

The City as a Playable Landscape: Investigating How Children's Digital Games Shape Imagined and Lived Urban Experiences

Abir Messaoudi ^{*1}, Boudjemaa Khalfallah ²

¹Research Laboratory Governance, Ambiance and Development of Cities (GADEV Lab), ENAU, University of Carthage, Tunis, (Tunisia), abir.messaoudi@isteub.u-carthage.tn.

²Department of Urban Engineering, Institute of Urban Techniques Management, The University of M'sila, M'sila, (Algeria), boudjemaa.khalfallah@univ-msila.dz

Received : 20/10/2025

Accepted: 15/02/2026

Abstract: The video game industry, today the world's largest cultural sector, raises a central question: how do digital spaces influence children's perception and experience of the city? Originally designed for entertainment, video games have evolved beyond this function to become cultural and symbolic mediators, providing a space for exploration between imagination and reality. For children, gaming is more than mere distraction: it constitutes a way of "inhabiting" the world and of symbolically and practically appropriating space. This experience generates a productive tension between the freedom offered by the virtual and the need for attentiveness to specific environmental constraints. The game thus becomes a space of action, cycle, and life, while urbanity — as a rational and structured organization — imposes separation from imagination. The trajectory dimension, that is, the transition between the real and the virtual, is essential for analyzing the practices specific to digital spaces. These environments, governed by their own rules, aesthetics, and limitations, reveal by contrast the shortcomings of certain real urban contexts. Modernist architecture, often perceived as austere and dehumanizing, contrasts with the participatory and inclusive imagination fostered by video game worlds. Thus, video games cannot be reduced to simple entertainment: they open an interdisciplinary field of investigation and offer new ways of engaging with the city, while highlighting the lack of urban spaces truly designed for children. Adopting a primarily theoretical approach, this study deploys a qualitative methodology structured around the systematic exploration of selected virtual environments (historical, dystopian, ecological cities) and a semiotic reading of these representations as systems of signs. The key issue remains understanding how these digital experiences can encourage younger generations to actively participate in the symbolic and practical construction of urban space, ultimately redefining how we think about, represent, and experience the city.

Keywords: Children's experience; digital imagination; urban space; video games; Virtual-reality transition.

Introduction:

Today, calls for more participatory urban planning often remain more rhetorical than effectively applied (Arnstein (1969); Innes & Booher (2004)). Yet ensuring fair implementation of urban rules requires the formation of citizens who are able to understand, interpret, and appropriate the frameworks that shape the city. For several decades, a variety of urban planning currents—utopian, Haussmannian, hygienist, functionalist, or zoning-based—have sought to address the notion of the "right to the city," understood as the possibility for everyone to inhabit, live in, and participate in the decisions that shape urban space (Lefebvre (1968); Harvey (2008)). However, the contemporary city remains marked by increasing spatial and social fragmentation, ultimately undermining this ideal. Reimagining the city of tomorrow therefore implies rethinking means to improve human conditions while maintaining the collective, inclusive, and democratic nature of urban life. A crucial aspect of this ambition lies in building a strong urban awareness from an early age: it is during childhood that spatial references first develop, along with an understanding of inclusion and exclusion within places, and the capacity to observe and question the built environment (Lynch (1977); Horelli (1998)). In this context, digital technologies are profoundly reshaping how urban environments are experienced and represented. By simulating, reconfiguring, or extending the urban world, they generate new

* Corresponding author

spatial imaginaries and influence how children envision and project themselves into the city (Batty (2018)).

Video games hold a particularly unique position in this transformation. They offer a protected space for exploration where children can experiment with different ways of inhabiting the city—from simple wandering to territorial governance—freed from physical, economic, or social constraints (Gordon & Souza e Silva (2011)). Whether realistic, fictional, or hybrid, urban representations in video games support the development of spatial skills, the interpretation of urban rules, and an awareness of issues related to living together. Focusing on how the city is perceived through video games therefore means examining a powerful lever for citizen education: these playful environments help children develop a critical understanding of the city—its uses, inequalities, and potentials. In other words, digital gaming becomes a tangible means of fostering access to the right to the city, by familiarising younger generations with principles of participation, mobility, inclusion, and urban justice. Building on this framework, this article aims to analyze how video games contribute to the construction of urban imaginaries and to processes of urban appropriation. It seeks to demonstrate that videogame environments are not merely platforms for entertainment, but constitute genuine visual, symbolic, and experiential matrices capable of shaping representations of urbanity, ways of inhabiting, and relationships to space. The article is structured into three main parts. The first part examines the city as a visual matrix in video games, focusing on processes of aestheticization, heritagization, dystopia, and heterotopia that structure digital urban representations. The second part addresses experimental cities by considering video games as urban laboratories, through serious games and simulations that foreground issues of sustainability, governance, resilience, and co-design. Finally, the third part explores the city as an interface between ludic imaginaries and real space, analyzing hybrid dispositifs that articulate gaming practices, public space, and renewed forms of urban appropriation and participation.

1. Research methodology

To study how video games contribute to the construction of urban imaginaries and the appropriation of the city, the adopted methodology is based on two complementary axes: exploration of virtual environments and semiotic reading of urban representations. The first step consisted of a systematic exploration of virtual worlds, allowing the selection of the most relevant games for analysis, whether historical cities (*Assassin's Creed Mirage*), dystopian (*Cyberpunk 2077*), ecological (*Block'hood*), or post-apocalyptic (*The Last of Us*). This exploration involved active navigation within these environments to observe spatial structuring, possible interactions, and the urban dynamics proposed by the game. The second step focused on semiotic reading of these environments, considering the city as a system of signs and symbols. This analysis examined representational choices, visual and narrative codes, cultural and heritage references, as well as the implicit values and meanings conveyed by the game. It highlighted how games organize the spatial experience and communicate particular visions of the city. By combining exploration and semiotic reading, this methodology provides a comprehensive understanding of digital cities, viewed as interactive urban laboratories, where imagination, participation, and critical reflection on real urbanity are experimented with.

However, this methodological framework has certain limitations. The semiotic and exploratory approach involves a degree of interpretative subjectivity, as the decoding of urban signs and the perception of spatial atmospheres are influenced by the cultural and theoretical background underlying the analysis. Furthermore, while the study analyzes the potential impact on children's imaginaries, it remains primarily focused on the formal properties of the games themselves rather than on direct longitudinal observations of young players. Beyond this scope focused on the technical object, there is an additional constraint related to the interface: the perception of digital urbanity depends closely on the technical configuration (screen size, processor fluidity, sound quality), whereas a structural reading tends to consider the game as an immaterial architecture, overlooking the impact of this physical mediation on the child's sensory immersion. Finally, unlike a physical city,

the digital city is inherently unstable and evolving; software updates can modify the spatial structure or game interactions after the analysis, thus limiting the absolute durability of the conclusions drawn at a specific point in time.

The perception of the city in video game environments is constructed through the modalities of experience and movement offered to the player. It does not derive from a single, unified representation, but rather from differentiated forms of engagement with digital space. In a first register, the city is apprehended through a primarily sensory and narrative experience. The player's attention focuses on architectural forms, atmospheres, and the symbolic meanings of places. Urban space thus functions as a narrative landscape, carrying stories and emotions, in which the city appears as an inhabited image. In a second register, urban perception develops through action and movement. Space becomes a functional territory structured by mobility, connectivity, and possibilities for interaction. The city is no longer merely a setting to be observed, but a dynamic environment, assessed in terms of its spatial efficiency and operational potential. A third mode of perception emerges when the urban environment constitutes the framework of a durable collective life. In these persistent worlds, the city takes the form of a social ecosystem, continuously transformed by players' practices. Exchanges, alliances, conflicts, and community dynamics contribute to redefining the materiality and uses of space, inscribing urbanity within evolving social, economic, and cultural logics. Finally, certain experiences place the player in an analytical, projective, or managerial position. The city is then designed, modeled, and governed. Perception becomes systemic and critical, based on an understanding of urban mechanisms, flows, resources, and territorial balances. In this context, the player adopts a position close to that of the urban planner or manager, producing and regulating the city according to analytical, strategic, or ecological principles. Thus, the perception of the city in video games is inseparable from the uses to which they are put. It results from a constant interaction between ways of inhabiting digital space and the game systems that structure this experience. The selection of the games studied is therefore not arbitrary, but is based on their modes of engagement—individual, collective, or systemic—insofar as these determine the forms of perception and appropriation of urbanity.

Four major modes of use can thus be distinguished: solo narrative experiences, limited multiplayer interactions, massively multiplayer environments, and urban simulations. These modalities do not constitute rigid categories, but rather form a matrix articulating types of engagement with corresponding forms of urban perception. Consequently, even in massively multiplayer games designed as social urban spaces, the experience may be reduced to a largely contemplative relationship, dominated by visual spectacularization, iconic monuments, or emblematic architectures. Conversely, some solo games, initially centered on individual narrative exploration, integrate mechanisms of construction, simulation, or resource management. They then place the player in the position of an experimental urbanist, enabling them to produce, organize, and regulate the city according to analytical, environmental, or prospective logics.

2. The city as a visual matrix in video games

The understanding of digital urban space is structured around the transition from visual contemplation to the practice of movement, thereby revealing the ideological significance embedded in active exploration. The urban project most often arises from an observation of the dysfunction of the city and a criticism of functionalist urban planning, breaking with the logic of zoning and restrictive regulations that limit development to specifications and fixed subdivisions. In a similar vein, video games regularly project an urban vision dominated by the question of stakes and conflict. The city appears as an immune system, a closed and defensive entity, designed to resist external threats. This representation, repeated and subliminal, contributes to erasing the multiple and versatile uses that usually emerge from social interactions in the city. The virtual city is then reduced to an elementary, static, and mute urbanity, incapable of evolving other than under the effect of external aggression. Often highlighted by designers, this digital city is essentially based on graphics and pixels, which re-examine the way we design the urban system. The built space becomes a setting, a simple environmental framework, sometimes punctuated by emblematic monuments serving as

landmarks, like the wings of a theater. The city is then aestheticized, transformed into a pictorial object intended for contemplation. In this case, the player occupies the position of a spectator fascinated by the indirect in-visu artialization of the urban landscape. Although this gaze appears passive, it remains fundamental, generating aesthetic appreciation that shapes the way reality unfolds as a visual composition. If "we know how curious is this habit of Western painting, from the 15th century onwards, of organizing the viewer's gaze in order to place him in front of a spectacle of objects or landscapes" (Latour (2015)), it is nevertheless essential to remember that the artialization of the city in video games does not constitute the only way of representing the urban landscape. Indeed, beyond the artistic dimension, sociologists and anthropologists point out that the representation of space does not depend only on art, but also on individual, collective, symbolic and ethical values (Roussiau & Bonardi (2001)). It therefore involves both cultural and political dimensions.

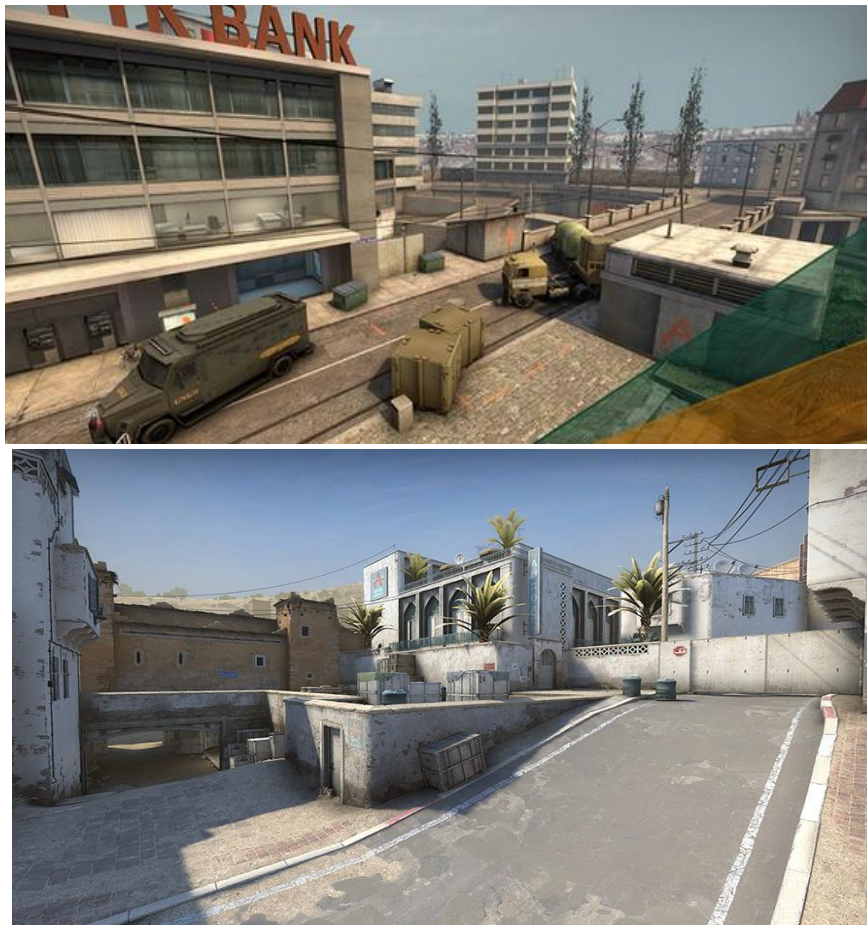
With the advent of three-dimensionality, video game designers have expanded the possibilities for exploration: the journey through the virtual city becomes a structuring element. The void, conceived as a space for circulation, acquires a value equivalent to that of the built environment, producing a lively urban landscape, balanced and punctuated by the alternation between full and empty spaces. This movement of space echoes Gordon Cullen's townscape theory (1961), for whom the understanding of the urban landscape is achieved through serial vision and movement, revealing the continuity between the existing and the emerging.

From this perspective, video games are not only aesthetic products, but also a pluralistic medium that combines music, cinema, architecture, and visual arts. They create a mode of continuous sensory perception, where urban wandering, even if limited to the discovery of spaces without being able to transform them, contributes to an immersive experience. However, this graphic exploration is also political. Behind the perceptual staging lies a desire to convey ideologies and worldviews. The case of war games is a striking illustration of this: the accelerated pace of progression through an urban space in conflict masks the complexity of the public space, transformed into a space of illusion and artificial perfection. This construction echoes the notion of "heterotopia" developed by Michel Foucault: other spaces, counter-spaces that juxtapose in the same place realities and imaginaries that are impossible to reconcile in the real world. The video game city, by hosting these heterotopias, becomes the support for a paradoxical learning of utopia: an alternative space that, despite violence and fragmentation, opens the way to new ways of imagining and practicing the urban. The path proposed by the game is not truly penetrable and does not fragment into differentiated spaces, unlike the imaginative experience of the child in his bed: "It's on this big bed that we discover the ocean, since we can swim between the covers; it is also the sky, since we can jump on the springs; it is the forest, since we hide there; it is the night, since we become ghosts between the sheets; it is pleasure, finally, since, when the parents come back, we will be punished (Foucault (1994))."

In contrast to this imaginative richness, the video game journey tends to produce a non-place: an abiotic itinerary, devoid of use and social exchanges. Within this framework, the player's journey becomes a solitary traversal of a spectacular yet socially mute architecture. The absence of unpredictable interactions transforms the digital city into an aestheticized and fundamentally "non-identity" projection surface. Even the ruins are devoid of memory: static and pre-programmed, they exist only as tactical constraints or lines of sight. This "aesthetic of abandonment" without a past suppresses all historical sedimentation, turning the video game itinerary into a non-place. Using Marc Augé's definition, a place is characterized by its identity, relational, and historical dimensions. Conversely, a space that cannot be defined as identity-based, relational, or historical is a non-place (Augé (1994)). In this context, the example of Counter-Strike: Global Offensive is revealing. The game's poster does not indicate any specific national affiliation, but the urban atmosphere it deploys suggests a theater of armed conflict against terrorism, implicitly located in an Arab country. The journey is then not penetrable and does not isolate differently as the child is used to doing in his bed: "It is on this big bed that we discover the ocean, since we can swim between the covers; it is also the sky, since we can jump on the springs; it is the forest, since we hide there; it is the night, since we become ghosts between the sheets; it is pleasure, finally, since, when the parents return, we will be

punished." A non-place is then created; the journey in play is an abiotic itinerary, without use, without social exchange. If a place can be defined as identity-based, relational and historical, a space that cannot be defined as identity-based, relational or historical will define a non-place.

Fig.1. Counter-Strike: Global Offensive



Source : (Counter-Strike, 2017) <https://www.counter-strike.net/dust2/>

Counter - Strike Global Offensive is identified. The video game poster does not contain a specific nationality, but the urban atmosphere suggests that it is an armed conflict against terrorism in an Arab country. In Counter- Strike: Global Offensive, the roles are clearly distributed: "terrorists" are equated with Islamists, while "anti-terrorists" embody American forces. Since the attacks of September 11, 2001, this playful construction has highlighted the ideology of American power. The effectiveness, speed, and radical nature of military intervention have become values that are showcased, although in reality, the American response has attracted strong criticism. Many analysts have criticized the government for a delayed and hampered response, attributing them to communication failures and an ambiguous military strategy.

However, the rigidity of a designer-programmed route, where the player simply follows a predetermined trajectory, is not inevitable. Other games place more emphasis on spontaneity and freedom of choice, allowing the route to be constructed based on the player's own decisions. This is particularly the case with GTA -like games, the most recent versions of which have moved to full three-dimensionality. This evolution required texturing the entire city, like Liberty City, a fictional but immediately recognizable reproduction of New York. Here, the city is no longer reduced to a setting: it becomes an exploratory, immersive, and interactive space, where the urban experience is closer to real-life practices of wandering and appropriating space.

This video game proposition is based on the notion of a conjectural journey, extending over several kilometers, where the player moves freely thanks to acquired or stolen vehicles, in a space

structured by spatial constraints. True freedom then lies in movement: this is exercised within a city complete in its urban composition, drawing its references from the past, the present and the future. Throughout the missions, the player can thus participate in multiple activities – tourist, commercial, cultural – that reinforce the impression of a lively and plural urbanity.

Fig.2. Liberty City



Source : (GTA 4's Liberty City, 2022) <https://www.pcgamer.com/ten-years-on-gta-4s-liberty-city-is-still-an-incredible-virtual-city/>

Although the city's name has been changed, the recognition of its real equivalent remains evident, thanks to the fidelity of the topography, the structure of its districts and the staging of its emblematic landmarks. This type of game offers the player an ambivalent experience: he is simultaneously actor and spectator, participant and voyeur (Fainstein, Gladstone & Balogun (2004)), engaged in the action but also in a critical position. This dual posture gives the video game experience an extraordinarily reflexive dimension, where the city becomes both an object of practice and a mirror of our urban imaginations. Because a news feed constantly crosses the virtual universe, video games become true symbolic means of transport, encouraging the player to cross borders and explore new territories under presumed tourist intentions. The journey through the city from a tourist perspective establishes a singular continuity between what is intimate – the private space – and what remains unknown or foreign. This dynamic storyline, which is closer to the action-adventure genre than to a simple sandbox, can no longer be reduced to a simple spatial translation. Rather, it is articulated in a true tourist posture, understood as a dual experience, both participatory and contemplative, which connects virtual citizens and shapes new ways of practicing and perceiving the city. The video games of the Assassin's Creed series (Ubisoft, 2023) do not merely recreate historical settings; they transform them into genuine interactive archives. Reconstructions of Florence, Venice, Paris, or London go beyond aesthetic backdrops: they constitute fully interactive archives. Players experience the city both as a flâneur and as a climber of façades, highlighting urban verticality and the relationship between public space and architectural space. The city thus functions simultaneously as a playground and as a space for transmitting heritage memory (Lavenir (2024))

Fig.3. Assassin's Creed Mirage



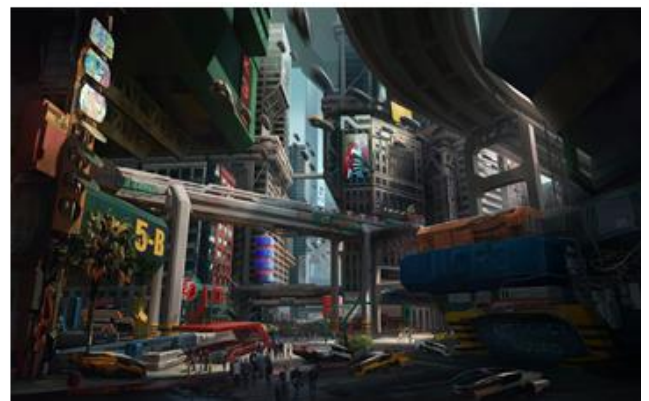
Source: (Assassin's Creed Mirage, 2023) <https://news.ubisoft.com/en-us/article/YJZekvzJH1XyKlygfhSbF/assassins-creed-mirage-building-an-authentic-baghdad>

A particularly significant example of this video game “urban matrix” is Assassin's Creed Mirage (Ubisoft, 2023), set in the Round City of Baghdad in the 9th century, at the height of the Abbasid Golden Age. This reconstruction goes beyond mere aesthetic reproduction: it's based on historical and anthropological research aimed at restoring a lost urbanity, of which only fragments remain through travelers' accounts, poetic sources, and a few material remains (Cárceles & Martínez (2022)). The challenge was to reshape a space whose materiality had been erased by time, invasions, and urban modernization. The design team, supported by Middle Eastern historians, mobilized a variety of resources—chronicles, biographies, travelers' accounts, and popular songs—to recreate the atmosphere of Baghdad: its markets, hammams, mosques, and its linguistic and cultural diversity. The game thus depicts a cosmopolitan world where Arabic, Persian, Greek, Aramaic, Hebrew, and even Chinese intertwine, reflecting the vitality of a metropolis that was, according to historians, one of the most influential centers of the medieval world (Anderson (2023)). This immersive dimension surpasses strict archaeological accuracy. Designers sometimes employ creative methods to fill the gaps left by history, such as introducing colors for domes that are not historically attested or integrating monuments from outside the city. These liberties aim to enhance gameplay and player orientation while maintaining overall plausibility. The city appears as a palimpsest-like reconstruction, oscillating between historical fidelity and artistic invention, where the urban experience unfolds through wandering, vertical exploration, and the discovery of explanatory cards integrated into the game (Aliaga Cárceles & Martínez Fernández (2022)). Assassin's Creed Mirage thus illustrates how video games can become tools for heritage and memorial mediation, giving life to a lost city while offering players a sensitive and interactive experience of urban space (Lavenir (2024)).

In the video game universe, each game can present a particular urban model, oscillating between social critique and post-apocalyptic reinvention. This diversity illustrates the capacity of digital worlds to function as visual matrices, where urban space is at once a backdrop, a symbolic system,

and a mirror of contemporary concerns. Thus, in *Cyberpunk 2077*, the city takes the form of a dystopian and futuristic matrix. Night City concentrates imaginaries linked to globalization, advanced capitalism, and technological surveillance. The vertiginous skyscrapers, marginalized districts, and omnipresent digital flows compose an urban heterotopia saturated with signs and contrasts (Foucault (2009)). Moreover, *Cyberpunk 2077* has been the subject of recent analyses emphasizing how the game's aesthetic and narrative choices reflect and critique the excesses of late capitalism, technological alienation, and social disparities (Li, 2023; Jeursen (2024)). The verticality of the architecture embodies social hierarchy, while permanent hyper-connectivity points to the inequalities and exclusions of a postmodern world. Here, the video game city appears as a critical mirror of contemporary social and urban drifts: territorial fragmentation, corporate domination, and generalized surveillance. In this sense, Night City is part of the cyberpunk tradition, where the metropolis becomes an exacerbated projection of the crises of urban modernity.

Fig.4. Cyberpunk 2077



Source : (Cyberpunk,2020)

<https://www.domusweb.it/en/architecture/gallery/2020/12/21/night-city-how-the-cyberpunk-2077s-megalopolis-was-built.html>

In contrast, *The Last of Us* proposes an urban matrix in ruins and recomposed, belonging to an entirely different logic of representation. The cities of Boston, Pittsburgh, or Seattle appear as post-apocalyptic palimpsests, where the remnants of modern urbanity coexist with the progressive re-invasion of nature. Collapsed bridges, buildings overtaken by vegetation, and abandoned subway systems are transformed into obstacles or refuges, redefining the possible uses of urban space. Furthermore, academic studies on *The Last of Us* highlight its dimension as an ecodystopia, in which the return of nature functions both as an aesthetic counterpoint and as a critique of anthropocentrism (Verheul (2025)). Unlike Night City, where technological excess lies at the heart of dystopia, *The Last of Us* stages an ecological dystopia, where the collapse of infrastructures reveals the vulnerability of modern societies in the face of crises. The video game city thus becomes a space of survival and resilience, where traces of an urban past nurture the emergence of new forms of inhabiting.

Fig.5. The last of us



Source: (The last of us, 2017) <https://rare-gallery.com/969405-the-last-of-us-ellie-joel-apocalyptic-video-games-screen-.html>

3. Experimental cities: video games as urban laboratories:

In light of these digital representations that showcase the uses of the city, the world of video games also presents itself as an invitation to the real appropriation of urban space. The emergence of simulations in video games calls for citizen participation in the creation and transformation of the city (Szot (2024)). This open model, which configures urban development according to available resources, induces a diversion of the video game: that of an immersion in an urban planning context. The pixel city then ceases to be a simple conformist decor to become an experimental platform where a dream universe is displayed, carrying a participatory democracy where the player takes on the role of co -designer of the virtual urban project (Rufat & Ter Minassian (2012)). With this in mind, schemes such as Climway are creating a more coherent and rational urban vision in the face of climate constraints. The goal is to establish a city within a regional landscape while respecting a set of rules and indicators: limiting greenhouse gas emissions, reducing energy losses (with a maximum threshold set at 10%), and increasing the consumption of renewable energy. Thus, the game takes into account the waste of resources and overconsumption, linked to the demographic pressure that contributes to global warming (Poplin (2011)).

Fig.6. Climway



Source: (Climway,2008) <https://www.graphikarbre.com/studio-graphikarbre-graphiste-web-designer-directeur-artistique-ux-ui/expos/clim-way-paris/>

The Climway system thus engages the player-citizen not only through his technical knowledge, but also by understanding the environmental impacts of urban development (Raghothama, Hauge, & Meijer (2022)). This model implicitly refers to the proposals of geoengineering, which aim to develop alternatives to control global warming. The omnipotent agent who orchestrates the rational exploitation of resources actually illustrates an operational translation of urban resilience, applied to contemporary issues of sustainability and territorial governance. Furthermore, the game Godus offers the player a divine power allowing him to manage his territory over the ages of the human species, the faithful who evolve according to the cost of faith.

The game Godus grants the player divine power to manage and shape their territory throughout the ages of humanity. The faithful, whose evolution depends on the cost of faith, become a central resource in this process. The game Godus, by granting the player a divine power to manage and transform the territory; can be read as a metaphor for contemporary technocratic logic in urban planning and environmental governance. The virtual population, natural resources and climatic phenomena become variables that can be manipulated at will, reflecting a mechanistic approach where nature and society are subordinated to the player's objectives.

The player can, from mountain strata or seabeds, destroy trees to acquire homes, multiply the

population, then transform nature: flatten the reliefs for agricultural fields, free rivers and marshes, or manipulate the weather by modulating the rain according to his desires. This dynamic illustrates a centralized and normative vision of the city, comparable to certain real urban policies, which seek to organize space according to principles of efficiency and control, sometimes to the detriment of social uses, ecological diversity and citizen interactions.

Fig.7. Godus



Source: (Godus, 2024)

https://play.google.com/store/apps/details?hl=en_ZA&id=com.mobage.ww.a1912.Godus_Android

In Godus, as in certain urban planning, landscapes and infrastructures are instruments of domination: the topography is remodeled, waterways diverted, and the weather modulated, just as certain urban regulation policies seek to "shape" the environment to meet economic or security objectives. This game mechanic highlights a particular vision: to "win," the player must assert their dominance over nature. Sustainability is presented as an artificial utopia, but in reality, it reflects a mechanistic conception of the environment, likened to a simple exploitable machine. Agriculture, forests, polders, topography: everything must conform to human logic, even to the ideologies and market logics specific to globalization.

In this context, Godus appears as a critical metaphor: capitalist thought reduces nature to a passive and obedient role, perpetuating a model of overconsumption in the service of the powerful – States and companies – rather than a policy of sobriety respectful of ecological balances. This playful fiction finds a disturbing echo in reality. Today, the "climate sorcerer's apprentices" propose artificial solutions to cool the planet without challenging the structural causes of global warming: energy dependence, extractivism, and the infinite growth model. Several powerful states are already resorting to geoengineering, experimenting with devices such as carbon sequestration or climate modification techniques. Among these proposals is the cloud bleaching project: injecting seawater particles to increase their albedo and thus reflect more sunlight. Other approaches aim to modify the chemistry of the oceans to counter their acidification, a direct consequence of CO₂ absorption. However, these interventions, while claiming to compensate for the disruptions, conceal their perverse effects: under an artificially sulfur-bleached sky, the ocean would continue to acidify and marine species would disappear. As in the game, these interventions reflect a logic of control rather than a balanced relationship with natural systems, illustrating a governance where sustainability is thought of in terms of manipulation rather than cohabitation. In this sense, Godus offers a critical framework for thinking about contemporary urban planning and development. It emphasizes that the

representation and appropriation of the city, whether real or virtual, cannot be limited to a logic of total control. The playful experience reminds us that urban resilience and sustainability require co-design, citizen participation, and respect for natural dynamics, rather than simple technical domination. Thus, *Godus* offers an implicit critique: that of a humanity that continues to perceive nature as a malleable material, to be shaped according to its interests, rather than as a partner to be respected and preserved in a relationship of reciprocity (Neyrat (2016)).

A documentary dive takes place through seriousness game *Fort McMoney*, which faithfully reproduces the city of Fort McMurray in Canada, the world's third-largest oil reserve. By participating in this online game, accessible in several countries and offered in three languages, the player experiences a hybrid between a video game and a web documentary (Qiu, Lin, He, & Lu (2024)). The introduction, reminiscent of a climate fiction film, highlights the catastrophic impacts of the oil industry on the city, combining immersive storytelling and critical engagement.

Compared to games like *Climway* or *Godus*, *Fort McMoney* illustrates an approach where urban simulation is not only a space of control and manipulation, but also a citizen laboratory, which engages in reflecting on the limits of human action and the imperatives of sustainability. In all these cases, the player becomes a conscious actor of the virtual city, but also a critical witness of real urbanity. Whether by manipulating resources in *Godus*, by configuring energy and climate resilience in *Climway*, or by observing industrial impacts in *Fort McMoney*, the video game invites an active appropriation and understanding of the city, at the crossroads of urban practices, imaginations and environmental awareness.

Based on this scenario, the game allows for direct interaction with local stakeholders, giving the player the opportunity to participate in referendums, follow the evolution of the city's virtual destiny, and observe debates between pro-industry and civil society activists. It thus offers a collective experience situated on a front line between industry and the environment, where exploring the city becomes a reflective and collaborative practice. Using a modern and fun tool is not limited to offsetting environmental or social impacts: it places the player in the position of designer of an urban project, giving him a new role of engagement and involvement. It raises the essential question often debated in urban projects: what is the weight of technical expertise compared to citizen participation? Taking into account the opinion of residents often remains unclear, particularly in terms of resources mobilized and methods to guarantee continuous or occasional participation. Unlike one-off participation, co-production aims for a more developed level of involvement, by mobilizing citizens-residents as direct actors in the design. In this context, the video game device can encourage a redistribution of powers in the conceptualization of the project, allowing for a truly collective construction of urban change. For example, the co-design project for the *Parc de la Chapelle* in Paris, involving 1,490 participants, shows how these approaches can generate concrete ideas and fuel collective reflection. The objective of the game or participatory device is not necessarily to lead to immediate implementation, but rather to model ideas, raise awareness of the cost of equipment, and create a shared awareness of the issues related to urban planning.

Thus, video games articulate function, contemplation and participation, making the city an interactive laboratory: it can be manipulated, explored or observed, while offering the player the possibility of reflecting on its uses, its sustainability and its representations (Szot (2024); Raghothama and al.(2022)). Indeed, even if these interactions remain programmed, the video game city offers a contemplative experience, which transforms the player into an active spectator, capable of grasping the spatial and aesthetic qualities of urbanity and acting on it. However, these narrative choices in urban simulations seem to be limited to the creation of a functional work, breaking away from a pleasant, physical, and emotional city. The player is then restricted to a range of predefined choices, which he activates with his cursor with the main aim of progressing or building, without any real emotional or sensory interaction with the urban space.

In contrast with the logics of unlimited growth conveyed by many city-builders, *Block'hood* offers an experimental vision of the city, based on ecological balance and urban resilience. Conceived as an urban planning simulator, it stands out for its focus on ecology and resilience. The player constructs vertical neighborhoods by assembling blocks representing housing, shops, green spaces, technical

infrastructures, or cultural facilities. Each block produces, consumes, or transforms resources: air, water, energy, food, waste, biodiversity. Success in the game relies on the ability to maintain a fragile balance between these flows, since any disruption—for instance, excessive water consumption or high



Source: (Block'hood, 2017) <https://store.steampowered.com/app/416210/Blockhood/>

This principle transforms the city into a living organism, where every element, no matter how small, is connected to the others. Unlike classic planning games that emphasize expansion and unlimited growth, Block'hood values frugality, maintenance, and regeneration. The player must design sustainable neighborhoods capable of withstanding crises and shortages, which aligns with approaches inspired by theories of urban resilience (Meerow, Newell & Stults (2016)). Urban space is no longer seen as a mere surface to occupy and optimize, but as a system of sensitive interactions between infrastructures, natural environments, and human needs, echoing the perspective of urban metabolism (Kennedy, Pincetl & Bunje (2011)). The experience proposed by Block'hood also carries a strong pedagogical dimension. By experimenting with scenarios, the player becomes aware of the ecological and social complexity of the city. They realize that every technical choice—installing a factory, planting a park, constructing a building—produces chain reactions that can either strengthen or weaken the overall balance. The game thus functions as an accessible metaphor of the principle of sustainability, showing that urbanism is above all a matter of flows and trade-offs, not solely one of form and aesthetics (Wolfram, Frantzeskaki & Maschmeyer (2016)). Block'hood also invites reflection on urban diversity. By integrating very different blocks—agricultural spaces, laboratories, social housing, or shopping centers—it stages the coexistence of sometimes contradictory logics within the same space. The city becomes the outcome of permanent negotiations between energy needs, environmental imperatives, and social expectations.

Video games also provide a platform for experimenting with critical and dystopian approaches to urbanism, portraying cities confronted with extreme crises or hostile environments. *Surviving Mars* (2018) illustrates this dimension by placing the player in the context of colonizing a distant planet. Behind the space exploration lies a reflection on urban planning in a radically constrained environment. The survival of the colonists depends on managing limited resources such as water, oxygen, and energy, and every decision affects the viability of the colony.

Fig.9. Surviving Mars



Source: (Surviving Mars,2018) <https://xboxsquad.fr/test-surviving-mars-planete-rouge-nattend/>

In this way, the game transposes, within a science-fiction framework, very concrete issues faced by terrestrial cities dealing with resource scarcity and the need to balance growth, infrastructure, and residents' well-being. It compels the player to consider the compromises and priorities required in a situation where every choice may have irreversible consequences (Couture (2018)).

Frostpunk (2018) takes the critical dimension even further by placing the player at the head of a post-apocalyptic city plunged into an eternal winter. Here, survival depends on complex ethical and political decisions: enforcing martial law, imposing child labor, and rationing food and heat. The game highlights the harshness and urgency of urban decision-making in extreme contexts, offering an implicit critique of governance systems that prioritize material survival over social justice and fundamental rights. The video game experience thus becomes an experimentation with dystopian scenarios, where moral dilemmas and strategic planning combine to reveal the tensions inherent in managing extreme urban crises (Dolkemeyer (2020)).

Fig.10. Frostpunk



Source: (Frostpunk,2018) <https://steamdb.info/app/323190/screenshots/>

Anno 2070 (2011) completes this panorama by presenting a futuristic vision of urban and

industrial development choices. Players must choose between two opposing models: an extractivist industrial development based on intensive resource exploitation and economic maximization, and a sustainable ecological model emphasizing green innovation and environmental preservation.

Fig.11. Anno 2070



Source: (Anno 2070,2011)

<https://store.ubisoft.com/ie/anno-2070/56c4947e88a7e300458b4662.html>

Each decision profoundly alters the city’s morphology, spatial organization, infrastructure, and socio-economic balances. The game thus illustrates the tension between growth logic and ecological imperatives, confronting the player with the long-term consequences of their choices on urbanity and communities (Janssen et al., 2024).

TABLE 1. Virtual Cities: Modes of Play, Perception, and Design

Game	Category / Typology	Player Use	Urban Perception	City Concept and Visual Challenges
Counter-Strike: Global Offensive	Urban Warfare / First-Person Shooter	Limited multiplayer interactions team cooperation or direct confrontation	Conflict theatre city, static, non-social	The city is a geopolitical fiction in which the Arab urban space is reduced to an anonymous backdrop of counter-terrorism warfare. Its visual language contributes to the construction of a political imaginary that legitimises Western military dominance while dehumanising the Other.
GTA (Liberty City)	Action-Adventure / Urban Sandbox	Narrative single-player	Immersive, lively, exploratory city varied activities (tourism, commerce, crime)	The city is conceived as a space of freedom where the player constructs their own narrative through exploration. Visual realism and interactivity transform the city into a dense, diverse and appropriable urban experience, reflecting contemporary metropolitan imaginaries.
Assassin’s Creed	Historical / Action-	Narrative single-player	Interactive heritage city,	The city becomes a living, interactive and memorial archive.

Mirage	Adventure		vertical navigation within a faithful and immersive historical environment	Visual choices, balancing historical accuracy and artistic invention, allow vanished urbanities to be revived and reinterpreted, offering an experience where heritage discovery intersects with playful exploration.
Cyberpunk 2077 (Night City)	Dystopian / Futuristic Role Playing Game	Narrative single-player	Futuristic city saturated with information and social contrasts immersion in a futuristic and vertical urban world.	the city is a dystopian metropolis that stages and critiques the excesses of technological capitalism. Visual choices based on verticality, luminous saturation and hyper-connectivity reveal a fractured urbanity, where corporate domination and pervasive surveillance redefine the citizen's experience.
The Last of Us	Post-Apocalyptic / Narrative Adventure	Narrative single-player	Ruined, recomposed city, ecodystopia	he city is a post-apocalyptic ecodystopia, where ruin and nature reinvent the urban experience. Visual choices (ruins, vegetation, and fragmented spaces) create a space of survival, memory, and transformation, contrasting with technological dystopias such as Night City.
Climway	Simulation / Ecological Serious Game	Simulation / urban lab and co-design	Sustainable, experimental city	the city becomes an interactive and participatory urban experiment, where the player acts as a co-designer and understands the environmental and social impacts of urban choices. Visual choices (indicators, flows, and spatial organization) convey a rational and sustainable urbanity, confronting the virtual city with contemporary challenges of planning and resilience.
Godus	Simulation / God Game	Limited multiplayer interactions Simulation / urban lab	Manipulable city, complex system	the city is a centralized and normative territory, where nature and society become instruments of control. Visual choices (reshaped terrain, manipulated resources, and regulated climate) convey a mechanistic and technocratic vision of urbanity, offering an implicit critique of domination logics and highlighting the need for co-design, citizen participation, and respect for natural dynamics.

Fort McMoney	Serious Game / Interactive Documentary	Massively multiplayer environments co-design and reflection on industrial challenges.	Documentary and critical city	the city becomes an interactive and civic urban laboratory, where the player explores, observes, and engages with issues of sustainability, governance, and planning. Visual choices (realism, documentary-style narration, and interactivity) provide a critical and reflective experience, transforming the city into a space for co-design and urban contemplation, while questioning the role of the citizen in urban development and sustainability.
Block'hood	Simulation / Ecological City-Builder	Ecological and educational simulation/ urban lab	Organic, balanced city	the city is an ecological and resilient urban system, where sustainability relies on the balance of flows and the interconnection of elements. Visual choices (modular blocks, resource flows, and ecological indicators) convey the complexity and fragility of the city, offering the player a pedagogical experience of sustainable urbanism and the constant negotiation between human needs, the environment, and infrastructure.
Surviving Mars	Simulation / Sci-Fi / Colonisation	Extreme and critical simulation/ urban lab	Experimental city on Mars urban planning under constraints	the city is a resilient and critical colony, where urban planning is entirely conditioned by survival and limited resources. Visual choices (modular structures, resource indicators, and hostile environment) convey fragility, interdependence, and the necessity of trade-offs, offering the player a radical and reflective urban planning experience.
Frostpunk	Post-Apocalyptic / Extreme City Management	Simulation / urban lab	City in extreme climate, moral dystopia	the city is a post-apocalyptic dystopia, where survival and urban planning are intertwined with ethical and political choices. Visual choices (icy environment, adapted infrastructure, and social indicators) convey the pressure, moral dilemmas, and complexity of urban governance in extreme conditions, offering a strategic and

				reflective experience of urbanism in crisis situations.
Anno 2070	Simulation / Futuristic City-Builder	Simulation / urban lab Limited multiplayer interactions	choice between extractive industrial development and ecological sustainability ; long-term urban planning	The city is a futuristic and strategic laboratory, confronting the player with choices between extractive industrial development and ecological sustainability. Visual choices (morphology, infrastructure, and resource flows) convey the complexity of urban, social, and environmental impacts, offering an experience of prospective and reflective urban planning.

4. The city as a bridge between playful imagination and real space:

This dialectic between landscape and city, which is gradually taking hold in video games through 2D or 3D virtual models, must go beyond the stage of simple contemplation to reach that of understanding. Why these landscapes? Let us recall that during the 1960s and 1970s, in reaction to the destructive impacts of modernism, several architects and urban planners, such as Jane Jacobs and Christopher Alexander, sought to restore meaning to the city by reconstituting the social and symbolic functions of public space. They criticized the loss of the human dimension in modern cities, where towers dominated the human scale. At that time, contradictions were less marked, philosophical and political conceptions more coherent, and technical possibilities limited: urban landscapes were then relatively coherent. After the Second World War, the scale of reconstruction and the incoherent occupation of the territory spread urban planning across the continent, with a concern more for economics than aesthetics. Ecologists subsequently demonstrated the catastrophic errors engendered by these exclusively economic visions.

The notion of urban landscape gradually emerged, first in geography, then among architects, landscapers and urban planners, to designate any view referring to a landscape in an urban environment. The urban landscape thus appears as a fragmentary image of the city, created by the gaze and conditioned by the sensitivity of the observer. Depending on the scene observed, the distance and the methods used, the gaze produces different landscapes. Thus, geologists, geomorphologists, pedologists, phytosociologists, geographers, economists, urban planners, landscapers and architects each have their own vision of the urban landscape, determined by the scale of observation. The areas studied can vary from a few square decimeters to several thousand hectares. This question of scale suggests two complementary approaches: a bottom-up approach, from the city to the territory and landscape units, or a top-down approach, from the territory to the city, ranging from a global vision to mastery of local typo-morphology. In video games, this digitally drawn world on the screen becomes a divergent urban experience. The city integrated into the game is transformed into a place for exercising the gaze, where the player becomes "an operator without a camera." They do not limit themselves to playing to walk around the city, but walk around the city to experience and understand the game elsewhere. This immersion allows them to reach, sometimes without conscious intention, peri-urban, rural, or coastal spaces, thus expanding their perception and understanding of urban space beyond the limits of the strictly designed city.

In this reciprocity between city and landscaped exterior, the city often appears only as a medium of passage towards the forest, the countryside, the desert or the beach. The relevant scale remains first that of the urban: it is the movement in the city and the way of accomplishing certain functions which then allows access to experiences on a larger scale, outside of urbanity, where the opposition rest-adventure is underlined by musical variations. This phenomenon is not recent. Since the middle Ages, the city, an ancient subject of fiction, has taken on a protective form, offering a respite, a sort

of tent for the nomad before setting out to explore wild environments in search of resources or to confront an enemy. In the industrial production of video games, behind the utopian or dystopian representations, there is an economic interest: to seduce and stimulate the desire of the child or player to immerse themselves in the city. The city thus becomes the arena of fiction through Trans -media practices. The player discovers a labyrinthine city, defined by its alleys, forecourts, squares, squares and buildings, and the game exploits this immersion to offer a pleasure projected into the city, via tablet or telephone, more than a simple pleasure of the city itself. Location-based games, the playground encompasses the entire city and arouses in children a new appetite that traditional video games cannot achieve alone. Exploring new real spaces thus becomes an extension of the gaming experience. This observation is in line with recent developments in urban planning, which is now more human-centered, and integrates the notions of environmentalism, sustainability and digital technologies.

Ingress (2013), developed by Niantic, represents one of the earliest notable examples of this approach. The game challenges players to capture and defend portals located at real-world sites such as monuments, sculptures, or iconic buildings. To progress, participants must actively and strategically explore their urban environment, which leads them to discover often-overlooked places and reflect on the relationships between public space, history, and urban identity (Seif El-Nasr, Drachen & Canossa (2013)). By transforming the city into a dynamic network, Ingress combines mobility, cooperation, and competition, placing the player in a role where each decision influences both the game and their perception of real-world space. Pokémon Go (2016), also, encourages the player to explore surrounding structures and local urban landmarks, reinforcing awareness of urban quality and citizen participation.

Fig.12. Ingress



Source: (Ingress,2014)

<https://www.tomsguide.com/us/ingress-tips-new-players%2Creview-2257.html>

Minecraft Earth (2019) also represented a significant advancement in augmented reality (AR) games by allowing players to overlay 3D virtual constructions onto real-world environments.

Fig.13. Minecraft Earth



Unlike Pokémon Go, which focuses on capturing creatures, Minecraft Earth encouraged creation and collaboration, transforming urban spaces, parks, and public areas into true virtual construction laboratories. Players could design buildings, structures, or imaginative landscapes directly integrated into their city, promoting a playful approach to urban planning and the co-creation of spaces. Unfortunately, the game was shut down in 2021, primarily for technical and strategic reasons. Developing and maintaining a large-scale, persistent AR platform proved costly and complex, particularly regarding server infrastructure, content updates, and compatibility with mobile devices. Furthermore, the COVID-19 pandemic limited players' ability to interact physically in public spaces, reducing the collaborative experience and engagement that the game concept had intended.

Fig.14. Pokémon Go



Source: (Pokémon Go, 2016)

<https://architectureau.com/articles/public-space-versus-Pok%C3%A9mon-go/>

However, the real city remains subject to regulatory and political constraints: official plans, zoning regulations, and design standards often limit the ability to respond quickly to the needs of sensitive urban planning. However, tactical urban planning initiatives propose one-off interventions installing

seating, transforming unused parking lots or paved areas into temporary green spaces, allowing for the testing and experimentation of new ways of occupying space. Digital gaming, in this context, offers a new modality of urban revitalization, making the city playable again and involving citizens in the temporary transformation of space. This deliberate and projectable approach acts as a true urban seam, where the city becomes an interface between the real and the virtual, offering a renewed perception of the urban as a platform for play and participation.

5. Discussion

This discussion is structured around a four-level progression: it first examines the potential of video games as cognitive matrices of the city, before exposing their limitations (the creation of 'non-places'). The reflection then shifts toward the decoding of ideologies (generational and gendered) to conclude with the ethics of simulation, questioning the legitimacy of the values imposed within these virtual worlds.

Video games have today emerged as genuine visual and cognitive matrices of the city, contributing decisively to the construction of contemporary perceptions of urban space. They go far beyond the realm of mere entertainment to offer immersive, critical, and pedagogically significant experiences. Through their narrative and spatial dispositifs, they provide in particular a distanced reading of functionalist urban models. Cities are frequently represented as spaces in crisis, militarized, fragmented, or marked by deep inequalities, thereby enabling, through a mirror effect, a critical questioning of real-world urban policies based on control, securitization, and zoning.

At the same time, the city becomes a fully-fledged aesthetic and sensory object. The three-dimensional experience—characterized by verticality, opportunities for wandering, and multiple forms of spatial appropriation—brings players closer to concrete urban practices and generates an unprecedented form of spatial immersion. Video games thus foster an embodied apprehension of the city, in which exploration, orientation, and the use of places contribute to the construction of an experiential relationship to the urban.

Virtual environments also make contemporary ideologies visible and open to interrogation. *Counter-Strike* stages stereotypical geopolitical conflicts, *Cyberpunk 2077* offers a critique of dystopian capitalism, while *The Last of Us* deploys an eco-dystopia marked by environmental collapse. These universes constitute genuine political heterotopias, where collective fears, utopian projections, and dystopian scenarios intersect. Some titles also function as experimental urban laboratories: *Climway*, *Godus*, *Fort McMoney*, and *Block'hood* raise awareness of energy, environmental, and social issues by assigning players a role of co-design and simulation, with educational and reflexive aims.

However, these contributions need to be nuanced. The virtual city is often reduced to a static backdrop, lacking social uses, which can lead to the creation of “non-places.” Player freedom remains largely illusory: scenarios are pre-programmed, and citizen participation is simulated. In this sense, digital environments tend to reproduce operational urbanism, where space is subjected to regulations and expert logics, unlike strategic urban projects that involve forward-thinking, citizen dialogue, and adaptation to social needs. Simulations prioritize efficiency, technocratic planning, and expert visions, reinforcing an instrumental approach to the city.

Games also reproduce geopolitical stereotypes and technocratic models, where humans dominate nature and infrastructure in the service of efficiency, reflecting a mechanistic and regulatory vision of urbanism. A major critique concerns the imagination transmitted to children. Most games are designed by adults and rely on representations and ideologies that do not consider the perspective of young players. These urban and social worlds are often projections of adult imaginaries, potentially indoctrinating children into societal models, stereotypes, or power relationships. This top-down approach neglects the creativity, needs, and perceptions of the child.

This dynamic is further compounded by a gendered dimension. Digital environments are often designed based on a dominant male imagination: characters, scenarios, and missions primarily target a male audience, reinforcing models of violence, competition, or domination in urban space. Women, on the other hand, are sometimes relegated to secondary or stereotypical roles, influencing the way

boys and girls perceive the city from an early age. In this educational and social context, video games thus contribute to transmitting gendered urban imaginaries, shaping differentiated socialization in public space and in relation to power.

Finally, the social and relational dimension remains limited: most games ignore the diversity of inhabitants, urban marginality, and real coexistence. The ethics of simulation are also questionable: who decides what the city should become? Who validates the choices and values imposed within these virtual spaces?

Conclusion

Video games, as an interactive medium, have profoundly transformed traditional game theory and the way the city is represented and perceived. The computer, now a meta-platform for play—whether in a child's bedroom or embedded in transmedia urban environments—enables the exploration of a wide variety of urban models, so vast that it requires classifying game types in a way that reflects the plurality of definitions of the city itself. This shift has driven video games from a niche market to a major cultural industry, constantly renewing how urbanity is imagined and challenging traditional understandings of urban space. The emergence of “Machinima,” combining “machine” and “cinema,” illustrates this convergence between urbanity and cyberspace.

However, these representations are not neutral: they convey visions of the city that deserve critical attention. What role is given to nature and open public spaces? What narratives are constructed around social and spatial inequalities? Is the city depicted as an inclusive space of coexistence and diversity, or as a place of surveillance, conflict, and segregation?

These questions become even more crucial when considering young players. Video games help construct, simplify, or sometimes distort a child's mental image of the city. Through exploring, building, and interacting with digital environments, children manipulate urban space and gradually develop an intuitive understanding of the structures, mobility systems, and landscapes that shape real cities. The boundary between lived urban experience and virtual worlds becomes porous: children blend sensory experiences with digital contexts, forming a hybrid representation of urbanity shaped by their emotions, discoveries, and aspirations.

Within this dynamic, it becomes essential to reinvent the city in video games. This means moving beyond the traditional imaginary dominated by skyscrapers, artificial landscapes, and concrete, to reflect contemporary urban planning trends and responsible resource use. Children should be seen as true partners in shaping their mental image of the city of the future: a sustainable, inclusive city committed to environmental stewardship.

Building on these insights, the design of video game environments may first prioritize sustainability by creating greener, resilient urban spaces that preserve ecosystems and optimize natural resource use. In addition, it can promote social equity by representing diverse populations and ensuring that urban spaces remain accessible to all users. Moreover, designers may integrate inclusivity into the depiction of lifestyles, neighborhoods, and mobility patterns, thereby avoiding any form of discrimination. Furthermore, they can enhance the diversity of urban functions by incorporating everyday activities, professions, and uses often overlooked in digital narratives. Finally, they can advance ecological design through the adoption of green architecture, innovative spatial practices, and sustainable infrastructure solutions. Taken together, these principles offer a comprehensive framework for virtual urban environments that reflect contemporary ethical and planning standards, while also enabling young players to engage critically with urban space.

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