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In and out domains

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In and Out Domains. Playful principles to in-form urban solutions

A Dialogue between Architects and Game Scholars

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ABSTRACT

The implementation of games in architecture and urban planning has a long history since the 1960s and is still a preferential tool to foster public participation and address contemporary spatial – and social - conflicts within the urban fabric. Moreover, in the last decade, we have seen the rise of urban play as a tool for community building, and city-making and Western society is actively focusing on play/playfulness – together with ludic dynamics and mechanics - as an applied methodology to deal with complex challenges, and deeper comprehend emergent situations.

In this paper, we aim to initiate a dialogue between game scholars and architects through the use of the PLEX/CIVIC framework. Like many creative professions, we believe that architectural practice may benefit significantly from having more design methodologies at hand, thus improving lateral thinking. We aim at providing new conceptual and operative tools to discuss and reflect on how games facilitate long-term planning processes and help to solve migration issues, allowing citizens themselves to take their responsibility and contribute to durable solutions.

CCS CONCEPTS

• Social and Professional topics • Networks • Human-Centered Computing

KEYWORDS

Games, architecture, participatory planning, policies, PLEX/CIVIC framework

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1 Introduction

The last decades have seen a constant increase in migration towards Western Europe, with more than 21 million people fleeing from their countries in search of better economic, social and environmental conditions. In the Netherlands alone, more than 110.000 migrants are struggling to integrate into the urban fabric and to construct positive relationships with local inhabitants. While the European Union is attempting to develop a distribution key through which relocate the massive incoming of immigrants, the persistent and continuous influx of asylum seekers and war refugees represents a significant challenge for regions and municipalities affected by this phenomena.

We firmly believe that migration and housing issues are not just a matter of policy-making procedures, and we assert that a holistic approach should be implemented to communicate them and empower citizens to play an active role in the accommodation process of refugees in densely built cities and rapidly growing urban regions. Indeed the evident lack of an economical, legislative and social framework has led to unproductive solutions that gradually exacerbate social tensions and fostered isolation between the different groups co-inhabiting the urban fabric. To confirm that, emergency answers (not taking into account different needs and expectations by refugees and inhabitants) were ad-hoc implement and, most of the time, the accommodations proposed consisted in tents, warehouses or gymnasium – where the quality of the living and interaction space was overlooked entirely. All these boundaries and issues, furthermore worsened by space limitation in the existing urban environment, still represents a severe obstacle in a long-term planning process, especially in complex and layered situations as the European reality. To date, governments, municipalities, and citizens' associations have been following two primary paths to overcome this question.

On the one hand, top-down procedures - the breaking down of a system to gain insight into its compositional sub-systems in a reverse engineering fashion [7] - have shown in the past a lack of

empathy towards people (focusing on policies rather than users); on the other hand, bottom-up strategies - piecing together of methods to give rise to more complex systems, thus making the original systems sub-systems of the emergent system - sometimes overlooked their consequences for society as whole [2], often focusing on the spontaneous organization of citizens.

In the context of a strategy-oriented towards longer-term outcomes, architects should reflect on new transdisciplinary tools for urban planning and public participation, with the objective of avoiding ghettoization and ready-made functionalist solutions. Our idea is to lay the foundation for a debate to develop an alternative path to overcome the current antagonism between top-down city developments and bottom-up citizen initiatives and to allow citizens and designers to envision themselves as social change agents. Using participation processes as a tool to appropriate the urban fabric's environment, infrastructures and resources, not for a personal gain, but rather from the perspective of a common goal or collective interest, is the key to let professionals, institutions, and citizens work together in a more informed process called city-making [3].

With this in mind, we propose a two-sided analysis that addresses migration issues through the lens of serious gaming and playfulness. What we aim to offer is a tool to overcome the existing barriers to public participation, like inclusion and empowerment of underrepresented actor groups, and to make participatory city making the process more playful, engaging and able to reach long-term outcomes.

Alongside the theoretical frame, we will present two case studies - "FindingPlaces: HCI platform for Public Participation in Refugees Accommodation Process" (2016), and "Utrecht: Inclusive City Game Jam" (2016) - to highlight how serious games and architectural approaches can cooperate to empower multiple stakeholders towards more integrated design strategies.

To highlight the potentiality of the examples mentioned above, and the unexpected criticalities in their processes and outcomes, they will be analyzed through the PLEX/CIVIC framework [17], a set of analytic categories addressing three conditions of playful empowerment - *motivation, participation, and advocacy*.

2 Objectives and Contribution

In this paper, we aim to initiate a dialogue between game scholars and architects. Like many creative professions, we believe that architectural practice may benefit significantly from having more design methodologies at hand, thus improving lateral thinking [10]. We aim at providing new conceptual and operative tools to discuss and reflect on how games facilitate long-term planning processes, where citizens themselves could take their responsibility and contribute to durable solutions. To do this we propose a critical reflection on existing design actions and strategies, transforming the PLEX/CIVIC framework from a descriptive model to a prescriptive one.

We want to set the debate for the development of a more nuanced vocabulary that will improve the communication between game designers, urban planners, city officials, and invested citizens. All these different stakeholders should do their part in city-making processes and work together to reach common goals rather than personal profits. Nevertheless, governments are no longer the

central directors determining both societal goals and the exact path to achieve them, but instead, producers that should capitalize on the energy of citizens, organizations, companies, and institutions. We want to offer them as tools for a closer dialogue between game design, urban planning, and civic engagement, where empowering citizens is particularly urgent [44].

From the get-go, our objectives are twofold. On the 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 and to advanced common strategies to tackle migration issues. Games – and especially serious games – are the passe-partout through which we want to produce and communicate policies, engage citizens and foster the overall process of public participation and co-design sessions.

On the other hand, we argue for multiple design approaches that can empower various stakeholders towards more integrated and inclusive design strategies, and to shift the existing models from descriptive to prescriptive, setting the foundation for new holistic design approaches.

3 Games and Architecture. Are we really serious?

The implementation of games in architecture has a long history since the 1960s [1,14] and is still a fundamental tool to foster public participation and address contemporary spatial – and social – conflicts within the urban fabric [32, 13]. In the last decade, we have seen the rise of urban play as a tool for community building and city-making [54, 39] – with proper methodologies like the city-gaming method developed for this purpose [53] – and Western society is actively focusing on play/playfulness – together with ludic dynamics and mechanics - as an applied methodology to deal with complex challenges and deeper comprehend emergent situations. Even though the combined study of games and cities [35] is gaining more and more attention from academic researchers, it is essential for us to define what a game is, to set the theoretical base in which our research roots. Since the heterogeneity of our backgrounds (an architect, and a game scholar), before starting working together, we needed to create a shared nuanced vocabulary to communicate between us. We decided to use the definition of a game as a "form of structured play" [44] that is characterized by four conditions [51] 1. A clear goal; 2. The need for performing explicit acts (rules) to reach this goal; 3. A collective agreement among players to embrace the rules and work towards the goal; 4. Players need an assessment loop for continuous motivation. A recent statement invites people to "play anything" [6] and we aim for finding a matching between our specific disciplines and attempt to bring game dynamics and mechanics in a complicated and risky field like the architectural one [39]. For this reason, we want to examine the need of using games as a way to trigger participation and to address a variety of problems concerning urban planning such as design issues, social conflicts, and long-term strategies and outcomes for a contemporary crisis [20, 24, 26]

Specifically, we will refer to the category of serious games as tools for fostering civic learning and promoting citizen engagement

and public actions [46]. Their use has shown how is it possible, with games, to deliver short and persuasive messages, and to invite citizens to concretely taking direct action.

Serious gaming [56] represents a still relatively understudied space of opportunities to develop new tools for scientific analysis and methodologies regarding urban design and planning strategies and to involve different actors in developing more significant problem-solving means. The field of 'serious games' is quite recent and focuses on specific games that also include educational goals instead of only being dedicated to amusement and fun [1].

In the last decades, serious games and gamified application – centered on the use of specific game features to incorporate ludic qualities [12] - have been widely implemented within design practices and strategic planning processes. Many studies have shown that their use can be beneficial in situations where these tools could be applied as part of the planning phase [3] and if their development phase is based on co-creation with multiple stakeholders and participants. Design research is a transdisciplinary academic field that integrates elements from interaction, experience, service, product, and graphic design, as well as other design-related disciplines such as architecture and urban planning.

Early applications of serious games in urban planning focused on developing strategies to overcome topics such as land use, transportation, ecology and management of cultural resources, and to find effective ways to understand and model urban dynamics. Some first attempts worth naming in this context are Abt's first urban game 'Corridor' [1] - a computer-assisted simulation game, to explore the technological, economic and political constraints on the development of an alternative transportation plan for the Northeast Corridor – and Jay Forrester's [18] work on urban dynamics and urban simulation games such as the games developed by Meadows and Randers for the Club of Rome. More recent examples focus on games that tackle many different, but related issues, in the urban environment as resource management, urban power grid simulations, renewable energy, and decision making. Some of the most popular ones, entertaining by millions of players around the world are SimCity [32]. 'Climate Hope City' [11] and 'Port of the Future' [5].

Nevertheless, Research through (Game) Design has already shown promising results “for the objective of making complex situations more understandable and accessible for researchers and stakeholders alike [such as] in the Hackable City project, [where] games were not simple “deliverables” but an integral part of the inquiry process” [47, 2, 16].

Some researchers have argued that, even though the term “serious games” has become more popular, there is no current single definition able to give an exhaustive understanding of the concept [52]. Therefore, it is clear that before we can seriously task the issue of what a (serious) game-based research agenda for urban designers and game scholars could be, we must define what the term means. The already existing literature shows that there is broad attempt to define – with slight differences according to the specific researchers' point of view - but most of them agree on a

core that “serious games are (digital) games used for purposes other than mere entertainment” [52].

The Serious Game Initiative, emerged in 2002, describes serious games as it follows:

The SGI is based on uses for games in exploring management and leadership challenges facing the public sector. Part of its overall charter is to help forge productive links between the electronic game industry and projects involving the use of games in education, training, health, and public policy.

Even though our attempt to create a link between policies issues and game-based problem-solving strategies might be tricky and ambitious, we believe that the chance to experiment with novel tools and technologies, such as digital apps and gamified environments, are valuable efforts to diversify the typologies of media involved to trigger citizenship engagement and empowerment. Furthermore, these tools partially addresses many underlying common problems [41, 49] such as social conflicts and power struggles [15, 42], the inequality of bargaining power among various stakeholders [28] or deal-brokering behind closed doors, the difficulties of including socioeconomically disadvantaged groups, the lack of expertise and motivation among citizens, high drop-out rates, as well as the lack of trust in the government's ability to make good use of the participatory processes [8, 25, 55].

With this paper, we aim to support the development of lateral thinking design methodologies, based on serious games and gamified applications, to tackle specific design issues related to various fields and help the scientific community to reflect on the importance of developing new inclusive and holistic methodologies. [41, 49]. To do so, our contribution is based on Zyda's [57] more formal definition of serious games where the entertainment phase is considered the main ingredient:

Serious game: a mental contest, played with a computer by specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives.

This explanation also points out the importance of pedagogy arguing for a strong-based learning phase that can be associated with a series of benefits for participation and civic engagement, as for resolve conflicts or influence decision-making and foster more inclusive and long-term development process. Migration policies, and new solutions to revitalize the urban fabric, are undoubtedly one of the most delicate topics nowadays, and we need to use new tools to communicate them more effectively and engagingly.

According to the features of 'serious gaming' we have been highlighting, we are now introducing the PLEX/CIVIC framework, a brand new model to describe urban play. The idea behind its development is that – with 'play' on one side, and 'city' on the other – we need a new tool to operate a transversal analysis for describing the qualities of urban games. The examination of the two case studies we present aims to develop new practical categories and

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 [17].

4 Introducing PLEX/CIVIC. A new framework for Urban Play

The development of PLEX/CIVIC took place for the first time in 2018. A team¹ of researchers from both HvA – Amsterdam University of Applied Sciences – and TUE - Eindhoven University of Technology – found some issues with the resolution of the phenomena described by three already existing models²: “Mechanics, Dynamics, Aesthetics (MDA)”, “Rapid Analysis Method (RAM)”, and “Playful Experience framework (PLEX)”.

The three above mentioned model were chosen – among others – because of the peculiarity to easily mediate between fine-grained, platform-specific mechanics and general experiences, even though, at the same time, they lack the ability of ‘zooming into’ a specific domain (such as cities in our case or, more deeply, urban spaces), and ‘zooming out’ to be connected to more intangible experiences concerning civic empowerment. If we want to see a potential in the application of games (and playful) design principles in architecture and urban design, we are in need of new tools – and the PLEX/CIVIC is a first attempt in this direction – that can bridge this gap between experiences and their resonance in physical spaces. Furthermore, as the researchers point out [17], the actors taking part in the game sessions and experience are still an under-considered part of the previous three models.

As a matter of fact, the main criticism regarding the PLEX model is that it is situated in 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 [22, 17].

The primary purpose was to move the model from descriptive to prescriptive – offering guidance and criteria to designers, game scholars and public administrations – and to point out the specificities of urban play in order to connect to the more general principles of motivation and design. A secondary goal investigated by the team was the possibility to solve the ambiguities in the terminology currently employed in analyzing game experiences. As stated in the paper, some necessary words like mechanics have a different meaning if compared, for example, in the RAM or the MDA models, leading to a blurry field that pictures difficulties in developing a common language for play analysis. Not only these terminological gaps make passing from a framework to another a

tedious process for game designers themselves, but also lead to communication issues when dealing with experts from different fields. Overcoming this point, and developing a shared and more nuanced vocabulary is, therefore, the first step to take to create an interdisciplinary field of study for games and urban planning based on playfulness.

To do so, the team decided not necessary to increase the already existing confusion by developing another model but focused its work on enhancing the possibility of the PLEX model adding another layer they called PLEX/CIVIC³.

The original framework identifies nineteen categories⁴: “by reviewing several game studies which have identified game experiences that are important in video games [thus synthesizing] playful experience categories that could be useful when designing products outside of the game domain” [27]. After a critical analysis, only the most relevant for the domain of urban play - Completion, Control, Discovery, Exploration, Expression, Fantasy, Fellowship, Subversion, Sympathy - were extracted and clustered with other coming from the civic engagement framework [45] to generate the new model. On a subsequent step the PLEX/CIVIC categories were related to the types of playful empowerment [45] – motivation, participation, advocate - and with the kind of the implied actor in each of them (*I, Us and Other*).

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

Figure 1: The PLEX/CIVIC model and the existing PLEX model by adding a specific vocabulary (left) and a finer resolution (right) and enhanced by the use broader qualities of Empowerment and related actors

At this stage, a necessary step is to analyze the categories composing the finer resolution and point out their effectiveness for the domain of urban planning and civic participation.

In the last decade, the role of play as a vehicle of social has been central; this is why applied urban play is “intentionally

¹ The team was composed by: Ben A.M. Schouten, Gabriele Ferri, Nicolai B. Hansen and Adam van Heerden.

² 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 latter one, briefly, is structured around Exploration, Nurture, or Relaxation, plus other sixteen.

³ The conceptual frame for this decision is based on the following statement by H. Koronen, M. Montola and A. Arrasvuori: “We are by no means certain that these [PLEX] categories capture the entire scope of [...] playfulness” [27].

⁴ Captivation, challenge, competition, completion, control, cruelty, discovery, eroticism, exploration, expression, fantasy, fellowship, humour, nurture, relaxation, sensation, simulation, submission, subversion, suffering, sympathy, thrill. The list refers to the work by A. Lucero, J. Holopainen, E. Ollila, R. Suomela, E. Karapanos [31].

designed to have a purposeful **impact** on the players' lives beyond the self-contained aim of the game itself" [34]. Following this description we can also understand how citizens/players are often motivated, through urban play, to have **agency**, on real cityscapes and city issues. If wisely inserted in the urban process, games can tackle different problems and foster collaborative decision-making and design, making the significant amount of data coming from the urban fabric more understandable and usable also by not expert users⁵.

Another crucial part of this scheme is that games can contribute to a participation process that makes them feel partners (**relatedness**) of those who are usually in charge to decide and establish plans such as city councils and city administration.

Furthermore, **empathy** is deeply related to the idea of **understanding** of other people's situation to change our **perspective**. In confirmation of this, we report the example of The Buiksloterham Matrix [21], a game that was developed to facilitate consensus-building about the self-management of a neighborhood.

Finally, role-playing games have a long tradition of raising **awareness** - while being used as educational tools to communicate the "felt experience" of being immersed in a certain context [4] - and empowering the players to create different **what-if scenarios**, pushing them to experiment and develop lateral thinking systems for problem-solving.

The following analysis of the two case studies presented in this paper will be design-oriented and will see the use of the PLEX/CIVIC framework as a tool to produce a close reading and point out point at how to take design decisions according to these qualities and components of PLEX/CIVIC. What we argue for is that to tackle multiple urban issues we need a flexible and scalar system that can also guarantee to make urban matters relatable and engaging through play.

5 "FindingPlaces" and "Utrecht: Inclusive City Game Jam" (2016). Selection criteria: differences and common elements

The two case studies we analyze in this paper deal with the topic of allocating accommodation in a specific urban area for migrants and people coming from different parts of the world. Both of them focus on the possible relationships and conflicting feelings these new inhabitants will develop with the citizens already living in the selected neighborhoods. Even though they cover two different kinds of experiences, either concerning boundary conditions and players involved, the main aim was to show the possibility of applying the PLEX/CIVIC in heterogeneous case studies and demonstrate its multi-scalar and multi-user potentials. In one situation (Utrecht: Inclusive City Game Jam), one of the authors has taken active part in the session, being part of one of the teams involved in the game.

The idea for these case studies was to treat the issue as a collective and city-wide challenge, in which citizens themselves could take responsibility and contribute to a standard solution. As it usually happens in the urban play, a significant narrative part is implemented in both the example, with the storytelling phase actively trying to address a new participatory decision-making process. As we will see, they do open up new possibilities for engagement and contribute to the diversification of methods and tools available to the facilitators of these processes. Furthermore, they want to focus attention on the concepts of civic engagement and citizen participation that can be broadly defined as the sum of political and social practices, by which individuals engage with and influence public affairs, beyond their direct private environment [23, 27, 40].

For each one, we provide an overview, and then we apply the PLEX/CIVIC categories to tease out the critical element of their urban play experience and analyze how the proposed solutions are influenced by the playful experience led by the above-mentioned categories.

What we want to underline is that these are not the only existing games tackling these issues, but the examples were chosen from a broader range of cases according to differences et *similia*. They both engage different stakeholders in the co-design participatory process. Involved in the multiple sessions composing the games we can see members of municipalities, private investors, citizens, and local associations. Furthermore, among the primary goals of both the cases, we identified the will to lower the dispute between the different actors populating the urban fabric. To do so, they stimulate players in developing a vision of how their neighborhood might be like and use empathy as a way where different perspectives and viewpoints can be shared, discussed, deconstructed, and negotiated by the players. Nevertheless, these games are experienced as suitable formats to illustrate the complexity of urban matters and to make them more tangible. The real-world complexities are then mirrored in the artificial game context.

Among the main differences, we want to focus the reader's attention on the different technological approach that characterizes the games. On the one hand, FindingPlaces represents a significant example of a high-tech solution where multiple digital tools are used to trigger participation and dialogue between the different stakeholders; on the other hand "Utrecht: Inclusive City Game Jam" is a perfect model of how low-tech tools can be implemented in the urban planning phase. Another significant point is the scale of the game itself: in one case, players took the whole municipality of Hamburg into account; in the other one, a single district of the city of Utrecht, Overvecht, was selected to stage the game.

The institutional support provided to architects and game designers was satisfying, at least in the design and implementing phases.

⁵ Another interesting thing to point out is that designing games for the city, together with the citizens, is sometimes more effective than playing the games themselves. According to this 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 Gendthallen' session [in 2012] players were also builders [who] constructed the 1/30 architectural scale model [resulting from the game]" [53].

5.1 FindingPlaces: HCI Platform for Public Participation in Refugees' Accommodation Process

FindingPlaces (2016) is a novel HCI system for public participation and decision-making⁶. The experimentation of this tool was implemented to deal with the process of allocating refugee accommodation within the City of Hamburg, which was struggling in finding a spatial solution and engage the resident population to accept the newcomers.

By February 2016, the municipality assigned to the HCU and MIT, the development of a participation platform that could foster citizens to take an active part in proposing housing solutions for more than 79.000 refugees that settled in the urban fabric. The primary goal of the project was to address the issue incorporating citizens' personal experience and local knowledge into the finding and evaluation of possible locations. Before this attempt, the allocation of refugees' accommodation was a top-down driven process done by experts and based only on technical, legal and contextual knowledge [36].

To activate a civic engagement and empowerment process in such complex tasks, MIT's Cityscope (CS) was proposed as a decision-making and knowledge support tool. The use of a Tangible User Interface guaranteed to present relevant information that could be easy to manipulate - and to comprehend - by people that had no previous knowledge either in architecture or policy-making⁷. The idea was to build up information clusters to create a flexible and interactive model fostering a direct response to the different players' inputs and helping to play different incremental sessions and iterations.

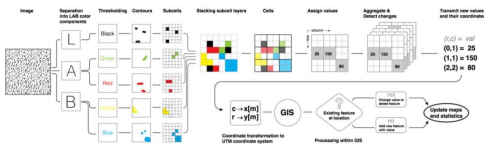


Figure 2: The system of data elaboration and color position processing

Just to give some details to the reader, the key components of a general CS platform are 1. A tangible urban model of the city (city, neighborhood or street scale) poised over a table frame; 2. A computational analysis unit; 3. A feedback module.

A table usually includes a set of color-tagged bricks acting as an intractable building or massive elements; the computational unit has sensors for real-time scanning of the scene, and the feedback module contains display screen, projectors, and other representation tools (AR, VR or touch feedback). For the FP case, the set up was more complicated due to the number of participants and to the specific physical limits of the game scenario.

⁶ The system was developed by the Massachusetts Institute of Technology, Media Lab, Changing Places Group, Cambridge MA – Hafencity University Hamburg, CityScienceLab – Hafencity University Hamburg, Lab for Geoinformatics and Geovisualization.

The final set of the platform included: image processing of live video data to interpret the users' interaction with the tangible table, translation of those iterations into a geospatial context (GIS), and communication and visualization of the effects of the interactions. The physical elements of the system consist of colored LEGO bricks so that users can play and allocate them on a transparent table surface. To empower and push the citizen to feel an active part of the game, detailed information about the parcels of Hamburg had to be available. The already know geospatial data were clustered together to create an initial assessment of places, sorted into three ranked classes: *a high indication of unsuitability; a medium indication of unsuitability; low or no indication of unsuitability.*



Figure 3: FindingPlaces (FP) table and game set up

According to the official report, 5 million citizens were engaged through the advertising phase, and 34, a two-hours workshop was 'played' at HCU with nearly 400 participants, and each of the workshops was focused on one of the city's seven districts. Each session, due to space limits, could host 20 people and the average number of players per workshop was around eleven. It's interesting to point out that response and registration numbers varied depending on the district – and this a significant data to reflect upon how to successfully engage a different range of people with different economic and social features. The overall feeling was the experiment was successful and recognized as a supportive instrument for public participation and real-time decision-making. The most outstanding level was the 'soft one' regarding human interaction: indeed citizens felt very empowered by the platform and able to supply the other stakeholders with relevant information coming from the local knowledge. In the end, accommodation solutions for almost 24.000 refugees were proposed.

5.2 FindingPlaces: PLEX/CIVIC ANALYSIS

Finding places motivates players to participate in collaborative discussion and **scenario** building surrounding the allocation of a massive number of migrants in the existing urban fabric. As a scenario-building experience, it empowers players to try out the role of urban planners and city experts and to feel an active part of the process bring their local knowledge into the game.

⁷ For the definition of a model composed by information we refer to Saggio [43] theoretical definition

Few simple rules motivate creativity and experimentation from players as well as an understanding of urban complexity, the digital game 'map' and its high-tech built environment facilitate contextual **relatedness**. The game itself fosters a sense of agency and impact because every decision made by the player has a direct resonance in the real/digital world of the FP experiment. Furthermore, the game inspires and motivates players to connect, either physically or virtually, with other like-minded people, thus fostering experiences of **relatedness** – not empathy! And we will underline why in the conclusions. 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. One of the most exciting features of the game is its capability of proposing an experience based on **action**, creating a sense of **awareness** as players may grasp the complexity of urban planning and they experiment and develop a spatial argumentation around housing patterns and issues.

The game covers all the three categories of the empowerment framework: it motivates people moving from their personal comfort zone (**the self**) and to join forces to solve a contemporary crisis (**the us**) while letting them leave the session with a more profound sense of advocacy regarding **the others**.

5.3 Utrecht: Inclusive City Game Jam

Unlike the other example, Utrecht: Inclusive City Game Jam (2016)⁸ is a project that focuses on a smaller project and specifically on a single neighborhood of the municipality of Utrecht, Overvecht. The question that shaped the concept of the game was: “how do you design useful games for a neighborhood that houses about 170 different nationalities?”

The main idea behind the project was to address the issue of migration as broad and inclusive as possible. For this reason, three teams of two game-designers (Adam van Heerden & Genevieve Korte, Ekim Tan & Nina Hälker, and Gabriele Ferri & Txell Blanco Diaz) set out to design games uniquely fitted to the needs and strengths of the urban area represented in the board-game.

The game mechanics, therefore, does not only concern refugees, but also the many other groups arriving in and leaving cities – directly or indirectly – to deal with migration-related problems, specifically how the migration phenomena affect the everyday lives of people already populating the area. The primary goals during the gaming session were the possibility to guarantee proper housing, training and employment, a sense of ‘belonging’, and security, for both current and new populations.

Potential solutions to these challenges, according to the PtC team, can only be found when existing communities and new inhabitants collaborate in an effective and low-conflict way. To do so, a wide range of different stakeholders was invited to join the sessions: from NGO’s to housing companies, from local governments and local citizens’ association. The use of a game

design platform can address the migration issue with a lateral thinking mindset and bring professionals and non-professionals together for collective decision-making to create long-term development processes.

To develop the game the municipality did not set any limits but was significantly interested in a game that could be:

- Re-playable
- Rewarding for the inhabitants of Overvecht
- More rewarding with more replays
- Playable at different locations

The three designer teams embraced this broader perspective to determine a focus. Since so many inhabitants of Overvecht are new or are only there for a short while, there is a lack of a link to the place itself. Following these different and heterogeneous path three different games were developed:

- The first one focused on sharing personal stories about the neighborhood (Aktiv-Echt – Ferri & Blanco Diaz)
- The second one foregrounding the available resources (skills and demands) in Overvecht (Discover Overvecht – Hälker & Tan)
- The third one increasing the meaning of the spaces available (The Gain Board - van Heerden & Korte)



Figure 4: Utrecht: Inclusive City Game Jam (2016). Deployment phase

Each of the final games relies on skills and need passports, which ultimately grounds the game into the players’ experiences, and served as a final product for the game jam. PtC, to maintain depth and quality in conversations, proposed an environment where a maximum of 40 participants can join a session. The team and the municipality to establish some continuity between past and current stakeholders engaged, and in the relationships and partnerships constructed future welcomed sessions.

5.4 Utrecht: Inclusive City Game Jam: PLEX/CIVIC ANALYSIS

⁸ The game was developed by PlayTheCity studio. Founded by Turkish architect Ekim Tan, the studio defines itself as a «global practice that supports public and private parties on large-scale development projects through city gaming».

The game supports creating different **what-if scenarios**, transforming players' roles from passive recipients into informed decision-makers with the real **agency** on such a complex, and thorny, a topic like migrations issue. The three different games from the jam provide players with the tools and information necessary for making informed decisions while building a more inclusive, thus supporting an **awareness**-raising experience about the functioning of a housing and accommodating process that can take into account the broad range of citizens populating the city. The **scenario** setting invite players to take direct action and tackle the central issue from a different perspective, using the board-game environment to be empowered and, at the same time, free to experiment – according to a riskless trial and error system - and build new relations with all the different involved stakeholders.

A sense of **empathy** and **relatedness** is fostered by the modeled built environment game-pieces facilitate and by needing to verbally motivate for game decisions, as well as encouraging players to connect with others and form partnerships. For this reason, the game focuses specifically on the creation of a collective actor (**the us**).

Furthermore, 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.

5.5 Discussion, conclusions, and future work

The examples presented in this paper clearly show how “traditional” methods for co-creative and participatory urban processes can comfortably co-exist, thus be enhanced, by the use of interdisciplinary novel tools such as digital media, games and open platforms. To clarify the purpose of the paper, we decided to divide the conclusion from the analysis of each case study from the final ones, to lay the foundation for further implementations of the PLEX/CIVIC framework.

According to recent researches [3], three main perspectives can be highlighted in the case studies we have introduced to the reader, and can be considered as benefits for participatory processes: i) the possibility to illustrate complex urban issues and make the complexity more tangible, (ii) the idea of evoking social learning and capacity building, and (iii) the chance to make the participatory processes ‘lighter’ and more accessible to attend.

Furthermore, the domain at the crossroads on urban planning, civic media, activism, and game design is becoming more and more critical [35, 53, 22] For this reasons, we honestly felt the need for a scalable model that could be, on the hand, used a descriptive tool for existing examples, and on the other side able to set the debate for shaping and support decisions influenced by playful principles.

Using the PLEX/CIVIC framework, we noticed that, in those examples where digital media are used as the primary medium between the players and the game itself, we still lack a strong sense of empathy. The use of high-tech solution save the players from developing strong connections and relatedness, due to the fact of the immersive situation they are invited to play. On the other side, the use of analog board-gams reduces the sense of agency and the

impact of the citizens/player. These are significant prerogatives of digital solutions that can set up, with real-time response, different scenarios and settings quickly and in a beneficial way due to their information modeling system.

Another consideration, specifically regarding migration – and in broader view ‘social’ – issues and conflicts, is the chance to implement the ‘inclusiveness’ criteria through PLEX/CIVIC. In the examples we have been analyzing, none of the players had a direct connection with any of the future inhabitants of the place. We argue that by inserting this parameter, the framework could lead to more effective empathy and relatedness features, enlarging the focus of the game not only on the players, but also on the people affected by the players’ decisions.

In conclusion, we can say that serious games are experienced as suitable formats to illustrate the complexity of urban matters and to make them more tangible and that a scalable tool as PLEX/CIVIC the ability to make urban issues relatable and engaging through play. Our aim with this paper was to create a quantitative/qualitative analysis of the case studies and not to declare which one was better/worse, but the point at how design decisions are taken according to these qualities and components of PLEX/CIVIC framework.

As a next step, more testing and validation are certainly needed, and we see this process as inherently iterative and practical. We are still in search of developing a more nuanced vocabulary that can accurately set the debate between architects and game scholars, and ambiguities in the terminology currently employed in analyzing game experiences. There is much more work to be done; the potential of this approach is far from being exhausted. For these reasons, the next step will consist in applying PLEX/CIVIC not only to serious games but to proper architectural design projects. We want to test, and eventually, re-shape, the categories we have been using in this paper to analyze case studies outside the game-field. If we want to keep walking this, focusing on playful interaction and urban play, we are still in need of shared nuanced design terminology. Approaching the topic from the other side could help us to clarify what we need – and subsequently what we don’t need – for an architectural design game-based approach.

We surely need more games, indeed real cases, to set an ever-growing design-oriented dialogue that can lead to further implementations and follow-up studies.

REFERENCES

- [1] Clark C. Abt. 1969. *Serious games*. Viking Press, New York.
- [2] Christina Ampatzidou, Matthijs Bouw, Froukje van de Klundert, Michiel de Lange, Martijn de Waal. 2015. *The Hackable City: A Research Manifesto and Design Toolkit*. Amsterdam Creative Industries Publishing, Amsterdam.
- [3] Christina Ampatzidou, Katharina Gugerell, Teodora Constantinescu, Oswald Devisch, Martina Jauschneg, Martina Berger. 2018. All Work and No Play. Facilitating Serious Games and Gamified Applications. In *Participatory Urban Planning and Governance. Urban Planning 3 (1)*. Cogitatio Press, Lisbon 34-46. DOI: <http://dx.doi.org/10.17645/up.v3i1.1261>.
- [4] Francesca Antonacci, Maresa Bertolo, Ilaria Mariani. 2017. In Migrants’ Shoes. A Game to Raise Awareness and Support Long-Lasting Learning. In *Italian Journal of Educational Technology 25 (1)*, 55-68. DOI: <https://doi.org/10.17471/2499-4324/858>.
- [5] Blockworks. 2015. *Climate hope city*
- [6] Ian Bogost. 2016. *Play Anything: The Pleasure of Limits, the Uses of Boredom, and the Secret of Games*. Hachette UK.

- [7] Luis Carlos Bresser-Pereira, José María Maravall, Adam Przeworski. 1993. *Economic reforms in new democracies*. Cambridge University Press, Cambridge.
- [8] Greg Brown, Sean Yeong Chin. 2013. Assessing the effectiveness of public participation in neighbourhood planning. In *Planning Practice and Research*, 28(5), 563–588. DOI: <https://doi.org/10.1080/02697459.2013>.
- [9] Kevin Corti. 2006. Game-based Learning: a serious business application. PIXELearning Limited. Retrieved November 08, 2019 from <https://www.cs.auckland.ac.nz/courses/compsci777s2c/lectures/lan/serious%20games%20business%20applications.pdf>.
- [10] Edward De Bono, E. 1970. *Lateral Thinking: Creativity Step by Step*. Harper and Row, New York.
- [11] Deltares. 2016. *Port of Future*
- [12] Sebastian Deterding, Dan Dixon, Rilla Khaled, Lennart E. Nacke. 2011 From game design elements to gamefulness: Defining “gamification”. In *Mindtrek '11*, ACM Press, Tampere, 9–15. DOI: <http://doi.acm.org/10.1145/2181037.2181040>.
- [13] Sotir Dhamo, Valerio, Perna, Ledian Bregasi, Gerdi Papa. 2019. *Non-Cooperative and Repetitive Games for Urban Conflicts in Tirana. Playful Collaborative System to Lower Social Tension*. In press.
- [14] Richard D. Duke. 1975. *Metropolis: The urban systems game*. Gamed Simulations, Inc, New York.
- [15] Susan S. Fainstein. 2000 New directions in planning theory. In *Urban Affairs Review*, 35(4), 451–478.
- [16] Gabriele Ferri, Martijn de Wall. 2017. *A Lab of Labs: Methods and Approaches for a Human-Centered Design*. Amsterdam Creative Industries Publishing, Amsterdam.
- [17] Gabriele Ferri, Nicolai Brodersen Hansen, Adam van Heerden, Ben A.M. Schouten. 2018. Design Concepts for Empowerment through Urban Play. In *DiGRA '18 - Proceedings of the 2018 DiGRA International Conference: The Game is the Message. Video Games, Learning, and the Shifting Educational Landscape*.
- [18] Jay Forrester. 1969. *Urban dynamics*. Pegasus Communications, Waltham, MA.
- [19] Marcus Foth, Martin Brynckov. 2016. *Participatory action research for civic engagement*. In *Civic Media: Technology, Design, Practises*. In: Eric Gordon, Paul Mihailidis (eds), MIT Press, Cambridge MA.
- [20] David Glick. 2012. *Bottom-up urbanism: A survey of temporary use in Europe*. Hart Howerton Community Fellowship, Boston. Retrieved November 08, 2019 Retrieved from https://issuu.com/david.t.glick/docs/bottom-up_urbanism_dglick.
- [21] Fourcelabs. 2015. *The Buikslooterham Matrix. Board game*. Fourcelabs, Amsterdam.
- [22] Eric Gordon, Paul Mihailidis. 2016. *Civic Media: Technology, Design, Practice* (1st ed.). MIT Press, Cambridge, MA.
- [23] Eric Gordon, Jesse Baldwin-Philippi, Martina Balestra. 2013. *Why we engage: How theories of human behaviour contribute to our understanding of civic engagement in a digital era*. Retrieved November 08, 2019 from https://cyber.harvard.edu/publications/2013/why_we_engage.
- [24] Stephen Graham, Simon Marvin. 2001. *Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition*. Routledge, London.
- [25] Renee A. Irvin, John Stansbury. 2004. Citizen participation in decision making: Is it worth the effort? In *Public Administration Review*, 64(1), 55–65.
- [26] Elke Krasny. 2013. *Hands-on urbanism 1850–2012: The right to green*. MCCM creations, Hong Kong.
- [27] Hannu Korhonen, Marcus Montola M, Juha Arrasvuori. 2009. Understanding Playful User Experience through Digital Games. In *International Conference on Designing Pleasurable Products and Interfaces. Vol. 2009*. Compiegne, France.
- [28] Marcus B. Lane. 2005. Public participation in planning: An intellectual history. In *Australian Geographer*, 36(3), 283–299. DOI: <https://doi.org/10.1080/00049180500325694>.
- [29] Petri Lankoski, Staffan Bjork. 2015 *Game Research Methods: An Overview*. Carnegie Mellon University: ETC Press, Pittsburgh (PA).
- [30] Petri Lankoski, Jussi Holopainen. 2017. *Game Design Research: An Introduction to Theory & Practice*. Carnegie Mellon University: ETC Press, Pittsburgh (PA).
- [31] Andrés Lucero, Jussi Holopainen, Elina Ollila, Riku Suomela, Evangelos Karapanos. 2013. The playful experiences (PLEX) framework as a guide for expert evaluation. In J. Bardzell, S. Bardzell (eds.), *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces (DPPi 2013)*, ACM, New York, 221–230. DOI: DOI: 10.1145/2513506.2513530.
- [32] Igor S. Mayer. 2009. The gaming of policy and the politics of gaming: A review. In *Simulation and Gaming*, 40(6), 825–862. DOI: 10.1177/1046878109346456.
- [33] David Micheal, Sande Chen. 2006. *Serious games: games that educate, train and inform*. Thomson Course Technology, Boston, MA.
- [34] Konstantin Mitgutsch, Narda Alvarado. 2012. Purposeful by Design?: A Serious Game Design Assessment Framework. In *Proceedings of the International Conference on the Foundations of Digital Games*, 121–128. FDG '12. ACM, New York, NY, USA. DOI: <https://doi.org/10.1145/2282338.2282364>.
- [35] Anton Nijholt. 2017. *Playable Cities: The City as a Digital Playground*. Springer, New York.
- [36] Ariel, Noyman, Tobias Holtz, T., Kröger, J., Noennig, Jörg Rainer, Kent Larson. 2017. Finding Places: HCI Platform for Public Participation in Refugees' Accommodation Process. In *Procedia Computer Science*, 112, 2463–2472.
- [37] Marc Parés, Hug March, H. 2013. *Short guides for citizen participation.3: Guide to evaluating participatory processes*. Department of Governance and Institutional Relations, Barcelona.
- [38] Valerio Perna. 2018. *From Smart Cities To Playable Cities. Towards Playful Intelligence In The Urban Environment*. archi-DOCT: The e-journal of doctoral research in architecture, 51–62.
- [39] Valerio Perna, Saimir Kristo, Ketii Hoxha. 2019. *Tirana Plug-in River: Catalyst Playful Experiences to Revitalize Albanian Informal Settlements*. In press.
- [40] Chad Raphael, Christine Bachén, Lynn, Kathleen. M. Lynn, Jessica Balwin-Philippi, Kristen McKee. 2010. Games for civic learning: A conceptual framework and agenda for research and design. In *Games and Culture*, 5(2), 199–235. DOI: <http://doi.org/10.1177/1555412009354728>.
- [41] Gene Rowe, Lynn Frewer. 2000 Public participation methods: a framework for evaluation. In *Science, Technology and Human Values*, 25 (1), 3–29. DOI: <https://doi.org/10.1177/016224390002500101>.
- [42] Leonie Sandercock. 1994. Citizen participation: The new conservatism. In Wendy Sarkissian, Donald Perglut (eds.), *The community participation handbook: Resources for public involvement in the planning process* (2nd, ed.) Murdoch: Institute for Science and Technology Policy, 7–16.
- [43] Antonino Saggio. 2013. *The It Revolution in Architecture. Thoughts on a Paradigm Shift*. Lulu.com, Raleigh USA.
- [44] Katie Salen, Eric Zimmerman. 2003. *Rules of Play: Game Design Fundamentals*. The MIT Press.
- [45] Ben Schouten. 2015. *Playful Empowerment. Inaugural Lecture*, May 2015. Amsterdam University of Applied Sciences, Amsterdam.
- [46] Steven Schirra. 2013. *Playing for impact : the design of civic games for community engagement and social action*. MIT Press, Cambridge, MA.
- [47] Ben Schouten, Gabriele Ferri, Michiel de Lange, Karel Millenaar. 2017. *Games as strong concepts for citymaking*. In Anton Nijholt (ed.) *Playable Cities The City as a Digital Playground*. Springer, New York.
- [48] Christian Schwägerl. 2014. *The Anthropocene. The human era and how it shapes our planet*. Synergetic Press, London.
- [49] Robert Shipley, Stephen Utz. 2012. Making it count: A review of the value and techniques for public consultation. In *Journal of Planning Literature*, 27 (1), 22–42. DOI: <https://doi.org/10.1177/0885412211413133>.
- [50] Kurt Squire, Henry Jenkins. 2003. Harnessing the power of games in education. In *Insight*, 3(1), 5–33.
- [51] Bernard Suits. 1978. *The Grasshopper: Games, Life and Utopia*. University of Toronto Press, Toronto.
- [52] Tarja Susi, Mikael Johansson, Per Backlund. 2007. *Serious Games – An Overview*. Institutionen för kommunikation och information, Skövde.
- [53] Ekim Tan. 2017. *Play the City. Games Informing the Urban Development*. JAP SAM Books, Heyningen.
- [54] Ekim Tan, Juval Portugali. (2012) The Responsive City Design Game. In Juval Portugali, Han Meyer, Egbert Stolk, Ekim Tan (eds.) *Complexity Theories of Cities Have Come of Age*, 369–90. Springer Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-24544-2_20.
- [55] Evelien Tonkens. 2014. *De participatiesamenleving inhuuman? De Humanistisch Verbond*. Retrieved 08 November, 2019 from www.humanistischverbond.nl/nieuws/departicipatiesamenleving-inhuuman.
- [56] Mary Ulicsak, Martha Wright. 2010. *Games in education: Serious games*. Futurelab, Bristol.
- [57] Michael Zyda. 2005 From visual simulation to virtual reality to games. In *Computer*, 38 (9), 25–32. IEEE. [10.1109/MC.2005.297](https://doi.org/10.1109/MC.2005.297)