Article

Unstable Wormholes: Communications Between Urban Planning and Game Studies

Moozhan Shakeri

Department of Urban and Regional Planning and Geo-Information Management, University of Twente, The Netherlands;
m.shakeri@utwente.nl

Abstract
The past decade has seen a gradual but steady increase in the planning scholars' interest in outlining a functional place for games in planning. A wide range of games for and about urban planning is developed and tested, from data-driven games that rely on extensive modelling techniques and aim to reduce the cost and risk of real-world scenario testing, to those that seek to educate their players about the complex nature of political and social issues. Despite the increasing interest in strengthening communications between planning and game studies, the current state is an amalgam of confusion and optimism about games' role and added value. To shed light on why such confusions emerge, the article reflects on the nature and outcomes of communications between urban planning and games studies and explores games' historical and current conceptions in planning. By adopting concepts from the work of Holbrook on interdisciplinary communications, the article explores how game studies' concepts are rendered useful in planning and how planning theory has dealt with untranslatability and incommensurability of concepts in the processes of establishing and sustaining communications with game studies.

Issue
This article is part of the issue "Gaming, Simulations, and Planning: Physical and Digital Technologies for Public Participation in Urban Planning" edited by Andrew Hudson-Smith (University College London) and Moozhan Shakeri (University of Twente).

1. Introduction

The critical reflection on the nature and success of interdisciplinary explorations in planning has become increasingly crucial with the recent focus on urban and civic issues across disciplines. In 2008, when Friedmann wrote about planning theory as the work of translation that should aim at "translating concepts and knowledge generated in other fields" to "render them accessible and useful" (Friedmann, 2008, p. 254), the assumption was that through communications with other fields and disciplines a reciprocal comprehension and a set of shared knowledge would be identified or created between planning and other fields. Despite the positive valence of the idea and the planner's current devotion to exploring the possible connections, the critiques of the nature, and success of these practices (Bickenbach & Hendler, 1994; Davoudi & Pendlebury, 2010) remain sufficiently powerful. Limiting the communications to mere juxtaposition, i.e., borrowing tools or concepts from other disciplines and uncritical mix and match of theories from the competing epistemic communities (Davoudi, 2015), have long been the main criticisms of interdisciplinary explorations in planning.

Today, planning scholars face new challenges in defining and establishing interdisciplinary communications. They are now required to communicate with fields that not only have fluid and porous boundaries and concepts (Repko, 2007) but also conflicting insights and theories with planning. The communicative and interpretive

turn in planning, particularly, required planners to communicate with fields such as game studies and interactive storytelling that are often seen as scholarly themes emerging from disciplines of computer science, media studies, and cultural studies, rather than fields of studies in their own right. Frameworks, other than traditional approaches to interdisciplinarity, are needed to fully understand the nature of communications between planning and these relatively new fields of study; frameworks that go beyond understanding interdisciplinarity as an integration of two disciplines (Klein, 2013) and do not fall short in accommodating disagreements, untranslatability, and incommensurability that might appear in the communications between planning and other fields of study. By taking the possibility of reaching common ground between any two disciplines as a given, in traditional approaches to interdisciplinarity, the shortcomings of interdisciplinary explorations and communications are often blamed on academia's culture and politics rather than the epistemic nature of the communication itself (Holbrook, 2013).

In this article, by adopting concepts from the work of Holbrook (2013) on interdisciplinary communications, I critically reflect on one of the seemingly successful communications between urban planning and game studies. I aim to understand how planning has instrumentalized games and rendered them useful for its practice and how planning theory has dealt with untranslatability and incommensurability of concepts in establishing and sustaining communications with game studies.

2. Translatability and Interdisciplinary Communications

In understanding the nature and underlying concepts of interdisciplinary studies, scholars have gained insights from philosophy, language, cognitive sciences, and communication studies (Holbrook, 2013; Repko, 2007). Fields are believed to have their own conceptual scheme, their own unique way of organizing facts of the world (Davidson, 1973). If no conceptual schemes can explain a phenomenon, the communication between disciplines and "constructing an integrated framework with a common vocabulary" (Klein, 2005, p. 44) to improve an understanding of a phenomenon becomes crucial. In traditional interdisciplinary theories, such integration is assumed to be possible between any two conceptual schemes (Holbrook, 2013); disciplines modify or reinterpret "components or relationships from different disciplines to bring out their commonalities so that linkages can be identified between sub-systems" (Newell, 2001, p. 20). This understanding, which is the dominant approach to interdisciplinarity, cannot fully explain the cases in which disciplines try but fail to find common grounds.

By reviewing the existing philosophical approaches to translatability and integration, Holbrook (2013) outlines two alternative approaches to interdisciplinarity: the Kuhn-MacIntyre (recognizing incommensurability) and the Bataille-Lyotard (reflective invention).

The Kuhn-MacIntyre approach emphasizes the importance of interpretation rather than translation in communications between different fields of study. In this approach, translatability is not about the mere translation of concepts or aiming for integration. Rather, it requires the competence to learn the standpoint of the target system of thought. The differences in the debates between two opposing systems, in this approach, can be resolved when "members of one system of thought resist the urge to translate claims made in the alien system of thought into their own language, but instead learn the language of the alien system as a second first language" (Holbrook, 2013, p. 1872).

In outlining the Bataille-Lyotard approach, Holbrook distinguishes between the strong and weak sense of communication (Holbrook, 2013). Weak communications are mainly used to "convince others to agree with us" and "to establish humble truths which coordinate our attitudes and activity with those of our fellow human beings" (Bataille, 1993, p. 199). As long as these weak communications are stable, i.e., as long as we appear to understand each other, strong communication will not be sought (Holbrook, 2013). In this account, mere interaction between disciplines, such as borrowing and translating concepts or tools from other disciplines and creating common grounds, are all efforts to sustain weak communications (Holbrook, 2013). The strong interdisciplinary communication, then, occurs with what Lyotard (1988) calls "differend," i.e., when disciplines fail to find common grounds: "In the case of a differend, the parties cannot agree on a rule or criterion by which their dispute might be decided" (Lyotard, 1988, p. xi). Strong communication, in this account, inevitably involves "mutual willingness [for disciplines] to risk [their] identities [which] may eventually be manifested in the creation of a new genre of discourse" (Holbrook, 2013, p. 1876).

Holbrook's work questioned the necessity of disciplines' integration in realizing successful interdisciplinary communication. He provided frameworks for understanding the many ways in which disciplines and fields of study communicate with each other, how they fail in communication, and what mechanism they use to deal with disagreements and untranslatability and incommensurability of concepts. Having these frameworks in mind, I will explore how communications between planning and game studies are established and sustained in the following sections.

3. Game Studies: An Overview

When the discipline of game studies—or ludology, as Frasca (2003) dubbed it—was called for in the early 2000s, the aim was to unify the works scholars were doing on games and playful activities. Gaming scholars began to "articulate [the discipline's] exact nature and scope, codify its tools and terminology and organize its findings into a coherent discipline" (Perron & Wolf, 2009, p. 4). This involved clarifying and critically evaluating, and

defining the field's basic concepts. Defining what games are and how they are distinguished from other interactive media became the agreed-upon priority for the field (Arjoranta, 2014; Stenros, 2017).

Game scholars adopted two main approaches to defining games (Arjoranta, 2014): definitive, focusing on defining sufficient and necessary conditions for an entity to be a game (see, for example, Abt, 1970; Avedon & Sutton-Smith, 1971; Costikyan, 1994; Juul, 2003; Koster, 2013; Salen & Zimmerman, 2004), and descriptive, categorizing games based on their technology, genre, mechanics, etc. The definitions provided using definitive approaches are essentially a list of sufficient and/or necessary conditions for an entity to be a game (Arjoranta, 2014). For defining these conditions, in their early attempts, gaming scholars took inspiration from the works of anthropologists and psychologists on the concept of play and games (Caillois, 1961; Huizinga, 1944; Suits, 1978). Caillois (1961, pp. 10–11) had defined games as "an activity which is essentially: free (voluntary), separate [in time and space], uncertain, unproductive, governed by rules, make-believe." Huizinga (1944, p. 13) had defined play as:

> A free activity standing quite consciously outside "ordinary" life as being "not serious," but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner.

By the late 1980s, a new approach to defining conditions, known as the "common core approach," was developed. The idea was that one looks at previous definitions, finds common elements and gaps, and then provides synthesis to fill those gaps (Arjoranta, 2014). The well-known and commonly referenced works of Juul (2003) and Salen and Zimmerman (2004) followed the same approach. Salen and Zimmerman (2004) suggested new properties for games to better fit their definition within the systems thinking framework, and Juul (2003) aimed to expand the so-called classical game model to cover new types of games to better distinguish them from other interactive and playful systems.

Despite its value in providing a universal set of conditions, the definitive approach to defining games had certain limitations. Setting rigid boundaries between what is and what is not a game, they fall short in explaining certain activities traditionally perceived as games or accommodating for those who would be perceived as games in the future (Calleja, 2007). In response to this limitation and inspired by Wittgensteinian's family resemblance theory, a number of gaming scholars (see, for example, Arjoranta, 2014) made an effort to devise descriptive frameworks for talking about games.

The idea was that rather than focusing on the essence of a phenomenon, one could explain how its use resembles its context (Arjoranta, 2014). The very immediate use of Wittgenstein's ideas in game studies was taking whatever is "commonly known" as a game and putting them into different categories; i.e., defining families of games based on their technology, platform, strategy, storyline, or even the country in which they were produced (Arjoranta, 2014). With the continued popularity of decision sciences and the appeal of system thinking in various fields, descriptive approaches, though used in daily conversations about games, failed to gain traction in fields looking to use games beyond entertainment purposes.

It is important to highlight that the context in which game studies as a field emerged was very influential in shaping the overall narratives around games and their use beyond entertainment purposes. Formal studies of games began in the era characterized by its heightened trust in science and scientific approach and its predisposition to explain everything through the lens of system theory. It is no surprise then that the game's conception, even in definitive approaches, in the early 2000s, shifted from focusing on essential elements of play to describing games as systems, from the player's experience in the magic circle to the system's productivity in the real world, and from understanding the game as a means to entertain and the game as a means for problem-solving Calleja (2007; Table 1). This conception distances itself from considering the primary role of games as "an escape from, an alternative to, or questioning of society" to the use of games "as a perfection of means toward societies' given end" (Walz & Deterding, 2014, p. 15).

Conceptualizing games as a means for problem-solving or driving real-world change was for a long time a point of disagreement and heated discussions between gaming scholars. For those considering games as a means to entertain, the systemic view of games was about understanding how game elements (including storyline, visualization, level design, and goal) can work together

Table 1. Differences between definitive and descriptive approaches to defining games.

	Focus	Definition of Games	Use of Games
Definitive	Productivity and achieving repeatable patterns and ensured outcomes	Rigid boundaries and list of necessary and sufficient conditions	Research, pedagogy, and problem solving
Descriptive	Play and promoting creativity and artistic values	Categories or descriptions	Entertainment and communication

to bring about certain experiences for the player. They argue for games as art forms (Pearce, 2006; Smuts, 2005) and refer to the then-renewed understanding of art's public and private value (McCarthy et al., 2004) in outlining the potential social and economic impacts games could have. For them, the intrinsic benefits of games (i.e., fun experience) were the starting point for all other social and economic benefits games could bring about. Koster (2013), for example, called games "edutainment" and argued for the educational value of games as a by-product of the fun experience players have rather than the game's main goal. For those considering games as a means for problem-solving, the systemic view of games was about how games can produce a certain outcome for the player (learning) or the field in which the game is being used (information collected from players in the game). They mainly highlighted the instrumental value of games and developed frameworks (Harteveld, 2011; Roungas et al., 2019) to address how "elements of paida [free form improvisation] and ludus [highly regulated activity aiming for predefined goals] play" can be combined "by being at once regulated and providing freedom for improvisation" (Iversen, 2009, p. 11).

4. Trends in Game Design: Conflicts and Agreements

With the various conceptions of games and the heated arguments between gaming scholars on games' nature and role, different trends emerged in game design, most notably simulation gaming, serious gaming, and gamification (Table 2). Disciplines reinterpreted the theoretical body of works in game studies, repurposed old terminologies in their own field, and introduced new vocabularies. Oppositions also emerged from game designers in the entertainment industry, with some designers calling gamification and serious game trends bastardization (Bogost, 2014) and colonization (Aarseth, 2001) of games. To them, the new trends were a neo-liberal move that replaced the player's experience and fun with mere productivity (Rey, 2014; Whitson, 2014).

Simulation gaming and serious gaming trends both build on the conception of games as systems and have their root in the works on simulation and gaming in the late 1960s. With the then popularity of simulation models and the technological advances in digital graphics led by the video gaming industry, the use of simulation gaming in settings where real-world training or decision-making was too costly or risky became popular (Pierfy,

1977). In 1970, simulation and gaming emerged as a field, and the *Simulation and Gaming* journal was established. The term "serious game" was coined by Abt (1970) in the same year to refer to games that "have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement" (Abt, 1970, p. 9).

While serious gaming banks on the game's educational capacities, the simulation gaming trend seeks ways to integrate gaming with social and urban modelling to enhance the data collection and decision-making processes. At the core of the simulation gaming trend was the idea that "valuable tacit knowledge often results in some observable action when individuals understand and subsequently make use of knowledge" (Dalkir & Liebowitz, 2011, p. 8). In carefully designed immersive simulated environments, the players' actions can be used as a proxy for their mental model of how things work in reality. New gaming technologies have made it possible for simulation game designers to design game environments with high fidelity to the real world; they allow for high-resolution 3D visualisation, provide computational capacity and infrastructure for collaboration and interaction of a large number of players, and allow real-time capturing and analysing of the players' behaviours and their interaction with game environments.

On the other hand, gamification has long struggled to be acknowledged and accepted as part of game studies and remains a contested concept (Deterding et al., 2011). However, with the widespread use of the term and the increased attention it has received in the urban planning field (Harviainen & Hassan, 2019; Hassan, 2017), it is important to include it in this study. Gamification emerged at the intersection of game design and behavioural science (Morford et al., 2014), and it is often defined as the use of game design elements in non-game contexts (Deterding et al., 2011). The core idea behind it was to understand how games successfully create intrinsic motivations and how those qualities of games can be used in the design of services and tools. Gamification for long was interpreted as using badges, leadership boards, and points as a means of persuasion for behaviour change in any designed service. The history of the idea, however, goes back to the early 1980s, when two articles titled "Toward a Theory of Intrinsically Motivating Instruction" and "Heuristics for Designing Enjoyable User Interfaces" were published by Malone (1981, 1982).

Table 2. The conception of "game" in different trends in game design.

Trends in Game Design	Conception of Game	
Gamification	Game-like systems	System
Simulation games	Systems for collecting data, testing scenarios, and pedagogy purposes	
Serious games	System for pedagogy purposes conscious of the importance of user experience	
Games initiated as entertainment	Structured playful experience with educational capacities	Play

5. Game Studies and Planning: The Communication so Far

Marking the beginning of the games and planning communication is not easily possible. In the 1940s and 1950s, particularly after World War II, war gaming was transferred to simulation gaming as a rational and analytical method for dealing with social complexities and public policy-making (Brewer, 1979; Mayer, 2009). The work of von Neumann and Morgenstern (1944) on the theory of games and economic behaviour, the emergence of decision sciences (i.e., operational research), and the wide range of studies done by the RAND corporation (Brewer, 1972; Goldhamer & Speier, 1958) were very influential on the then-emerging discipline of "gaming and simulation" (Fischer et al., 2007).

In the late 1940s, board games, such as Planning Operational Game Experiment designed by Francis Hendricks, METROPOLIS designed by Richard Duke, and CLUG (Figure 1) designed by Allan Feldt were used in planning courses to teach about the complex nature of cities and decision-making processes (Light, 2008). Games were known to be "exercises in the mastery of environment or self, social system, and of the supernatural" (Roberts et al., 1959, p. 604), and their pedagogic value was known to scholars in various fields. Particularly in developing strategies in the military context, games were used for creating simulated interaction environments for exploration, planning, testing, and training of military operations (Brewer, 1979; Klabbers, 2009; Mayer, 2009).

Figure 1. Early version of CLUG, 1966. Source: Feldt (2014, p. 286).

In the late 1950s, cities in the US were dealing with high levels of poverty. Urban renewal plans implemented to tackle the widespread urban poverty were heavily criticized for their impact on the neighbourhoods and communities. Those who favoured system thinking redefined "cities as communication and information systems, city problems as problems of communication and information flow and by extension, city planning as a science of communication information and control" (Light, 2008, p. 351). Around the same time, the added value of urban models was extensively explored in planning. Urban models were not pure architectural representations of cities' physical form anymore. Rather, they were seen as tools for representing cities' processes, testing scenarios, and predicting future outcomes (Batty, 2001). As Klabbers (2009, p. 448) puts it:

> Simulation models enabled expressing complex dynamic systems in tangible ways, and they allowed for performing experiments without interfering with *real-life* reference systems. In addition, linking human players to such models—that is, framing a gaming and learning environment—could enhance the transmission of available knowledge.

In 1970, Richard Duke organized the first International Conference on Simulation and Gaming (Klabbers, 2009). This conference marked the earliest formal interaction between planning and scholarly works that were then being done on games and was a reaction to a series of experiments done with games in policy-making as part of the Model Cities program in the US. With urban projects becoming a core of rebellion in the early 1960s, federal governments sought new ways of dealing with urban issues. As a result, several federally funded programs were introduced. Model Cities, in particular, became the program that highlighted the issues with communication strategies and tools in planning processes (Weber & Wallace, 2012).

While acknowledging the importance of public participation in decision making, much of the program was "focused on advancing participation through the structuring and management of citizen behaviour to match federal and local planning activities, creating Model Citizens eager to work within the *system*" (Light, 2008, p. 363). Several games, including MULBERRY, SIMPOLIS, and GHETTO, were developed by the second half of the 1960s as part of the Model Cities program and were applied to neighbourhoods in 150 cities across the US (Light, 2008; Figure 2). While initially, the plan was for these games to facilitate two-way communication between planners and the public, they soon turned into tools of one-way communication and control (Duke, 2011). By the early 1970s, with the lack of funding and city officials' inability to prove these games' effectiveness, the experiments with games could not be justified any longer (Light, 2008).

Figure 2. A group playing CLUG. Source: Feldt (2014, p. 291).

Having these experiments in mind, the main topic at hand in the First International Conference on Simulation and Gaming was the use of games for research purposes in the urban planning and public health context. The use of games for pedagogic and communication purposes was already tried-and-tested. The use of games for research purposes, however, was not yet explored to that date, and therefore, it raised many arguments at the conference of 1970; as Klabbers (2009) reports, the matter was left unsolved.

As the final decision, members suggested: "labelling the [use of games for] pedagogic objectives as gaming and the [use of games for] research objectives as simulation" (Klabbers, 2009, p. 450). The idea was that contrary to the games solely designed for entertainment purposes, games for the policy-making need to be based on "scientifically valid and policy-relevant theories that could be developed or tested" (Mayer, 2009, p. 831). Building on this conference's findings, Duke (1974, 1980), Meier (1977; Meier & Duke, 1966), and Feldt (1972, 1995) published extensively on the ways simulation games can be used in urban planning contexts.

Duke (2011), in particular, criticized the way games were used as part of the Model Cities program and published a series of books (Duke, 1974; Duke & Geurts, 2004; Duke & Greenblat, 1979) outlining games' potential for deliberation and strategic management. At the same time, literature emerged criticizing the "weak sci-

entific foundations of gaming" (Mayer, 2009, p. 830). Duke (2011, p. 342) argued that games "are not intended to be predictive; rather, their primary objective is to help a group achieve consensus through the multilogue mode of communication."

With the communicative turn in planning (Healey, 1992), community empowerment, communication, and contemplating and sharing knowledge among various stakeholders became explicit themes in planning discussions. The aim was to move away from system thinking and rational approaches to accommodate varied types of knowledge in decision-making processes in planning, expand the language of planning, and extend planners' creative capacities (Sandercock, 2004, 2005). By the late 2000s, the second wave of interest in the use of games in planning processes emerged. The success of the gamification trend in advertising and marketing was also very influential in the renewed interest in games. In the second wave, rather than emphasizing the technical capacities of digital games as in the *Simulation and Gaming* tradition, urban scholars and practitioners focused on the games' participatory qualities (Poplin, 2012).

6. Urban Games and Their Underlying Theories

Given the wide range of games used in urban planning processes and the ubiquitous use of terms playful, gameful, and games in planning literature, categorizing urban games into distinct categories is challenging. However, understanding how the urban game design practices borrow concepts from game studies trends is helpful in better understanding the function and design of the urban games (Table 3).

6.1. Urban Games Initiated as Entertainment

The traces of ideas from the 1970s gaming and simulation trend can be found in many commercially successful games designed in the entertainment industry. Today, the so-called city-building genre is offered on a wide range of platforms (including mobile phones, PCs, and VR headsets). While there are city-building games (e.g., Tropico 5 and Urban Empire) that focus on negotiation and diplomacy in city management as a source of development, most city-building games extensively rely on modelling the physical and social growth of the cities as a form of algorithmic city generation. In building virtual cities and their algorithmic generation, game designers have used a variety of "intelligent virtual environment''

Table 3. Trends in game design and their use in planning.

Trends in Game Design	Use of Game in Planning	
Gamification	Changing behaviours and collecting data on the public's behaviour	System
Simulation games	Urban modelling and testing future scenarios	
Serious games	Capacity building in a participatory planning setting	
Urban games initiated as entertainment	Placemaking and enhancing urban experiences	Play

(Luck & Aylett, 2000) design techniques. These techniques help designers model physical growth using cellular automata urban models (Garza, 2005), and create interactive and adaptive crowd behaviours, using rule-based behaviour control of autonomous and guided crowds (Reynolds, 1999; Ulicny & Thalmann, 2001).

Another group of games known as pervasive games is a subset of mixed reality games (Hinske et al., 2007). "Geo-coaching," also known as a "scavenger hunt," "geogames" (Ahlqvist et al., 2018), or "treasure hunt" games, were long the popular game mechanics in pervasive games. Can You See Me Now? (Benford et al., 2006), for example, was of the first examples of mobile mixed reality games in which online players compete against performers on the streets. Up to 20 online players were chased across the city by three performers running through the streets in this game.

The added value of pervasive games beyond entertainment is often discussed, considering their three main design elements: mobility, sociability, and spatiality (de Souza e Silva & Hjorth, 2009). The spatiality element, along with the physical and mental dimensions of pervasive games, make them great educational tools for increasing the player's spatial literacy (Bartoschek et al., 2018). These games' social and immersive qualities are also emphasized in placemaking exercises. The technological advances in the locative media have lent plausibility to collecting or creating located information as part of pervasive game design (Matyas et al., 2008). For example, Pokémon Go and its earlier successful counterpart, Ingress, collected a large amount of data on the player's locations, movements, and stops, which ignited heated discussions around the potential and downfalls of commodifying location information (Frith, 2017) as part of these practices.

Given the popularity and commercial success of the city-building and pervasive games, their potential uses for facilitating spatial decision-making processes have been extensively explored. Some have praised city-building games as great tools for learning about urban design, planning, and urban modelling (Gaber, 2007; Kim & Shin, 2016; Minnery & Searle, 2014), calling them "crucial bridge[s] between the realms of play and practice" (Bereitschaft, 2016, p. 52).

6.2. Gaming and Simulation (Game-Based Simulations)

Following its traditional form, simulation games are used as a tool for exploring urban models and scenarios. Certain simulation games are used in participatory planning settings to allow the communities to navigate future scenarios. The Participatory Chinatown (Gordon & Schirra, 2011), for example, is a web-based simulation of Boston that allows the player to walk through a potential future neighbourhood and provide comments. The games in this category are used mainly for feedback gathering. The design of these often guided interactions also allows communication between various actors and data collection on the nature and frequency of the interactions between players.

6.3. Serious Games

Serious games are often used for educational purposes and capacity building as part of participatory planning practices. Since the simulation gaming trend is often associated with rational and scientific approaches, most games designed to be used as part of participatory planning practices tend to associate themselves with the serious gaming trend. They often highlight games' pedagogic and capacity-building values and their value in consensus-building and negotiation (Poplin & Vemuri, 2018), rather than their simulated nature and role in data collection. The assumption is that, through playing such games, the players become more interested in planning issues and better understand what would and would not be possible.

Most games in this category that are used as part of participatory practices, though not relying on complete simulation of the physical or social urban spaces, are in one way or another a replica of the real-world processes. Several low-tech table-top or non-digital games were designed in the past decade following the same logic. For example, Play the City (Tan, 2017) has designed a series of games addressing the circular economy and affordable housing issues.

6.4. Gamified Systems

Gamified systems are often used in urban contexts for changing and understanding people's behaviours and habits (see, for example, Chromaroma, which aims to encourage its players to use public transport). In recent years, in response to the critiques of gamification and its strong reliance on external incentives (very often monetized rewards) for changing behaviour, efforts are made to accommodate for enhancing people's experiences in urban spaces—for example, Pieces of Berlin (Alfrink, 2014) and Hello Lamp Post (Stuart, 2013). Gamification principles are also used to create better governmental services and enhance public participation practices (Harviainen & Hassan, 2019; Hassan & Hamari, 2020).

7. Translation: Sustaining the Weak Communication Between Planning and Game Studies

The first instances of communications between planning and game studies and the resultant conception of games as systems happened decades before game studies were consolidated as a field in its own right. The works of Duke, Feldt, and the other early policy game designers were very influential in establishing weak communications between planning and game studies. The then-emerging theoretical discussions on what simulation games are and how they can be used in planning are great examples of communication as translation, as discussed by

Friedmann (2008). They introduced new terminologies and design elements to better fit games into urban planning theory and practice and made future communications between the two fields possible.

Since the early interactions of planning and game studies in the 1970s, game studies have evolved greatly. A wealth of theoretical works has emerged, rethinking the games' nature and function. These works have expanded our understanding of games' functions and added value in dealing with complex social problems. However, the second wave of interest in games in planning did not theoretically engage itself with these new understandings of games. Rather, it conceptually rooted itself in the definitions of games as a system, developed at the height of the systems thinking era. It did not translate new understandings into planning theory nor learned the gaming as its second language. Rather, it sustained the weak communications by conceptualizing games as systems with predictable outcomes. The dominant narrative, therefore, remained similar to the 1970s; those games that are considered of value in planning processes are often an educational or complete simulation of the future development or participation process, at times, at the expense of the player's experience and fun qualities of games.

In 2011, the seeds for strong communication between planning and game studies were sowed in a reflection piece written by Duke (2011). By reflecting on the early and then-recent urban and policy games, he outlined the moments when communication between the two fields became problematic. He also hinted at the fundamental differences between the problem-solving approach in game studies and urban planning. By referring to the work of Armstrong and Hobson (1973), he emphasized that:

> Some policy problems did not lend themselves to traditional scientific techniques….These problems were often intractable—they were difficult to quantify, and we could see no scientific basis for their solution—their complexity demanded an intuitive, yet disciplined approach. (Duke, 2011, p. 353)

New tools, such as games, geared towards communication and encouraging stakeholders' involvement, were needed to address such policy and planning problems (Duke, 2011). Today, while the use of games is justified using similar arguments, the conception of value and use of games remains rooted in the positivistic approaches to problem-solving in planning. The efforts are, therefore, mainly focused on better designing the game itself and balancing the game's elements rather than reflecting on how the game and the gaming frame of mind can enhance planning's problem-solving and decision-making processes. This can also partly be blamed on the struggles of planning as a field in moving away from positivist approaches and accommodating the subjective types of knowledge in its decision-making processes, the

struggle that is documented to a great extent in planning theory (see, for example, Osborne & Grant-Smith, 2015; Sandercock, 2005).

Strong communication with game studies or an attempt by planners to learn game design as their second language could enable planners to see games beyond their instrumental value and expand their problem-solving capacities by approaching the problem-solving process from a non-deterministic, intuitive game designer's mindset. Such communication could result in a more value-embedded understanding of media and tools in planning, enabling planning scholars to better understand the cycles of production and reproduction of values through the use and design of tools in planning processes.

8. Conclusion

Communications with other disciplines and fields of study are inevitable and crucial for the planning field. While the planners feel the urge to expand the range of knowledge they work with, the main narrative in communications between planning and fields that have an opposing system of thought to planning is often thought of as abandoning the very idea of planning as a discipline (Davoudi, 2012; Friedmann, 2003, 2008), rendering planning too fragile in its interdisciplinary explorations. This is partly because the existing interdisciplinary frameworks in planning are rooted in the traditional understanding of interdisciplinarity, seeking integration between the two fields. Acknowledging and understanding the untranslatability and incommensurability of concepts in interdisciplinary communications is crucial for the future of planning.

The story of communications between game studies and planning shows how planning has avoided such untranslatability and incommensurability through establishing and sustaining the weak communications. Games are rendered a useful tool for rational planning processes by introducing scientific validity measures and adopting the conception of games as systems. On the surface, games are great collaborative and interactive pedagogic tools. They have the potential to capture and influence the users' perceptions, attitudes, and preferences which makes them great tools for community building and participatory decision-making. On a deeper level, however, there are fundamental unaddressed differences between the approaches to social change in planning and game design as an art form, leading to unstable wormholes between the two disciplines.

Acknowledgments

Conflict of Interests

The author declares no conflict of interests.

References

Aarseth, E. (2001). Computer game studies, year one. *Game Studies*, *1*(1). http://gamestudies.org/0101/editorial.html

Abt, C. C. (1970). *Serious games*. Viking Press.

Ahlqvist, O., Joshi, S., Benkar, R., Vatev, K., Ramnath, R., Heckler, A., & Soundarajan, N. (2018). Defining a geogame genre using core concepts of games, play, and geographic information and thinking. In O. Ahlqvist & C. Schlieder (Eds.), *Geogames and geoplay* (pp. 19–35). Springer.

Alfrink, K. (2014). The gameful city. In In S. P. Walz & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications* (pp. 527–560). MIT Press.

Arjoranta, J. (2014). Game definitions: A Wittgensteinian approach. *Game Studies*, *14*(1).

Armstrong, R. H. R., & Hobson, M. (1973). *ALEA local government gaming simulation exercise*. Open University Press.

Avedon, E. M., & Sutton-Smith, B. (1971). *The study of games*. Wiley.

Bartoschek, T., Schwering, A., Li, R., Münzer, S., & Carlos, V. (2018). OriGami: A mobile geogame for spatial literacy. In O. Ahlqvist & C. Schlieder (Eds.), *Geogames and geoplay* (pp. 37–62). Springer.

Bataille, G. (1993). *Literature and evil*. Marion Boyers.

Batty, M. (2001). Models in planning: Technological imperatives and changing roles. *International Journal of Applied Earth Observation and Geoinformation*, *3*(3), 252–266.

Benford, S., Crabtree, A., Flintham, M., Drozd, A., Anastasi, R., Paxton, M., Tandavanitj, N., Adams, M., & Row-Farr, J. (2006). Can you see me now? *ACM Transactions on Computer-Human Interaction*, *13*(1), 100–133.

Bereitschaft, B. (2016). Gods of the city? Reflecting on city building games as an early introduction to urban systems. *Journal of Geography*, *115*(2), 51–60.

Bickenbach, J., & Hendler, S. (1994). The moral mandate of the 'profession' of planning. In H. Thomas (Ed.), *Values and planning* (pp. 162–177). Routledge.

Bogost, I. (2014). Why gamification is bullshit. In S. P. Walz & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications* (pp. 65–80). MIT Press.

Brewer, G. D. (1972). *Dealing with complex social problems: The potential of the "Decision Seminar."* RAND Corporation. https://www.rand.org/pubs/papers/P4894.html

Brewer, G. D. (1979). *The war game: A critique of military problem solving*. Harvard University Press.

Caillois, R. (1961). *Man, play, and games*. University of Illinois Press.

Calleja, G. (2007). *Digital games as designed experience: Reframing the concept of immersion* [Doctoral dissertation, Victoria University of Wellington]. OAR@UM. https://www.um.edu.mt/library/oar//handle/123456789/27354

Costikyan, G. (1994). I have no words & I must design: Toward a critical vocabulary for games. In F. Mäyrä (Ed.), *Proceedings of Computer Games and Digital Cultures Conference* (pp. 9–33). Tampere University Press.

Dalkir, K., & Liebowitz, J. (2011). *Knowledge management in theory and practice*. MIT Press.

Davidson, D. (1973). On the very idea of a conceptual scheme. *Proceedings and Addresses of the American Philosophical Association*, *47*, 5–20. https://doi.org/10.2307/3129898

Davoudi, S. (2012). The legacy of positivism and the emergence of interpretive tradition in spatial planning. *Regional Studies*, *46*(4), 429–441. https://doi.org/10.1080/00343404.2011.618120

Davoudi, S. (2015). Is planning an academic discipline? *Riurba*, *2015*(1). http://riurba.net/Revue/is-planning-an-academic-discipline

Davoudi, S., & Pendlebury, J. (2010). Centenary paper: The evolution of planning as an academic discipline. *The Town Planning Review*, *81*(6), 613–645. http://www.jstor.org/stable/41064633

de Souza e Silva, A., & Hjorth, L. (2009). Playful urban spaces: A historical approach to mobile games. *Simulation & Gaming*, *40*(5), 602–625.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. In A. Lugmayr (Ed.), *MindTrek '11: Proceedings of the 15th International Academic MindTrek Conference—Envisioning Future Media Environments* (pp. 9–15). Association for Computing Machinery. https://doi.org/10.1145/2181037.2181040

Duke, R. D. (1974). *Gaming: The future's language*. Wiley.

Duke, R. D. (1980). A paradigm for game design. *Simulation & Games*, *11*(3), 364–377.

Duke, R. D. (2011). Origin and evolution of policy simulation: A personal journey. *Simulation & Gaming*, *42*(3), 342–358.

Duke, R. D., & Geurts, J. (2004). *Policy games for strategic management*. Rozenberg Publishers.

Duke, R. D., & Greenblat, C. S. (1979). *Game-generating-games: A trilogy of games for community and classroom*. SAGE.

Feldt, A. G. (1972). *CLUG, community land use game: Player's manual with selected readings*. Free Press.

Feldt, A. G. (1995). Thirty-five years in gaming. *Simulation & Gaming*, *26*(4), 448–452.

Feldt, A. G. (2014). Experience with simulation/gaming: 1960–2010. *Simulation & Gaming*, *45*(3), 283–305. https://doi.org/10.1177/1046878114543983

Fischer, F., Miller, G. J., & Schunn, C. D. (2007). *Handbook of public policy analysis: Theory, politics, and methods*. CRC Press.

Frasca, G. (2003). Simulation versus narrative: Introduction to ludology. In M. J. P. Wolf & B. Perron (Eds.), *The video game theory reader* (pp. 221–235). Routledge.

Friedmann, J. (2003). Why do planning theory? *Planning Theory*, *2*(1), 7–10.

Friedmann, J. (2008). The uses of planning theory. *Journal of Planning Education and Research*, *28*(2), 247–257.

Frith, J. (2017). The digital "lure": Small businesses and Pokémon GO. *Mobile Media & Communication*, *5*(1), 51–54.

Gaber, J. (2007). Simulating planning: SimCity as a pedagogical tool. *Journal of Planning Education and Research*, *27*(2), 113–121.

Garza, E. (2005). *Algorithmic generation of cities using cellular automata in a dynamically generated world* [Honors thesis, Trinity University]. Digital Commons. https://digitalcommons.trinity.edu/compsci_honors/7

Goldhamer, H., & Speier, H. (1958). *Some observations on political gaming*. RAND Corporation.

Gordon, E., & Schirra, S. (2011). Playing with empathy: Digital role-playing games in public meetings. In M. Foth (Ed.), *Proceedings of the 5th International Conference on Communities and Technologies* (pp. 179–185). Association for Computing Machinery.

Harteveld, C. (2011). *Triadic game design: Balancing reality, meaning and play* (1st ed.). Springer.

Harviainen, J. T., & Hassan, L. (2019). Governmental service gamification: Central principles. *International Journal of Innovation in the Digital Economy*, *10*(3), Article 1. https://doi.org/10.4018/IJIDE.2019070101

Hassan, L. (2017). Governments should play games: Towards a framework for the gamification of civic engagement platforms. *Simulation and Gaming*, *48*(2), 249–267. https://doi.org/10.1177/1046878116683581

Hassan, L., & Hamari, J. (2020). Gameful civic engagement: A literature review of gamification in e-participation. *Government Information Quarterly*, *37*(3), Article 101461.

Healey, P. (1992). Planning through debate: The communicative turn in planning theory. *The Town Planning Review*, *63*(2), 143–162. http://www.jstor.org/stable/40113141

Hinske, S., Lampe, M., Magerkurth, C., & Röcker, C. (2007). Classifying pervasive games: On pervasive computing and mixed reality. In C. Magerkurth & C. Rocker (Eds.), *Concepts and technologies for pervasive games: A reader for pervasive gaming research* (pp. 1–20). Shaker Verlag.

Holbrook, J. B. (2013). What is interdisciplinary communication? Reflections on the very idea of disciplinary integration. *Synthese*, *190*(11), 1865–1879. https://doi.org/10.1007/s11229-012-0179-7

Huizinga, J. (1944). *Homo ludens: A study of the play element in culture*. Routledge.

Iversen, S. M. M. (2009). *Between regulation and improvisation: Playing and analysing "Games in the Middle"* [Doctoral dissertation, IT University of Copenhagen]. ITU Research. https://pure.itu.dk/portal/en/publications/between-regulation-and-improvisation(72143bcb-c577-492a-a218-575b1aecfe8e).html

Juul, J. (2003). *Half-real: Video games between real rules and fictional worlds*. IT University of Copenhagen.

Kim, M., & Shin, J. (2016). The pedagogical benefits of SimCity in urban geography education. *Journal of Geography*, *115*(2), 39–50.

Klabbers, J. H. G. (2009). Terminological ambiguity: Game and simulation. *Simulation & Gaming*, *40*(4), 446–463.

Klein, J. T. (2005). Interdisciplinary teamwork: The dynamics of collaboration and integration. In S. J. Derry, C. D. Schunn, & M. A. Gernsbacher (Eds.), *Interdisciplinary collaboration: An emerging cognitive science* (pp. 23–50). Psychology Press.

Klein, J. T. (2013). Communication and collaboration in interdisciplinary research. In M. O'Rourke, S. Crowley, S. D. Eigenbrode, & J. D. Wulfhorst (Eds.), *Enhancing communication & collaboration in crossdisciplinary research* (pp. 11–30). SAGE.

Koster, R. (2013). *Theory of fun for game design*. O'Reilly Media.

Light, J. (2008). Taking games seriously. *Technology and Culture*, *49*(2), 347–375.

Luck, M., & Aylett, R. (2000). Applying artificial intelligence to virtual reality: Intelligent virtual environments. *Applied Artificial Intelligence*, *14*(1), 3–32.

Lyotard, J.-F. (1988). *The differend: Phrases in dispute*. University of Minnesota Press.

Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, *5*(4), 333–369.

Malone, T. W. (1982). Heuristics for designing enjoyable user interfaces: Lessons from computer games. In J. A. Nichols & M. L. Schneider (Eds.), *Proceedings of the 1982 Conference on Human Factors in Computing Systems* (pp. 63–68). Association for Computing Machinery.

Matyas, S., Matyas, C., Schlieder, C., Kiefer, P., Mitarai, H., & Kamata, M. (2008). Designing location-based mobile games with a purpose: Collecting geospatial data with CityExplorer. In M. Inakage & A. D. Cheok (Eds.), *Proceedings of the 2008 International Conference on Advances in Computer Entertainment Technology* (pp. 244–247). Association for Computing Machinery.

Mayer, I. S. (2009). The gaming of policy and the politics of gaming: A review. *Simulation & Gaming*, *40*(6), 825–862. https://doi.org/doi:10.1177/1046878109346456

McCarthy, K. F., Ondaatje, E. H., Zakaras, L., & Brooks, A. (2004). *Gifts of the muse: Reframing the debate about the benefits of the arts*. RAND Corporation.

Meier, P. M. (1977). Game theory approach to design under uncertainty. *Journal of the Environmental Engineering Division*, *103*(1), 99–111.

Meier, R. L., & Duke, R. D. (1966). Gaming simulation for urban planning. *Journal of the American Institute of Planners*, *32*(1), 3–17.

Minnery, J., & Searle, G. (2014). Toying with the city? Using the computer game SimCityTM 4 in planning education. *Planning Practice and Research*, *29*(1), 41–55.

Morford, Z. H., Witts, B. N., Killingsworth, K. J., & Alavosius, M. P. (2014). Gamification: The intersection between behavior analysis and game design technologies. *The Behavior Analyst*, *37*(1), 25–40.

Newell, W. H. (2001). A theory of interdisciplinary studies. *Issues in Integrative Studies*, *19*(1), 1–25.

Osborne, N., & Grant-Smith, D. (2015). Supporting mindful planners in a mindless system: Limitations to the emotional turn in planning practice. *Town Planning Review*, *86*(6), 677–698.

Pearce, C. (2006). Games as art: The aesthetics of play. *Visible Language*, *40*(1), 66–89.

Perron, B., & Wolf, M. J. P. (2009). Introduction. In B. Perron & M. J. P. Wolf (Eds.), *The video game theory reader 2* (pp. 1–22). Routledge.

Pierfy, D. A. (1977). Comparative simulation game research: Stumbling blocks and steppingstones. *Simulation & Games*, *8*(2), 255–268. https://doi.org/10.1177/003755007782006

Poplin, A. (2012). Playful public participation in urban planning: A case study for online serious games. *Computers, Environment and Urban Systems*, *36*(3), 195–206.

Poplin, A., & Vemuri, K. (2018). Spatial game for negotiations and consensus building in urban planning: YouPlaceIt! In O. Ahlqvist & C. Schlieder (Eds.), *Geogames and geoplay* (pp. 63–90). Springer.

Repko, A. (2007). Integrating interdisciplinarity: How the theories of common ground and cognitive interdisciplinarity are informing the debate on interdisciplinary integration. *Issues in Interdisciplinary Studies*, *25*, 1–31.

Rey, P. J. (2014). Gamification and post-Fordist capitalism. In S. P. Walz & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications* (pp. 277–296). MIT Press.

Reynolds, C. W. (1999). Steering behaviors for autonomous characters. In *Game Developers Conference 1999* (pp. 763–782). Informa.

Roberts, J. M., Arth, M. J., & Bush, R. R. (1959). Games in culture. *American Anthropologist*, *61*(4), 597–605. https://doi.org/10.1525/aa.1959.61.4.02a00050

Roungas, B., Bekius, F., & Meijer, S. (2019). The game between game theory and gaming simulations: Design choices. *Simulation & Gaming*, *50*(2), 180–201.

Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT Press.

Sandercock, L. (2004). Towards a planning imagination for the 21st century. *Journal of the American Planning Association*, *70*(2), 133–141. https://doi.org/10.1080/01944360408976368

Sandercock, L. (2005). Interface. A new spin on the creative city: Artist/planner collaborations. *Planning Theory & Practice*, *6*(1), 101–103. https://doi.org/10.1080/1464935042000334985

Smuts, A. (2005). Are video games art? *Contemporary Aesthetics*, *3*(1), Article 6.

Stenros, J. (2017). The game definition game: A review. *Games and Culture*, *12*(6), 499–520. https://doi.org/10.1177/1555412016655679

Stuart, K. (2013, June 27). Hello Lamp Post and the idea of playful cities. *The Guardian*. https://www.theguardian.com/technology/gamesblog/2013/jun/27/hello-lamp-post-playful-cities

Suits, B. (1978). *The grasshopper: Games, life and utopia*. Broadview Press.

Tan, E. (2017). *Play the city: Games informing the urban development*. Jap Sam Books.

Ulicny, B., & Thalmann, D. (2001). Crowd simulation for interactive virtual environments and VR training systems. In N. Magnenat-Thalmann & D. Thalmann (Eds.), *Computer animation and simulation 2001* (pp. 163–170). Springer.

von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. Princeton University Press.

Walz, S. P., & Deterding, S. (2014). An introduction to the gameful world. In S. P. Walz & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications* (pp. 1–14). MIT Press.

Weber, B. A., & Wallace, A. (2012). Revealing the empowerment revolution: A literature review of the model cities program. *Journal of Urban History*, *38*(1), 173–192.

Whitson, J. R. (2014). Foucault's fitbit: Governance and gamification. In S. P. Walz & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications* (pp. 339–358). MIT Press.

About the Author

Moozhan Shakeri is a researcher at ITC, the Faculty of Geo-Information Science and Earth Observation of the University of Twente. Her research lies at the intersection of social sciences, media studies, and political science and focuses on critical analysis of instrumentalization and adaptation of various tools and communication media as part of the decision-making processes. She is particularly interested in translating theoretical ideas into design specifications of participatory tools and delineating digital and non-digital media's added value for various decision-making processes. Before joining ITC, she worked as an associate researcher at Newcastle University.