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CONSTANTINESCU, Teodora; DEVISCH, Oswald & HUYBRECHTS, Liesbeth
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Teodora Constantinescu, Oswald Devisch, Liesbeth Huybrechts

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Paper Abstracts

Capacity building refers to the process of improving the ability of a person, group, organization, or institute to meet a set of stated objectives (Brown et al., 2001). Spatial capacity building can take form in participatory ways, with many participants that need to be understood and involved in order to come to new ways of seeing spatial issues, relationships and options (Forester, 2000). When addressing complex urban projects, the variety of stakeholders that is required has a direct impact on the quality of the project, the budget and the power to speed it up or slow it down. Trying to overcome these challenges, policy makers have been experimenting with different participatory forms of governance, but were confronted with the lack of motivation among players (persons, organizations, …), inability to foster long term engagement and actors involvement. Having the ability to foster cooperation and understanding, games have been used as a tool to ease this process. Participation is described by Pelle Ehn as a meeting point between language games of people with each their expertise (1988).

In this paper we review three serious games that serve as potential tools for fostering civic learning and collective efficacy in participatory processes. Civic learning emphasizes active participation in the process of public decision making and establishment of public policies (Gordon & Baldwin-Philippi, 2014, p. 770), while coming to understand the relation between semantic and social patterns across the broad span of economic activities, social media, public and private actors. Collective efficacy on the other hand, is "the linkage of mutual trust and the willingness to intervene for the common good that defines the neighborhood context of collective efficacy. Just as individuals vary in their capacity for efficacious action, so too do neighborhoods vary in their capacity to achieve common goals" (Sampson et al., 1997, p. 919).

Looking at games such as *Participatory Chinatown* and *SprintCity* we can analyze the importance digital role-play games have on transforming face-to-face community meetings into usable feedback for the planning processes and creating mutual visibility among institutions and individuals. *Rezone* challenge the players to not just pursue individual self-interest but to strategically collaborate in order to make decision for the common good.

The games experiment in areas of public communication and social organization where different stakeholders collaborate on problems that can't be solved through present regulations alone. Social feedback loops based on participatory processes and analysis of data can be an effective catalyst for increasing collective reflection and collective action. Their main goal is to create and establish a dialogue between individuals and institutions to identify, discuss, and act on pressing societal problems. Thus, the paper researches to what extent serious games play a role in generating collective efficacy and civic learning and apply those findings to complex societal issues.

Serious games and spatial capacity building

1. Games and Civic Participation

Complex urban projects -such as large infrastructure projects, urban regeneration projects, and inter-municipality projects- require involvement of a variety of stakeholders. These stakeholders, ranging from single persons, to groups, organisations and political systems, can both speed up and slow down the project, having an enormous impact on the final budget and quality of the project. For this reason, policy makers have, since the sixties, been experimenting with participatory forms of governance, resulting in paradigms such as advocacy planning, transactive planning, collaborative planning and communicative planning (Feindt & Nentwig, 2005) which are stated in various European spatial policies as central objectives (i.e. European Spatial Development Perspective – ESDP, Cities of tomorrow, European Landscape Convention, Brundtland Report 1987, UNCED -Agenda 21). These attempts did lead to a more horizontal relation between citizens and policy makers (a/o Hagedorn, 2002; Mitchell, 2005; Pares & March, 2013), but at the same time revealed a number of new challenges, like how to motivate persons, organizations and systems to take part in participatory processes, how to sustain actors' involvement and foster long time engagement, how to integrate underrepresented actor groups or overcome unequal resource distribution, how to overcome misunderstandings related to differences in expertise, and so on (e.g. Arnstein, 1969; Healey, 1997; Pares & March, 2013).

Games have been put forward, also since the sixties, as a way to overcome these challenges, a/o because they can enable environments which foster cooperation and understanding.
1. They provide a somewhat abstracted model of a problem or conflict, which fosters an accelerated understanding of an otherwise complex issue,
2. They have a finite set of clearly defined rules for how conflicts can be addressed, providing not only a structure for interaction but also a model for learning,
3. They allow individuals to see direct consequences for their actions and decisions, but also the actions and decisions of others.
This led to a number of seminal urban planning games such as Metropolis (Duke, 2011), the Community Land Use Game (Feldt, 2013), and even SimCity. These games are referred to as 'simulation games' and are roleplaying games simulating actual urban planning processes. Players learn about planning instruments, roles and procedures. The games are not intended to be predictive, as their primary objective is to improve communication in complex policy decision environments, and, as such, help a group achieve consensus through the multilogue mode of communication (Duke, 2011). Simulation games are developed both for training urban planning students and for supporting decision making in actual planning projects.

2. The Proliferation of Serious Games

The commercialization of the internet, mobile communication devices and sensing technologies (such as GPS, air quality meters, heart rate monitors, etc.) precipitated a substantial increase in the development and use of games, both for entertainment and non-entertainment purposes. In literature, this last category has been referred to as learning games, game-based learning, applied games, educational games, edutainment games, persuasive games and/or serious games (Crookall, 2010). Over the years, serious games have been adopted in a variety of sectors ranging from health, to education, military, water management, logistics, and urban planning (see a/o Wachowicz et al., 2002; Borries et al., 2006; Poplin 2012, 2014; Reinart & Poplin, 2014) and led to, what some refer to as, the 'gamification of society', with gamification referring to "*the use of game design elements in non-game contexts*" (Deterding et al, 2011).

In an analysis of formal civic participation initiatives in the United States, Gordon & Baldwin-Philippi (2014) discuss how governments and organizations are increasingly adopting new technologies - such as serious games - to support these initiatives, but that they hardly ever lead to durable (i.e. long-term and structural) civic engagement because there is limited learning involved. They illustrate their point with the argument that: "*Voting in an online poll about the future of the city might represent an act of civic participation, but*

civic learning happens when the participant tells a friend or neighbor about the poll, when participants write about it, argue about it, or debate it at a public gathering" (p. 760).

3. Serious Games and Civic Learning

According to Gordon & Baldwin-Philippi (2014) **civic learning** requires, on the one hand, collective reflection, and on the other hand, trust building. With **collective reflection** they refer to a process during which a community of people reflects collectively upon their acts of civic participation and contextualizes these acts to understand the end view of that moment of participation, a/o mapping the involved actors, analyzing the generated dynamics, comparing formulated concerns, and assessing envisioned futures. Such an intense process of collective reflection, the authors claim, requires **trust**. Firstly among the community members, that there is power in their individual opinions, that others are paying attention, that others will support their proposal, that others will (also) come with productive input or take future action, and so on. Secondly, between the community and (local) authorities, that their proposals will be taken seriously and acted upon. Gordon & Baldwin-Philippi (2014) refer to the first type as lateral trust, and the second as vertical trust. They end their argumentation with stating that civic learning – supported by collective reflection and trust building – is a precondition for **association building**, "*simultaneously providing a context within which citizens believe in the importance of their actions and creating associations among individuals and between publics that have the potential for future productive use*" (p. 778).

In the second part of their paper, the authors discuss a serious game, called Community PlanIt (http://communityplanit.org), which they developed to support civic learning. The objective of this game is to engage citizens in the planning of their neighborhood and to give input to city officials on spatial issues related to this neighborhood. Rather than inviting citizens to formal events, they are challenged to complete a series of game-tasks in the form of questions or missions related to their neighborhood. By completing these game-tasks, the players can earn a budget, which they have to spend on self-defined community projects. Players can reward and comment on one another's ideas, and as such, influence the final budget. According to the developers Community Planit is "*clearly productive in developing alternative avenues for trust in civic processes and fostering recognition of alternative perspectives through reflection*" (p. 771) and is as such an example of a serious game that can foster civic learning.

4. Spatial Capacity Building

What the analysis of Gordon & Baldwin-Philippi (2014) makes clear is that for a civic participation initiative to generate durable civic engagement it should not only focus on the transaction of information and/or decision power, but also on capacity building among all participants to interpret this information and deal with the changed power relations. Capacity building, in this context, refers to the process of improving the ability of a person, group, organization, or institute to meet a set of stated objectives (Brown et al., 2001). The point of departure is that such a process requires external assistance or incentives, not to direct the process towards an end result, but rather to initiate, feed, and/or accelerate it. Capacity building can be considered durable when the acquired abilities do not disappear the moment the external input dries up. As such, the challenge 'is not so much to build the capacity of individuals and institutions, but to build the capacity to use capacity' (Peltenburg et al., 2000, p. 371).

Applied to our objective to illustrate how serious games can support civic participation in the context of complex urban projects, and considering the two requirements for civic learning - collective reflection and trust building -, we will analyze how a number of existing serious games help improving the ability of people, organizations and institutions to (1) reflect collectively on the spatial transformation processes taking place in their environment and (2) act collectively upon these processes. In the remainder of this paper, this process will be refer to these two requirements as spatial capacity building.

The next section introduces three serious games, by framing the context in which they were developed, discussing the respective objectives and assessing the gameplay against these objectives. The third section compares the three serious games against the two features of spatial capacity building, namely

collective reflection and collective action, and proposes a number of guiding principles for developing such games. The final section draws a number of general conclusions.

Case studies of serious games

1. Selection of the Games

Three serious games supporting spatial capacity building were selected to evaluate to what extent they create and establish a dialogue between individuals and institutions to identify, discuss, and act on pressing societal problems, playing thus a role in generating collective efficacy and civic learning. Reviewing the three games – all with similar objectives namely: to support reflection over the relation between urban planning and economy – we investigate on their potential to act as tools in participatory processes and analysis of data and if they can be effective catalysts for increasing collective reflection and collective action. The games experiment in areas of public communication and social organization where different stakeholders collaborate on problems that can't be solved through present regulations alone.

2. Case study 1 _ Participatory Chinatown

2.1 Context

Participatory Chinatown won the second annual Digital Media and Learning Competition announced by the MacArthur Foundation in 2009. The Boston based organizations: the Asian Community Development Corporation, the Metropolitan Area Planning Council, and Emerson College, teamed up and produced Participatory Chinatown (2010), a project in which 'physical deliberation, virtual interaction, and web-input are integrated into an engagement process that encourages residents of all ages and abilities to participate' (Asian Community Development Corporation, 2009). The main purpose for developing this game was to integrate digital media into one of Boston's core neighborhoods master planning process, Chinatown.

2.2 Game Objectives

A neighborhood in transition, Boston's Chinatown was dealing not only with socioeconomically and ethnically diverse residents but, with a series of planning issues ranging from rapid gentrification to affordable housing. Having this in consideration, the designers of Participatory Chinatown wanted to formalize the narrative and role-play elements used by previous projects into the planning process (Gordon and Koo, 2008; Foth et al., 2009) and aimed for a digital role-play game that would have the capacity to collect as much input as possible from a diverse set of residents and thus, to improve publics planning knowledge through gaming. In the same time, the digital setting of the game offers the possibility for less verbal people that do not feel comfortable speaking to a group, to make their contribution and, in this sense, 'disrupt the traditional power structures of public meetings' (Schirra, 2013).

By combining 3D virtual environment with role-play, the designing consortium wished for a stronger discussion on planning that focuses 'less on individuals personal concerns and more on the needs of the community's diverse stakeholders' (Gordon and Schirra, 2011; Nuss, 2010). The involvement of community members in the game design process: helping produce the 3D game environment, designing the games narrative not only created an engaging experiences but gave a sense of ownership to residents over the game. The 3D environment was created so that residents can recognize and identify with, by a real-life representation of the neighborhood. The facades of each of the neighborhoods buildings was photographed by the youth collaborators and the photos were used as the backdrop for the games narrative (Brown, 2009).

2.3 Game Play

The game offers a range of fifteen roles players can take in the virtual Chinatown. The characters are organized around three quest lines: finding a place to live, finding work, or finding a place to socialize within the neighborhood. However, each character has a biography subject to certain limitations e.g. monthly income, language skills etc. Community members were interviewed by the youth collaborators on their lives in Chinatown and based on the information collected from these interviews, each characters' biography was developed. There is a set of limited resources put at the disposal of players introduced under the form of 'opportunity cards'. The opportunity cards correspond to real-life live/work/play possibilities which players have to locate by walking through the city and can later choose to share or keep secret from other players. The goal is to select the three best opportunities that best match the players character thus, gathering as many opportunity cards as possible is crucial. Outside factors (e.g. economic constraints, different pre-defined social networks, market fluctuation, bureaucracy etc.) and competition from other players determines whether or not a character receives hers/his first choice of opportunities or any opportunities at all (Gordon and Schirra, 2011). Not all characters in the game fell these constraints, accordingly, the rules of the game stress on the inequality between community members needs and the resources available. The different limitations of characters were designed precisely to trigger a debate on the topic of inequality in community resources.

Participatory Chinatown was launched in May 2010 as a gameplay - discussion session that would immediately trigger a debated between players and decision-makers on their thought on the master plan. The meetings, two in total, were organized around three tables, each with fifteen laptops that were locally networked and had an individual illustration of the game. Ten 'interpreters', young volunteers, assisted participants with limited English and / or computer skills. As the game only offered location specific comments without any space for virtual chat, players communicated among them in the room during gameplay and later changed opportunity cards within the game. After collecting the different cards, players then learned what their characters options are based on the received opportunities, if any. Each table had a moderator that facilitated the discussion on the experience playing the game (Figure 1).

Figure 1. Room arrangement for the *Participatory Chinatown* meetings
Source: http://www.participatorychinatown.org/ (April 2015)

Players were name tagged with the name of their character and asked to describe this experience using 'I' statements (e.g. struggling to find an apartment when you have a low income) in order to establish a connection between players and their characters. At the end of the session, players were asked to remove their nametags and give an input on the Chinatown master plan. They did so by entering a different section of the game that allowed them to view and comment on proposed development plans. This opened a large group debate on whether the proposed scenarios for the neighborhood met residents' needs or did not take in account their priorities.

2.4 Game Output

After an overall assessment, the game managed to meet several of its preset goals. The young volunteers involved in the game development process felt they could use their everyday skills (e.g. cultural, language expertise) in facilitating the gameplay:

'*I still remember one woman who was really interested in the game but could not understand the English directions to play. I was glad that I could offer my help to her, so she was able to enjoy playing the game and leave her opinions about Chinatown in the game. Through these experiences, I was able to use both my cultural and language skills in real life to give back to the community*. (Participatory Chinatown interviews - Li, 2011)'

In this sense, the game helped in facilitating intergenerational communication and highlighted that designing a game for civic engagement with the community can be more eloquent for participation strategies than simply staging a preset game to trigger participation. The game provided a user friendly interface generating a dialogue on the planning resources of Chinatown. By using a human scale environment based on real urban plans participants could visualize, thus better understand the setting and direct their experiences in a more participatory process opposed to the traditional planning meetings normally facilitated through different basic software (e.g. PowerPoint presentations). All the community generated data could be easily collected and synthesized due to the digital nature of the game. An ongoing debate was generated by posting the comments made within the game on a website where people that did not take part in the play could join the conversation and add comments of their own. However the game failed in producing immediate wider community discussions even though, most players identified with the characters: 'The game for me was all the characters. I feel like I have a personal relationship with all of them because I've lived here for so long' (Gordon and Schirra, 2011, p.183).

2. Case study 2 _ Rezone

2.1 Context

Rezone is the result of a collaboration between two cultural organizations, Digital Workplace and BAI, based in Den Bosch, the Netherlands, while trying to understand how to tackle pressing and complex issues like vacancy and underused land and if and how cultural organizations can contribute to the development of their cities. The art and cultural center Digital Workplace focuses on organizing various expositions and large scale urban festivals, while BAI coordinates activities for both citizens and professionals and aims to contribute to the spatial quality of the city of Den Bosch. Their idea was to use digital media to engage new groups of people in the design process of the city. *Rezone* initiated with a starting grant from the Netherlands Architecture Fund (now Creative Industries Fund) and developed with the collaboration of the Utrecht School of the Arts where six international students designed and developed the game in four months.

2.2 Game Objectives

The role-play game, specifically designed for the Spoorzone neighborhood, west of Den Bosch central railway station was developed as a tool to address urban issues. Players can choose between four possible

roles and must keep the city safe from deterioration and vacancy by saving real estate from decline. The possible stakeholder roles range from real estate owner to engineer and from decision making representative to citizen. The system is programmed to leave the city to decay thus, the challenge is in how players find a collaborative way to defeat the system for the gather good of the city rather than pursuing individual interest.

2.3 Game Play

The game is composed of a physical board with a certain number of 3D iconic buildings that make up the neighborhood, a screen that projects real-time information on these buildings and a computer algorithm programmed to induce vacancy. The game starts with all the buildings being occupied, measured by a vacancy meter on the screen (4 – completely occupied to 0 – abandoned). At an alarming speed, buildings start being abandoned and act 'like a contagious virus that infects the neighboring buildings too' (Boxmeer, 2013). Each player has two pawns that they can move and control buildings where things start getting out of control. However, they need to act quickly as time is of an essence and must place the pawns according to the real-life sequence of the process (e.g. a building can only be upgrader after getting a permission from the owner and the mayor and not at the initiative of the engineer alone). When vacancy starts increasing, the owner of that particular building needs to take initiative and place a pawn next to it thereby upgrading it with one point. The mayor can reinforce this upgrade by adding another pawn and thus the designer / engineer can keep the building out of the danger zone. He can do so for a longer period of time compared to the citizen, that can only intervene for a short time. Nonetheless, in order for the building to be completely out of the danger zone, it needs for the citizen to start using it. The system is defeated when all buildings are out of the danger zone. The game if flexible and can be programmed to meet the problems of different neighborhoods and/or specific buildings. All pawns and player moves are registered by a camera placed above the game board that makes it possible for the game engine to continually adapt to the changes happening on the board (Figure 2).

Figure 2. *Rezone* play setting
Source: http://themobilecity.nl/ (April 2015)

2.4 Game Output

Rezone went public in December 2012 during the Playful Arts Festival, a festival for play and game in urban space. During the three day festival the game was tested and players feedback was used to make further improvements and / or changes. Players found that game needs to be played with a certain degree of attention rather than casualty because of its learning curve. The game was particularly relevant for people that have specific interest or are directly impacted by areas that suffer from risk abandonment or are already abandoned. The use of digital technology helps to engage citizens with their living environment and with each other by playing for a common goal. Based on the shared sense of ownership, even if playing by different groups of people that led to different outcomes, the game motivated play and contributed to scenarios for a more livable and lively city (Roessel, 2012).

3. Case study 3 _ SprintCity

2.1 Context

In 2009 the Delta Metropolis Association, the Serious Game Center of Delft University of Technology (TU Delft) and the Next Generation Infrastructures (NGI) foundation developed *SprintCity* under the framework of a joint project. The game has a flexible format that allows it to expand from the initial prototype of the Leiden-Schipol rail corridor in the Metropolis Delta to the entire Delta and beyond. Intended to be played with professionals from government agencies and stakeholders (administrators, planners, politicians, interest groups, experts and consultants, etc.). *SprintCity* is a computer-based multi- player (6-12 players) strategic spatial planning game, meant to investigate the opportunities for successful transit-oriented development (TOD) in the Dutch metropolitan region. Its name derives from the 'conceptual city of train station environments that are linked by frequent short-distance train services' (Nefs et al., 2014). Thus, the game is limited by the time spent to travel between one station to another and not by geographical distance.

2.2 Game Objectives

The railway corridor from the Metropolis Delta is simulated within the game prototype with its six stations from which, two not yet implemented. Data on an area of 1200 meter radius around each station was loaded into the game along with information on the transport network. Each player has to develop its own station from the year 2010 to 2030 in phases of four years in line with a functional master plan and previously set ambitions by the player himself. Limits on urban development programs and available infrastructures are set in order to trigger player to realize their ambitions by collaborating with each other. The game aims to produce scenarios for a better development for the entire corridor through cooperation between various stations (players) that would further generate discussions and negotiations around different decisions.

2.3 Game Play

The players have to draw up a Master Plan for the spatial development of urban stations areas on a rail corridor 'and to implement it in such a way that it complies with the 'values' (ambitions) established by the players themselves at the beginning of the game, such as public transport use, etc.'(Nefs et al., 2014, p.4). The prototype had six roles available , representing the six cities on the Leiden-Schipol rail corridor. Each role or city is played by at least one player or by a team of players. The teams are divided before the game starts by a game leader. The player scores according to the outcomes that are assessed against the values set at the beginning of the play.

The game starts with a brief orientation round after which, the players have to make a serious of decisions on the profile of the station area they care to develop and the program they wish to achieve for it (e.g. working, leisure, etc.). It is structured around five rounds, each representing a four year time frame. Players have to introduce their choices into the computer model after which the computer calculates the effects for the station area and the whole corridor. It does so for each round showing the number of houses, inhabitants and employees, floor areas used, number of passengers at the station, etc. generated. Individual and

collective decisions, motivation, cause-effect relationships and results are debated after each round in a brief group discussion (Figure 3).

Figure 3. Room arrangement for the *SprintCity* meetings
Source: http://deltametropool.nl/ (April 2015)

In order to better document the output of the game play and to enrich the learning experience of players, as well as to further develop and improve game mechanics additional research and evaluation methods are used (e.g. initial questionnaire on the backgrounds of participants and their involvement with and influence on the subject, observations and questionnaires concerning game play during and after the game, group discussions on the experience of the game, classification of data resulted from the game play).

In 2013, the 2.0 version of the game was launched and allowed for a more interactive play bringing in four new feature: (1) Players taking a role in the province or region have a coordinating role and can add regional functions to the corridor (e.g. schools, hospitals) and enforce restrictions on certain programs. Their aim is to achieve optimum accessibility and ensure coherence between the joint spatial development plans. (2) The presence of vacant areas in the simulation, resulting in a more realistic image. (3) Players taking a role in the public transport have to create the most profitable timetable and increase the amount of travelers as the game now provides the role of the public transport company with a dynamic timetable showing the frequency of the trains and which stops can be adjusted. (4) A multilingual user interface.

2.4 Game Output

During September 2009 – August 2010, *SprintCity* prototype was played with a variety of organizations summing up around 70 stakeholders. The sessions had a more introductory role and were not intended as policy interventions at the time. The data generated was stored and reports were made on the basis of closing discussions. As well, 45 players filled in a questionnaire after playing the game commenting on their learning experience and quality of the game. The game contributed to a better understanding of the rail mobility and spatial development interaction within the Metropolis Delta, it made possible for relation such as mobility and land use to be demonstrated to the different stakeholders and made the model of reality playable. 'In this way possibilities can be freely explored without this having direct consequences in the real world' (Neft et al., 2012, p.6).

The result of the March and October 2013 sessions played with municipal officials and provincial executives were significantly better than the ones from the previous sessions. Both sessions (from March and October) registered an increase in discussions and adjustment during the simulation which led to an increase in travelers, number of workers and density in a number of places, as well as developing several regional facilities that lacked in the previous game plays.

Towards guiding principles for serious games to support spatial capacity building

1. Collective reflection

Analyzing the three games, we show that game-based practices foster civic engagement and action, however, we need to maintain a critical eye when measuring to what extent they do so. Both *Participatory Chinatown* and *Rezone* engage players to reflect on a complex issue by radically simplifying it. Providing a familiar setting and an engaging virtual environment, the games manage to open debates allowing the different players to discuss common concerns and take action in the interest of the community. *SprintCity* game play results led to a collaboration between the province, municipalities and NS (the public transport company) to ensure that the plans to increase frequency levels will take place. The game managed to brig light on the need of a common vision and collaboration at the Zaan Corridor scale. The games do not provide solutions but act as platforms for debate that allow for individual action / choice which then leads to a stronger feeling of ownership of players within the game. The format of the games, team based role – play, facilitates the understanding of the importance for a shared reflection on future possible scenarios for a certain area and/or community.

Games that support spatial capacity building are still an experimental exercise. Even though designers noted that some are work in progress (e.g. Participatory Chinatown) and in need of future research study (Boyd, 2006; Gordon and Schirra, 2011), certain benefits on the civic sphere could be registered. 'Providing such evidence through rigorous and generalizable research (…) is the holy grail of any scholarly agenda on game-based civic learning"(Raphael et al., 2010, p.204).

2. Collective action

Participatory Chinatown brought to surface the complexity of the civic decision-making process, a process influenced by various internal and external factors. 'When facilitators prompted participants to reflect on their suggestions for the master plan in terms of their characters' needs, some of them casually glossed over the question, while others outright rejected it. One participant said, "I understand what you're trying to do, but…" (Gordon and Schirra,2011, p.184). While it was easy for participants to identify and propose changes to the community that would ultimately benefit their character while playing the game, outside the game play they had troubles in appreciating the importance these new perspectives have in their community. In order for the game to have the desired impact – function as a tools for fostering civic learning and collective efficacy in participatory processes – 'would require an immediate translation of an emotional experience into a rational conclusion'(Gordon and Schirra, 2001, p.184). Huizinga argues that play is not

part of culture but stays at its origin. Offering a space for experimentation, innovation and new cooperation without a direct consequence in case one fails, *Rezone* and *SprintCity* sustains collective action in play. Players become active makers of the city by playful engaging in the co creation process of their environment.

Games may promote the ideals of civic action but can be rather ineffective when making any changes in it (Gordon, 2011). As such, game designer Tad Hirsch argues that the process of civic action is more important rather than its outcomes, thus the goals of these games should be to 'facilitate ongoing and sustained participation in civic life' (Hirsch, 2010, p.342). Nonetheless, they do not have the capacity to produce a common agreement among all stakeholders but provide a starting point for the debate. The three games reviewed in this paper reveal a range of principles that can be used to support spatial capacity building — from short civic activities encouraged by a serious game, to a deeper engagement in local affairs through face-to-face planning game.

Conclusions

We conclude that games serve as an alternative way through which players can get familiar with different subjects, learn more about various civic issues and maybe take action beyond the game itself (e.g. SprintCity). Games are influential tools for civic engagement when connected to existing and social frameworks (Schirra, 2012). *Participatory Chinatown* was used to frame discussions that happen at public meetings. The game outcomes allowed community leaders to make the basis for further debates on the community's needs. *SprintCity* created a bridge between science and practice. During the last four years, hundreds of station areas have been investigated, research methods and tools developed, and strategies for transit corridors unraveled together with stakeholders by the use of the game. While playing *Rezone,* a simplified artificial setting of an existing physical space, players felt emotionally attached with both the activity of playing and with the outcomes of the game. Games are by nature a participatory medium: the player creates his/her own gameplay experience.

One focus of analysis throughout this paper has been the process of how games offer potential for helping individuals to understand and become more involved in participatory processes. They can provide clear rules, goals and a motivational structure for participation and effectively illustrate the flow of processes using (abstract) interactive models. However, a distinction was made in how ideas are conceived and later transposed into games. In two of the cases, *Rezone* and *SprintCity*, games were created by content-area expert and only afterwards brought into a certain setting / community to be played. Challenges can arise in gaining the support of the community they target as opposed to a game that is the product of a collaborative design process – *Participatory Chinatown*. When community members were involved from the early stages of design, the game design/development process itself became part of the larger participatory process, with observation and inquiry of the gameplay – and thus the iterative process of tuning the game – became part of the game itself.

To create games that promote civic awareness and participation, particular attention needs to be paid to meeting specific design goals that focus on establishing commonality and trust between participants. The use of a game or multiple games to foster civic participation may only be part of the process, but it is a promising technique for exploratory phases and can be employed in successive iterations, provided that such games offer multiple goals and mechanisms that continually activate player interaction.

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