

Among Pixels and Pavement: Exploring the Feedback Loop Between Digital Games and Public Spaces

Caio Tulio Olimpio Pereira da Costa

Caio Tulio Olimpio Pereira da Costa, Ph.D.

*Federal University of Pernambuco
Center of Education
Avenida, R. Acdo. Hélio Ramos, s/n
50.670-901 Recife, PE
BRAZIL
caio.tulio@ufpe.br*



Caio Tulio Olimpio Pereira da Costa is a doctor of technological education from the Federal University of Pernambuco (UFPE), Brazil, with a research internship period at the University of Québec in Outaouais, Canada, through the PDSE CAPES program. He holds a Master of Arts in communication from the Federal University of Pernambuco and a Bachelor of Arts in social communication/journalism from Sete de Setembro University Center (2016). He is a member of the research group on digital media and intercultural mediation at the UFPE and CIPEG – interdisciplinary research collective on games. His research interests include cyberculture, digital communication, game studies, technologies, image and imaginary, narratives, language, technological education, cinema, serial fiction, and popular culture.



ABSTRACT:

The paper explores the complex interactions between public spaces and digital games, highlighting how these environments both influence and are influenced by each other on real and virtual worlds. Drawing on Johan Huizinga's concept of *Homo ludens*, the study underscores the importance of play as a fundamental aspect of human culture and its extension into contemporary digital interfaces. In addition, the paper argues that the feedback loop between game and reality reshapes our understanding of public spaces and games, exploring mini-cases as potential examples for the discussion. The analysis also considers Dewey's notion of experience and Janet Murray's concept of immersion, positioning the player as a critical mediator who navigates the thin line between virtual and real worlds. As a methodological approach, this study employs qualitative and bibliographic research to offer a theoretical perspective on how digital games and architectural dynamics intertwine, as well as using *SimCity* as a primary case study of public spaces in digital games. As result, the paper states that public spaces and their intertwining with digital games behave in the modern era as a projection of the user's experience, with their cultural, social, and aesthetic values represented by instances that transit between the real and virtual, even narrowing the ties between these two fields.

KEY WORDS:

digital games, public spaces, urban and architectural dynamics, virtual environments.

DOI:

10.34135/actaludologica.2025-8-1.4-15

Introduction

It is intriguing to observe how the act of playing permeates contemporary cultures, even as many individuals consciously distance themselves from this practice. However, this detachment does not exempt linguistic expressions and sayings that frequently reference games in our daily lives. Unconsciously, people often live and speak about 'having a game of skill', 'understanding the game behind the scenes', or 'not agreeing with a dirty game', while preferring a 'clean game'. They admire a clever 'play on words', yet hate 'games of interest'. Individuals live the 'game of life', resist the 'political game' (sometimes even the game of power or thrones), and when faced with a lack of transparency, they recognize the 'game of shadows'. We see 'games of chance' transform into 'games of patience' after a 'tough game'. Thus, one possibility as a truth is that playing is an integral part of our culture. Moreover, culture itself may not exist or be formed without the act of playing.

This perspective is what led the Dutch historian and linguist Johan Huizinga, as early as the late 1930s, to outline in his proposals on the theory of history and cultural criticism a trajectory of play that predates and transcends the human label as *Homo sapiens*. This concept, in fact, contextualizes not only contemporary societies but also the human condition as a whole. It might be overly simplistic to assert that every activity around people is a form of play, but for Huizinga (2024), this is self-evident. Beyond its biological factor, to play is older than culture itself, as the latter presupposes the clear presence of human

society. However, animals did not wait for humans to introduce them to playful activities, which supports and corroborates the idea that civilizations did not add any essential characteristics to the concept of play, considering that animals engage in play in much the same way.

Thus, it is precisely this shared context between animals that positions contemporary humans above and beyond *Homo sapiens*. It states people, above other categories, as *Homo ludens*. In this context, it is essential to understand that the game of life is a framework that generates tensions and frictions. As people live, they unconsciously and consciously seek to create tensions in life performances. Thus, the concept of play can become a new way of entering the landscape of interpreting the world around us. This is because all daily activities are acts of translation, interpretation, and communication (Dewey, 2010).

Considering this epistemological anchor, to play means to live immersively. It means constantly creating tension, and this makes all the difference in the human experience, especially if people are capable of viewing the game as a source of rejuvenation and revitalization in the same way humans can approach and interpret the world around them. In this scenario, in various strands of research on digital games, culture itself is often understood as being formulated, developed, and unfolded through the intrinsic act of playing (da Costa, 2024; Loures, 2020).

Within this field, the transport into the meticulously simulated universe of a digital game and its narrative, achieved through an immersive process (Murray, 2017), is considered a natural and consequential aspect of how culture evolves. In many contemporary digital games, representations of reality can be identified within fictional settings, often seeking to contextualize their narratives by employing elements of verisimilitude or connections that establish a sense of belonging and validate the game as an extension of a real and possible world (da Costa & Duarte, 2019). This is evident in reinterpretations or representations of historical monuments, such as the *Assassin's Creed* (Ubisoft Montreal et al., 2007-2025) franchise with its development of Notre-Dame Cathedral in Paris or the Great Sphinx of Giza during Cleopatra's Ptolemaic reign (see Radošinská, 2018); likewise, *The Last of Us* (Naughty Dog, 2013) includes the Mormon Temple of Salt Lake City.

This trend of digital environments reflecting global ambience, beyond preservation efforts, also extends in the opposite direction. The EVE Online Monument in Reykjavik, Iceland, inscribes the names of all *EVE Online* (CCP Games, 2003) players from 2014 on a five-metre-high monolith, celebrating the game's ten-year anniversary and those who collectively built its narrative and fantastical ambience (Kelly, 2022); similarly, the Block by Block initiative by Mojang, in partnership with the United Nations, has, since 2012, provided a platform for global citizens to design the spaces they wish to inhabit, experience, and exercise their citizenship in *Minecraft* (Mojang Studios, 2011), which can then be translated into real-life projects.

Amid these processes, driven by different forces (from the game to reality/reality to the game), the player emerges as the mediator who most acutely perceives this process in practice. However, when discussing Dewey's concept of experience, even within a pragmatic framework, subjectivity is considered an essential factor in this feedback loop (Dewey, 2010). In other words, the player becomes the conduit through which the 'thin line' between the realms of the real and the virtual is perceived, often highlighting public space as the stage where fictional narratives are formulated and allowing us to embody the role of *Homo ludens*. In this context, this study aims to exemplify, through a qualitative nature and bibliographic approach to game studies, the concept of public space and its relation when considering this feedback loop, while also discussing Dewey's (2010) conception of experience and Murray's (2017) immersion as key points of articulation.

In this introductory section, it is essential to contextualize the conceptual starting point of the term *immersion*. To this end, the player is considered as the protagonist of the experience and as an active agent in the immersive process, not as someone who becomes passive during immersion, but as part of a phenomenon that often operates in a reversed order, where it is not necessarily the technology that enables immersion, but rather the formative process and the outcomes of the individual's lived experience (Bergson, 2019).

Therefore, for this paper and based on the proposals of Murray (2017) and da Costa (2024), the concept of immersion is understood as a phenomenon that tends to enable, based on formative processes, individual and/or collective experiences and subjectivities, allowing a person to reformulate judgments, exercise different worldviews, and experience realities that are not part of their regular routine, regardless of the nature of the environment in which this experience occurs.

Whether applied to games, dreamlike fields, or even sensitivities triggered through the development of skills and competencies, this conceptual anchor on immersion establishes the starting point of this paper, also serving as a beacon that illuminates potential applications at different levels and instances, thus considering the potentials of contexts that expand knowledge universes. This conceptualization, consequently, opposes the 'rigidities' imposed by different fields/areas in an attempt to claim a singular understanding of what immersion should be. However, it is a concept that is in constant evolution, which may disassemble or be reformulated as post-modernity alters and rewrites realities.

Concerning experience, furthermore, it is considered another key factor in this discussion, particularly from the perspective of exploration, which in this paper is defined as an interaction between an organism and its environment (Quéré, 2013). This perspective moves away from exclusive notions of sensory experiences, which are tied to the senses (hearing, taste, sight, smell, and touch), as well as from conceptions of experience understood solely through the faculty of understanding (Kant, 2021). Thus, the comprehension and treatment of experience are considered within the framework of a theory of emotions, as advocated by Dewey (2010) in his early works. In this context, individuals objectively experience the world they live in through integration with the environment of which they are part. The relationships established by this environment are subject to change, allowing *Homo ludens* to be affected by various stimuli from the same setting (Duarte, 2015). For instance, the environment of a game is created, extended, re-signified, and interpreted through experience.

In this sense, as a way to illustrate this methodological approach, this theoretical academic work employs a collection of mini-cases exploring the interplay between digital games and architectural dynamics, and their interconnections in the representations of public spaces within digital games. This allows for the conceptualization of practical applications of this feedback, highlighting a multidisciplinary nature between the interconnections of public spaces, architectural dynamics, and digital games.

Public Spaces and Digital Games

Public spaces have always been indispensable locations for human daily life, as they were where, since ancient times, the most varied types of cultural and historical manifestations and expressions occurred (Lynch, 1960). As focal points of collective life, these

spaces were not only venues for events but also served as places for rest, leisure, trade, free movement, and social interaction (Habermas, 2023). Although Lynch and Habermas address the notions of public spaces in antiquity in their works, the term was only officially used in the 1970s, within the framework of a public intervention process (Ascher, 1995).

In modern era, cities face numerous challenges due to factors such as unregulated growth, urban planning focused on automotive use, and the lack of efficient public policies to manage this development. This leads to characteristic problems in urban areas that hinder their organization. Issues such as high levels of built-up land, the concentration of large numbers of people in small locations, the reduction and neglect of green spaces, and the lack of pedestrian circulation areas, as well as leisure spaces, result in a mismatch between growth and organization, ultimately leading to a decline in environmental quality in cities.

Many capitals and large metropolises around the world, for example, suffer from the migration of people to more peripheral areas as commerce takes over central neighbourhoods (da Silva & de Queiroz, 2018). Despite increased revenue, public spaces are consequently deteriorating. These spaces, such as streets and squares, are deteriorating due to abandonment and neglect, with no efforts directed towards revitalization and care to ensure that their occupancy is restored, improving the quality of life for the population.

Due to these constant arrangements for development and the pursuit of business/commercial growth, public spaces are increasingly forgotten, sidelined, and become merely places intended for vehicle circulation. Historically, as urban environments grew, they began to ignore pedestrian activities, as the volume of motor traffic necessitated an infrastructure to accommodate vehicle flow. Consequently, beyond air and noise pollution, obstacles and barriers were created for pedestrians seeking a vibrant, safe, sustainable, and healthy occupation (Global Designing Cities Initiative, 2016). From energy consumption to water, sewage, and transportation management, the concept of a sustainable city permeates the fields of public spaces. For example, when a city is complete and allows citizens to perform daily activities within a comfortable walking distance, it contributes to the formation of a sustainable city, primarily due to the reduction in automotive transport use (Farr, 2018).

Following this line of reasoning, health problems are often tied to the arrangement of public spaces. The replacement of stairs with escalators, for instance, is considered an urban advancement. However, when the population suffers from heart conditions/obesity, that which should generally facilitate movement can, in fact, be detrimental. The reduction of physical activity in an individual's routine decreases their quality of life. Although not the sole culprit, public spaces require a balanced integration of physical exercise to mitigate such issues. This is where sports plazas or community gyms come into play, transforming cities into healthier environments (Farr, 2018). In this context, a vibrant city emerges from the promise of emitting welcoming signals for social interaction. An empty square and a full square convey two different messages, reflecting a city's identity. However, it is not about the numbers or the size of the locality, but rather the meanings generated by a popular, inviting space utilized by all.

Public spaces are understood as all democratic places, common to all and for public use, accessible free of charge and without profit motives. This includes open environments such as sidewalks, streets, squares, parks, and gardens, as well as enclosed environments like museums, libraries, and public markets. When we understand that public spaces, the urban environment, and the population are interconnected, a scenario arises for various activities, manifestations, festive events, commerce, celebrations, and appropriations that occur when there is a need or interest. According to Calliari (2016), public space provides the energy of a self-sustaining ecosystem, marked by countless

relationships. These spaces are indispensable for the well-being of both individuals and the collective, as they are where acts, personalities, and ideologies are expressed; where cultural diversity occurs, where community life unfolds and identity is created. These environments are tasked with the responsibility of improving people's health by promoting spaces for walking, exercising, contemplation, cycling, resting, and engaging in sports activities.

When well-designed and well-maintained, public spaces reduce crime rates in the area. As a result, various socio-cultural and economic activities arise, contributing to familiarity, a sense of belonging, and security. Affective memory also develops in this process. Thus, public spaces form the environments where the common life of all unfolds, freely used by individuals or groups and accessible to everyone without exception. These same spaces must always strive to improve the quality of life for citizens, serving the social function for which they were designed, and thus contributing to urban planning and the sustainability of cities.

To measure and understand the spectrum surrounding interactions between city life and public spaces, various investigative methods have been developed as strategic tools aimed at analysing spaces, so that they can later improve and become more functional. Assuming that good architecture originates from this aforementioned interaction, it becomes essential to understand that everything observed when walking in the streets is relevant. Streets, alleys, squares, as well as the journey to and from school, plus people walking and cycling, all contribute to the versatility that unfolds in public spaces (Gehl & Svarre, 2013). Consequently, the interrelation between life and space in all its aspects serves as the guiding force for analytical processes that categorize, classify, interpret, and understand this relationship.

Bringing this discussion into the realm of digital games, as products of human production influenced by social and civic contexts based on the rights and duties to which both consumers and developers are exposed daily, it is possible to find representations of this very issue of public spaces in various game titles, spanning genres, styles, and designs, making evident a gaming culture based on the human condition itself (Huizinga, 2024). Within this perspective, franchises like *The Sims* (Maxis, 2000) and *SimCity* (Maxis, 1989) emerge, for example (Alves & Pratschke, 2015; da Silva Nunes et al., 2018).

Digital Games in Public Spaces

From the concept of public spaces, it is possible to observe the reverse movement of habitation between the real and virtual worlds. In other words, just as public spaces are represented and transposed from our real world into the context and environment of digital games in the modern era, the reverse also occurs when elements from digital narratives or ambiances cross screens and devices to inhabit the real world. Regardless of their reasons and motives (such as marketing actions or promotional campaigns), this paper aims only to identify a range of facets rather than map and discern their intentions.

In the introduction, brief examples such as the Block by Block initiative and the EVE Online Monument were presented. However, this section will discuss practices considered more incisive regarding this feedback loop between digital games and public spaces, particularly focusing on examples that have taken root in Brazilian public spaces. Firstly,

there is the initiative associated with the location-based game *Pokémon GO* (Niantic, 2016), which, despite being widely discussed in research on location-based games, saw several public spaces in the city of Suzano, São Paulo, receive interventions with statues of characters from the transmedia franchise. On March 26, 2018, a statue of the Pokémon Bulbasaur was installed in a public space in the city. Consequently, on March 30, the 'legendary' Pokémon Celebi and Mew made their appearance as statues. The following month, on the 20th, it was Charizard's turn to appear (Prandoni, 2018).

All the statues were located in public areas of the city of Suzano and were contextualized within the *Pokémon GO* digital game through special thematic events. According to some news portals, Suzano even became the Brazilian capital of Pokémon, despite the fact that by the end of May 2018, Ibirapuera Park in São Paulo had also received the monuments in its public space. This *Pokémon GO* initiative was the second of its kind worldwide, with the first being a Pikachu statue placed in a public square in New Orleans, United States, in 2016 (Prandoni, 2018).

Another case that exemplifies the intertwining of architectural dynamics, public spaces, and digital games is the 2013 *Paulista Invaders* initiative, which humanized Paulista Ave. in São Paulo by creating a public space interaction and experience for players, blending digital game elements with reality (Venturelli, 2015). The project, a game art initiative, was developed by researchers from MidiaLab, the Computational Art Research Laboratory at the University of Brasília, led by Suzete Venturelli, who, along with her team, has been conducting digital and augmented reality urban interventions since 1986 (Venturelli, 2015).

The project transformed the FIESP/SESI building into the largest open-air digital art gallery in Latin America, displaying on the building's facade an integration of digital art and urban fabric, where the classic 1978 Japanese digital game *Space Invaders* could be played in a reinterpreted form by passersby on Paulista Ave. With a combination of 100,000 LED lights and up to 4.3 billion colour combinations (Venturelli, 2015), *Paulista Invaders* presented a sustainability proposal, where the space creatures and weapons were replaced by cars and bicycles. On Paulista Ave., passersby were guided by FIESP/SESI monitors who taught people how to play in real-time using iPads (Venturelli, 2015).

As the project's creators emphasize, it is not just about playing a digital game and interacting with a building's facade, but rather about encouraging the occupation of public spaces, drawing attention to urgent issues like sustainability and urban mobility (Venturelli, 2015). The experience of playing at the intersection between the real and virtual worlds feeds back and re-signifies the gaming moment, establishing a cohabitation while offering users the opportunity to experience public spaces from a new perspective – one of belonging, representation, and affection.

Public Spaces in Digital Games

A series of digital games relevant to the discussion of the interweaving of public spaces and games is the *SimCity* franchise itself, particularly for the current discussion, the first eponymous title released in 1989, which serves as a case study for this research and topic. According to Arnold et al. (2019), this game represents the most well-known and successful city simulation game, establishing city-building through resource management as a distinct genre within the spectrum of digital games.

Directly linked to the theme of urban planning, the franchise was developed by Will Wright in collaboration with the company Maxis. The game's premise, which has persisted across all subsequent titles in the franchise, is the possibility for players to create and modify their digital cities to reflect evolving construction strategies and urban spatial structures. Therefore, the player assumes the role of a persona/position as a representative and leader of a city, who, through their choices, experiences phenomena such as environmental pollution, uncontrolled urban expansion, and other contexts triggered by socio-cultural issues.

For Arnold et al. (2019), this title was a development that changed the perspectives of individuals already familiar with the game industry, as well as those who had previously disregarded or shown little interest in this medium, inspiring the creation and reformulation of game genres. Terzano and Morckel (2016), for instance, explore the context in which players create residential, commercial, industrial, and other zones, adjusting tax rates to enable city expansion. A series of simulated elements then come into play as a result of the player's actions, calculating effects, consequences, or simply displaying an isometric view or top-down perspective of small pixels representing the population moving through the urban grid.

Despite the focus on construction in *SimCity*, there is also the option to destroy, as seen in nearly all the franchise titles. As a playful aspect of imagining and materializing digital consequences, there is a city destruction menu with earthquakes, fires, tornadoes, plane crashes, floods, and even a reptile-like monster strongly inspired, for many players, by the Japanese atomic terror icon, Godzilla.

However, despite these opportunities for active destruction, these events may also randomly occur in cities without direct activation, serving as crisis management dynamics for the player to consider in city planning. Yet, if the city were developed in a desert area, for example, there would be no possibility of a flood occurring naturally, unlike a city built along the banks of a major river (Terzano & Morckel, 2016). Therefore, having a macro perspective of the city's context is integral to the game's structuring mechanics.

An interesting aspect to explore is the fact that there is not necessarily a specific way to win or complete the games in the franchise. However, according to Arnold et al. (2019), the goal assigned by the developers was to nurture a sense of accomplishment or simple enjoyment from seeing the outcomes of decisions represented on screen. The feedback in the game is conveyed through the public opinion of the city's citizens and residents, approving or disapproving of the player's choices, such as the desire for a park or a shopping centre, as well as notifications and statistics regarding population growth or decline due to crime and other social issues. It was, clearly, a perspective of experimentation of the real world and its public spaces in a sandbox environment.

According to Justice (2021), *SimCity* broke through the conventional bubble upon its release, remaining referenced in newspapers and magazines for many years and being present in debates regarding its application in classrooms at various educational levels.

However, beyond the context directly and originally intended for education, *SimCity* also had relevance in political contexts. Notably, during a mayoral election in Providence, Rhode Island, in the United States, a prominent local newspaper, following a suggestion from a school-aged child, organized a contest in which five candidates created *SimCity* simulations of the city in Rhode Island to compare the results. While most candidates ended up destroying entire neighbourhoods and raising the crime rate to absurd levels in the game, Vincent "Buddy" Cianci was the only candidate who actually managed to create improvements, and was declared the winner of the challenge. According to Justice (2021), it is unlikely that the *SimCity* challenge was a decisive factor in the election outcome, but the truth is that Cianci won the election that year.

Considering these exemplifications, it is possible to infer that in many instances games are designed to mediate and provide sensory experiences for players through immersion. The transport caused by the human-machine relationship at this point leads people to assume that the impacts and other effects exchanged and shared by the game-player (environment-individual), or the feedback loop, allow for an array of infinite individual contours, varying and shaping differently for each experience of the fantastic universes offered by this communicational interface. After this sharing and feedback, where the individual transforms the digital game through their experience, and the digital game transforms the individual through its narrative, the game becomes capable of bridging the gap between real and virtual spaces, originating and retrieving configurations that can impact social processes of affective mobilization.

According to Gadamer (2013), playing allows people to inhabit the proposed universe, whether it is the real world with game elements crossing the virtual or reality frontier, or the other way around. From this relationship, it is possible to build experiential intimacy with the content played/lived. Moreover, through the reactions the game provokes in people, it brings the question of what the technological apparatus truly triggers in the player. In the sensitive experience, the game universe occurs in the performative effect of traversing it. Thus, a distinct field emerges where sensations gain affective meanings in a formative process. In this context, the software merely activates the territory through which emotion for formative process performs.

The Experience of Play as a Game-Player Feedback Loop

Dewey (2010) asserts in his propositions that everything one experiences is part of the human experience. Consequently, there is no distinction between processes that occur externally or internally, such as subjective experiences, in constituting what is considered an experience. In this context, it includes what people do and suffer, what they strive to achieve, love, believe, and endure, and also how they act and are acted upon, the ways in which they perform and suffer, desire and enjoy, see and believe, imagine (Dewey, 2012). From this perspective, experience is a living and authentic instance that perpetuates through the ongoing consequences of human life. Thus, what we conceive as past experience is also part of the future. It is, therefore, the knowledge employed to project new actions through the construction of hypotheses, as experimentation involves the very process of experiencing – past and future compose the flow of experience (Marcondes, 2017). This, in turn, is an enhancement of actions that constitute people as human beings, and also as *Homo ludens* (Huizinga, 2024; Bergson, 2019).

Alves and Pratschke (2015) affirm that designing in the field of architecture and urbanism is constituted as an interactive game of creating something based on a balance of lived experiences (Bergson, 2019). Architects/designers, in this context, play according to the rules of physics, society, economics, and other intersecting fields. Thus, designing is, by nature, a game with multiple players, in which many specialists need to work together to increase their chances of winning, just as Alves and Pratschke (2015) state. The feedback loop formulated by the experience between game and player, in this context of intertwining between public spaces and their digital representations as mentioned throughout

the paper, becomes evident when digital games like those of the *SimCity* franchise end up expressing desires to influence, through planning, both politics and education, fuelling reflection on the nature of ideal cities (Lobo, 2007; Alves & Pratschke, 2015). *The Sims* franchise, by the same developer of *SimCity*, also highlights the use and occupation of spaces as a primary theme, whether public or private. For Flanagan (2007), users build their houses and can choose to remove existing structures, even using a literal bulldozer on lots (Alves & Pratschke, 2015). The graphics and the possibilities of approximating real life explore the influence of architecture and urbanism in virtual fields, in order to analyse aesthetic and experiential aspects (da Silva Nunes et al., 2018).

In this conjecture, the player and the game undergo subjectivations, projection-identifications, and immersive processes (Murray, 2017) that do not necessarily need to occur in the real or virtual world. In truth, they simply need to exist. Thus, the interactional perspective that holds with the public space or game establishes a dynamic of feedback in the experience of play, where the public space can recover its colours, effects, and intentions, just as Habermas (2023), Lynch (1960), Farr (2018), and Gehl and Svarre (2013) attest in their functions of accommodating and housing life, while allowing the fabric of human existence to be constituted by the experience of living and interacting (Dewey, 2010).

Discussion and Conclusion

Public spaces and their intertwining with digital games behave in the modern era as a projection of the user's experience, with their cultural, social, and aesthetic values represented by instances that transit between the real and virtual, even narrowing the ties between these two fields.

From the initiatives addressed throughout this paper, it is possible to observe that public spaces often occupy a privileged position, even if this is perhaps not the primary intention of developers or the objective of the players' own experiences. To inhabit and coexist with the ambiance of the digital game, whether in the real or virtual world, is to exercise a principle of citizenship, of occupation, and representativeness, the importance of which each user/player/consumer/developer needs to be aware so that the intertwining between the public spaces that is their right and the digital game becomes significant to ensure genuinely human experiences, where play transcends the virtual and the real, reaffirming the human condition as *Homo ludens*.

Although this is by no means the only way to ensure this type of experience, it is perceived that considering public spaces intertwined with the digital game, beyond being an ambiance into which one can immerse oneself through an immersive trigger or narrative (Murray, 2017), may be through this awareness that it is possible to exercise citizen empowerment, a result of architectural dynamics.

Future research in game studies could further explore the multidimensional nature of this intersection, considering how public spaces within digital environments can foster citizen empowerment and engagement. By adopting multidisciplinary perspectives, researchers can deepen their understanding of how architectural dynamics, cultural contexts, and immersive narratives influence the gaming experience. Furthermore, this paper contributes to the ongoing discourse by highlighting the potential of digital games to serve as platforms for exploring and redefining public spaces, offering new opportunities for research that bridge the gap between digital environments and real-world implications. As the field of game studies continues to evolve, the insights presented can act as foundation for future explorations.

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