

Design Concepts for Empowerment through Urban Play

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ABSTRACT

Playfulness intertwined with city-related themes, such as participatory planning and civic media are becoming more popular. In the last ten years, game designers have taken up the theme of play in relation to the urban environment. In this paper, we present a conceptual mapping of “urban play,” through the analysis of eight examples of urban games. Better conceptual tools are necessary to discuss and reflect on how games draw on, or deal with, urban issues.

While urban games are diverse in medium, intent, and experience, across the spectrum analyzed in this paper, they hold the potential for various player experiences emerging through play that may be useful to designers. These are: a sense of agency and impact; feelings of relatedness and empathy; an awareness and understanding of complexity, perspective-taking and scenario-building, and either planning or taking action. The conceptual mapping offers scholars and practitioners a more nuanced vocabulary for designing games and playful interventions that might be used to tackle societal issues that either require or could benefit from genuine public involvement as engaged citizens.

Keywords

urban game, civic empowerment, applied game, experience, cities

INTRODUCTION

Paraphrasing the title of a recent essay¹, Western society indeed allows/invites to “play anything.” Games and play have entered the mainstream not only in design, but also in a broad spectrum of socio-cultural contexts: from the emphasis on playfulness in

¹ (Bogost 2016).

Human-Computer Interaction design (Lucero and Arrasvuori 2010), play-based curriculums in education (Felicia 2009; Deen and Schouten 2011), play in healthcare for people of all ages and conditions (Primack et al. 2012; Brezinka 2014), and urban play as a tool for community-building and city-making (Tan and Portugali 2012; Tan 2017).

The combined study of games and cities is quickly gaining momentum (Nijholt 2017), but as a community we still have gaps in our conceptual vocabulary. What are we talking about when we refer to that still-fuzzy domain where game designers cooperate with urban planners, public officials, activists and engaged citizens? The application domain at the crossroads of cities and play is so nebulous that we still lack a common name (and, therefore, a set of concepts to “think through”) for that kind of games. For instance, the term Playable City is tightly linked to Watershed Bristol, while Games for Cities was adopted as the name for a series of events and conferences in the Netherlands. Can we move past labels such as games in/about/for cities, towards a more precise, scalable and shareable set of categories?

A more nuanced vocabulary will improve the communication between game designers, urban planners, city officials, and invested citizens. We present a conceptual mapping of urban play through a set of categories that we bootstrap from game analysis and support through literature review. We offer them as tools for a closer dialogue between game design, urban planning, and civic engagement, where empowering citizens is particularly urgent (Schouten 2015). To move beyond the myriad of structural differences between types of urban play, we leverage an approach based on the experience of playing.

OBJECTIVES AND CONTRIBUTION

We aim for a twofold contribution, with a practical side and a theoretical one. On one hand, we offer a more precise shared vocabulary for game designers and urban planners to improve their dialogue and cooperation on city-scale issues. On the other hand, we revisit the idea of playful experiences through a specific application domain (urban play), producing an applied model as a first step in a longer research trajectory. Everything considered, we aim at developing a more scalable, precise and practical way to talk about urban play, and we do so by leveraging an experiential approach.

Should we design a Pokemon Go for urban waste management?

While city councils and public administrations worldwide begin hiring game designers to facilitate public engagement and participation (Gordon, Haas, and Michelson 2017; Gordon and Baldwin-Philippi 2014), these practitioners often face many challenges. One of them is finding a common ground and a shared vocabulary with urban planners, architects and administrators. It is not uncommon to hear about designers receiving from potential public clients some inquiries such as “*Should we design a Pokemon Go for urban waste management?*” This question, although perfectly legitimate for some reasons, teases out the difficulty of describing exactly the desirable effects that a stakeholder would like to elicit with an applied game. Indeed, practitioners are often confronted with nebulous requirements based on the rhetorical figure of *antonomasia*² where, for instance, Pokemon Go is used as an archetypical exemplar of a type of urban playful experience that a client wants to foster. This suggests a lack of shared analytical

² The rhetorical figure where an exemplar is taken as the overall name for a category – for example “You’re an Einstein!” for “You’re a genius!”

and practical concepts to communicate and explain how playful experiences may useful to address urban challenges.

We point at a rather messy overlap between some game genres, their objectives, and the technologies enabling them, and we suspect that this confusion derives from a naïve use of the above-mentioned prepositions *in/about/for*. How is the experience of playing a game *in* a city different from playing a game *about* cities or a game *for* cities? Many games set *in* cities belong to the genres of pervasive games (Nieuwdorp 2007), mobile games (Farman 2014; de Souza e Silva and Sutko 2009), and sometimes pervasive LARPs (Montola, Stenros, and Waern 2009). Other games are *about* cities as a theme, as shown by the famous SimCity franchise or more recently Cities Skylines (Colossal Order 2015) – a genre of games that has frequently been conflated with serious games, and been criticized for producing a didactic experience (Devisch 2008; Gaber 2007). Yet other games are tools *for* cities, as exemplified by the growing number of games leveraged as tools for participatory planning, awareness raising, and community building (Tan 2017; B. Schouten et al. 2017). By discussing the experiences of urban play, we aim at providing a more nuanced and yet coherent terminology to describe them. The categorization of games *in/about/for* cities seems coarse and confusing, often leading the public stakeholders to fixate on secondary characteristics instead of on the desired experiences to foster through a game they are commissioning.

And yet, we also see a thematic coherence: 'play' on one side, and 'cities' on the other. A fine-grained and transversal analysis of the academic nomenclature for describing and analyzing the qualities of urban play would allow game designers to communicate more effectively with urban planners, public administrators and other city officials regarding the potentials and trade-offs at play when designing for civic empowerment through play. Simultaneously, a stronger description would allow city councils to have more realistic expectations of urban play and avoid fixating on the latest successfully marketed examples³.

Do we need new models to study urban play?

In what follows, we tease out some shortcomings of existing models that address playful experiences, before synthesizing the requirements for ours own. To kickstart our discussion, we consider three models⁴: “Mechanics, Dynamics, Aesthetics (MDA)”, “Rapid Analysis Method (RAM)”, and “Playful Experience framework (PLEX)”.

³ Pokemon Go seems the go-to title in 2016/17, but others will surely follow in the coming years.

⁴ Introduced respectively by Hunicke et al. (2004), Jarvinen (2007), Korhonen et al. (2009).

This is not the place for discussing in-depth the three models. However, in the interest of clarity, we will provide a concise outline. The MDA model considers three related categories: Mechanics, the particular components of the game; Dynamics, the run-time behavior of the mechanics acting on player inputs; Aesthetics, the desirable emotional responses evoked in the player. The RAM model considers: Components, the resources for play; Environment, the space for play; Ruleset, the procedures governing the system; Game mechanics, the actions taken by players; Theme, the subject matter of the game; Information, what players need to know; Interface, the affordances of the game system; Players, the participants; and Context. The PLEX model will be discussed more in depth in the following paragraphs.

We note some issues with the **resolution** of the phenomena described by the three above-mentioned models. Let us remember that the experiences composing PLEX (such as *Exploration*, *Nurture*, or *Relaxation*, plus other sixteen) are expressly understood as “*aesthetic tools for the design and evaluation of non-utilitarian features [...] that can make the products more engaging, attractive and playful for users*” (Korhonen, Montola, and Arrasvuori 2009). They are situated at an intermediate level, more abstract than a specific application domain (and, indeed, PLEX draws upon many genres of entertainment games) but less general than the overarching grand societal challenges that civic games and media are often called to act upon (Gordon and Mihailidis 2016). For the kind of conceptual contribution we point at, we want to adopt a perspective that is not only descriptive but also prescriptive – offering guidance to designers and public administrators – and to do so we need to point at the specificities of urban play and connect it to the more general principles of design and motivation. Secondly, there are **ambiguities in the nomenclature** currently employed in analyzing game experiences. Each application domain or discipline tends to influence related design terminology, and causes nomenclature to be used loosely and interchangeably (Polaine 2010). Game mechanics in RAM are neither the mechanics in MDA, nor the game elements in PLEX: small but significant terminological gaps make passing from a framework to another a tedious and long process. Finally, the **uncertainty exists also at the level of experiences**. In MDA, “*Aesthetics describes the desirable emotional responses evoked in the player, when she interacts with the game system*” (Hunicke et al 2004), and RAM is aligned to this definition⁵. On the other hand, PLEX uses a more experiential approach typical in Human-Computer Interaction (HCI) (Desmet and Hekkert 2007), but its categories (e.g. Captivation, Challenge, Competition...) are often explained separately from the player, whereas other definitions from pragmatist HCI (McCarthy and Wright 2005) emphasize how experiences are felt *by someone*. For an event or action to be experienced, an interpretation, perception or internalization is needed: an experience is indeed relative to a person.

Let us now synthesize our position and requirements vis-à-vis models of playful experiences. While we appreciate that existing ones – PLEX, RAM and MDA above all – tend to mediate between fine-grained, platform-specific mechanics and general experiences, we need additional layers that enable “zooming into” a specific domain such as cities, and “zooming out” to connect to the broader experiences of civic empowerment. Furthermore, we underline our need of a coherent model, not a conglomerate requiring many translations from one to another. As an additional thought, we point at the actors taking part to an experience as a still under-considered aspect of the three models presented so far. In sum, we feel it is not necessary to increase the confusion of an already complex field, we conclude that we do not need a brand-new model for urban play, and we rather decide to extend PLEX with an extra layer of the model that we call PLEX/CIVIC. Korhonen and colleagues indeed note “*We are by no means certain that these [PLEX] categories capture the entire scope of [...] playfulness*” (2009) and, indeed, we follow in their footsteps and revisit their work with a critical eye and through the lens of civically-engaged games (Ferri et al. 2017). As we do so, we propose to add domain-specific categories⁶ at a finer resolution on one side, and broader, more general ones on the other.

⁵ Although with a different nomenclature.

⁶ Specific to urban play in this work, although we recognize that a similar move may be done for other ones – such as serious games for healthcare.

Although our first objective is to bootstrap a list of descriptive and prescriptive categories, this work is also part of a longer research investigating the qualities of play through a series of spotlight analyses. We suspect that the experience of play is irreducible to a single transversal definition (Huizinga 1938; Caillois 1961; Wittgenstein 2003) and that understanding playfulness does not require a unifying and singular, top-down perspective, but an emergent approach influenced by Wittgenstein's "family resemblance" (Wittgenstein 2003). In this vein, we do not search for an overarching 'theory of everything playful'. Instead, we have the ambition to develop multiple *ad hoc* models and categories that function as intermediate-level knowledge (Höök and Löwgren 2012) useful for connecting, comparing and mediating between different types of play, and connect this analysis to concrete examples. It is from this comparison and connection between different types of playfulness and game design that we eventually want to build a federated theory of play.

CORPUS AND METHODOLOGY

Three steps compose the methodology we follow in this paper: first, we construct a set of analytical categories (PLEX/CIVIC), then we assemble a corpus of games in/about/for cities and, finally, we analyze it using the PLEX/CIVIC categories, thus validating them. To generate the analytical categories necessary for our study, we follow a strategy composed by two complementary parts supporting one another. On one side, we go back to PLEX, eliminating the categories not pertinent and relevant to our field of enquiry, and we cluster and label the others with a card-sorting method. These aggregated categories are named PLEX/CIVIC to distinguish them from PLEX⁷. On the other side, we cross-reference the PLEX/CIVIC categories with the existing literature and game design artifacts, to provide them with context and further support.

We select a corpus of eight games starting from the Games For Cities (GfC) database⁸. While other online archives exist⁹, we choose GfC for its connection with both the design and academic communities, brought together at the first Games for Cities International Conference in 2017. Six games from our corpus¹⁰ derive directly from the GfC database, while two others¹¹ are added to address the lack of pervasive urban games in this database. We select the eight games for their thematic affinity with cities and their variety in terms of issues addressed, technology, and purpose.

We finally produce a close reading (Tanenbaum 2015; Smethurst and Craps 2015) of our corpus, with special attention to how they function in/about/for cities. By carefully conducting our analysis with the PLEX/CIVIC categories, we extract a more general a

⁷ We specify that we are not "forking" the PLEX framework and, indeed, we see the PLEX/CIVIC categories as cross-compatible with it.

⁸ <http://gamesforcities.com/database/>.

⁹ For instance, <http://ludocity.org> or <http://www.larping.org/larps/>.

¹⁰ Minimetro (Dinosaur Polo Club 2015), Block'hood (Plethora Project 2017), Age of Energy (Clicks and Links 2015), World Without Oil (Electric Shadows 2007), City Hall (Skyless Games Studios 2015), Play Oosterwold (Play the City 2012).

¹¹ Submerged (Korte and Ferri 2016) and Massively Multiplayer Soba (Tiltfactor 2009).

connection with the notion of civic empowerment (Schouten 2015), that we finally discuss and offer as a theoretical and practical contribution.

GENERATING THE “CIVIC” CATEGORIES

The PLEX framework identifies nineteen categories “by reviewing several game studies which have identified game experiences that are important in videogames [thus synthesizing] playful experience categories that could be useful when designing products outside of the game domain” (Korhonen, Montola, and Arrasvuori 2009). Of these, we extract Completion, Control, Discovery, Exploration, Expression, Fantasy, Fellowship, Subversion, Sympathy, as particularly relevant for our application domain of urban play. With a card sorting method that considers also the concepts of civic empowerment (Schouten 2015), we cluster them to generate the more specific PLEX/CIVIC categories. Let us clarify that our aim here is to bootstrap our analysis, and PLEX/CIVIC categories are not immutable but rather 'things to think with'. In a second card sorting, we relate PLEX/CIVIC categories with **playful empowerment** (Schouten 2015), with the type of implied actor (collective, single), and with an example of a civically-engaged action supported by the experience. Schouten defines three conditions of playful empowerment: **motivation, participation and advocate**. The player should be able, *motivated* and heard in order to *participate* and invited to act or *advocate*. The resulting table 1 shows the PLEX categories being augmented on one side with the finer-grained, more domain-specific PLEX/CIVIC ones on the right, and on the other side with the broader qualities on Empowerment and related actors (I, Us and Other).

EMPOWERMENT	PLEX	PLEX/CIVIC
Motivate The Self (Being able)	Completion	Impact
	Control	Agency
	Subversion	
Participate The Us (Being invited)	Fellowship	Relatedness
	Sympathy	Participation Empathy
Advocate The Other (Being informed, Envision)	Discovery	Awareness
	Exploration	Understanding
	Expression	Perspective
	Fantasy	Scenario Building Action

Table 1. The PLEX/CIVIC model and the existing PLEX model by adding a coarser, detailed nomenclature (left) and a finer resolution (right)

RELATION TO LITERATURE AND GAME DESIGN PRACTICES

After having bootstrapped and preliminarily organized our PLEX/CIVIC categories, we now proceed to substantiating them with recent literature and examples from the

application domain. In this section we review and compare the state of the art with our nomenclature, to check whether our model resonates with the latest publications¹².

In recent years, the role of games and play for social change is becoming central (<http://www.gamesforchange.org>). This has more recently expanded to the domain of cities, as testified by foundations like Play the City (<http://wwplaythecity.nl>), and initiatives like Games for Cities (<http://gamesforcities.com>) a public research- and event-program that explores the role of gaming for complex urban impact and agency. Applied urban play is, in fact, “intentionally designed to have a purposeful **impact** on the players’ lives beyond the self-contained aim of the game itself” (Mitgutsch and Alvarado 2012). Indeed, urban play often motivates participants to have **agency** on real cityscapes. issues. In fact, we think that games and play carry unexplored potentials for city-making. When inserted carefully into urban processes, games significantly improve the practice of conventional urban design by, for example, supporting collaborative decision-making and design, extracting and visualizing comprehensible meaning from big data, and contributing to conflict resolution.

One of the most interesting findings in our research, is the fact that **designing** games together with citizens is in many cases more effective than playing games. By doing so, citizens/players/co-designers agree on rules and other game elements, consequently creating a better sense ownership, more than a game pre-designed by an (external) designer or author. As architect and game designer Ekim Tan reports: “perhaps the most radical form of linking between the game and the real world occurred during the ‘Play Van Gendhallen’ session [in 2012] players were also builders [who] constructed the 1/30 architectural scale model [resulting from the game]” (Tan 2017).

Experiencing relatedness and participation is also a crucial part of play activities that involve socially-shared spaces, such as cities. FindingPlaces (MIT Media Lab 2016) is an exemplar in this sense. At the peak of the Syrian crisis of 2015, the city of Hamburg and MIT partnered to develop innovative solutions for a participatory management of the migrants. The FindingPlaces game contributed to “a **participation** process that would enable citizens to engage in finding accommodations for a predicted influx of ~79,000 refugees in the city [while feeling] as partners (**relatedness**) in an ‘eye-level’ dialogue with policy makers and city administration” (Noyman et al. 2017).

The interest in serious games for empathy has recently increased significantly (Kors et al. 2016; Gordon and Schirra 2011), as testified by titles such as PeaceMaker (ImpactGames 2007). Referring to that example, Belman and Flanagan note “Cognitive **empathy** is involved in gameplay [...] To make progress [...] players have to consider the perspectives of a variety of stakeholders, rather than only that of their own side. [...] The game requires one to think carefully about the perspectives of a wide range of stakeholder groups [...] Policy decisions that agitate a stakeholder group too much can potentially derail the peace process” (Belman and Flanagan 2010).

Experiencing a sense of **understanding** for other people or situations, and being able to change one’s **perspective**, is crucial for games used in participatory workshops. The Buiksloterham Matrix (Fourcelabs 2015) game was developed to facilitate consensus-building about the self-management of a neighborhood. To do so, the game teased out the players/citizens’ tacit assumptions. Millenaar, the author of the game, explains: “I was looking at gameplay that allows people to express their **understanding**, and the

¹² For this reason, in the following page we prioritize references published after 2016.

matrix games are perfect for doing that by creating competing groups” (B. Schouten et al. 2017).

Role-play have a long history of fostering an experience of **awareness**, as exemplified by their growing use as educational tools to communicate the “felt experience” of being immersed in a certain context (Antonacci, Bertolo, and Mariani 2017). In this sense, here we interpret awareness as the realization that a certain scenario currently exists, but others could also be different. Live-action Role-Playing games (LARPs) exemplify the creation of (im)possible **scenarios**, as shown by System Danmarc, which immersed nearly 350 players in a dystopian near-future where Copenhagen adopts a caste system. The LARP took participants to a “Class C zone in Copenhagen, reserved for the citizens deemed useless for the society: a future Denmark, where democracy had degenerated” (Munthe-Kaas 2010).

ANALYSIS AND CLOSE READING

In what follows, we delve deeper in the analysis of our corpus composed by: Massively Multiplayer Soba (Tiltfactor 2009), Submerged (Korte and Ferri 2016), Minimetro (Dinosaur Polo Club 2015), Block’hood (Plethora Project 2017), City Hall (Skyless Games Studios 2015), World Without Oil (Electric Shadows 2007), Age of Energy (Clicks and Links 2015), Play Oosterwold (Play the City 2012). For each one, we provide an overview, then we apply the PLEX/CIVIC categories to tease out the key element of their urban play experience.


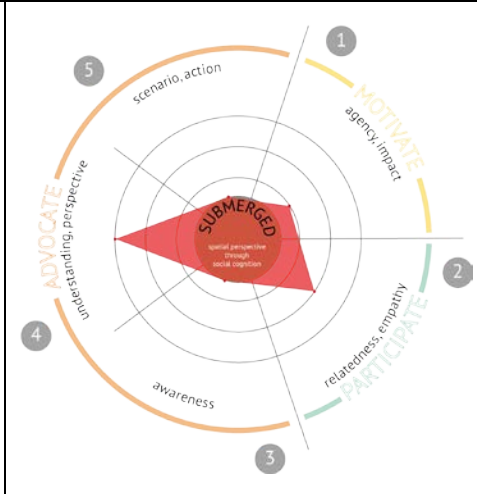
Massively Multiplayer Soba (2008), New York (USA) – Tiltfactor

	
<p>Description. Massively Multiplayer Soba (MMS) is a low-tech “street game” set in culturally diverse neighborhoods of New York. Players are invited to “<i>Talk to strangers, find clues, and fetch ingredients for a giant collective noodle party</i>”¹³. They receive an envelope containing a map, clues and missions, all written in a language other than English. Once players translate the clues, most likely with the help of a local passerby,</p>	<p>Analysis. Massively Multiplayer Soba fosters experiences of relatedness, as the game rules require players to ask for help to local passersby, and empathy, as they are temporarily places in a less-privileged position (not understanding a language). By modifying social roles (from visitors to explorers and interviewers), it creates awareness of local issues in a concrete, face-to-face manner. By pushing players “outside of</p>

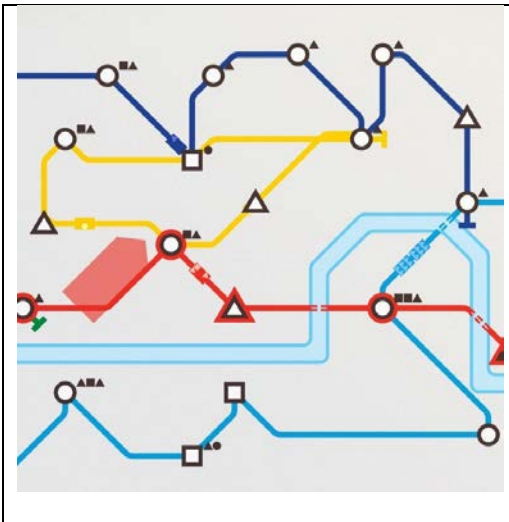
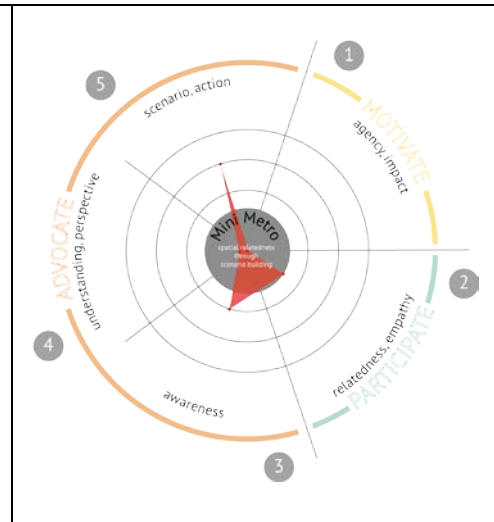
¹³ https://www.youtube.com/watch?v=BiQ3_D1huJc

<p>they uncover a recipe for an ethnic dish. The primary goal is to gather the necessary ingredients while conducting multi-cultural interviews. Points are awarded primarily on the complexity and depth of interactions. MMS combines play with opportunities for engagement, allowing participants to mix and interact with residents in meaningful ways, while challenging preconceptions around and language, ethnicity and culture.</p>	<p>their comfort zone” and forcing them to interact with strangers, it supports a sense of agency as participants activate new social connections. If we consider the actors involved in the game, we notice a movement from single individuals (the I) becoming temporarily part of a local community (the us), and aware of their context.</p>
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Submerged (2017), Amsterdam (NL) – G. Korte and G. Ferri

	
<p>Description. Submerged is a cross-media interactive storytelling project on the future of technology and public spaces. Among various components, it also makes use of a 'mobile geolocalized storytelling game' set in Amsterdam. Using a text-based interface mimicking a chat service, players interact with time-travelling characters from the year 2031, and as they progress in the story are led to a series of real places. They prompt players to describe their surroundings by recording audio clips and taking photos, and this exploratory game mechanics serves as a data-collection tool in a broader research project. The game tasks players with observing specific locations in urban environments, helping the protagonist with coming up with ideas how to use old technology in new ways, and re-imagine public spaces in Amsterdam.</p>	<p>Analysis. Submerged is an awareness-raising experience inasmuch it confronts players with a scenario where Amsterdam is underwater, linked to human-caused climate change. It prompts a sense of understanding (perspective), as the in-game characters dialoguing with the player offer diametrically opposed values and opinions on the future of public areas. Doing so, it offers an empathic experience for the players (confronted with views that may be quite different from their own), but it is also an empathy-based data collection tool used for research. Indeed, from the point of view of the in-game actors, Submerged is primarily focused on understanding the context and the others (e.g. reacting to NPCs).</p> <p>Submerged https://submerged2017.wordpress.com/</p>

Minimetro (2015), Wellington, New Zealand – Dinosaur Polo Club

	
<p>Description. As a casual game <i>about</i> cities, Minimetro challenges players to connect subway stations appearing on the map by building railway lines between them and transporting passengers along these routes. The goal is to prevent overcrowding at any of the subway stations by maintaining circulation throughout the system. It employs a minimalistic 2D graphic style that uses primary colors to differentiate game elements from one another. Everything but the line layout is handled automatically; trains run along the lines as quickly as they can, and the commuters decide which trains to board and where to make transfers. Connections obstructed by waterways require tunnels to be developed when the game makes these components available. Other functions that appear as the game progresses include increasing the capacity of any one train by adding an extra carriage or opening up a new subway line. Players are also free to remove lines and reconstruct them in alternative configurations in order to transport passengers more efficiently.</p>	<p>Analysis. Contrary to the previous examples, Minimetro proposes an experience based on action. From the point of view of the actors involved, it focuses on the context. It offers a canvas to spatially reconfigure a subway system, where simple logics of connecting stations to one another with subway lines allow for creative exploration. The possibility of quick action and reaction is exhilarating in its simplicity. However, while it remains a casual entertainment game, Minimetro creates a sense of awareness as players may grasp the complexity of urban planning and they experiment and develop a spatial argumentation around urban mobility patterns.</p> <p>Minimetro, http://dinopoloclub.com/minimetro/</p>

City Hall (2015), U.S.A. - Skylesse Game Studios

	
<p>Description. As a city-building and -management game that incorporates real-world budget data from the city of Philadelphia into the management and planning of a fictional city, City Hall cross-pollinates game and planning. Players are assigned the same budget as the city council of Philadelphia and are tasked with allocating resource investments across their city in areas such as education, health and safety, mobility, or public spaces, and so on, balancing the needs and wants of varied groups of citizens. The game's realism extends to restrictions based on urban planning regulations, such as delimiting certain urban functions in proximity to one another or having more issues to address than time or money to address them with. Players must come to terms with the many trade-offs necessary for managing their city, making decisions concerning the best way to achieve growth, prosperity and happiness for its citizens.</p>	<p>Analysis. City Hall provides players with the budget and scenario transparency and the role shift necessary to experiment with various funding instruments in their city (Philadelphia). From the perspective of the actors involved, it focuses primarily on the context. Managing a public budget, players have an experience based on understanding about the complexity of their mayor's decision-making tensions, tending to overwhelming demands with a constrained budget. The game supports creating different what-if scenarios, transforming players' roles from passive recipients into informed decision-makers with real budgets to 'dispense'. Finally, City Hall may also constitute an awareness-raising experience, inasmuch players may grasp the far-reaching effects of city policies.</p> <p>City Hall http://skylessegames.com/games/city-hall/</p>

Block'hood (2016), Los Angeles (USA) – Jose Sanchez


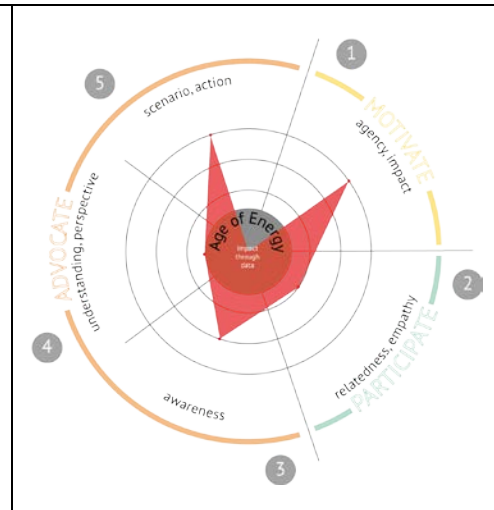
<p>Description. As a vertical city/system-building game built on ideas of ecology and entropy, Block'hood enables player experimentation with different combinations of urban functions and layouts to realize synergistic urban configurations. Unlike other city-building games, where maintaining the happiness of inhabitants is based primarily on servicing individual needs and desires, here citizen vitality is linked to the neighborhood's overall ecological balance. For example, apart from other more familiar building 'blocks' such as housing, retail space and trees, the challenge of producing 250 units of water requires utilizing blocks such as algae farms, water towers, solar panels, and windmills, with each block generally having at least one input and one output. Creating a productive vertical ecosystem requires understanding how each block is interdependent on other blocks, and with more than twenty resource blocks, and each block requiring and producing its own, the amount of relations are enormous and increase exponentially the more your neighborhood evolves. If components don't get the inputs they need when they need them, they will start to decay and slowly become abandoned or destroyed, reducing the overall vitality of your neighborhood and consequently the wellbeing of its inhabitants.</p>	<p>Analysis. Block'hood provides players with the tools and information necessary for making informed decisions while building a neighborhood that is in ecological balance, thus supporting an awareness-raising experience about the functioning of a circular economy and foregrounding the context. Experimenting with different urban configurations and development strategies allows players to build perspective around the diversity of approaches to spatial development as well as the complexity surrounding seemingly isolated urban challenges. Finally, it constitutes a scenario-based experience because of its exploratory, trial-and-error nature, as it aims at shifting players' mindsets away from single bottom-line motives for economic growth and towards triple bottom-line urban ecologies.</p> <p>Block'hood https://www.plethora-project.com/blockhood/</p>

World Without Oil (2007), U.S.A. – San Jose, Ken Eklund



<p>Description. World Without Oil (WWO) is an Alternate Reality Game (ARG) that employs transmedia storytelling to deliver a story composed of self-documented player ideas and/or actions. It sparks dialogue around solutions to a near-future global oil shortage, simulating the first 32 weeks of a global oil crisis. WWO asks participants to “Play it – before [they] live it,” and share solutions. Players were tasked with envisioning a world reeling from a sudden oil shortage, describe how the crisis unfolds, and work together on practical ways to adapt. Players could contribute to the crowdsourced narrative progression, with compelling player stories and ideas incorporated into the official narrative and posted daily¹⁴. By playing out this scenario, the game aimed to apply collective intelligence and imagination to the problem in advance, creating a living record of possible interventions to help anticipate the future and prevent its worst outcomes. WWO opened the door to using games as democratic, collaborative platforms for exploring possible futures and sparking future-changing action, creating a simple framework that focused people from all walks of life on a common issue, and promoting exploration of the roots, outcomes, and prevention of an oil crisis.</p>	<p>Analysis. World Without Oil inspires and motivates players to connect, either physically or virtually, with other likeminded people, thus fostering experiences of relatedness and empathy. By asking to blog about fictional daily diaries from the oil crisis, it support a sense of agency and impact as players experiment inside and outside of the game world. Likewise, the community features of WWO support experiences of awareness-taking, as the full potential effects of an oil shortage unfold and overlap with everyday lives. WWO finally fosters a sense of understanding as it allows players to familiarize with sustainable practices (e.g. community food-gardens) before committing to adopt them in their everyday lives. WWO touches all the actors considered in the PLEX/CIVIC model, as single users (the I) become part of a collective (the us) to tackle a problematic context and understand others’ perspectives.</p> <p>World Without Oil http://worldwithoutoil.org</p>

¹⁴ Now archived at <http://worldwithoutoil.org>

Age of Energy (2015), Amsterdam (NL)/Grenoble (FR) – Clicks and Links

	
<p>Description. Age of Energy is a digital game on energy-saving, deployed in the cities of Amsterdam and Grenoble. Players are immersed in a post-apocalyptic world dry of resources and tasked with rebuilding a functional community. Played via a mobile application wirelessly linked to their home's smart electricity meter, the game makes use of real-time data to stimulate more conscious energy consumption from players. Players manage resources and energy performance as they work to gain bonus points by optimizing the electricity consumption in their houses. To progress in the game, Age of Energy requires players to consume less electricity in the real world. Players can also earn upgrades and compete with friends through various energy-saving missions, such as turning off the lights or defrosting the freezer. Players face increasing challenges, gradually pushing actual energy consumption reductions towards 30%. Special time-bound missions also appear during gameplay, requiring players to collaborate with others in their neighborhood towards collective savings.</p>	<p>Analysis. Age of Energy motivates players and provides an experience based on agency and impact both in the virtual and real world. Through engaging critically with energy reductions in the context of a game, players experience what-if scenarios and can clearly see the costs and consequences of everyday energy-saving practices: they experiment with their energy consumption in the home, thus making a real impact on a micro-scale. Indeed, from the point of view of the actors included in gameplay, Age of Energy focuses on single players (the I) and coordinated groups (the us). Finally, the game fosters a sense of awareness, showing the hidden electricity costs of many everyday activities.</p> <p>Age of Energy http://theageofenergy.com</p>

Play Oosterwold (2012), Almere (NL) – Play the City

	
<p>Description. As a serious board game driven primarily by research motivations, Play Oosterwold was designed as a tool for testing the implementation of a plan for Do-It-Yourself urbanism in Oosterwold, the Netherlands, supplying vital citizen feedback regarding practical interpretations on the ground. The Oosterwold Plan includes a range of innovative land-use principles, such as heightened responsibilities for individual residents and entrepreneurs, and requirements for managing privately owned public green space. Players assume the role of stakeholders in the region, each with their budget and land-use limitations, and make investment and block layout decisions based on the Plan's DIY rule system criteria. Possible roles include future residents, small, medium and large investors, local government, and bankers controlling cash flows. This 'crowdsourced simulation' reveals how and where individual residents or entrepreneurs choose to invest when expected to provide their own local roads, energy production, water provision and sewage systems. Ultimately, the requirement for footing public infrastructure costs leads players to cluster their developments around one another to share costs. Forming local agglomerations to deal with public resources and maintenance is also a common emerging dynamic.</p>	<p>Analysis. Play Oosterwold motivates players to participate in collaborative discussion and scenario building surrounding the planning of a new area. As a scenario-building experience, it empowers players to try out the role of urban planners and city experts. Few simple rules motivate creativity and experimentation from players as well as an understanding of urban complexity, the board game 'map' and its realistically modeled built environment game-pieces facilitate contextual relatedness. The face-to-face nature of the live game session and the mechanic of needing to verbally motivate for game decisions builds empathy, as well as encouraging players to connect with others and form partnerships. For this reason, Play Oosterwold focuses specifically on the creation of a collective actor (the us).</p> <p>Play Oosterwold https://www.playthecity.nl/page/8990/play-oosterwold</p>

DISCUSSION, CONCLUSIONS, AND FUTURE WORK

The domain at the crossroads on urban planning, civic media, activism, and game design is becoming more and more important (Nijholt 2017; Tan 2017; Gordon and Mihailidis 2016), and yet there is a lack in concepts and nomenclature to “think through” it. In terms of requirements, we aim for a conceptual scalable model capable of being descriptive (allowing clients and designers to discuss existing games) and prescriptive (shaping and supporting game design decisions). After reviewing existing frameworks and categories, with special attention to PLEX (Korhonen, Montola, and Arrasvuori 2009), RAM (Järvinen 2007) and MDA (Hunicke, LeBlanc, and Zubek 2004), descriptive **resolution** was identified as a key hindering factor. We suggested the notion of **scalability** in the categories of the model, as a necessary improvement for the existing models. In the specific domain of urban play, we suggested a revised version (or add-on) for the PLEX model, which we called PLEX/CIVIC, and noticed how it resonates with current literature and nomenclature. A quali-quantitative user research, possibly using interviews and card sorting protocols, is planned as a further step in validating PLEX/CIVIC.

Using PLEX/CIVIC, we produced a conceptual mapping of urban play by analyzing eight examples, referring to the twofold contribution of this work. Table 2 offers a synthetic view of our analysis.

	Massively Multiplayer Soba	City Hall	SUBMERGED	Block'Hood	World Without Oil	Mini Metro	Age of Energy	Play Oosterwold
Agency & Impact	Medium	Medium	Medium	Low	Medium	Low	High	Low
Relatedness & Empathy	High	Low	Medium	Low	High	Low	Medium	Medium
Understanding & Perspective	Low	High	High	Medium	Medium	Low	Low	Medium
Awareness	Medium	Medium	Low	High	High	Medium	Medium	Medium
Scenario-Building & Action	Low	Medium	Low	Medium	High	High	High	High

Table 2. Eight urban games analyzed according to the qualities of the CIVIC/PLEX model.

It is not our intention to rank the different games and decide upon the best, but to merely understand them, and ultimately point at how design decisions are taken according to these qualities and components of PLEX/CIVIC. By doing so, we argue that scalable models could provide more prescriptive effectiveness for the design of games and playful interaction. On the other hand, this constituted a first check of whether PLEX/CIVIC has enough descriptive resolution in the specific application domain of urban play. From the eight games we analyzed, each achieves its effects through different means. What brings them together is the ability to make urban issues relatable and engaging through play. As we have seen, all the games to varying degrees address our five proposed additions to the PLEX framework: *agency & impact*; *relatedness & empathy*; *understanding and perspective*; *awareness*; and *scenario & action*. However, none of the games are ‘superior’ examples of urban play. Rather, they all, as our analysis shows, exhibit different useful qualities that might serve as inspiration for practitioners, researchers, public officials and engage citizens interested in urban play.

As we conclude, let us go through the PLEX/CIVIC categories once more, correlating them to some outstanding outcomes from Table 2. The experience of having **agency** and producing **impact** on the real world is crucial for motivating participants: in this sense, **Age of Energy** is particularly effective because it connects real-world behaviors – such as saving electricity – to in-game parameters. Vice versa, **Block’hood** is a refined simulation in itself, but lack a call-to-action in the real world, thus scoring low on this category.

To invite people to participate and take action a social cause, creating a collective actor (the Us) is an effective strategy. To do so, play experiences that foster **relatedness** and **empathy** may be particularly appropriate. **Massively Multiplayer Soba** is exemplar in this sense, at it nudges players to interact with local passersby, creating a temporary group around a specific theme. Vice versa, **Minimetro** is a completely single-player game and does not connects to this kind of category.

To advocate for a cause often implies taking into account external actors (the Other), in addition to players and designers. We connect this to **awareness**-raising experiences, of which **World Without Oil** emerges as a primary exemplar. Vice versa, **Submerged** was designed primarily as a data-collection tool, not as a way to sensitize citizens, and therefore scores low on this type of experience.

For the same reason, however, **Submerged** scores high on **understanding** and **perspective**-taking, as it actively prompts players to tease out and make evident their opinions – this is a design strategy that we could advice when creating games as ways to prompt citizens to share their opinions. We also observe that **City Hall** scores high in the same category, with a complementary approach: instead of being a probe into citizens’ opinions, it offers a glimpse of the functioning of a public administration, thus enabling users to have a clearer idea about budget constraints and other limitations.

Finally, we point at envisioning alternative possibilities as a crucial part of civic empowerment, enabling citizens/players to imagine how things could be different and “dream” about innovative ways to reach those goals. We have linked it to experiences related to **scenario-building** and **action**, as complementary sides of the same quality. On one hand, games like **Play Oosterwold** are particularly effective for stimulating players in developing a vision of how their neighborhood might be like. On the other one, titles like **Age of Energy** and **Minimetro** are effective in having players quickly taking action and iterating on possible scenarios.

As we conclude, let us briefly reflect on our process so far, and highlight some directions for further work to build upon these foundations. In this paper, we bootstrapped a set of categories that we explicitly framed as transitory and open for further improvement. As a next step, more testing and validation are certainly needed, and we see this process as inherently iterative and practical: as we conduct more analyses, we plan to refine the categories and keep checking them against existing designs, as well as literature. There is clearly much more work to be done, the potential of this type of approached is far from being exhausted, and we aim at further contributing to theory and practice also in future follow-up studies.

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