are being picked and formulated. It becomes clear that the artificiality of the requirements picked by the game designer would make the results of the game artificial and unauthentic as well.

3.4 Phase 3 - A Call for Diversity

a) Brief

The third phase is supposed to research new ways of dwelling for young generation. The purpose of the game is to get beyond the decisions that laymen make in order to set priorities in their requirements for

dwelling and find the reasoning that drives them towards the decisions. The results should give us an insight to a typical day of a person and it's cycles, his/her prioritized periods and activities of such day and the ones that he/she would prefer to perform within the building complex where he/she dwells. Furthermore, we should learn certain climatic aspects of the spaces where these activities are performed, the connections between them and, last but not least, the degree of sharing of such space. From such outcomes, the designer should be able to elaborate a programmatic brief for the project, creating a strategy how to bring the diversity and individuality into the project while retaining it's sustainability and future adaptability.

b) The problem and its representation

Until now I was trying to find a way to create a firm foundation for architect's decisions about the design constraints for his project. For such task it is important to realize where does the imaginary line between layman's competence and architect's competence lies. While trying to reflect on previous phases of game design, I realized I was wrong in setting this line for myself. Pre-setting the requirements that the players are supposed to pick from is exactly the kind of assumption-based decision that I am trying to find an alternative for. Therefore, a new question arises: what are processes in one's mind that result in choosing one requirement over the others? What would be the determinants for laymen coming up with a set of requirements themselves? With these question we are getting to a sphere so personal that in can hardly belong to the architect's area of competence. Next to motivating the players, we suddenly stand before the task of how to trigger these pure and intimate desires and leave away all rational limitations and obstacles that prevents them from becoming accomplished in physical world.

The variety of human characters create a complex social environment in which every individual, even though having a common label of a "student", has his own specific requirements and needs. On the other hand, this variety also brings affinities among individuals that have no obvious connection. Based on such thoughts, I started to doubt not only about the way how "targeted group" is usually defined by the architect, but also about the whole idea of defining the targeted group itself, that with this variety of characters suddenly seems to lose its point. Such categorization perhaps makes sense in cases where such selection is imposed from the top due to a particular owner or investor (such as student dormitory

owned by the University and therefore being exclusively for students of this University), however, this is not the intention for my proper task.
I decided to redefine the targeted group to 'young generation', aiming mostly at similar financial possibilities, compatible lifestyles and the kind of dwelling that embodies certain temporariness.
In this phase I will also try to elaborate more on the aspects of cost and environmental impact, that will surely be important in the consequent architectural design.

As I decided to broaden the view on the problem, I changed the representation of it and the form of the play as well, into a much more personal and participatory experience.
In order to stimulate players' fantasy and imagination I decided to choose for rather surreal and dreamy game-reality. I figured that once we no longer ask for requirements but rather for 'personal dreams', we would perhaps get a result much more detached from reality than a mere assessment of what is appreciated by the students in current living and what can be improved. Tracing these 'perfect worlds' in images and written narratives will possibly create an integrated image of the individual participants and build a rich database that can be later worked with while trying to translate these dreams into feasible demands and looking for patterns within them.

An issue that became important, while I was trying to dig deeper beneath the superficial layers of requirements for dwelling, is concerned with the way of translating the real situation and the actual architectural object into a system of representations that would be suitable for our game. First of all, it is essential to imagine a building as a system of voids more then a physical tangible object. As Hillier and Hanson (1984) suggest in their publication 'The social logic of space', "...buildings are not what they seem. They appear to be physical artifacts, like any other, and to follow the same type of logic. But this is illusory. Insofar as they are purposeful, buildings are not just objects, but transformations of space through objects." Furthermore, they point out the correlation between the network of spaces with the network of relations between people (Hillier & Hanson 1984). Markus (1993) also formulates it in a statement "Space is a metaphor for social relations".

Considering such thoughts as the theory basis of the game, I started to elaborate on the relationship

between *actions,* the activities that a person's life consists of, and *accommodators,* the units that offer a suitable room for such activities. Accommodators without an action are undefined units - they only gain certain characteristics, such as climate aspects or group of users, by getting an action to house. While actions are proper to every person, accommodators can belong to several actions concurrently and create clusters of people with either similar actions or actions that are, according to the individuals themselves, combinable. The cost could then be dependent on the number of accommodators that are needed to house the desired activities, which proposes a certain sustainable strategy: the more activities can be grouped together, the lower will be the financial burden and perhaps the environmental impact as well. Furthermore, accommodator shared with more people is more likely to be better adaptable in the future, when it needs to adapt already at the very point of it's creation. However, the thought of clustering was already introduced in the phase 2.

c) Game mechanics

Pre-task

About 1 or 2 weeks before the game takes place, participants are asked in advance to send 10 - 15 pictures to the game master. First 5 pictures are depicting spots of their own current living, the ones that they like and find as the most valuable of the accommodation. The theme of the other 5 - 10 pictures is completely free - it can be an object, space, landscape, fictive reality or painting - as long as it depicts something that the particular student desires, that he would want to make part of his real experience at this current period of life. I will shortly call them 'dream pictures'.

Set up

In the room where the game takes place, there is the 'game universe' - a construction constituted of two superimposed metal mashes fixed on two long screws - and big boards on which the game master hung the printed pictures that the players sent in the pre-task.

Phase 1 - individual narratives

In the first phase, players are asked to write narratives, personal stories describing one perfect day of the

current period of their life, featuring the activities they like to do and the ones they would like to but currently cannot, all of which they assign to a certain time slot of the day. They are motivated to (and naturally do) create a mental image of places they use for these activities, the space dimensions, the atmosphere, the climate. Each activity is also assigned to certain time slot to investigate the different cycles of different participants. The activity can be happening both in exterior or interior and their locations can differ. This task is limited by time (20-25min) as well as by the length (ca 1 A4).

After this text is done, they try to divide it into chunks that contain one of these activities (sleeping, running, feeding cows) or several of them that is accommodated in the same space (running, practicing yoga). In the end, they have separate stripes of paper with the description of the desired activities, that they organize into a hierarchy according to personal preference and importance. Players then read these stripes to the others to get familiar with others's dreams and start thinking of possible allies.

Phase 2 - the dialog

The purpose of the third phase is to 'accommodate' these desired activities in 'units' and making connections between them to create a network of integrated units.

Basic operation - accommodating an activity (=expense)

No activity exists without a an accommodator that houses it. Also in our game, no stripe of paper can be placed on the lower layer without assigning it to some unit on the upper level. In order to place an *action* in the game, participant has to 'buy' a spool with a string from the game master for game-money (chocolate euros), that he received on the beginning by exchanging real money in a ratio €1 of real money = €2 of game-money. He places the spool on the upper layer, stretches the string through both layers and places a peg with the proper paper stripe on the very end. This step is rather expensive, but necessary for placing a new *action*.

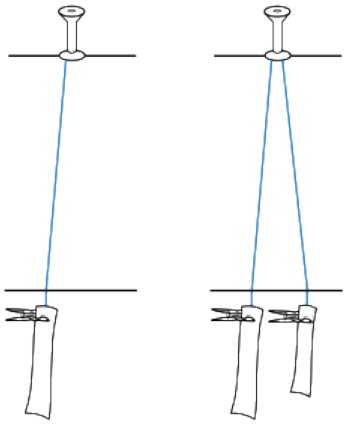


Fig. 13 (left): On the left we can see the first step to accommodate an action. On the right there are already two players' action accommodated in single one.
credits: own illustration

Making alliances (connections - fixed connection and loose connection) (=gain)

An opportunity of gaining the money back is creating *connections.* In the game there are two types of connections: *fixed connection*, merging the units into one and creating a shared unit for everyone, and *loose connection*, that only represents physical link of neighboring units and integrates it into the system of units. The network of *loose connections* is thus superimposed on the network on the *fixed connections*.

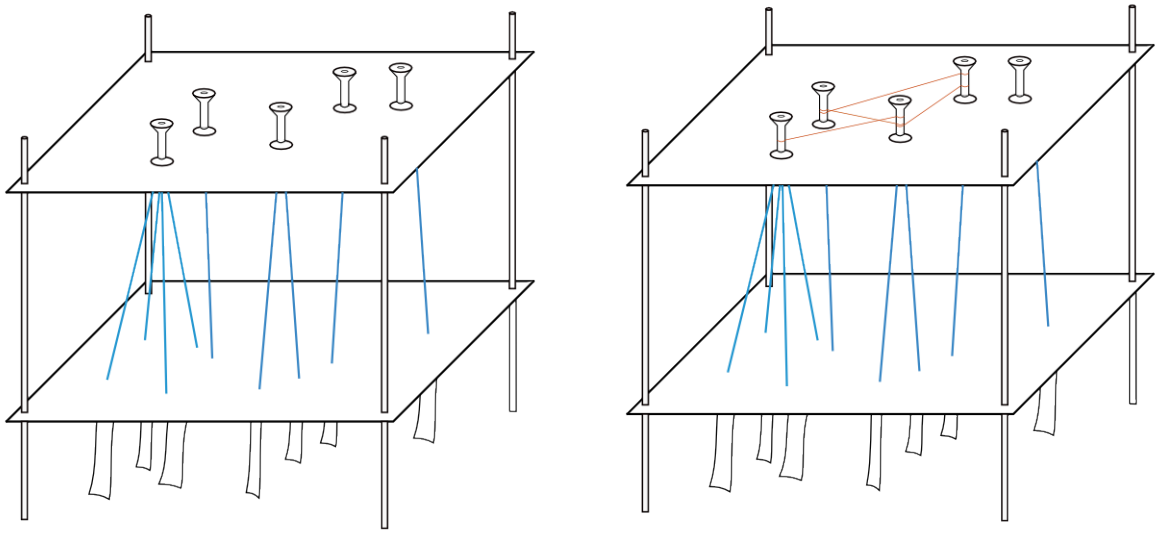


Fig. 14 (top left): actions on the lower level are connected to the accommodators on the upper level. Some players have already made alliances (fixed connections), some are still separated.
Fig. 15 (top right): Loose connections have been established on the upper level.
credits: own illustration

The fixed connection is carried out by assigning more actions on the lower level to a single unit on the upper one, which practically mean hanging more stripes of paper on one spool (fig. 10).
The loose connections are visible on the upper level only, in horizontal plane and are possibly created only in later stages of the game, when the fixed connections are established and units more or less defined (fig. 11). They are simple string connections in between the spools that share enough aspects to be able to 'neighbor', but not enough to be merged in one.
Applying any of these connections is financially advantageous. By merging spools into one or by connecting them with a string, a player gets a financial payback.

Prices and pay-backs

On the beginning, every player should exchange at least 5 real euros for game money (5 real euros = 10 chocolate ones).
Prices and pay-backs are determined as follows:

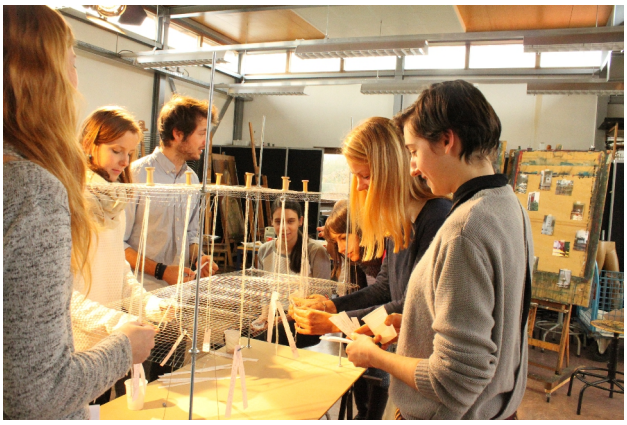
- buying one spool costs 5 game money,
- buying a spool with two players costs 3 game money each,
- for creating an alliance of two players, every player gets 2 game money back,
- by joining an alliance of 2 or more players, everyone in the alliance and the newcomer gets 1 game money back.

If a player is not satisfied in a group, he can abandon it, but gets no pay-back. Then, he has to start again by creating a unit for his activity. Alliance can also be cancelled by all the players, if they all agree. In case only one player would want to stay in the alliance, it is proclaimed to be cancelled.

Defining accommodators through images

One part of the second phase is also defining the accommodators by using the images on the board. As on the layered construction units and alliances are being formed, players form their mental images about how the space(s) can look like, what materials, dimensions or climate conditions can characterize them. The boards serve to visualize these mental images through collages that the players can create from pieces of the printed images and stickies with written keywords characterizing the particular

accommodators.



d) Outcomes

The practical purpose of the game was to deliver a network of integrated 'accommodators' (as represented on the horizontal level), each of which was defined by the collection of activities that were connected to it. Moreover, these 'accommodators' were further defined by collages of images that the players collected on the 'case wall'. The stripes of narratives and stripes of images became the most important material to work with further, while paying attention to the relationships between them, that were determined in the game. Next to that, I also stored the original complete narratives of players and the set of images they submitted in the pre-task, as such material can be a fruitful subject for further analysis as well.

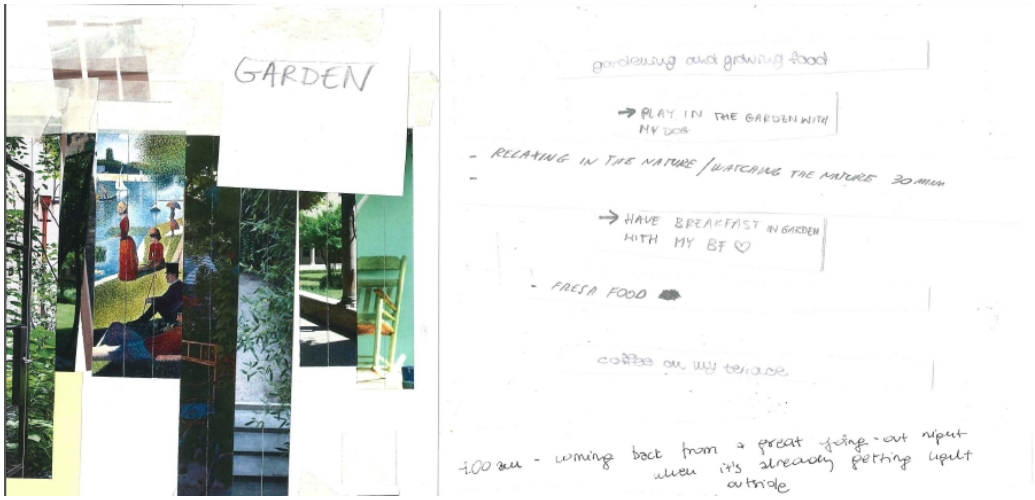


Fig. 16 (above): Collages from images assigned to a group of actions.
credits: own illustration

e) Game from the player's perspective

In the chapter dealing with player's motivation I discussed the importance of the strong and personal relationship between each player and the topic of the game. Urgent problems result in an urgent need of decisions and solutions and create a fertile ground for game implementations. Both luckily and unluckily, not all problems are urgent at the moment when solutions are being sought. Also in our case, the situation of housing for students and young workers around Delft is not perfect nor severe. Although students might be in this case interested not only in the search for solutions but also in testing the tool of a game itself and therefore motivated to play even without the problem being urgent, I find important for both the research and the game to focus on the way of introducing the problem and creating the feeling of urgency in each player's mind.

The pre-task that the players are assigned with is supposed to motivate and "tune" them on the note of the game, premise the purpose of it and, last but not least, make them meditate about themselves and about their way of living, and reflect upon the viability of their future plans and dreams. When they all gather to play the game, the printed pictures on the boards then represent a certain link to this previous meditation, which they continue to build on further. Players have the chance to dive into this

introspection by writing the narratives, making decisions, creating words out of thoughts and sharing them with others. The images of their dreams then stay in their heads and become more and more physical and accurate with every phase of the game. Furthermore, the mutual similarity of some of player's dreams is an inspiration for bringing the dream to life in the reality as well.

f) Testing

The theme of this game was picked on the practical bases of students being an easy target for potential testing of the game. From the beginning it was clear that we cannot see students as a homogenous group, as an architectural insight and training of a player will necessarily have an impact on the player's behavior within the game. To be able to reflect on how these architectural insights influence the whole development of the game and how differently must a non-architectural audience be approached, I decided to conduct to separate test rounds of this game. First test was planned to be carried out with architectural students, in order to get more relevant and critical reflection on the game design and the ideas it embraces, the second one with non-architectural students, already focusing on the data that we obtain by playing the game.

Testing with architectural students

The first test round took place on the beginning of December 2014 between 9:30 and 13:00 in the rented room devoted for courses of painting in the Culture Centre of TU Delft. To address the potential participants, the game was promoted by posters and leaflets as well as through social media. In the end, the test round included 7 players, all of which were students of architecture, one assistant documenting the game in photos and videos, and me, directing the event.

The rules of the game were slightly modified during the play, mostly with the purpose to speed up the process of playing, particularly by being able to make an alliance of 3 people already at the point of creating an *accommodator*. Apart from that, the game was played successfully with the original rules as they were explained above.

The reflection from the players on the game was obtained through a group discussion, first lead by questions I prepared and later carried on by the comments of the players. This discussion was recorded on a video and voice recorder separately.

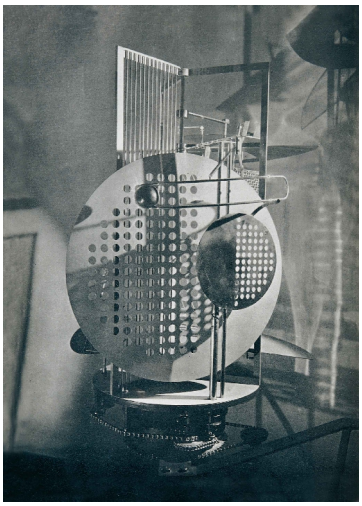




Fig. 17, 18, 19 (above): Examples of images sent by the architectural students in the pre-task.
credits: unknown

Testing with non-architectural students

The second test was planned for the beginning of February 2015 for the same time range and location as the first one. This event was promoted by posters and banners on information screens over several non-architectural faculties of TU Delft and the office of DUWO, an organization providing accommodation for students. Next to that, the power of social media was used in this case as well.

Unfortunately, the date picked for this test appeared to be at the end of the 3rd quarter of the academic year, where exams and subsequent holidays take place. Perhaps for this reason I was able to find only 5 volunteers to engage in this test round, which was too little to make the half-a-day game meaningful and beneficial for all those engaged. However, I decided to conduct at least the pre-task to see if some major issues would arise already at the very beginning. Next to the images that I obtained from these non-architectural players, I asked them to deliver a written reflection depicting their impressions from this pre-task.



Fig. 20, 21, 22 (Above): Images sent by the non-architectural players within the pre-task. The difference of representation of desires in images between architectural and non-architectural students can be seen by comparing those above (non-architectural) with those placed at the paragraph about *Pre-task*.
credits: unknown

g) Initial reflections

Reflecting on the first test

During the reflection on the first test round, several important issues arose, some theoretical, some of more practical manner. The latter one mostly touched upon modifying the rules in order to speed up the game, organizing the process of the game into rounds and turns to give the players time and space to act or offer more distinct materials to create the collages.

The architectural students also recognized the important aspects of the game, such as the initial enjoyable immersion into the personal desires and fantasies and subsequent confrontation with the complex situation when all of these personal desires were put together to be accommodated. The pre-task seemed to motivate them and introduce them into the topic well, and the inclusion of the images from the pre-task into the game itself was welcomed. The need for dialog and compromise leading to a collaborative behavior was approached positively as well. More weakly defined and therefore less successful aspect was making the *loose connections* between the spools, representing a certain relationship between the different accommodators. Although the idea itself of introducing these connections was welcomed, their loose integration in the rules and the not so well designed system of payback prevented them to deliver any essentially meaningful data.

In the next paragraphs I reflect more thoroughly on the most important aspects that arose from the first testing, combining the comments of the players with my own reflection. These aspects are *Complexity*

of the game, *Unforeseen behavior of the players* and *Value for the players,* and are supposed to address the weak points that would need to be improved in order to raise the quality of the game.

- Complexity of the game

The complexity of the game was, compared to the previous games, raised enough to offer satisfactorily relevant outcomes. However, it is important to understand that the elements that were missing or not defined clearly enough have a certain impact on the outcome as well. This outcome is misleading mostly because the aspects creating it were not designed and sometimes not even thought of, and it therefore brings a self-developed and uncontrolled values, that can be mostly decoded only by the game designer himself, and sometimes not even.

An example element that was not introduced can be the distribution of the spools on the upper mesh. Thinking it through, it can bring another interesting data and substantially simplify the view of the results of the game.

The different types of the *loose connections,* linking the spools to each other on the upper mesh, can be an example of an ill-defined element. As creating such connection had only a little meaning for the player next to earning some game-money, the players created some rather obvious connections and once they did not need any more game-money, they simply did not feel the need to anymore. It resulted in a phenomenon of most of the spools remaining isolated. Such isolation would have a meaning in the results, as I planned, if players would connect all the spools according to how connected they want them to be; however, as that did not happen, he isolation of a spool lost its meaning completely. It is a challenge for the next game to perhaps think of some more relevant types of connection, but more importantly to integrate this element better into the playing process.

A moment positively reflected by the players was the initial chaos of the game, when everyone divided their narrative into stripes and started looking for allies. Players had to evaluate into what extend is the other's activity similar to his, what will he gain and what will he loose by sharing one accommodator and how precious these gained or lost values are. As one of the participants said, this phase simulated the clash of different interests very well, and, importantly, was entertaining as well.

- Unforeseen behavior of the players

The not so successful upper connections certainly belong to this category as well. It is healthy to remind ourselves that from the player's perspective, it is rather irrelevant what the game designer wants the outcome to be ad what kind of data he would need. It is very relevant, on the other hand, what kind of reward he will get for performing such action and if it is worth the time and effort. In our case it was too much conditioned by the current financial situation and the further intention of the player, that determined if he needs to gain some more game-money or not. It is important to realize that for every single action of a player there must be a motivation.

Another surprise that the unpredicted players' behavior caused was focusing on allying with others so passionately that most of player's private activities remained unaccommodated. Most of the spools then represent common spaces, outside areas used by wide public or special rooms, such as painting studios or room for napping. Private spaces of the participants do not take almost any space in the game. That might have happened due to an unclear communication of the game's goal, or over-motivating the players to play according to a cooperative strategy, that was not only financially advantageous, but also much more fun. Furthermore, the participants might have gotten a wrong image while listening to and trying to understand the rules - as the instructions about making the connections took up a big part of them, it might have seemed as the main purpose of the goal. Therefore, it is important to keep the rules and their explanation in balance, in the same balance as the game is supposed to be played.

- Value for the players

I was happy to see and hear that testing of the game was beneficial for the participants as well. Next to a very enjoyable atmosphere of pre-christmasy meeting of friends, on purpose supported by the presence of free tea, fruit, biscuits and cake, the game brought a valuable insight for the participants as well. The pre-task was for several of them already a pleasant exercise of giving freedom to their imagination and reviving their dreams. Writing the narratives then helped to reflect on these dreams, evaluate them from the point of there viability and giving them and actual place in there very busy lives. Players expressed a positive feedback about this phase, finding it soothing as well as entertaining while sharing it with the others.

It is necessary to acknowledge that in order to motivate people without architectural education, this

value for the players needs to be raised to more generally relevant degree. However engaged they were, the motivation of the architectural students was driven mostly by their interest in this new approach to architecture together with the interest in contributing to my project. It is clear that these two motivations would not be proper to a non-architecturally oriented stranger. Although this is a crucial point in carrying out a successful participatory project, we have to acknowledge that the theme of my project was picked as somewhat secondary, as a vehicle for my research of architectural game. In that sense, the primer incentive for a project designed in professional sphere is always the urgent problem that needs to be solved, and the idea of conducting a participatory project comes in second as a possible solution for it, being shaped exclusively to suit the problem. We can therefore assume that the motivation to engage in a real participatory project already exists inside of the potential participants in the form of a strong desire to remove this problem from their environment.

Reflecting on the second test

The second test, assigning the pre-task to the non-architectural students, delivered a proof that even such tasks, that seem to be for an architectural student rather simple, can be by others seen as difficult. Even though the way how the pre-task was explained did not differ at all, the results of the tests differed fundamentally. The ideas and fantasies about an everyday life were, in this second case, being translated much more literally, into images with much more concrete and tangible subjects, in most cases simply photos of different interiors of existing buildings. The architectural students, on the other hand, made use of abstract graphics or sculptures or classical paintings, or photos of different elements of architecture, perhaps emphasizing rather the atmosphere than the physical environment itself. Moreover, when the architectural students used a photograph of a room, there was always a person on it, which was almost never the case for the photographs delivered by the non-architectural students. The core of this divergence is perhaps the ability to translate a wished-for intangible experience into more concrete image, which embraces this meaning in more intrinsic way and therefore stays open for different interpretations and triggers further thoughts.

Although the bad timing of the second test can be one reason why only few people responded to my call for participation, it is certainly related to the matter of motivation as well, as it was discussed in the previous section. In this case, the students addressed by the promotion were strangers without a

significant insight in architecture. Even after inviting those who spend their time waiting for a meeting in the DUWO office, there did not seem to be much enthusiasm about having a say in how should their dwelling environment look like. Those who did respond seemed to be attracted by the idea of a game more than the theme itself, although several of them expressed fondness for the ways how architectural practice shapes our environment.

4. Reflecting on the experiment

4.1 Introduction to games

Although game is frequently a natural and inseparable part of one's life and the term can seem known to everyone, the huge variety of games and its long history makes defining it rather difficult. In literature we find a lot of different definitions. They differ mostly by the purpose and field for which they are formulated - some are approached from a structural point of view, some from more philosophical one. Some more rigorous, some less, some even contradicting each other. Furthermore, we can quite easily find a counterexample to each of these definitions and declare it inaccurate. However, efforts to find an irrefutable definition usually produce results too general to be useful (Adams & Rollings 2007). Therefore, for this research paper, I decided to acknowledge the fact that the description I accept and offer for my purposes won't be rigorous, but will explain the notion of game in the way that we need to understand it. That is, after all, how games were being defined until now.

To avoid misinterpretations and inaccurate use of terms, we first need to establish the relationship between game and play. From how we use the words, it is clear that a game is subject of an activity called play. However, play is in English grammar, apart from a verb, also a noun. The great variety of understandings and definitions of both terms make the relationship interpretable in different ways as well. Nevertheless, they all share the principle that 'play' is, as a noun, a broader term than 'game'. In another words, everything that can be played may not necessarily be a game. Kids play with toys, with puzzles, or just with each other by adopting different roles and pretending to be someone else. Game, as

opposed to these examples, has clearly defined rules, and by those tries to confront players with different situations and tasks of different level of difficulty. Important characteristics of a game, applied to make the game more entertaining, are e.g. creating a conflict of interests between the players, motivating them to collaborate despite having different goals, or introducing different means of pay-off when a certain goal is achieved. Play, on the other hand, does not necessarily include these elements, it is often less structured and open to be developed freely by the players. (Adams & Rollings 2007, Zimmerman & Salen 2003)

Using play for more serious purposes then a mere entertainment is not a new concept. The notion of play and game have always been a subject of research thanks to the resemblance of situations in play with situations in real life. Moreover, play has always been recognized as a powerful learning tool, and has always been an innate part of education of children, who, step by step, develop abilities that enable them to engage with more and more difficult forms of play (Piaget 1962, Goldstein 1979). Johan Huizinga's publication Homo Ludens (1939), elaborating on game as a necessary condition for a culture to emerge and develop, became a foundation stone for everyone who saw the notion of play as an essential element of social life.

Designing the built environment has many convergences with the notion of play and game, too. Researching the analogy of game and the process of design has become popular in the recent decades, and the published reports have delivered interesting observations. Apart from that, many practical design projects adopting the framework of game have been realized, many of which were based on the idea of participatory design, incorporating different stakeholders in the game. While architecture is still waiting for a breakout of this new approach, urban planning have successfully experimented in making the main elements of game complementary to their own matters. To be able to discuss my own experiment through the knowledge gained from learning about the projects in urban planning, I offer a description of two case studies (CLUG and Leve de Krimp) and one more example (Play the City) in the next section.

4.2 Examples of game-like projects in urban planning

4.2.1 Introduction

"Tree is leaf and leaf is tree. House is city and city is house. A tree is tree but it is also a huge leaf. A leaf is a leaf but it is also a tiny tree. A city is not a city unless it is a huge house. A house is a house only if it is also a tiny city." (Aldo van Eyck)

The last decades brought the understanding that city is a self-organizing system. Some urban planners reacted to this information by transforming their way of doing, and believing that only through a participatory design can a well-performing participatory product arise. As Aldo van Eyck depicted in his quote, houses actually work line tiny cities, and the thought of a self-organizing system within a building, making the users engage and take control over its management, leads to a well-working, satisfactory and sustainable environment. Analogically, I believe, as many others already have, that to create such buildings, architects need to change their way of doing. They need to acknowledge that they are only one of the players and give the space that has always belonged to the others. As I tried to propose, game can be a possible framework to accommodate such practice. The potential to accommodate small or large groups of diverse participants, the competitive and collaborative elements that make their conflicts turn into the driving force needed to arrive to common decisions, and no less the surreal entertaining realm in which are the competitors brought together, these all aspects respond positively to a demand for new methods for shaping the built environment in every scale. Even though the problems and issues present in urban planning differ from the ones we encounter in architecture, the pattern remains the same. I therefore believe that studying the projects realized in urban planning can give us an insight of how do we have to proceed to bring this way of doing to architecture as well. As the leaf resembles a tiny tree, an architectural problem can resemble a problem of a tiny city.

4.2.2 Case study: CLUG

a) Problem description and its representation

Community Land Use Game, CLUG, has been developed in 1960s by a professor of urban planning at

University of Michigan Allan Feldt as a teaching tool for his field of practice. Since then, CLUG has been played by thousands of students, public officials and civic groups. (Warrington 2014)

Feldt found very difficult using verbal descriptive methods to portray the dynamic and fluctuating process and to pass on the understanding of the basic principles of organizations of cities and regions. At that time, theorists began to turn to mathematics and simulation to capture the dynamics. Feldt develops this game upon a mathematical description of basic elements of urban growth proposed by Brian Berry (1965), who claims that cities are supported by basic activities (central business district, special activities for specific cities,..) and transport system. Such grid is then filled with residences of workers, districts for secondary activities (such as leisure time activities, shopping districts..) and residences of citizens working for these secondary activities. This pattern is then modified by outer conditions, such as terrain or climate as well as the desired relationships between different districts, and create an increasingly complex chain of multiple reactions. (Feldt, 1972)

We can state the argument symbolically:

Definitions:

A = a locational pattern of basic activities
B = a transport system
C = a set of urban sites
D = employees in A
E = the residential pattern of D
F = a basic commuting pattern
G = a system of business services
H = a system of tertiary activities
I = all "second-round" effects

Then, given A:

D = f(A)
E = f(A,D subject to B,C)
F = f(A,E subject to B)
G = f(A)
H = f(E,D subject to B)
I = f(G,H)

Fig. 23 (Above): Brian Berry's mathematical description of the main elements of urban growth.
credits: Feldt (1972)

Berry's description is the foundation for CLUG, which takes these technical and static statements and puts them to life in a more realistic, dynamic and fraught situation. CLUG becomes a simulation model with humans being the main decision-makers and witnesses of growth and decay of an urban structure. It becomes clear to all that the individual's well-being is, to a large degree, dependent on the well-being of other players. And so, while being competitors, they learn how to cooperate and make the community prosper and grow. (Feldt, 1972)

CLUG was designed as an educational tool, which essentially shapes its form. Next to the primary goal to create a financially and socially stable fictional community, there is a secondary goal (or rather purpose) - to gain a basic understanding of some of the more important underlying factors affecting the growth of an urban region. The motivation to play the game is thus partially dependent on students' motivation to learn. However, it generally applies that educational game raises the motivation to learn, which is also the purpose of introducing the tool of game to teaching methods. The motivation within

the game is driven by the desire to make money and to rule over other players. The element of electing a new manager of the game was introduced to contribute to the motivation - not only for gaining money, but also for gaining trust and respect and showing positive attitude towards collaborating with other players and teams.

b) Game mechanics

CLUG is played with a playing board and playing pieces, that are being placed on the board during the play. The board is divided into 14x14 matrix of 122 squares, each of which represents a single building parcel. The lines dividing the board serve as primary (thick) and secondary (thin) roads. The playing pieces then represent the different land uses. Next to this equipment, there are pre-printed stripes of paper used as Shopping Contracts and Land Purchase Offers, as well as tables to keep track of tax payments, community financial status or forms to document the development of the game.

The game is played most effectively with three to five teams of one to three persons each. Members of the team are encouraged to select a team leader to be the spokesman and voting representative for each team. Next to the players an instructor is present at the game, who manages the game by explaining and interpreting the rules and interrupts the game to illuminate certain special situations that may appear during the play.

At the beginning of the game, each team is provided with $100,000 in cash. This money is used during the play to purchase lands and construct buildings or pay taxes. Owners of industries then gain more money every round, which party circulates as payrolls to employees or payments for different services.

CLUG provides for three basic types of land use: industrial, commercial and residential, each of which includes several different types of the use (for example, commercial use is further divided into Local Store, Central Store and Office). Players can choose what to invest in and how to use pieces of land, however, they are always limited by certain theoretical relations between the uses (owner of an industrial district must provide employees with residences) as well as the physical ones (transportation costs are an important aspect in the growth of the community).

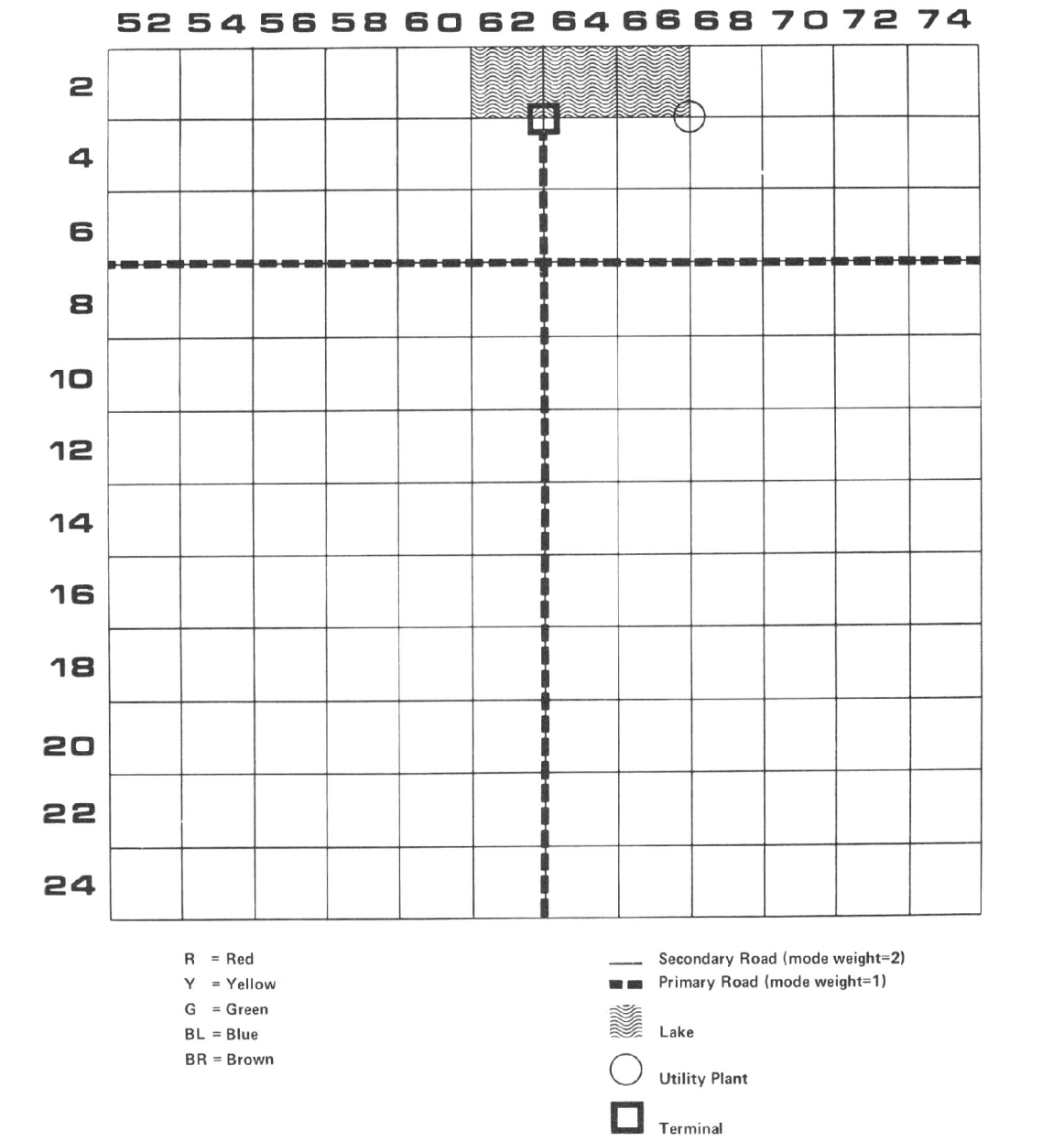


Fig. 24 (Above): Playing board and playing pieces of CLUG.
credits: Feldt (1970)

The game proceeds through a set of rounds that consists of 11 steps. These steps are Purchase land, Provide utilities, Renovate buildings, Construct buildings, Designate employment, Sign trade agreements, Receive income, Pay employees, Pay local and central stores and offices, Pay transportation, Pay taxes. After this sequence is finished, the first step of the next round starts.

After playing through 5-10 rounds of the Basic CLUG game, most of the players have developed a clear idea of the mechanics of the operation and are prepared to take over the operation of the game from the instructor. A new manager and new accountant are elected from the teams (their mother teams get a financial reward at every round) and reelected every two rounds. The goal of every team is to create a community of as high financial status as possible, although there is not any specific victory condition that would end the game. Except for special purposes, it does not usually appear worthwhile to continue playing beyond 10-15 rounds, after which it becomes rather repetitious and the difficulty of playing slowly disappears.

4.2.3 Case study: Leve de Krimp

a) The problem and its representation

Studio Papaver, the author of the movement Leve de Krimp!, is a young studio founded by Anne Seghers and Zineb Seghrouchni, two Dutch urban designers. For the past years, they have been working on one of the most urgent topics of The Netherlands, population shrinkage. This phenomenon, also known as population decline, results in partial or complete depopulation of certain parts of the country, especially the isolated ones close to the border. In Holland, the areas of upcoming critical population shrinkage are South Limburg, Northeast Groningen and Zeeland Flanders. Between all different propositions of how to cope with this problem, Studio Papaver tries to see population shrinkage as opportunity and to investigate new smarter connections between existing flows in shrinking regions - knowledge, money, energy, material, networks.

The basic method and purpose of the game, which Studio Papaver came up with, is to covert the mentality and attitude from a believe in "quantitative growth" into thinking in "qualitative wealth". In

parallel, Anne and Zineb focused on defining their role as a designer, as this project does not go straight to a content or a design of physical space, but rather towards a renovation or change of attitude.

The use of an alternate reality game seemed to both urban designers on the spot in order to raise awareness of the topic among the citizens and motivate them to engage in it. The game organized within the movement Leve de Krimp! makes the players immerse themselves in the future shrinkage and experience what the consequences are. In the same time, it falls into the category "call for ideas", as the solutions for the shrinkage, that the players come up with during the play, are reviewed, and the ones with a certain potential are elaborated on further. According to Seghers, the importance of gaining ideas from the players does not lie in the quality or uniqueness of the ideas; the most important is making the players (and generally the citizens) feel important in this process, being the authors and "owners" of the ideas that might possibly be applied.

Although the main goal of the game is rather abstract and far in the future at the time of the play, the selection of the best idea after each round and it's public promotion can be seen as an essential sub-goal which primarily drives the players towards bigger effort and better results. As noted by Seghers and Seghrouchni, the purpose of the game is to change the attitude of the citizens and consequently their every-day-life habits, which would lead to slowing down the negative development of population decline. However, changing the player's habits for sure cannot be the motivation to play. Therefore, Studio Papaver decided to use the tool of alternate reality located in the future, which not only serves as an attractive element to the residents, but also enables to show the critical consequences of the problem and introduces the topic in a much more urgent, thrilling light.

b) Game mechanics

At first, the game masters create a buzz in the local media by posting messages from future, specifically from 2039, when the critical peak of the population shrinkage is believed to take place. These reports show how the environment will look like: a world where the population decline was not anticipated. For example, one of the many articles is entitled "Many people have to travel more than 20km to the nearest supermarket." Such extreme visions are based on realistic forecasts, which stimulate the participants to

become involved. (Oog voor de buurt 2014)

In the same media, a meeting for potential participants is announced. There, a trailer is shown to introduce 4 persons living in an shrunk area in 2039. Through them, participants are informed more comprehensively about the future situation and have the chance to possibly relate their own life story to one of the character. This moment also serves as a call for action - through an assignment, residents get the chance to think of a way how to influence the negative development in the present time. In three or four rounds, each with different theme (mobility, new markets, partnership..), the residents are challenged to find a solution in everyday life. These solutions are collected on a website to expose the collective intelligence of the area, and the solution, elected after every round, is presented through posters and bus-shelter advertising panels. (Oog voor de buurt, 2014)

The upcoming phase is a first step to realization of one of the ideas - looking for investors. Studio Papaver finds it striking how little can the ideas of the residents differ from the ideas of the decision-makers from the municipality. "They all want the same, but they do not speak the same language" (Oog voor de buurt, 2014). Therefore, Studio Papaver wants to bring these interests together, without introducing any direct traditional strategy. "Bottom-up is too limited to see the big picture, but the top-down strategy is too global."(Oog voor de buurt, 2014) It is thus a challenge to link ambitions and interests at different scales. For the phase of looking for financial resources, Studio Papaver decided to reverse the pitching procedure: the investing parties present themselves to the holder of the idea they are interested in; they must convince the resident about a good future cooperation.

c) Testing the game

Studio Papaver launched a pilot project of Leve de Krimp! in 2013 to test the game with 4 players, citizens from Achterhoek. The interest and involvement in the region turned out, according to the authors, surprisingly well. The participants felt to be taken seriously and the ideas sent forward gained on value as they emerge from the people of the region. (Oog voor de buurt, 2014) In the interview with both Seghers and Sehrouchni, that can be found in the appendix of this report, they agreed that even after the testing, they would not change anything on the game. However, they both see a repeated testing

of a game as a very important part of its design, and regret that they did not have more time for further testing.

4.2.3 Example: Play the City

The problem and its representation

Play the City is a project of a Turkish urban planner Ekim Tan, which was developed during her PhD study at TU Delft, and is described in detail in her publication Negotiation and Design for Self-Organizing City (2014). It is based on thoughts of Christopher Alexander and Yuval Portugali, concerning the notions of self-organizing society and iterative design. Precisely because of this direct reference I decided to, next the two more elaborate case studies, incorporate this example as well.

Behind this projects lies a belief that city works better if the inhabitants develop a sense of ownership and care towards their environment and consequently engage in its flourishing. During an interview with Tan (findable in the appendices), she referred to Portugali, who claimed that cities already are and have always been to a large degree self-organizing, as many people influence the system and no one particularly controls it. Every city works as a huge playground for it's inhabitants. The difference in this century is, as Tan says, that we realized this character of the city and found out that the method with which we design the city must change. If many different stakeholders and inhabitants will be influencing the way how the city is used, they must have a say in the way how it is planned and designed.

For that purpose, Tan created a game-like platform for bringing the different stakeholders together in an entertaining way, that is able to produce more realistic design and plans than any other urban planner alone. Thanks to the nature of game, that accentuates both competitive and collaborative aspects of human behavior, the different interests of different stakeholders become apparent, yet achievable only through a mutual collaboration. By setting rather simple rules, a game designer is able to create a complex environment engaging many players whose conflicting goals and desire to achieve them naturally and necessarily grows into an extensive and fruitful debate.

4.3 Final reflection

4.3.1 The nature of the experiment

The way by which I arrived to the design of the final game through iteration of preliminary designs, their testing and subsequent reflection, could serve as an example or learning-by-doing method of gaining knowledge through practical experience. Although Schön's reflection-in-action describes a process or refining a certain design rather than exploring several different designs in a row, the essence of this method, lying in the continuous alternation of reflection as a "talk-back" and a modified design as a "response", is certainly present. Moreover, we can see an analogy between the way how this experiment was conducted and Alexander's description of the unselfconscious way of learning a craft. As well as members of that culture, I have started designing without being familiar eith any formal principles or recommendations. Through errors and failures, I learned how to design a product that would fulfill my demands on a satisfactory level. Although it might have not been the most effective way or arriving to a satisfactory product, it certainly brought a valuable insight and thorough understanding, that is often not obtained through a detached literature study.

The different phases of this experiment differed in the kind of data they were designed to obtain. The later in the process, the more was the focus on qualitative nature of the data recognized as a fundamental quality of the game. As the kind of the data, that the game focuses on, essentially shapes its design, this development from quantitative to qualitative nature resulted in dramatic differences between the single phases of the experiment. The relevance of seeing such architectural research as a qualitative rather than quantitative is elaborated on further in the following sections.

4.3.2 Good game vs. meaningful data

In the previous chapter, I have briefly elaborated on the theory of games and its most important elements. With such an insight we can now evaluate the different phases of the experiment in terms of the extend to which they fulfill the definition of game.

Although the conflict of player's interests is not always determined as a necessary elements by the various

definitions of game, we can observe that, for most games applied for serious problem-solving, it is the presence of conflict that makes the framework of game attractive and useful. In this perspective, the Octagonal game does not, in fact, posses many elements of game, and becomes rather a playful way of retrieving quantitative data.

In a response to such reflection, the Card game introduces a conflict of interests, firstly determined by the scarcity of cards, and secondly by the necessity to collaborate and make compromise in order to achieve the achieve the goal. This combination of a competitive and collaborative element, proper to games, is a crucial aspect for all the three examples of projects - CLUG, Leve de Krimp and Play the City. Although the representation of this aspect is different for each game, they all recognize the power in bringing people together and letting them find out that without a sense for collaboration, their unique personal dreams are difficult to achieve. The Card game adapted this idea and became a game that well fitted to the requirements of how should a game look like. However, the data which it delivered did not seem to offer an insight as valuable as I would hope, mostly caused by the artificiality and quantitative nature of the requirements that this game was based on.

Such a realization asked for a new game, this time focusing on relevance of the game within the topic investigated, thus on the quality of the data that we obtain. While the focus shifted essentially from quantitative to qualitative data and therefore became more successful in addressing the issues that I was aiming at, the 'gameness' of the game noticeably fropped. That was caused mostly by the increase of the complexity of the game, that made designing the mechanics considerably more complicated. As qualitative research often suffers from the lack of rigor, the elements of this game remained rather ill-defined and confusing, as opposed to the rigorously articulated rules of the game that preceded. An obvious example can be the lack of victory condition, which makes the main goal of the game rather undetermined.

The development of the experiment clearly show a pattern of a friction between the quality of the game as a game, and a quality of the game as a tool for research and design. We can observe that the general structure of game is in many ways complementary to the delivery of relevant data (concerning the competitive-collaborative aspect, or the system of pay-offs as a tool to condition the behavior of the players), yet sometimes can also represent an obstacle demanding for an undesired level of rigor.

The iterative process of design, depicting well the way how the experiment developed, seems to be

suitable method for finding the right harmony between the quality of game-play and the quality of the data it delivers. Analogically to the preceding steps, the next one would be supposedly to improve the aspects that make the game well-structured and entertaining, e.g. defining better the loose connections, improving the system of pay-offs or determining the victory condition in order to support the players' motivation to fight for their interests. The iterative process becomes even more effective when every phase is tested with players and reflected upon from different points of view.

4.3.3 Finding and motivating the players

In the section of *Initial reflection* on the different phases of the experiment, I already touched upon the topic of motivating end-users to engage with the design process. When we look at the examples of projects in urban planning, we can recognize a common characteristic pointing at the aspect of 'fun'. The fact that game is entertaining should, according to the designers, motivate people to engage with a serious problem that would normally be unattractive and hard to grasp. Apart from that, each of the project has its own specific way of motivating the participants. In case of CLUG it is inseparable from the motivation to learn, in the other two cases it is mostly the matter of belonging and caring about citizens' neighborhood combined with the urgency of the problem, that is transformed into the citizens' will to contribute to the search for solutions. The aspects belonging and urgency proved to be, also in other projects, the necessary conditions for realizing a successful participatory project.

All of these projects were successful in their search for participants. As crucial prerequisite for this success, which in the same time determines one of the obstacles for participatory design in architecture, is the knowledge of the group of potential participants. While projects in urban planning work with citizens of the neighborhood that is going through some transformations, architectural projects often get to know their users only after the design has been completed. As creating the sense of ownership seems to be one of the highlights of participatory processes, it does not seem to make sense to work with anyone else than the true future inhabitants of the designed spaces. For this reason, participatory practices has flourished in the field of re-construction and rarely also in cases of bespoke architectural projects. In order to develop participatory practices in architecture, we therefore need to elaborate

further on the possible transformations of traditional processes of developing architectural projects, that would enable the contact between architects and users already during the design phase.

4.3.4 Determining the subject of research and roles of the participants

I have described that participatory design process in in fact a mutual exchange of laymen's and designer's tacit knowledge. While the inhabitants posses an inherent understanding of the environment they live in, the designers, as the initiators, have the necessary broader understanding of the situation that needs to be passed onto the citizens, and furthermore have the insight in how can a design facilitate the determined requirements. Both of these information flows are necessary to bring together in order to produce a from that performs well within its complex context.

To successfully realize the mutual exchange of knowledge between the architect and other participants of the process, we first need to determine the kind of knowledge we will be aiming at, and the way how is the exchange practically performed. While the next section focuses on the latter aspect, this one tries to elaborate on the first one, trying to define the role of the players, the kind of data they should contribute to the game by, and the kind of data by which the game itself should, on the contrary, contribute to their increased quality of life.

While urban planning encompasses the complexity of a large area with a complex integrated network of mutually dependent variables, the complexity of architecture lies in more detailed understanding of the meaning of an object in its social, artistic and technological context. Urban planning deals with data describing the behavior of tens or hundreds of citizens inhabiting a particular area; architectural design, on the other hand, is built on issues scaled down to a single individual, his personal habits and values. The qualitative nature of the data that we aim for is therefore another specificity of the participatory processes in the field of architecture.

As I already mentioned, I came to such an understanding after the second phase of the experiment. Although I knew that the data delivered by the laymen are, at the very end of the process, translated into certain set of requirements for the project, I felt that the process of the game must stay away from a mere

enlistment of the laymen's demands, and offer an openness fundamental for facilitating and benefiting from the variety of participants' characters.

Another motivation to reach beyond the superficial layer of requirements is the aspect of validity of the data. As these data are so essential to create a trustworthy foundation for the architect's work, we must make sure that these data are as truthful as possible. We have to define the kind of data the users are able to deliver truthfully, and the kind of method we use to obtain them that preserves their truthfulness. As I have already mentioned earlier, the essence of participatory design is an exchange of the tacit knowledge of the designer and the lay people. That would suggests that the data obtained from the participants are justifiable only if they can be designated as participant's knowledge. Only when participants *know* them they become irrefutable.

In the third phase of the experiment, I try to respond to such an insight by seeing the personal requirements as encoded in people's activities. Based on what we do, we can determine what we need from the design in order to house our activities well. The test of the third game proved that the focus on people's activities, as described in 'personal narratives', opens the frame of the game satisfactorily and enables to examine the complexity of the players' characters.

Although this was a positive step towards delivering more truthful data, the activities we perform are still a result of our decision making. The problem is that articulating the reasons that hide beyond such decision making is, even for the proper person, rather difficult. We can decode why do we like to perform certain activity and what value or pleasure it brings, but the reasons for which we recognize the value as important or the pleasure as enjoyable still remains hidden. The complexity that I am trying to draw should already suggest that the data we should receive form the participants are not formulated in any kind of requirements, and that asking the laymen to communicate their demands or even draw a plan of a house they would like is far away from the method we might call legitimate. In the words of an english architect Denys Lasdun: "Our job is to give the client, on the time and cost, not what he wants, but what he never dreamed he wanted; and when he gets it he recognizes it as something he wanted all the time." (quoted in Cross 1990)

The reason why we cannot articulate the reasons leading to our deeds is that it is part of the tacit knowledge. We intuitively know that we are choosing for the right thing, but the actual reasons cannot be verbalized. Nigel Cross (1990) elaborated on this topic in Nature and Nurture of Design, where he proposed that by trying to understand the reasons that lead to our intuitive deeds, we are getting to know the intuitive side of ourselves, our own identity. As ungraspable as that gets, getting to know participants identity seems to be the way to obtain as truthful data as possible. As there is no direct knowledge about how to do this, participatory practitioners have been so far using different means to represent participants' identity, some going deeper than other, according to how many people were engaged and to which level of detail was it meaningful to investigate them.
In order to learn how to collect as truthful and authentic data as possible through the participatory processes, a further research needs to be conducted, elaborating on what are the data that can be indicated as truthful, on the ways how we can motivate the participants to share this kind of data with us, and on the possible means of communication that can be use to express these data in an authentic, unmodified manner.

Importantly, the validity of the data that we obtain from the participants is also strongly dependent on how the game designer (and supposedly an architect in one person) manages to perform his role within the process. By designing a game, the designer to a certain degree predetermines the results of the game. He chooses for the amount of information that will be released during the game, he chooses for the kind of information as well as the way of how are these informations transmitted and processed. Another big influence, that is particularly obvious in our case, is the kind of players the designer chooses to invite. Although it was in our experiment more a matter of practicality, as architectural students were easily reachable and motivated to join, it was important to acknowledge that their knowledge about architecture will have an essential impact on the results of the game. Concerning the influence by the game design itself, all the decisions made during the process of design were based on my common sense beliefs and expectations. All the points mentioned in the direct reflection of the game, especially then in the chapter *Unforeseen behavior of the players,* is a result certain expectations of mine, that formed the structure of the game, but were not fulfilled in the end. Such problem starts to dangerously resemble the

one that we are, through the participatory design approach, trying to fight in the first place - the illegitimate decisions taken by the architect without having a necessary knowledge base. To solve this problem in the game design, it is immensely important to conduct such an experiment more than one time and modify the game in order to reduce the impact of the common-sense beliefs of the designer on the results, and iteratively arrive to a game-design which results will be justifiable. In the same time, repeating this experiment with different kinds of players would give an important insight in how the experiences of these groups differ and how must be the game adapted in order to respond well to these diversities.

The issue of suspending of common-sense beliefs applies also on the processing of the obtained data after the game has finished. Although I tried not to reinterpret the data through my own way of reasoning, I modified them and reassessed them in a graphical way, making collages from the images that the players collected on the case wall. Such a process might have accentuated certain aspects that were not so important for the players themselves, and vice versa. It would therefore be better to present the data in an unmodified way as they were originally delivered. This aspect also brings about the demand for using certain communication tools and ways of representation within the game, ensuring that the 'raw' outcomes will already be usable as the final data which the architect refers to when making important decisions. I our case, the two layered construction on which the actions and accommodators are placed, and being detached from the collages that were made on the boards, is not too easily observable and simple to work with, which resulted in my need to modify the outcomes into some more comprehensible form. The outcomes of the game itself should therefore be expressed already in an integrated and comprehensible way to avoid the need of further editing.

Although the last paragraphs can give an impression that architect's impact should be eliminated as much as possible, that is certainly not true. The role and knowledge of the architect is essential for participatory processes to be facilitated well and realized successfully. In the way how the participatory process is planned and conducted, he already performs his role as a designer - not yet designing the tangible form, but designing the process through which the form will arose. In the same time, he possesses an important general insight to the complex context of which the participants know only

certain fragments, and is therefore the one that can compose the fragment into an integrated picture of the situation. This picture is then essentially passed on to the other participants, which leads to their better understanding of their own environment, and, together with their contribution to the design, supports the sense of ownership and results in a well working whole.

Fig. 25 (Above): An example of a collage made by myself, based on the collages made by participants. credits: own illustration

I have discussed the importance of finding the kind of data that would be legitimate to obtain from the lay people involved in the design process. However, it is important to stress that the genuine participation of users, as expressed by Bodker (2004) for the field of participatory IT design, refers to the transcendence of the users form being merely informants to being legitimate and acknowledged participants of the design. Apart from the issues such as who should participate, how to design the design process itself and what tools and methods to use, the notion of genuine participation puts us in front of another question: what does the participation mean in terms of actual power to make decisions?

No matter what kind of data and representation we choose for, the results will be very diverse - as diverse as the participants are. Such diversity is fruitful and an actual target of genuine participatory approaches. However, it obviously makes the architect's life more complicated. Instead of trying to fool himself that there is a certain targeted group that behaves in a similar way and has similar life values, he now has a proof that the group of users is more divergent than it is convergent, and that the requirements that such participatory approach will generate will be highly conflicting. That is a part of the highly complex context.

A response to this is, with a reference to Alexander, architect's attemot to generalize and sort the results in order to reduce the conflict and arrive to some reasonable set of requirements he will be able to fulfill. The way how this is often done is highly questionable and too random to be justifiable. It is the genuine participation that seems to be a possible answer to this. The participants themselves, as the authors of the data and experts in their own lives, are the only one compatible to take the decision of how this reduction should be done. Sadly, that does not mean that the outcome of the participatory phase will be less complex then the raw data, but the way how the participants interact and cooperatively try to reduce the conflict between them might offer us a valuable insight into how can the architect, from the data too complex to build on, arrive to a simplified program, that is easy enough to be grasped by human mind, and still able to house the complexity of the context.

Also in the third, final game, I tried to address the diversity that dwells in individuals and let them play with it to see how these complexities interact. To use the advantageous aspects of game, the players were encouraged to collaborate with each other to see how the complex conflicting interest can result in system that accommodates them all on a satisfactory level. To a certain degree, this purpose was fulfilled. The players had to make compromises and modify their goals in order to be able to benefit from collaboration with others. The result of the game indeed showed a system of units that were shared by different players, and therefore were the outcome of achieving personal goals through collaborative behavior.

However, the game that I conducted was not successful in uncovering the patterns of reducing the complexity and conflict. The main reason is the fact that it was tested only once, as the information about patterns lie in-between the games rather than within them. A second reason was my false, or perhaps redundant, focus on delivering data that would be concrete enough to form a firm base for my design decisions. Paying more attention on the general understanding of the players' behavior, conditioned by the need to collaboratively achieve our personal interests, would bring a better insight in how can an architect reduce the complexity on the design problem.

4.3.5 The search for common language

Practitioners of participatory design in architecture and urban planning agree that creation of mutual language and understanding is a crucial factor of participatory design processes (Granath 2001, Woolner 2009, Tan 2014). To communicate the laymen's tacit understanding of themselves to the architect in the first challenge, the second is then for the laymen to understand the design that is being fed back to them and which is based on the architect's tacit understanding of the situation (Granath 2001). The difficulty of this task is mostly determined by the fact that tacit knowledge is in its nature difficult to express in words, or in general offer any logical reasoning to support it. Although our understanding of the function of human brain is far from being thorough, we can find certain explanation of this phenomenon in the results of extensive scientific research conducted on people with brain damage. As Cross (1990) found out, the right brain hemisphere seems to house this intuitive knowledge, especially concerning emotional and aesthetic perception, recognition of faces and objects or visuo-spatial and constructional tasks, while the left one was proved to be controlling our speech functions and the verbal reasoning associated with logical thought.

An interesting insight is offered by the CLUG project. The complexity that Feldt found unexplainable through verbal communication does not, at first, seem to have much in common with intuition, as the relations between the different elements of urban growth were expressed with a mathematical rigidity. However, the personal aspect that Feldt added by making a game out of the mathematical relations created space for intuition, based on which a considerable number of decisions is made. The success of this game is based on Feldt's understanding that the complexity of the system cannot be explained, it has to be experienced. I believe that this idea needs to be adapted by the participatory practice in architecture as well, making the participants express their tacit knowledge indirectly, through an experience gained during a collective activity.

An indirect way to understand the tacit knowledge means, that the understanding is encoded in some other volume of direct information, from which this understanding can be derived. This naturally creates a demand for comprehensibility and clarity of the direct information, and therefore for a means

of communication that all participants master and understand in the same way. This lead to a birth of new untraditional tools for communication and representation, by which participatory practices highly contributed to the field of architecture (Granath 2001). Written narratives, drawings and sketches, models, images or videos, they all became an innate components of the interaction between designer and layman. However, many of them proved to be an obstacle in the process when not used in the right way. As drawings and models are tools that architects use a lot, those engaged with participatory practices often choose them for communication between the laymen and himself, or between the laymen themselves, forgetting that for many of the participants, these ways of representation are not as innate as for architects. There are examples of participatory projects in which laymen were asked to draw a plan, draw a sketch or make a simple physical model. These concrete visions were then adopted by the designers without an attempt to find out the reasoning behind them, which often lead to misinterpretations of the data by giving a meaning to the information that come with a whole rather coincidentally. The products of such designs were neither shaped according to the users' desires, nor were they composed through the architect's common sense, expert knowledge and practical experience, which would ensure the existence of at least some reasons behind architect's decisions.

The reason for this failure lies, as addressed in the previous sections, in forcing the laymen to use ways of representation that they do not know and are not trained in using. Studio Papaver solved this issue by letting the citizens present their ideas verbally, and only afterwards were these ideas put into sketches and 3D models by the cooperating architects.
Being familiar with the importance of common language already before the third phase of the experiment, I tried to use tools of representation that are commonly used by both architects and laymen, and are able to depict intuitive thoughts in the same time. I chose to use the tool of written narrative combined with the usage of images and photographs. Although we have learned that written text is not a tool through which a person can express his intuitive knowledge, I see the way how I used it as justifiable, regarding the fact that it does not try to express directly what people want or think, but approaches this data indirectly through narratives and somewhat hides them in-between the lines.

Despite paying attention to the aspect of common language, the second testing of the pre-task of Call for

Diversity proved the use of images rather problematic. Although this may vary from person to person, we have to acknowledge that many people are not used to expressing their thoughts, feelings or desires in pictures. This does not necessarily ask for a change of the tool of representation I used, but can be solved by modifying the task according to the abilities of participants. While the architectural students seized the task with all its freedom that it suggested, the non-architectural students stayed more down-to-earth without much effort to explore the different ways that an image can represent their feelings and desires. As this exploration was the purpose of this pre-task, it would be meaningful to add few examples or even a certain pre-pre-task that would explain better the nature of the results that was aimed for and support them in looking more deeply into what the tool of image can offer.

Although the amount of literature discussing different tools for design and methods of representation is rather rich, what we need now is to conduct a research on this topic applied directly on the use in participatory architectural projects. Working with different tools proved to be inspiring and fruitful; however, a false use of a representational tool can cause a failure of the whole project. Among the other aspects that have been mentioned before, this one also calls for a special attention while paving a road to successful participatory architectural practice.

Conclusion

This research paper focused on searching for the benefits that participatory of laymen can bring to architectural design, and for the reasons that have, so far, prevented architecture from a successful adoption of these practices. Furthermore, the question of how to practically realize a participatory

project is researched through a practical experiment, focusing on the use of game as a framework that can be supportive for the issues that we deal with in participatory design.
The benefits were investigated through the theory of design as proposed by Christopher Alexander. The most important aspects for achieving a good fit, that give a meaning to participatory practices, was the need to understand the context and to create a form that could adapt to this ever-changing complex context. As the complexity of the context is from a big part formed by the complexity of its inhabitants, sharing their knowledge about their environment and themselves can highly contribute to the architect's understanding of the context. In order to make the form adaptable, it needs to be controlled by its users and become a so-called self-organizing system. Necessary conditions for the emergence of self-organization is the characteristics of the form that make it possible for the users to take control over it, developing a sense of ownership that the users feel towards the form, and last but not least, the understanding of the users that their role in creating a well-working form is crucial, both in the process of design and the actual performance of the product.

For several reasons, the architectural design performed in the complex modern urban contexts mostly does not follow such principles. The reasons spread from the practical side of engaging with participatory practices, over the way that modern architects are used to do their work, to the way how cities are governed and inhabitants raised.

For a participatory practice to be successful, an architect needs a group of engaged lay people to work with. As Anne Seghers, Zineb Seghrouchni and Ekim Tan addressed in the interviews (attached as appendices), the general understanding of the distribution of power over the urban environment needs to shift in order to create a suitable environment for participatory practices to develop. While the American society always understood volunteer participation as an innate part of the social life, European style of governing the cities can be better identified as so-called *active state*, where citizens are fully taken care of by the governmental services, for which are rewarded with the tax-payers' money. Such a system, perhaps once a sign of a developed country, leads to a significant passivity of the citizens, and the lack of communication between the government and the citizens results in the citizens' feeling of powerlessness towards any change. However, all the interviewed urban planners acknowledged that the shift is, at least in the Netherlands, already taking place, mostly driven by the governments themselves, who realized

that city is too complex to be ruled without coming in serious touch with the citizens. What we need now is to inform the citizens that their participation in shaping the environment is important, and offer ways how to get involved for those who are interested.

The attitude of the architect, on the other side, is as important. Different sources talk about the individuality of an architect and his recognition as an artist as being obstacles on the way to more participatory architectural design, that would lead to better performance of architectural form. It becomes clear that role of an architect, that became during the 20th century rather inhospitable for participatory practices, needs to be redefined again. From more product-oriented approach we need to develop to a more process-oriented approach, and attempt to retrieve the harmony between the social and the artistic meaning of architectural practice.

In between the citizens and the architect is the participatory practice itself. The practical experiment, conducted as a major part of this research project, shed light on several practical aspects of participatory design that represent significant obstacles on the road to a more participatory architectural design. They included the issue of searching for participants and motivating them to engage in the project, defining the role of the architect and the laymen within the process, or searching for suitable communication and design tools that would represent a common language for both sides.

Next to these findings, the practical experiment was focused on investigating the notion of game as a possible framework for facilitating participatory practices. The final reflection, based on the literature and case study, revealed that while some aspects of game can be complementary to participatory practices in architecture, some other can represent obstacles. That naturally results in a friction between the two intentions of the designer - intention of designing an engaging and entertaining game, and intention to obtain relevant data that would form a firm base for his decisions. However, the aspects that contribute positively to the participatory practice are significant enough to still consider game as a hypothetical new tool for architectural design. These are, for example, the competitive and cooperative elements that are an innate part of games as well as the nature of urban environment, or the aspect of entertainment and fun, possessed by a good game design an essentially contributing to the motivation of

laymen to join the process.

An important isight brought about by the final reflection in the experiment was connected to the subject targeted by such an participatory architectural event. The essence of participatory design is the desire to embrace the complexity of the participating individuals rather then try to artificially simplify it. However, without a certain simplification, a designer would not be able solve the design problem as there would be too many variables to cope with. This paper recognizes the potential of participatory practice as having the the means to offer a clue for this simplification through the interaction of participants during the process. With their own personal interests, they are suddenly confronted with the interests of the others and learn that in order to achieve their goals, they need to cooperate and compromise with the others. In the end, they are the only legitimate individuals to make the decision of how to simplify the complexity to which their own identity contributes. More then arriving to concrete information about the participants requirements, it would be more meaningful to focus on the general patterns that emerge in the behavior of different individuals, when they face the task of simplifying their demands in order to make them compatible with the ones of the others.

In order to push forward the development of participatory practices in architecture, more knowledge about the problematic issues needs to be produced. At this moment, too many projects are based on literature that is not focused specifically on participatory process on architecture, but discussing the different issues either generally or applied on other fields of design. Regarding how complex the understanding of participatory design is and how differently it needs to be approached in different situations, it is clear that only a volume of literature discussing this approach in its architectural specificities will form a firm foundation for making the architectural practice more participatory and increasing the quality of architectural forms and the lives of those who inhabit them.

Appendices

Interview with Ekim Tan

urban planner, founder of the Play the City studio in Amsterdam
date and place: 6. 3. 2015, Amsterdam

Your journey towards the Play the City platform for participation in design started already during your studies. Was this approach popular already back then, or did you feel as a pioneer of something new?
When my PhD started in 2005, I think it was quite new. We were talking about it before the crisis came and before everybody else realized that it was actually a need.
Nowadays there are two groups that are attracted to this subject. One group says that thanks to the existence of internet and other media, people have better access to information, therefore they are getting as intelligent as the people that are governing us, and therefore they are becoming more critical and they would like to be involved in the processes. The other group says that welfare state doesn't work anymore, the economy is changing and the government is not able to realize large scale projects by itself anymore, that's why we have to partner with the citizens and other groups.
I find the second route a little cynical, in a way, because it says that if we had enough money, we wouldn't need the citizens and other groups to join us. Now we need the money, so we have to ask the citizens to join. In a different way from different directions, people are coming to the same point.
And if I feel as an innovator or pioneer.. I really don't care about that. I also can't really explain how this whole research developed from the research of the last century, such as Christofer Alexander, who was into the understanding of how iterative design works... You can always find your own ideas of today in the last centuries as well. In the end, it is actually about trying to understand what today is happening and how can you respond.

What or who were your most essential inspirations for dedicating your PhD research to the topic of self-organizing city and iterative design?
I think indeed, Christopher Alexander. He is totally notorious amongst architects, he's a mathematician, he talks about parameters, he talks about how can you actually look at design as a systemic approach. Some people think he is just getting away from this more customized unique design story, but I think he is a really smart man. Architects are really good in understanding patterns and working with them, and why not to try to build a system around it, so that other people can also understand it? His books such as Pattern Language were given to us already in the first year at METU in Ankara, so I think my fascination really goes back to that.
Next to that, when I was starting my PhD, we were so lucky to have the professor Yuval Portugali, who came up with his book Self-Organization in the City in 2000. His department is social geography, but he has been looking into anthropology, and as his wife is an architect, he is interested in cities and how we can bring the self-organization theory into architecture. Him working with us was a second big influence. It was very interesting, but he was a little too abstract, being a scientist and not really working with the real contextual stuff. That was the challenge for me - how can I actually take this theory and bring it down to tangible, touchable project?

You are proposing that cities should be self-organizing in order to work well. From where do we need to get to this self-organization, what is the situation now in The Netherlands, for example? Are the cities governed in top-down way, imposing artificial principles on the inhabitants?
I think the Dutch are really trying to get away from that approach. By now, everybody realizes that it is not the way we should be working. In the same time in the Netherlands there is a strong culture of what they call 'polderen', 'to polder', that is to bring different views and have this endless conversations and meetings. They already have the culture of bringing various people into the conversation, having a debate. I think what has to change is so called 'active state'. What I observe in the countries where the state is too active and tries to arrange and organize everything for the society, people get passive because they know that the government is doing it for them, and they just keep waiting. This is now slowly shifting, the people who are working for the government are trying to change their ways of doing, but even if they understand that it needs to change, they don't know how to do it. Understanding something

and doing something is different.

There is also the economic issue of where does the money come from. If government wants to partner with citizens, is the government the one to give the money so that they can partner with them? Why do we do that then? I think it is exactly these questions that has to be answered now.
In Amsterdam, there are some parts of the city that already try to invent and show how it can be done. But if you compare it to other European countries, the Netherlands is still the leading country.

So the initiative for incorporating inhabitants in the process comes both form the inhabitants and from the government? Do they already understand that city needs to be self-organizing?
I think that it is actually not a new thing. Even in the Netherlands, where we imagine that everything is organized top-down, self-organization is part of the way of making the city. Even in Almere, which is a new town and has been top-down planned, within that top-down system there are so many different bodies who are pushing different buttons, that you can also see it as a self-organizing system. You already get a system that everybody influences and no one really controls it. Yuval Portugali also says that cities have always been self-organized systems. The last century, the century before and also this century. What is different now is that we are understanding it. We are now conscious that this is a self-organized system, and that we, as designers, are only one of the players. We realized that even if you play the city as a scheme which is later implemented, the city is afterwards given to the hands of the citizens and they start playing with it. What is different for this century is that we know that the partnerships and multi-stakeholder system has to be in the process form the beginning. The old system of big scheme, big money, push it and make the city, it doesn't work. People are trying with smart cities as Songdo, but I think there will be a moment when we understand that this is not the way how the extreme complexity of the city can be accommodated.

It seems that many people are still comfortable living in the system where everything is organized top-down. Did you ever feel a rejection from the citizens towards taking part in planning of their city?
That is an interesting question. When we were making the Play Noord game in Amsterdam, one of the citizens was really protesting. She was saying: "hey, we paid our taxes, we invested here with the idea that the city will serve us, and now you are coming with this game and explaining to us that the people that we have been paying to are not able to realize it, and you are asking me to do it? Why should I do it?" There are people that think like this - that the city works for them when they paid for it, and there is no problem that such people think that way. I don't think everybody has to be part of making the city, we only see that there are more people becoming capable of understanding and making the city. And if that is happening, than you have to change your methods of making city. And in this sense gaming may be interesting, because it can allow many people to join, if they want to. And if they don't want to, I think it's fine, they can be interested in farming, or football, or other things.. Not everybody has to be interested in making the city.

You realized the game in many different countries and cultures. How much were the characteristics of the cultures influencing the process and results of the game?
I think that's the best part of the work. It's really nice. You have some generic method and you customize it to the different questions in different cultures.
My best experience was in South Africa, which is the most difficult society we have been working with. It is really fragmented and post-apartheid, still suffering from the apartheid planning strategies. And then you see that people are so hungry to find a good way of having a conversation with each other, and they are enjoying being in a game together. Even though they are sometimes very poor and there are big inequalities, they are more happy, smiling more and interacting more. In Turkey I like it in a different way, it is where I come from. When I feel the frustration and the anger coming from different directions,

gaming suddenly becomes much more interestingly relevant there, as it's maybe be one of the last ways how to bring people together in a light way. They are taking everything so seriously and are so angry, that a method like gaming can calm things down. They start to interact with people they wouldn't say hi to on the street.
The impact of the game in Turkey might be smaller because we have politically a very centralized way of doing things, so you shouldn't expect a big impact on the reality.
In the Netherlands, on the other hand, you really see the direct influence. So what we always learn is that one thing you shouldn't expect is the same result. But you also learn what you can expect, if you know a little about the power relations, what is the power of local government, how the money works in relation with politics...

In the early games you worked with international group of architects as being the main participants. Do you think it can work to make architects of different cultures design specifically for a whole other culture that is foreign to them?
We have done the international groups for the case of Almere and Rotterdam, and in the case of Almere the outcome was quite absurd. We worked with a group of architectural students coming form Ghana, Istanbul, New York or wherever, and they they decided to design highrises, which is in Almere probably the last thing that would happen. But it was their background, it was their cognition of how a city should be like. I think that in Rotterdam it was much more appropriate, because the neighborhood we worked in was already multicultural neighborhood, and the students were also coming from Spain or all different parts of Europe. However, the game would give very different results if it is normal people playing, not designers. You can see that the designers really dream of turning everything upside down, you see this shifted mind of an architect coming into the game. It is a very creative way, but you would never see the outcome of those two games as an implementable one.
That is one of the conclusions, if the players you bring to the game are the closest to the real players, then your outcome get as real as possible. And I can really argue that it is more real than what a professional designer would design. If you bring together all these people that are influencing and interfering later in the process, what they do together is much more closer to the outcome than when the designer at the desk fantasizes about how it could be.

When you were working with the stakeholders, were they motivated themselves, or did you have to motivate them?
Depending on the case you choose. If it's a really burning question, people are already having a conversation, and they are happily joining. You can see that if the politicians or decision makers are in the game, the dynamics of the game are already changing and people are becoming much more assertive and really starting to engage in the game. I think the magic is really to try to bring all the different vectors of the game in one session together.

Next to the inhabitants and the stakeholders, an architect has always a role in the game as well. What would you say are his biggest contributions to the game?
Most of the times the architect are strong players, because they really know how to deal with 3D environment and all these physical object, they are also in a way leading and helping the group to come up with more designed environment. In that sense a lot of people also criticize the participatory approach, saying: "But where is the expert, where is the expertise?" Well, it's in the game! It's not as if we are kicking the designer out of the game, it's just that we are recognizing that there are other people in the game.

How do you position yourself within the process? Do you try to stay neutral a serve as a mere facilitator of the event?

I believe it's not possible to be really neutral. You always say that it is an around-the-table environment where they can come and bring their own interests and takes on the table, but on the other hand, we are also not totally innocent. The way you design the game, the way you design the rules are already giving a certain direction to the whole debate. And that is where the design component of the game still remains. The way you decided to show certain information in your game or not, the way you design the interaction between the players, you are already in a way suggesting a certain vision, and I think it is really just up to the people to decide to join it or not, and if they like it or enjoy it, they are already registering to the rules that you prepared for them.

With your diverse experience, where do you see the potential of using game as a method?
I think gaming should be much more integral in education, especially in design education. I have no time because we kind of dedicated ourselves more to how to influence the practice, but I am very convinced that architectural and design education can really pick it up, for example make it an integral part of introducing a design studio. You probably know games yourself, it has a competitive component, but it also has a cooperative component. On one side you are trying to prove yourself as the leader, but at the same time you can only do while collaborating with others and learning from others. In that sense it is really like a built-in education tool.

What are your plans for the future?
Right now we are a small office. The idea is to see if we can become an internationally performing consultancy company, where we can bring the game to really complex situations. In the last five years, the whole project has become more mature and more professional, and the question is how to implement it.
In a way we are fighting against the existing planning system. We are saying to the city: "you don't need a master plan, you need a game!" In Amsterdam, they already accepted it in the conversations, they put in their documents that gaming is part of their process, but I think there is still a big world out there. You have to go out and tell them that gaming can really become the method that we make cities with.
At the end of this century maybe our children are waking up and instead of spending time on Minecraft, they are spending time on real time games, where they can influence and they can give reactions to how the city should be like. I think it is a big chance it can happen, but it's not there yet.

It seems to bee a good time to propose a game as a framework for different practices, as the development and popularity of gaming increased enormously thanks to the development of technology, and is being implemented in many different fields.
You're right, it's not only for making cities, it's in management, in medical science, you can really see that games are becoming a new language for solving problems. Military has been using it already in the 1950s. Johan Huizinga claims in one of his books that the whole project of enlightenment, which was about learning, personal improvement, science and rational understanding of the world, somehow forgot about gaming, although gaming is the most effective way of learning for a human being. In his book from 1930, he says that gaming will become the way we learn things and it will become the language of the century, language of the future. In the last century it didn't happen, but now you see that it is indeed becoming the century's language of how we learn and how we communicate.

Interview with Anne Seghers and Zineb Seghrouchni

urban planners, founders of the movement Leve de Krimp!
date and place: 21. 1. 2015, Utrecht

On what basis did you decide to investigate participatory approach in connection to the topic of population shrinkage?

Zineb: When we started the project, it was no more than an idea and topic of the depopulation in the Netherlands. There were three subjects on which more knowledge was needed.
One was raising awareness about this topic amongst inhabitants and other stakeholders in the areas that have to anticipate on the process of depopulation. It is a very abstract theme, so it is important to think of the way how to approach them.
The second was how to make people who are living there come up with ideas and embrace the process that is coming deal with it, so a certain bottom-up project.
The third one was to use the potential to make smart connections between different business flows that were already present in the area, which was the biggest challenge.

We realized that more than a spacial project, we need to design a process to raise awareness to get a shared ownership of the issue, after which you can get into action, start to re-design, implement?? or build.. Then by brainstorming and thinking we found out about a game, and realized that it is the best tool for engaging people, letting them reflect and making possible to imagine themselves in a situation that isn't happening yet. It was an experiment for ourselves as well.

Anne: We were already both familiar with what is called the fun theory. We knew that if you want to make people participate in a project with a really abstract future theme taking place only in 20 years, and you explain them the topic in words, it sounds really boring. They don't feel the urgency and the need to participate. But when you start to make it fun, there is another incentive. It is a tool that you can use to sell the boring stuff. And we really believe in that.

Zineb: We know our place and we know what we are capable of , so we didn't want to do everything ourselves. We just looked for a group of people to surround us with different knowledge from different fields that we are not experts in, and that definitely helped us a lot. We just kept on developing something, testing it and then discussing the problems with all the people. So we are big fans of working together with other disciplines, because it also brings innovation to your own way of working.

How did you find the players for the game and how did you motivate them?
Zineb: We kind of built it up. We got the names and the phone numbers from one of the person that was in our advising board of experts. He used to be the director of the whole region of Achterhoek and now he is a chairman of the municipality, so he is quite a known person. He helped us already in making a selection of the people in the community.
Then we called these people, we said that they might be nice to collaborate with in this process. Of course we went to their place and we tried to give them as least hassle as possible, and in the end they decided themselves how intensely they want to engage in the two weeks. And in the end they were very motivated.

Anne: In the beginning we were quite vulnerable.. Until now we were used to design something, and when it's finished and you have all the arguments prepared, you start presenting it to the audience. Here, we were presenting mock-ups and half-thought through product and everything was still in concept. We felt really vulnerable. That was the largest barrier to take for us - to pick up the phone and call to someone saying: *You don't know me, you don't know what we're doing, we don't know what we're doing, would you like to invest two weeks of your time in our project?*

Zineb: It was also very important that we were an independent party. Not two people from the municipality, from very big consultancy company who comes there and tries to get influential...

Anne: Trust is surely the most important thing to get people engaged in your game. If they feel that they

are only figurines in someone else's interests, they won't engage for you. We had honest motives and that's what we felt, they simply trusted us.

Knowing that the participants are not trained in designing by can bring some other relevant data, what would you say it the role of the participant in your project? How do you find the line between what is the competence of an architect and what is the one of the inhabitant?
Anne: Well, we didn't see our game as a designing game. It was more a game to investigate to what extend the collective intelligence of the area is able to come up with good ideas to anticipate on the depopulation. I think that in design projects, a lot of things that the citizens come up with are very good ideas, but they need a translation to a spacial intervention.

In another project that I did here in Utrecht we did a design with citizens. We made teams of designer and citizens together. First, we only investigated how they use the area, what is bothering them or what they like in their neighborhood. Later, we distilled the important ingredience for the design, which was an assignment for the designers. What was striking was that, in the end, the citizens really recognized their input and were thinking: '*oh, that's something I could have designed myself.*' But they couldn't have, because they are not designers!

So you can't say to the citizens: '*ok, together we take a pencil and we start drawing*'. The citizens don't have any references how to draw, how design works and what is possible, what is expansive and what is not. On the other hand, professionals often say: '*ok, we are professionals, you are the citizens, we just want you to give us some data and we, professionals, will take over from there.*' And that is also not working, because you don't take the citizens seriously. The are actually the experts of their neighborhood! So you have to take them seriously.

Zineb: And what we did in the Leve de Krimp! project, we let the citizens present the project to the chairman. So we reversed the traditional procedure. And they were so dedicated and so engaged! That is why I like the work engagement in designing more then participating. One inhabitant even wrote a poem about the place, how it was before and how it would be with the design, it was so poetic.
In the end, the municipality asked us for the material, as they were working on some projects in the neighborhood. Eventually they built something there, it was not our design, but... you set something in movement, and you open some eyes. Maybe it is not your masterpiece, but that doesn't matter at that point.

How would you position yourself within the game, as its designers? Do you need to set a certain kind of relationship with the inhabitants in order to make it work?
Zineb: Partly it's important of course, because it is about their environment, about their area, they already have a connection with their area and you are doing something about that. I don't think it's really a matter of becoming friends with them, it's more an independent position.. of course we had our own interests, but it was not in any way conflicting with their interests or with the municipality or other stakeholders.
And this independent position can be manifested in different ways, depending on the project and you as an architect. In the end it always comes back to what fits with you and your skills.

It was important that were able to have this independent position. We got funding from the Unsolicited studio, which was giving us all the freedom. They were not demanding anything specific - of course they were asking for a project, but we were free in how and with whom will we make it, while getting the means from them that actually made it possible to do it.

Anne: It is essential to buy yourself time to organize periods for yourself in which you can freely experiment without having to accept assignments or rules from the funding parties. That is what you need. And if you have that in your process, then you can build strong arguments and strong case. And if you have that strong case, then you can go to the parties that can pay you, because then you know better what to expect and what the results will be. If you go to those parties before you had the experimental phase, you restrict yourself too much..

Zineb: ..and you follow the agenda of the people that would offer you the funding. So I think it is the most important to have the opportunity to carry out the experimental phase. Because with that comes the independent position.

Anne: I think the position is different when you are doing a pilot of a game and when you are really playing the game on a large scale. We were thinking, what if there would be enough money to organize this game in with much more players.. But it's too difficult if you are still only the two people organizing it and putting together the players. So we thought we would need these local ambassadors who live in the region and who the other people trust, who already know what is going on and already have their local network and can activate it... Someone intermediating between the hardcore game designers and the friendship kind of relationship. You need something in between.

You also worked with different stakeholders during the game, but you didn't invite them for the first meeting with the participants. Was it your conscious decision not to do so?
Anne: Yes! That is the freedom we had in the process. By their presence, you would create a large gap between the citizens and the professionals. And that is something you don't really want to do. I think the outcome of the project would have been totally different if we would have invited the stakeholders to the table.

Zineb: Definitely. But it doesn't mean you have to exclude yourself. It just means you have to have a different kind of engagement, instead of being the decider, you are part of it, but more on the background. You finance and facilitate the activities. You have to know when it's the time to come on board as a decision maker.

When would you say is the good time for the designer to enter the process?
Anne: It works two ways around: if two much is already designed, then the participants do not feel they have enough room to come up with their own ideas. But if the designers step in too late, then they are not really a part of the whole team. You really have to work together as a team.

After the pilot of the project, is there something you would do differently?
Anne: It's difficult. The project that we did had to take place in a period of six months. In the beginning, we didn't know that we are going to make a game. If we knew it from the beginning, we would have done the pilot earlier, because now it was really at the end of the six months, it was a little hasty and quick. Otherwise, we would have done another pilot, or even two of three, with a bigger group. You always have to test it several times. For me, that is a weakness.

Zineb: Indeed, testing it many times is what brings you to another level.

What was your motivation to choose the game as a method for the participatory project?
Anne: When we started our project, we were also very hesitant about using a game as a tool, we weren't sure if people will take us seriously. I think there is a certain first barrier that you have to overcome, for non-game-developers, whether or not is game something you can use in a professional experience.

But I am wondering as well, as the spacial demands are changing and there is a large demand for participation and engagement, why there is such little use of games and game processes in the spacial context. The connection between games, participation, and new media and spatial planning is not really often made, and I don't know why that is.

Zineb: The application of games has been done in medical or army field to simulate stuff... The methodology of creating a game and designing spaces are very similar processes and they can be mutually very complementary. If more and more people search for different ways of doing things in this field, and this awareness comes to different levels and different disciplines, it is going to gradually change.

Anne: There is one project of a large and traditional developer Heymans, who is also trying to experiment, investing money in the development of game. They realized that the traditional, old way of developing might work today, but might not work tomorrow, so they are searching for alternative ways how to get stuff done. One of their employee was asked how much money would he be willing to invest in something so experimental, and he said: '*about €100 000... It's maybe a lot of money for you, but for us it is really easy to invest them in such experiment.*'

Zineb: They also have other investment costs that in the end do not work out. If you have someone who knows how to give a good argument why this money can be used for int his way, it works out. These stakeholders and developers are important for PD in architecture, as they can invest in the development. I think that the consciousness of what the participatory way of thinking can bring should not only improve in the group of the designers, but also in the community and the financing parties.

People that engaged with participatory practices mostly return with positive reflections that support their believe in this approach. Why is it that participatory design is not yet becoming part of everyday practice, at least in architecture?

Zineb: I think that in the situation in which we are, and with the issues that we have to deal with, there is a demand for more and more different ways of designing, including different stakeholders. The different financial situations or, as in our project, demographic changes gives participatory design a place. Also social design is coming more and more up and almost always it has to do with participation of different stakeholders. It's just that architecture is not used to this approach yet.
I think it just needs to get into the consciousness of the designers and the users. And then, this clash will happen anyway sometime.
There is still the traditional practice designing a museum with a certain program, or houses with other program, but now with the new media and technology and the possibilities that it's giving, people make their own programs in the build environment. With Airbnb, suddenly a city becomes one big hotel, in places that were not designed like that. The program of the city is suddenly being decided by the people themselves. So it is maybe just a matter of time for the designer step into this more.
But I also think that it has to do with you as an architect and your skills and interests to dig into this as a designer. It's not like this is necessarily the way to go for everybody.

Is it also financial issue that represents an obstacle for this approach to develop? Are architects and urban planner afraid that the work they will have with incorporating people in the process won't be paid?

Zineb: I think you're right, but maybe for a spatial designer to think in a way as a game developer does could be applied in many fields - not only in the process of developing a context, but also new business models or the way how you pitch your idea.. You can learn also from each others business models, because the game industry is doing well, obviously.

Anne: But I do think that the amount of invested money that the architectural process is dealing with and the amount of money that game development is dealing with is totally different, and therefore in architecture there is a lot of avoiding-a-great-risk behavior.
And also, urban planning is used to earning money by building. New buildings are not always built because there is a demand for offices or dwellings, but just because they know that they can sell it and earn money. The reasons behind the the architectural and urban development process are very different and not always honest, and therefore the field of decision making in building and game development is not comparable.

What do you think has to change to enable participatory design to develop and flourish?
Anne: I think that people living in different areas or communities are used to having the government arranging everything for them, it's really lazy, leaning backwards attitude. That is now starting to shift... but the shift is coming from the top down: the government simply says: *'we will no longer a party that will organize your life, you have to do it yourself.'* I think it has to come a step further first, so that the people actually feel from the inside, that if they want to organize their life, they are the ones responsible for that in the first place. If that is the general state of mind, then participatory processes will become part of the general practice. It's about taking the responsibility to organize your life and organize how your city is working
But all the bottom-up projects in the Netherlands are only happening when there is funding, mostly from cultural funds. But when these cultural funds don't exist, the bottom-up projects don't exist. So I do think that has to change, it is necessary for new business models to grow and house this new way of working.
And also need to make it sustainable; when all the funding parties withdraw, the initiatives that they have started should continue to work themselves and keep themselves alive.

Zineb: Recently, I spoke to somebody who has lived in NY, and said that the mentality there is much more DIY-like. When it starts snowing a lot, all people just start shoveling it in the street by organizing it themselves. Here it's much more *'when is the big car coming to do it for me?'*. And it's all these small things, that always refer to some bigger systems.
It was a very luxury position here for many years that so many things are organized top-down, and also give freedom in a way to study or to take care of your parents.. But it's just not a situation that can be maintained.

Bibliography

Adams, E. & Rollings, A. (2007). *Game Design and Development: Fundamental of Game Design.* New Jersey: Pearson Education.

Alexander, Ch. (1964). *Notes on the Synthesis of Form*. Cambridge, Harvard University Press.
Alexander, Ch. (1965). City Is not a Tree. Architectural Forum, 122 (1).
Alexander, Ch. et al. (1977). *Pattern Language. New York: Oxford University Press.*
Birks, T. (1972). *Building our new universities*. Exeter: David & Charles.
Cross, N. (1972). *Design Participation: Proceedings of the Design Research Society's Conference*. London: Academy Editions.
Cross, N. (1990). The nature and nurture of design ability. *Design Studies*, 11(3). Oxford: Butterworth-Heinemann Ltd.
Ehn, P. (1989). *Work-oriented design of computer artifacts*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Feldt, A. G. (1972). *CLUG: The player's manual of The Community Land Use Game*. New York: The Free Press.
Goldstein, J. H. (1979). *Sports, Games, and Play*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Granath, J. A., & Lindahl, G. A., & Rehal, S. (1996). From Empowerment to Enablement: An evolution of new dimension in participatory design. *Logistiek und Arbeit*, 8(2). Göteborg: Chalmers University press.
Granath, J. A. (2001). Participation of users in design activities. *International Encyclopedia of Ergonomics and Human Factors*. London: Taylor & Francis.
Hanson, J. & Hillier, B. (1984). *The Social Logic of Space*. Cambridge: Cambridge University Press.
Hofmann, S. (2014). Architecture is Participation: Die Baupiloten Methods and Projects. Berlin: Jovis.
Huizinga, J. (1949). *Homo Ludens: A Study of the Play-Element in Culture*. London: Routledge & Kegan Paul.
Chan, CH. S. (1990). *Cognitive processes in architectural design problem solving*. Pittsburgh, USA: Carnegie Mellon University press.
Johnson R. R. (1998). User-centered technology: A rhetorical theory for computes and other mundane artifacts. New York, NY: SUNY Press.
Jones, P. B. & Petrescu, D. & Till, J. (2005). *Architecture and Participation*. New York: Taylor & Francis.
Markus, T. A. (1993). *Buildings and Power*. New York: Routledge.
Mayer, I. S. et al. (2004). *Collaborative decision making for sustainable urban renewal projects: a simulation - gaming approach*. Delft: Delft University press.
Nardi , B. A. & Engestrӧm, Y. (1999). A web on the wind: The structure of invisible work. *Computer supported cooperative work*, 8 (2). Dordrecht: Kluwer Academic Publishers.
North Carolina State University n. d., *Henry Sanoff*. Available from: <http://www4.ncsu.edu/unity/users/s/sanoff/www/henry.html>. [14 April 2015]
Oog voor de buurt 2013, Spijkenisse Zuidwest. Available from: <http://oogvoordebuurt.nl/spijkenisse-zuidwest/>. [14 April 2015]
Piaget, J. (1962). *Play, dreams and imitation*. New York: Norton.
Winograd, T. & Flores, F. (1986). *Understanding Computers and Cognition: A New Foundation for Design*. NJ: Ablex
Sanoff, H. (2006). Multiple views on participatory design. *METU Journal of the Faculty of Architecture*, 23(2). Ankara: METU University press.
Schӧn, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. USA: Basic Books.
Simon, H. A. (1987). *Decision Making and Problem Solving*. Maryland, USA: Institute for Operations Reserach and the Management Sciences.
Simonsen, J., & Robertson, T. (2013). *Routledge International Handbook of Participatory Design*. New York: Routledge.
Spatial Agency 2014, *Participation*. Available from: <http://www.spatialagency.net/database/participation.1970s>. [14 April 2015]
Spinuzzi, C. (2005). The Methodology of Participatory Design. *Technical Communication*, 52(2). Virginia,USA: Society for Technical Communication
Tan, E. (2014). *Negotiation and Design for Self-Organizing City*. Delft: Delft University Press.
Warrington College for Business Administration 2014, Community Land Use Game (CLUG). Available from: <http://warrington.ufl.edu/centers/cres/students/CLUG.asp>. [12 December 2014]

Woolner, P. (2009). Building Schools for the Future through a participatory design process exploring the issues and investigating was forward, in *BERA Conference*, September 2-5, 2009, Manchester.
Zimmerman, E. & Salen, K. (2004). *Rules of play*. Cambridge: MIT Press.