GAME MECHANICS FOR CIVIC PARTICIPATION IN DIGITIZED CITIES

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ABSTRACT

The digitization of society not only made it possible for authorities to involve citizens in policy making - via social media, real-time monitoring, etc. -, but at the same time increased the demand from these citizens for more direct participation. Both authorities and citizens see participation as an instrument to reach a well-defined objective. In the case of a municipality, for instance, this may be generating public support for a new policy or the avoidance of juridical complaints and thus the shortening of a building process. This instrumental approach to participation is miles away from its true objective, namely to emancipate people, irrespective of personal ambitions (Arnstein, 1969). Emancipation requires that acts of civic participation are accompanied by processes of interpretation,

reflection, and contextualization, or, in short, by civic learning. Gordon & Baldwin-Philippi (2014) discuss two requirements for civic learning: namely critical reflection and lateral trust. Critical reflection refers to the ability to map key actors, to analyse key dynamics, to understand the concerns of involved actors, etc. Lateral trust refers to the trust between citizens and/or local community groups. This is opposed to vertical trust, which refers to the trust of citizens in (local) authorities. The two authors argue that games are excellent platforms to support civic learning, under such conditions.

A difficulty in this respect is that developing a good game is time-consuming and thus costly. Considering that civic learning is a long-term process, typically addressing a multitude of issues and involving multiple audiences, it is clear that such a process requires a series of games, making it virtually impossible for one organization to cope with. The paper therefore proposes to no longer reason in terms of complete games, but rather in terms of game mechanics. These are methods to steer the interaction of players within and with the game world (Sicart, 2008). Think of rules and actions supporting actions such as searching, collecting, bargaining, cooperating, creating, etc. The challenge is then no longer to develop a full game addressing a given spatial issue, but rather to develop re-usable mini-games addressing single features of civic learning. These mini-games can then be combined into a 'full' game as the participatory process evolves.

The purpose of this paper is to list and describe a number of game mechanics relevant to civic learning and to touch upon a series of challenges related to the 'organic' use of such mechanics along a participatory process.

Keywords: Civic learning; guided self-organization; collective efficacy; game mechanics, dynamics and aesthetics

1. INTRODUCTION: GAMES FACILITATE CIVIC PARTICIPATION

1.1. An increasing demand for civic self-organization

Countries all over Europe are increasingly witnessing situations in which citizens are asking for a more direct form of civic participation, ranging from demands for more information, over requests for the active involvement in decision-making procedures, to complete self-governance. At the same time, a growing number of governments are putting civic participation at the center of their policy objectives, striving for more transparency, the coproduction of public projects, and even the empowerment of lay citizens and communities to self-organize and take up (part of) the decision power (see a/o Van der Steen et al., 2013). Illustrative, in this respect, are initiatives such as the 'Big Society' in the U.K. and the 'Participation Society' in the Netherlands.

Urban planning has, since the sixties, been experimenting with how to support this call for 'civic self-organization', resulting in paradigms such as advocacy planning, trans-active 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 spatial policy makers (a/o Hagedorn, 2002; Mitchell, 2005; Pares & March, 2013), but at the same time revealed a number of challenges, like how to equally motivate citizens, organizations and institutions to engage in participatory processes, how to sustain this engagement, how to integrate underrepresented actor groups or overcome unequal resource distribution, how to tackle misunderstandings related to differences in expertise, and so on (e.g. Arnstein, 1969; Healey, 1997; Pares & March, 2013).

These challenges make that, in practice, the two-way demand –from both citizens and authorities- for civic self-organization often ends in disappointment. Certainly when self-organization is understood as a system that "*acquires a spatial, temporal, or functional structure without specific interference from the outside*" (Haken, 2006). Unequal power relations among the involved citizens or between the involved citizens and authorities, make that the more powerful participants can enforce their practices or procedures on the less powerful ones and, as such, hinder global patterns to spontaneously emerge from local interactions. And even in those rare occasion that self-organization does take place, the result is not automatically that positive, for instance, creating negative externalities for the larger environment of which the self-organizing system is part. Helbing (2014) speaks in this respect of 'selfish self-organization', and illustrates his point by referring to congestion patterns at road intersections. Simulations of these patterns suggest that local optimization (i.e. cars self-organizing) only generates good results below a certain traffic volume, but ends in queues long before the maximum capacity utilization of the intersection is reached.

1.2. Guided self-organization

In order to address the above challenge of supporting true civic self-organization and, at the same time, avoid negative externalities, scholars in complexity thinking are increasingly pointing at the phenomenon of 'guided self-organization' (e.g. Prokopenko, 2010; Helbing, 2012). The main idea is to guide the process (dynamics) of self-organization, achieving a specific increase in structure or function within a system. "This guidance may be provided by limiting the scope or extent of the self-organizing structures/functions, or specifying the rate of the internal dynamics, or simply selecting a subset of all possible trajectories that the dynamics may take" (Prokopenko, 2010, p.287). Heylighen (2013a) stresses that guided self-organization is not about imposing a trajectory but about stimulating the system components to move in the right direction. Such stimulation requires feedback, either in the form of rewards or inhibits. This feedback can either be introduced by an external actor, or by the system components itself. A second way of guiding a system is by controlling the boundary conditions, introducing 'scaffolds' that make the right moves easy and make the wrong moves difficult, while at the same time leaving enough space for exploration.

The process of guided self-organization has been observed within the context of biological systems (Polani, 2009) and has been applied to transportation and production systems (Helbing, 2014). Given our challenge to support civic self-organization, the question is how to guide social systems. An interesting concept, in this regard, is that of 'mobilization systems' introduced by Heylighen et al. (2013b). They

begin their argument with the observation that the digitalization of cities has led to the emergence of internet communities collaboratively developing content that can be freely consulted – and often edited- by anyone. The authors stress that these communities produce very useful - and typically high-quality - applications and information, without any direct communication between the contributors. In other words, these communities self-organize. What makes this even more remarkable is that in most cases there is no financial compensation or legal organization. These communities often consist purely of volunteers contributing on an informal basis to a common project. Heylighen et al. (2013b) are not focusing on the motivations for why people engage in these communities, but on the underlying structures supporting the functioning of these communities. In short, the aim of the authors is to try and understand the feedback mechanisms and scaffolds that guide the self-organizing internet communities in generating qualitative output. This aim makes the article very relevant to our objective to support civic self-organization.

Heylighen et al. (2013b, p.2) begin their investigation by referring to these feedback mechanisms and scaffolds as mobilization systems which they define as "a socio-technological system that motivates and coordinates people to work towards a given objective—thus efficiently rallying their efforts". With socio-technical systems, they refer to all ICT techniques which have – over the last decade or two – been labeled as "persuasive technologies", "collaborative technologies", "user experience", and "gamification". These technologies all have in common that they can be used to guide actions without imposing a trajectory. In order to derive the general principles behind mobilization systems, the authors first investigate how these technologies are able to stimulate or motivate individuals to act 'effectively' (i.e. committed

and focused), pointing, among others, at the importance of clear goals, feedback and challenges. In a second part, the authors investigate how the technologies succeed in coordinating the actions of these individuals so that they help rather than hinder each other, to collectively achieve an optimal result. Here they point, among others, at the importance of alignment. They conclude their paper stressing that "effective mobilization systems will both incite individuals and coordinate communities" (p.15).

1.3. Mini games for guided self-organization

The objective of this paper is to explore the use of mobilization technology to support guided civic self-organization within the context of urban planning. Within this overall objective, the paper particularly explores the use of games as mobilization devices. The commercialization of mobile communication devices and sensing technologies (such as GPS, air quality meters, hart rate monitors, etc.) has precipitated an explosion in the use of games, both for entertainment, educational and commercial purposes, to the extent that scholars have started to talk about the gamification of society, with games infiltrating nearly every aspect of our daily lives (Kapp, 2012). Also urban planners are increasingly exploring the use of games. For an overview of recent examples, see a/o Wachowicz, 2002; Borries et al., 2006; and Poplin, 2011. What this overview makes clear is that experiments with games are either led by urban planners or by game developers, but rarely by multidisciplinary teams in which both are present. The consequence is that these experiments either do not really result in games (in the sense that they have rules and goals, and are fun to play), or do not really support spatial decision-making processes.

Developing a good game is time-consuming and thus costly. Considering that civic self-organization requires the involvement of multiple audiences, typically addressing a multitude of issues over longer periods of time, it is clear that 'guiding' such a process calls for a series of games, making it virtually impossible for one organization to cope with. This paper therefore proposes to no longer reason in terms of complete games, but rather in terms of generic mini-games addressing particular challenges/objectives of civic self-organization. These mini-games can then be combined into a 'full' game in order to align the actions of all actors involved.
The paper starts by introducing the MDA-framework, a method to understand and design games. The next section re-interprets a civic participation process as a number of challenges. Each challenge is then translated into design goals for a series of 'mobilizing mini-games'. The fourth section proposes three mini-game concepts addressing a selection of these design goals. The fifth section suggests how these concepts could work as real games by augmenting them with additional elements utilized in games for other contexts. The final section draws some conclusions regarding the use of games to guide civic self-organization processes.

2. Mechanics, Dynamics and Aesthetics

The point of departure of the MDA framework (standing for Mechanics, Dynamics, and Aesthetics) is that the consumption of games is relatively unpredictable (Hunicke et al., 2004). The string of events that occur during gameplay and the outcome of those events are unknown at the time the game is being designed. The MDA framework is a formalization of this string of events, approaching games as a series of interaction '*rules*' that generate a '*system*' of

actions, which trigger (fun) '*behavior*' among the players. Or, translated into the terminology of game-designers, games are '*mechanics*' that generate '*dynamics'*, which trigger '*aesthetics*'.
Mechanics are the clockwork of the game, consisting a/o of the various actions, roles and control mechanisms afforded to the players. Together with the games content (narrative, levels, assets and so on), the mechanics generate or support all gameplay dynamics. Dynamics refer to the observable behavior of the players, such as competing or cooperating, hiding or sharing information, forming or ending of alliances, and so on. Aesthetics are what the player experiences when playing the game. These experiences are generally summarized as 'fun', and can include sensation, challenge, fellowship, submission, and so on.
Hunicke et al. (2004) describe these three components as "lenses" for looking at games. "*From the designers perspective, the mechanics give rise to dynamic system behavior, which in turn leads to particular aesthetic experiences. From the players perspective, aesthetics set the tone, which is born out in observable dynamics and eventually, operable mechanics*" (p.2). Switching between these lenses then helps understanding games and, as such, helps to get a grip on the unpredictable consumption of games. The designer begins by tweaking one part of the mechanics to then observe the changes in dynamics and aesthetics. He then tweaks another part and observes again, until he understands the role of all game components.
The framework not only helps to understand, but also to tune games; for instance, to avoid a particular gameplay dynamic, or to amplify a particular playing experience. Again, the designer simply has to go through an iterative process of tweaking and observing. Approached as such, the framework even helps to develop completely new games supporting particular design goals (Hunicke et al., 2004). The

designer begins with outlining the aesthetics that the players should experience. These make up the design goals. The second step is to imagine the dynamics that support these goals. Once these are drawn up, the designer composes a range of mechanics which could potentially trigger these dynamics. Then the iterative process of tuning and analyzing begins, until the mechanics generate the desired player experiences.

Note that such an iterative design process requires precise design goals, in order to assess the impact of changes in the game mechanics. These design goals could either be desired player experiences (as mentioned earlier), but also particular playing dynamics (such as cooperation or reflection). With 'precise' we mean that the design goals should be operationalized in such a way that they can be observed, documented and analyzed qualitatively or quantitatively. The next section will define such 'operational' design goals related to our objective of developing a game supporting civic participation.

3. Design goals: civic learning and collective efficacy

On the basis of an analysis of formal participatory initiatives in the United States, Gordon & Baldwin-Philippi (2014) conclude that institutional forms of capacity building, such as taking part in town hall meetings or in public design charrettes, may represent acts of civic participation, but hardly ever lead to durable (i.e. long-term and structural) civic engagement because there is limited learning involved. They propose to particularly focus on the process of civic learning within civic participation. 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). Dahlgren (2009) characterizes civic learning as 'interactive practices' – as opposed to isolated events – that "*include how [mediated information] is received, discussed, made sense of, re-interpreted, circulated among, and utilized by publics*" (p. 74). It is a process of learning about social, political and economic reality of the community (Schaffer, Squire, Halverson and Gee 2005). Gordon & Baldwin-Philippi (2014) argue that 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). Note that association

building is, in this context, synonymous with civic self-organization and is, in this paper, considered to be a precondition for durable civic engagement.

Interesting in this respect is the concept of collective efficacy, referring to the capacity of a group to realize collective, as opposed to forced, goals (Sampson et al., 1997). Note again that collective efficacy can be considered to be in family with civic self-organization. As with civic learning, collective efficacy depends on two types of trust. The first type, mutual (or lateral) trust, refers to the belief in one's own capacities and in the capacities of others. Kleinhans and Bolt (2010) stress that this trust is not so much about actual capacities, but primarily about the perception of capacities. They argue that this perception increases the better people know one another. The second type of trust is referred to as the willingness to intervene for the common good. Sampson et al. (1997, p. 919) point out that "*just as individuals vary in their capacity for efficacious action, so too do neighborhoods vary in their capacity to achieve common goals*". Again, this type of trust has to do with perception, on the one hand regarding the effectiveness of the proposed actions, on the other hand, regarding external factors, such as support from (local) authorities. Seen as such, willingness to intervene is related to the concept of vertical trust. Kleinhans and Bolt (2010) argue that the willingness to intervene increases with the size of the network that the community can rely on.

In summary, the concepts of civic learning and collective efficacy – and thus civic self-organization- can be operationalized as collective reflection, (perception of) lateral trust and (perception of) vertical trust (or willingness to intervene). What follows is an attempt to translate these concepts into design goals:

Aesthetics related to collective reflection:

- to make people experience that they share concerns, values and norms
- to make people experience that they play a role in these concerns
- to make people experience that they also can have different perspectives on the same concerns
- to make people experience that they can anyway come to shared objectives

Aesthetics related to lateral trust:

- to make people experience that they share capacities and roles
- to make people experience that it is also good to have different capacities and roles
- to make people experience pleasure in reaching a common objective
- to make people experience appreciation for taking initiative

Aesthetics related to vertical trust:

- to make people experience reward in involving external actors

4. Three mini-game concepts

With these design goals in mind, three mini-game prototypes were designed as exploratory activities for groups of four to eight participants. Alternatively, the games could either feature multiple groups, each playing separate instances, or be scaled up to work with a greater number of players. To accommodate for different playing preferences and contexts, three entirely separate approaches were chosen: a card-based game, a map/boardgame and a digital game.

Although each of the game prototypes focuses on different aspects of the identified design goals, all of the games share a number of similar features:

1. Each game is designed for a co-located context, i.e. players interact within the same physical space,
2. All games foster communication between individual players,
3. The games aim to establish trust between players and promote the ideals of collective efficacy.

A brief description of each game prototype is given followed by a brief analysis of its proposed benefits in respect to the design goals.

4.1. Game Concept 1: Floating City

The first game concept, *Floating City*, is a card-based activity loosely based on established metaphorical games such as “Speedboat” and “Speed Plane” described by Gray et al. (2010). Such games are routinely used to help groups quickly identify major problems with a product or service without getting too caught up with the negativity typically associated with voicing complaints.

In *Floating City*, the respective town, city or neighborhood of the players serves as the focus for collective reflection activities. In this game world, cities (or neighborhoods) of the future are elevated into the air like floating castles to have a better access to resources (i.e. the sun) and better views of the world below. However, each city needs to be tethered so that it does not float away due to wind or other adverse conditions. The weight of pressing urban problems also influences the height cities can attain, and the higher a city flies, the better the quality of life.

In the first round, players are presented with a graphical representation of their floating city and given cards of two separate colors (e.g. brown and yellow) and asked to write down the strengths (brown cards) and problem areas (yellow cards) of their city or neighborhood. For the problem cards, players also need to estimate the "weight" of the respective problem (in tons, kilograms, etc.). The cards are then collected and then examined together by the group (with a moderator). Only strengths that were identified by at least two players are then added as tethers to the graphical representation of their city. Problems are grouped together so that they are (fairly) equally distributed based on their weight on the surface of the floating city (so that it should not tip and the tethers will hold).
In the second round, all players receive an additional card of an additional color (e.g. green). After selecting one of the established problems that they are most concerned about, each player proposes an idea to lessen its metaphorical "weight". The new cards are then reviewed in the group and each player gives their estimate to how much "weight" each of the proposals would relieve. The average of those answers is taken and the weight of the city is recalculated. This process could be repeated for multiple steps, but the goal is to calculate the weight difference between the initial and final phases of the game so that players can quantify the results of their brainstorming.

Benefits: The proposed game structures the brainstorming process and provides democratic mechanisms for sharing and evaluating the ideas of others. It promotes reflection as an individual and as a group and reinforces the identification of shared beliefs.

4.2. Game Concept 2: Are You Gonna Go My Way?

The second game concept, *Are You Gonna Go My Way?,* utilizes a map of the respective community, town or neighborhood for a turn-based boardgame-like activity. Players are each given a marker or pen in a different color and instructed to draw their three most traveled routes in the area (from starting to end point). If other players use part of an already established route, they should draw their line next to the existing one so the colors are still clearly identifiable.
The game uses a total of three six-sided dice (each with a different color). During each turn, one of the players rolls two dice (e.g. red and black) separately. The number of each die is important, but nevertheless secondary; the location of each die on the map is primary (if a die lands outside of the board, it needs to be rolled again). Once the dice have been rolled, the player is asked to name some desired (preferably buyable) item (e.g. pizza, beer, book). The location of the black die is the starting point for the round; the red die is the destination. The rest of the players need to confer and determine how they can procure the desired item in the most direct manner from the established starting point all the way to the destination point. To do this, players must use one of their existing routes, but only one route per player can be used in a round. Players are encouraged to use their knowledge of the area to decide which location (i.e. store) would be the closest to pick up the desired item. If there is a gap between player routes, then a “taxi” has to be taken from one route to another. The cost of the taxi is decided by rolling the third die. The added values of the two initial dice represent the total amount of money (e.g. dollars) the player is willing to pay for the desired item. The goal is for players to limit their use of the taxi and to ideally save as much money as possible to deliver the item. Each “dollar” saved is distributed equally amongst the players. Once an

item has been delivered, the next player is up and can decide what he or she desires in the game, and so on until each player has had a turn.

Benefits: The game facilitates the sharing of knowledge about existing infrastructures (e.g. location of shops or other procurement opportunities such as in informal economies) and helps to establish lateral trust within the group.

4.3. Game Concept 3: Crowded Streets

Crowded Streets is a digital game and utilizes a setup with a floor-based projection and a laser tracking system as described by Hochleitner, et al (2013) so that players can actually walk “on” or over their virtual environment. Each round starts with a basic version of a small town or neighborhood projected onto the floor. Players can select different “city components” from categories such as “energy”, “education”, “industry”, etc. simply by walking to the respective area (see figure 1) and then moving the selected component to the desired location. Town needs and/or emergencies are generated randomly (similar to games like SimCity) so that players also need to react to them. The population of the town also grows over time based on the existing infrastructure. A second category of players, made up of audience members (ideally experienced stakeholders), can upgrade existing structures based on the taxes generated by the current population. This is done by using any mobile device, either with a browser or e-mail client, to denote the monetary value of the upgrade and the component’s ID. The goal of the game is to collaboratively build and maintain the fast-paced growth of the town for a defined period of time.

Benefits: The game allows each player to experience taking initiative and yet still be part of a collaborative process. It also enables the involvement of outside actors and ideally both rewards players for their contributions (via external upgrades to the structures they built) and fosters their capacity for vertical trust. Additionally, it serves as an initial explorative activity to discuss common urban development issues that are represented in the town's underlying infrastructure model.

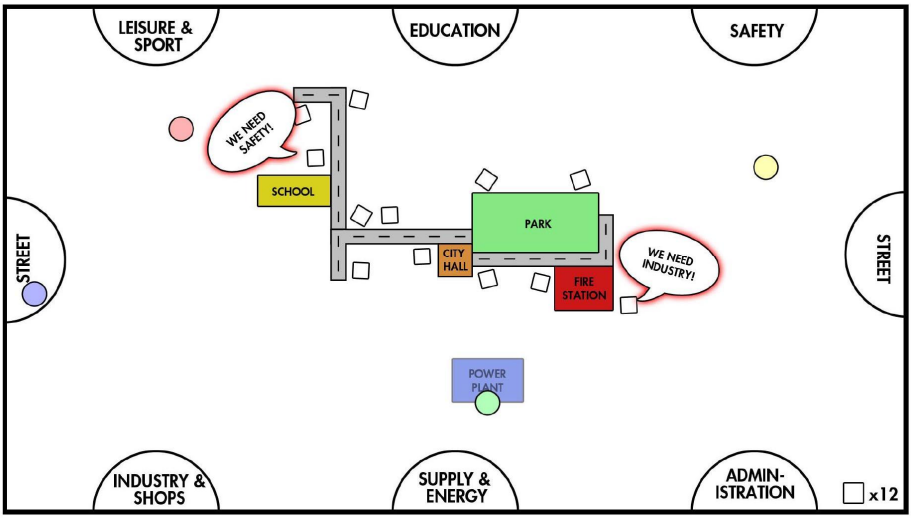

Figure 1: A graphical mock-up of Crowded Streets, a co-located multiplayer digital game. Players (represented by colored circles) can select and place town components simply by physically moving to different areas on the floor projection.

Although each of the three mini-games proposed here were developed with the MDA framework in mind and reflect the design goals defined by the tenets of civic learning and collective efficacy, they are still quite limited from a game-design perspective. The next section will address some of these shortcomings and the potential for such approaches to become full-fledged games.

5. Towards actual mobilizing games

Games are designed experiences, but they are usually designed for an audience with specific player preferences (e.g. strategy, role-playing, etc.), a clearly defined narrative and/or setting, and are intended to be played either repeatedly or for an extended amount of time (in some cases, literally hundreds of hours). Using traditional game approaches as mobilization devices poses a number of challenges, as audiences can vary and the time for such activities is usually quite limited. Ideally, games used in such contexts should either be generic enough to be applicable to more than one situation or easily adaptable so that they can be custom tailored to each environment. Nevertheless, to truly harness the potential of game-based approaches, particular focus needs to be placed on the factors that contribute to the enjoyable experience attributed to them. Squire (2011) identifies a number of essential elements for the design of a captivating game experience which he applies to games in educational contexts. Two of these elements appear particularly applicable to the (further) development of mini-games like those proposed in the previous section into actual games in their own right.

Overlapping of goals: The proposed mini-games (and many other so-called games utilized in similar contexts) all feature a very limited

number of goals to reach, and thus, offer few or no conflicting decisions for players to make. Although this simplicity makes the games easier to learn and play, it significantly limits the potential to replay them or for players to simply get caught up in the exploration of a multitude of possibilities. However, adding goals and/or mechanics can quickly change the dynamics of the game and perhaps even hamper the desired effects of the experience. For example, adding the possibility for the floating city to completely sink or even crash may motivate players to participate more quickly, but it can easily discourage a high level of quality of their contributions and may even goad some players into actively sinking their city just to explore that option.

Orchestration of time: Game mechanics are typically implemented in ways that make use of multiple and varied (but corresponding) time structures so that players always have something interesting to do or think about. This is a particular weakness of some board games, as they are usually turn-based, and sometimes only offer a passive experience when it is another player's turn. This is not to say, however, that every minute of gameplay should require decisions to be made; watching, waiting and considering can also be very active endeavors. In fact, adding a feature that can potentially increase waiting time, such as making the taxi cab option dependent on rolling an odd or even number can potentially promote the challenge and fun of a game like *Are You Gonna Go My Way?*

In addition to considerations regarding the experience of gameplay, there are two other significant caveats for the use or development of actual games to guide civic self-organization processes. The first is related to the framing of the game and its level of abstraction

(Mitgutsch et al, 2012). Games always employ some level of abstraction, for their underlying models, rules and representations. As such, they offer a limited relevance to real-world situations. This is, in and of itself, not necessarily a major drawback; abstract models are used to explain concepts in every discipline from economics to physics. However, coupled with the second caveat, the issue of transfer, it does present some difficulty in having lasting effects on participants. SimCity may do a very good job of illustrating some of the challenges city planners may be confronted with (on an abstract level), but playing the game often and or at a high level will not necessarily increase my willingness to be more actively involved in making my hometown a better place. As Wagner et al. (2013) experienced with their involvement with the serious game *Ludwig*, achieving a measurable transfer of knowledge, skills or behavioral change requires multiple iterations, and in a best-case scenario, a teacher or trainer who mediates gameplay and post-play discussion.

6. Conclusions

Games are, by nature, participatory devices: the player creates his/her own gameplay experience by observing and reacting to the dynamics, or combined mechanics, of the game system that was conceived by the game designer. Games also offer extraordinary potential for helping individuals to understand and become more involved in self-organizing processes. They can provide clear rules, goals and a motivational structure for participation and effectively illustrate the flow of processes using (abstract) interactive models. Using games in a co-located setting also provides the benefit of interpersonal communication, allowing and/or forcing participants to verbalize and therefore more profoundly concern themselves with

their own opinions, beliefs and ideas, as well as those from others. In sum, games are clearly mobilization systems supporting guided self-organization. To create games that can specifically guide civic self-organization processes, 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 for promoting guided civic self-organization may only be part of the answer, 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. In fact, the game design/development process itself could potentially become part of the larger participatory process, with observation and inquiry of the gameplay –and thus the iterative process of tuning the game- becoming part of the (meta)game itself.

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