Politecnico di Torino

Master's Degree in Architecture Construction City

A.a.2024/2025

PLAY THE CITY

——Reconstructing Game Urban Design and Narrative Architecture Based on Spatial Poetics Theory

Relator

ARTUSO MARIO

Co-Relator

VOGHERA ANGIOLETTA

Candidate

YUN ZHANG

Contents

Abstract

As the "ninth art[①]" of the digital age, video games have opened up entirely new creative dimensions for architectural design through the construction of virtual spaces. Architecture is no longer confined by the laws of the physical world but has become an "editable game." In this process, the role of architects has undergone a fundamental shift—they are not only organizers of space but also directors of narratives, colorists of emotions, and creators of interactive experiences.

The core characteristic of game architecture lies in its unique narrative quality. Through meticulous design of layout, atmosphere, and pathways, virtual spaces achieve a narrative depth unattainable by traditional architecture. This transforms players from passive observers into active participants, endowing the space with a dynamic vitality akin to life itself. It transcends the limitations of static forms, presenting an experience rich in "poetic" quality.

Simultaneously, the emphasis on interactivity and immersion in game spaces fosters deep emotional connections between players and their environment through multisensory coordination and instant feedback. This intensity of experience often surpasses reality, enabling spaces to convey more nuanced and rich emotional expressions.

Based on these narrative and interactive mechanisms, game architecture offers crucial counter-perspectives for real-world urban design. Its groundbreaking formal explorations disrupt conventional urban planning paradigms, driving more innovative design approaches. Interdisciplinary analysis reveals the latent value of game mechanics in urban design—allowing the "poetics", interactive logic, and emotional structures of virtual spaces to inspire real cities, thereby fostering human-centered spatial expressions.

Therefore, interdisciplinary studies on game architecture have a twofold value: they not only enrich the theoretical horizons of the architectural research but also offer fresh patterns for real world urban design. This synergy is what will keep driving the discipline of architecture toward a more open, diverse and poetic future, changing how cities build space.

Keywords: Game Architecture, Spatial Poetics, Urban Design, Narrative Architecture, Virtual Space, Interdisciplinary Studies

[①] The notion that "video games are hailed as the 'ninth art' of the digital age" varies across cultural contexts. French critics designated comics as the "ninth art" in 1964 and 1971; in China, Wu Guanjun first referred to video games as the "ninth art" in the Chinese context through his 1997 article titled "The Ninth Art," published in the magazine New Trend Electronics.

Part 1 Introduction and Structure

Chapter 1：Introduction and Thesis Structure

“Games are invisible design; game design is invisible architecture.[①]“

——Tetsuya Mizuguchi

Reason

Should video games be the subject of architectural study? Or instead, should architecture adapt to the new spatial conditions spawned by games? It all started with some accidental gaming questions. But there I was, floating through an imagined ruin of broken walls and fading light, following an speechless expedition all the way to the top of a snowy peak where I had a sudden sense of “belonging”, and at that moment, playing video games ceased to be entertainment for me but rather became one type—contemporary forms of poetic spatial expression. I’ve had a passion for video games since I was a kid, and during university my architectural education only intensified this interest. From twin experiences of playing and designing, one question continued to arise: Might there be some deep structural correspondence between architecture and games? Can we design virtual spaces that count as “places”, which are worthy of architects’ engagement and participation? As the spatial order of game worlds, mechanics and their narrative pacing increasingly complicated themselves, these questions turned into topics of research. In the end, it steered my thesis to study in a dynamic flow relationship between architecture and games.

1.1 Research Background

- The New Digital Battleground for Architects

The rapid advancement of digital technology has given rise to video games as an emerging medium. The notion that “game design is invisible architecture” reveals an essential connection between architecture and gaming—both serve as organizers of space and constructors of experience. Within virtual worlds, architecture has long transcended the constraints of physical materials, evolving into a structural language that carries narrative and emotion.

The development of architecture is closely related to digital technology innovation. With the

[①] This concept was proposed by Japanese game designer Tetsuya Mizuguchi during a game development interview. He emphasized the similarities between game design and architecture, arguing that both shape people’s lifestyles and experiences of perceiving the world.

sweeping of the digital wave, every technological leap is quietly reshaping the ontology logic and design methods of architecture. The explosive growth of information technology in the third industrial revolution has gradually freed buildings from their dependence on traditional manual drawing and physical models, and instead invested in digital design systems based on 3D modeling, virtual reality, image processing, and computational simulation. The widespread involvement of digital tools has not only changed the expression form of architectural design, but also spawned a new type of "virtual field" that is different from physical space. The generation of this virtual space relies on the integration and development of various emerging technologies, such as VR, game engines, movie effects, remote sensing images, etc., which together construct a highly immersive, operable, and narrative spatial dimension, becoming an emerging battlefield for architectural research.

As an interdisciplinary knowledge system, architecture has gradually formed a complete theoretical system after thousands of years of development, accompanied by multiple dimensions such as natural sciences, humanistic ideas, and social needs. And its three-dimensional composition characteristics and visual expression form make architecture naturally suitable for translation and reconstruction in the context of digital media. Therefore, it has become one of the most easily mapped spatial elements into virtual dimensions in the real world.

In the realm of real-world architecture and urban planning, the spatial construction methods proposed by games offer profound inspiration for design thinking. As Kishō Kurokawa stated: "The significance of a proposal for a future city lies not in whether it can exist or whether its technical challenges can be overcome, but in its ability to highlight the contradictions of the present and envision the future.[①]" This statement not only encapsulates architectural futurism but also resonates with the social symbolism and cultural allegories embodied within virtual gaming spaces. In this emerging "digital battlefield", the presentation of architecture, its design vocabulary, and the very perception of space are all being recoded. Against this backdrop, video games will undoubtedly become a crucial battleground for the future of architecture. In terms of replication and dissemination, the expanse of the gaming world may have already far surpassed that of the physical world.[②] This trend also signals that architecture is entering a new era defined by digital dominance, interactive empowerment, and media-driven innovation.

[①] Li Ning. Futuristic Tendencies and Reflections in Contemporary Architectural Design [J]. Architectural Journal. 2012.09:15

[②] Li Bo. Architects' New Battlefield in the Digital World: Afterword to "Architecture in Games: Designing for Impact" [J]. Times Architecture, 2021(02):55-57. DOI:10.13717/j.cnki.ta.2021.02.010.

- Continuously evolving and refined game city design

Over the past few decades, gaming and architecture have evolved from unrelated fields to deeply integrated disciplines. Early video games, dominated by pixelated graphics and two-dimensional perspectives, lacked a sense of real spatiality and architectural logic, resulting in minimal overlap with architecture. However, with the rise of 3D graphics technology, physics engines, and spatial modeling tools, architectural thinking has gradually permeated game development workflows—particularly in the creation of virtual environments, scene planning and atmosphere design.

Architects have also become players in game making process, not only as visual designer but spatial configuration experts with interests on narrative structures, behavioral constraints, or interactive systems. Simultaneously, architectural education has adopted virtual reality and game engines such as Unreal Engine and Unity[①] as alternative media for architectural representation and spatial investigation, resulting in an academic turn towards virtual building.

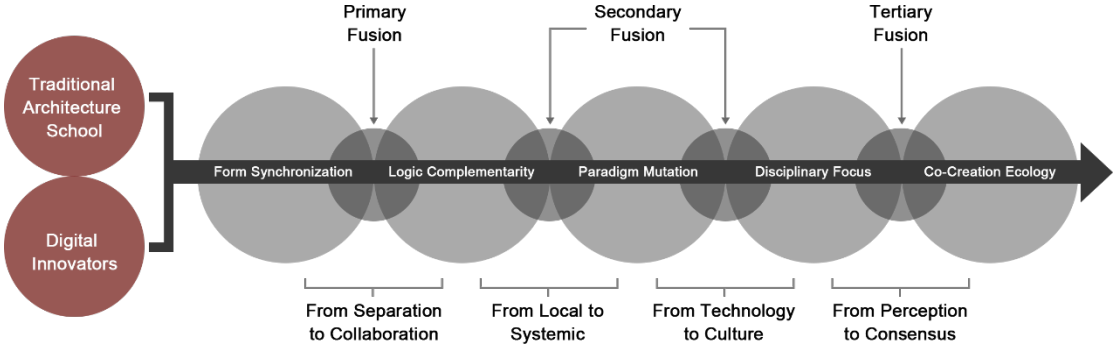
More and more of today's game designers understand the significance of spatial logic and player experience in the production stage. They borrow a people-based design concept from architecture, involving human sentiments and actions with game space. This leads to an easy understanding of the functionality, lanes and symbolic meaning behind objects in the game, for greater immersion. This kind of self-supported structure not only makes architecture an important construction method in game world, but also brings unique freedom and feedback into architectural proposal.

Video games are the form that most closely approximates the vast concept of a virtual world, and they represent the most mature field for the practical implementation of virtual worlds today.[②] During this historical development process, games and architecture have gradually formed an interdisciplinary dialogue mechanism, giving birth to the unique cross-disciplinary field of "game architecture". This field not only integrates the creative concepts and technical realizations from game design, but also absorbs the deep understanding of spatial organization and narrative expression from architecture, thus opening up a brand-new experimental platform for the exploration of future urban forms and spatial construction models.

[①] Unreal Engine and Unity are two of the most representative real-time 3D game engines in today's digital creation landscape. Both provide comprehensive tools for scene construction, rendering, physics simulation, and interactive logic, enabling designers to create visualized spatial structures and narrative experiences within virtual environments.

[②] Wei Shiyi. Toward a Convergent Metaverse: The Transformation of Video Games and Digital Bodies [J]. Literary Theory Research, 2023, 43(01): 52-60.

Figure 1-1: Chart of the development process of architecture



Resource from: Self-drawn by the author

1.2 Research Objectives and Significance

- Research Objectives

In the contemporary society where digitization and media integration are increasingly intensifying, electronic games, as a comprehensive cultural form, have gradually become an important platform for expressing space, telling stories, and organizing behavior. Especially with the development of open world games and immersive narrative systems, virtual cities are no longer just background settings or functional scenes, but have become a narrative architectural entity that combines structure and poetry. This architectural form not only breaks the logical framework of physical entities and functional layout in traditional architecture, but also endows the architectural space with multiple attributes of language, participation, and symbolism, prompting us to rethink the boundaries, roles, and possibilities of architecture.

This study is conducted in this context, aiming to explore the construction logic, narrative mechanisms, and emotional strategies of virtual spaces in digital games from the perspective of spatial poetics, with "game cities" and "narrative architecture" as the research core. Space poetics advocates viewing space as a composite structure of emotions, experiences, and meanings. It is no longer a static physical container, but a "living medium" that can evoke memories, inspire action, and organize stories. Supported by this theory, research focuses on spatial devices and narrative paths in virtual spaces that possess aesthetic meaning, symbolic logic, and behavioral guidance functions, attempting to reveal how virtual cities establish a participatory narrative experience through poetic components such as rhythm, dislocation, symbolism, and repetition.

This study not only focuses on how virtual architecture achieves narrative expression, but also on the reconstruction of the relationship between "human space story" in game space, especially in the context of players as new "spatial subjects", how architecture becomes a

resonance structure of perception, decision-making, and emotions. On this basis, the study will further analyze the evolution process of game city design from imitating reality to transcending reality, revealing how the generation logic of virtual space has a reverse impact on real city design, especially in terms of immersive experience, multidimensional paths, interactive logic, and emotional guidance, which reflect creativity.

Furthermore, this research seeks to redefine architects' role in the virtual era through the practical application of "narrative architecture" within digital media. In the advent of the digital society, exploring the intersectional value and significance between emerging disciplines represents a new direction for architectural development in the contemporary age. This research represents a theoretical endeavor to deeply integrate architecture, gaming, and media. It seeks to transcend disciplinary boundaries, construct a cross-media, cross-semantic cognitive model for architecture, and provide a forward-thinking conceptual framework and practical paradigm for the creative expression of future urban and architectural spaces.

- Research Significance

(1) Theoretical Significance

① Advancing the Digital Transformation of Architecture

Against the backdrop of rapid advancements in digital media, this research explores the deep integration of architecture with video games—the "ninth art". By incorporating core concepts such as spatial narrative, emotional pacing, and immersive experiences, it expands the practical boundaries of architecture's "human-centered" philosophy within virtual environments. This approach enriches the adaptability of contemporary architectural theory within the digital context. In the era of the digital society, uncovering the cross-disciplinary value and significance between emerging fields represents a new direction for the advancement of architecture in the modern age.[①]

② Constructing a Theoretical Model of "Narrative Architecture" in Game Cities

"Narrative architecture" as a form that links space and story has flourished in video games. The main premise of this study is based on the concept known as spatial poetics, and its evaluation focuses on the level design consideration, mission guidance system and environment interaction issues. It discusses how space can be a "storyteller", and through this, it defines narrative architecture in games. The research is intended to offer fresh underpinning for researching architectural storytelling across ideas and media forms.

[①] Zhang Li. From CAAD to Cyberspace: Architecture and Architectural Design in the Information Age [M]. China Architecture & Building Press, 2003.

③ The Sociocultural Value of Spatial Poetics as a "Perceptual Training Ground"

Virtual cities are not only aesthetic constructs, but also social symbols and instructors of culture. This study views the virtual space as a new form of "life rehearsal ground" and examines how individuals experience identity projection, emotional control, spatial memory within gaming space. This method provides a new way of thinking about the whole relation between perception, behaviour and space in architecture.

(2) Practical Significance

① Supporting the construction of urban spaces in game design

The cityscape of video game has become more complicated alongside the rise of open-world game and virtual storytelling. It should account for spatial layout and functional logic at the same time as maintaining the flow of a story and player emotions. The study will introduce a series of city design techniques that incorporate story structure, path in space and interactive feedback. The objective is to provide practical advice for game makers and to enhance the experience, story and memory of virtual cities.

② Immersive Experiences and Multi-dimensional Interaction Mechanisms in Urban Design

The immersive quality, exploratory nature, and user engagement emphasized in game spaces represent precisely the elements that real-world cities urgently need to strengthen in their future development. By comparing the construction logics of real and virtual cities, this study extracts transferable design concepts—such as dynamic path planning, spatial narratives, and emotion-oriented layouts—to provide inspiration and reference value for real-world urban design. This approach propels architectural and urban design toward more inclusive, open, and futuristic directions.

③ Expanding the Architect's Role Boundaries to Foster Cross-Media Design Thinking

Against the backdrop of widespread digital design and interactive storytelling, this research aims to deepen the exploration of game cities and narrative architecture mechanisms. It seeks to broaden architects' conceptual horizons and operational capabilities within virtual contexts, unlock their creative potential in cross-media and interdisciplinary practices, and propel architectural education and design practice toward a comprehensive shift from "technology-driven" to "narrative-driven" and "experience-oriented" approaches. This initiative cultivates a new generation of architectural designers equipped with narrative awareness and media literacy.

Chapter Summary

Chapter 1 begins with an immersive gaming experience to pose the fundamental question:

Should architecture respond to the "new reality" of virtual space? With the rapid advancement of digital technology, architecture has transitioned from manual drafting to three-dimensional modeling, VR, and game engine-driven virtual design systems, forming highly immersive and interactive "digital fields". Simultaneously, the spatial organization, urban construction, and narrative mechanisms within video games increasingly resemble architectural practices, creating a deep methodological and medium-based coupling between architecture and gaming. Against this backdrop of technological evolution and media convergence, this study establishes the necessity for an "architecture-game" dialogue, laying the theoretical foundation for subsequent explorations of virtual cities and narrative architecture.

Part 2 Research and Literature: Scientific Background

Chapter 2：Research Theory and Literature Review

2.1 Research Theory and Subjects

- Spatial Poetics

The word "poetics" is a transition in origin from the ancient Greek Poetike, which refers to the art of creating or making, particularly in literary composition. The first to clearly articulate this concept was the Greek philosopher Aristotle. His Poetics is thought to be the earliest work focusing on literary theory in the Western tradition. In it he probed some of the fundamental elements, such as structure of story, mimesis imprinted on art and tragedy. This early foray into what we now call "poetics" focused on how a text makes meaning, how art imitates life, and how the shape of a work can manipulate the reader's emotions.

In keeping with the legacy of "poetics" as both how art is made and understood, French philosopher Gaston Bachelard offered us ablutions, his Poetics of Space in 1958's La Poétique de l'Espace. He expanded the definition of poetics from written language to one's experience as a human in an inhabited space. He thought of space not just as a geometric figure, or even as a physical container, but as a kind of way of being — what might be called a matrix, a resonator for memory and emotion and symbol. In his poetic meditation on places: the house, the attic, the cellar and in a nook (and their psychological associations), Bachelard found a language to describe how human beings have made an emotional home out of domestic spaces. He didn't think that the idea of space had to be all about form-and-function, but wanted it also seen like "poetic place", where feeling and meaning and our sense of human presence over time come into clearer focus.

Theating Research on space has expanded, the concept of “spatial poetics” providing a rewarding perspective to approach many fields or discourses (among which literature, architecture, art, cinema and games). Now it’s not just studying poems or literary works anymore, but also how people feel, shape and tell stories in space. From this standpoint, space is not only something one looks at or makes use of — it can be like a poem raising emotional resonance, generating the imagination and expressing feelings and ideas. n other words, space has its own kind of story and emotion. People pass, people live, remember and dream in it and all together they make up what we can refer to as the ‘poetic experience’ of space.

For architects and urbanists, spatial poetics provide a new form of design thinking outside of rationalism, function and utility. It challenges the old notion that space should be useful and rule bound, offering designers a new way to put human feeling and experience at the forefront. It prizes how people feel space, move through it and make emotional connections to it. They are invited to imagine space not only as air, but also as the repository of memories, heat and spirit. By imagining from the user’s emotional perspective, they can develop spaces that are personal and alive, places people don’t only use but also enjoy, remember themselves in and find a part of themselves in. The value of spatial poetics is further amplified in digital media, particularly within video games and virtual reality. Virtual spaces in games transcend mere operational backdrops to become pivotal sites for narrative unfolding, emotional construction, and meaning generation. Spatial design in gaming not only facilitates interaction but manifests as “walkable poetry”. Players engage with stories through spatial perception and action, imbuing these environments with emotion and vitality.

- Narrative Architecture

Narrative Architecture is an important concept that has gradually emerged in architectural theory and spatial studies in recent years. It refers to an architectural practice model that achieves narrative expression through spatial construction and formal organization. It breaks away from the traditional paradigm that views architecture solely as a functional or structural vessel, emphasizing the inherent capacity of architectural space to symbolize, convey, and narrate meaning. Narrative architecture treats buildings as “texts”, where elements such as structure, pathways, materials, light, and atmosphere collectively form a “spatial language”. This language “tells” specific stories, evokes particular emotions, or conveys cultural significance to users through perception and experience.

The design idea of “narrative architecture”, connecting storytelling and spatial experience, didn’t organically erupt from the disciplinary loins of architecture. It was theorized and practiced following the changes in the study of humanities that took place in mid to late 20th

century. Under the influence of structuralism, post-structuralism, semiotics and narratology, it became possible to think that architecture could be something that might be "read", a sort of text. It was as if there was a meaning to the shape of space, capable of explaining the stories. This shift provided a base to focus on storytelling in architecture and "narrative architecture" evolved into an independent research topic.

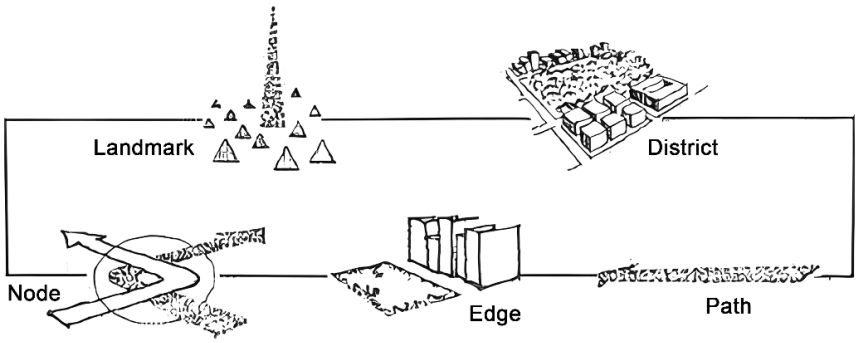
(1) Early Prototypes: Myth and Symbolic Space

Architectural narrativity isn't especially novel or odd. In traditional societies, buildings were intended to unfold narratives, transcribe myths and illustrate cultural insights. Whether the ancient Egyptian pyramids, the Gothic cathedrals of Europe or the ritual buildings of China - all were expressing concepts and faith in their spatial planning, symbols and ceremonial passages. These buildings were all about symbol, turning space into place that could hold history, common identity and spiritual feeling. But that kind of storytelling was frequently static, and one-sided. People could only watch and follow; they couldn't participate or become entangled.

(2) Modern Turn: Structuralism and Linguistic Influences

Since the mid-20th century, with structuralist linguistics emphasizing "text", "grammar", and "meaning construction", architects began exploring architectural design as a symbolic operating system. Roland Barthes introduced the concept of "spatial legibility[①]", positing that cities and buildings could be 'written' and "read" like language; Kevin Lynch, in The Image of the City (1960) (Figure 1-2), identified five elements of urban imagery—"paths, boundaries, districts, nodes, and landmarks"—emphasizing the city's 'recognizability' and "readability".

Figure 2-1: Five Elements of Urban Imagery



Resource from: Lynch, Kevin: *The Image of the City*. Cambridge, MA: MIT Press, 1960.

Christian Norberg-Schulz, meanwhile, emphasized the resonance between architecture and

[①] Roland Barthes's semiotics research and his theory of textual interpretation provide a crucial perspective for understanding how space conveys meaning. For instance, in *Éléments de sémiologie* (1964), he explores how sign systems construct meaning—a theoretical framework applicable to analyzing the semiotics of architectural and urban spaces.

cultural meaning through his theory of "Genius Loci[①]" Architectural narratives during this phase remained predominantly metaphorical and symbolic, seeking to convey meaning through form.

(3) The Postmodern and Deconstructivist Era: The Theoretical Construction of Narrative Architecture

The real sense of "narrative architecture" was created at the time when postmodern and deconstructivist architectures were employed. In the 1970s and '80s, architects like Peter Eisenman and Bernard Tschumi released a challenge to modernism's claim that "form follows function". They thought architecture should have many layers of meaning — culture, text and human experience. They thought of architectural design as a means to "build events" or "write texts", and, in it, tried out ideas from storytelling in fiction, like non-linear order, jumps and fragments, for organizing space. Tschumi proposed: "Architecture is the stage for events, the place where thought and action converge". His Parc de la Villette project employed a "cinematic montage[②]" narrative structure, arranging elements like points (point buildings), lines (pathways), and planes (functional spaces) in a staggered pattern to construct a open urban narrative field. This design philosophy marks the emergence of event-driven narrative architecture, where space ceases to be a static presentation of stories and instead dynamically generates meaning through users' experiences and actions.

(4) Contemporary Expansion: Cross-Media Narratives and Immersive Space

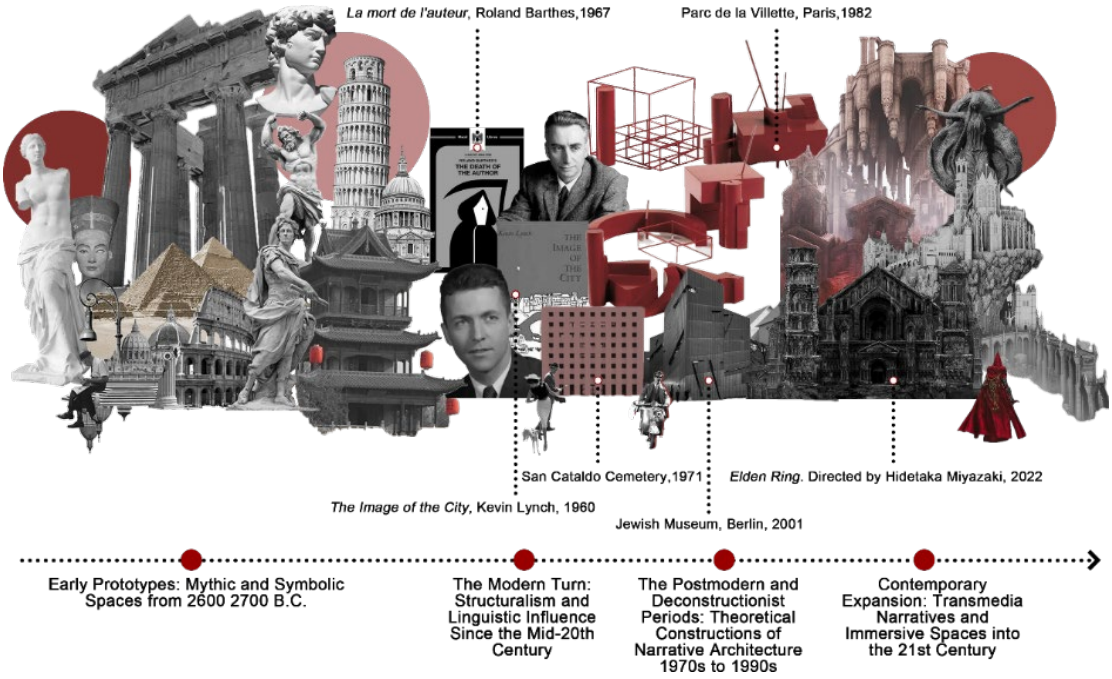
Entering the 21st century, the rapid development of digital media such as video games has further expanded the boundaries of narrative architecture. Architectural design is no longer confined to physical construction but has merged with visual arts, game design, and digital interaction, forming immersive and participatory cross-media narrative spaces. In video games in particular, virtual architecture serves as a "walkable story container". It combines path guidance, atmosphere and character interaction — it demonstrates a type of storytelling potential we've never seen. This type of architecture dwells not only on the way space is constructed, but also in how users create stories inside it through actions. Take for instance the layered spatial designs and visual symbols of games such as *Death Stranding* or *Elden Ring*, challenging players to participate in an idiosyncratic world-building where architecture, narrative and interaction converge. This is a major trend in the evolution of narrative architecture in modern articulation.

---

① Christian Norberg-Schulz. Genius Loci – Towards a Phenomenology of Architecture. Rizzoli, 1980.

② "cinematic montage" stands as one of the most fundamental narrative and expressive techniques in cinematic art. The concept originates from the French term montage, meaning 'assembly' or "editing." As a cinematic language, its development and systematization are largely attributed to Soviet film theorists and directors in the early 20th century. It profoundly influenced cross-media fields such as architecture, literature, exhibition design, and game design; architect Bernard Tschumi applied "film montage" to architectural design.

Figure 2-2: the development history of Narrative Architecture



Resource from: Self-drawn by the author

2.2 Research Review

- Research Status

(1) Theoretical Foundations and Transformations in Spatial Poetics

The concept of spatial poetics was first introduced by French philosopher Gaston Bachelard in his 1958 work *The Poetics of Space*. **[1]**

In 1977, geographer Yi-Fu Tuan wrote in *Space and Place: The Perspective of Experience* that "Place is security, space is freedom: we are attached to the one and long for the other". This shows that space can carry people's feelings and sense of belonging. **[20]**

In 1984, Michel de Certeau wrote in *The Practice of Everyday Life* about the idea of "walking as writing". He said that when people move, walk, and use space in daily life, they are also creating small stories and meanings. Space, in this way, becomes something that people shape through their actions. **[12]**

In 2002, Italian art historian Giuliana Bruno introduced the idea of "emotional geography" in her book *Atlas of Emotion: Journeys in Art, Architecture, and Film*. She explored how space in movies and buildings can hold and express emotions, helping people understand how space connects to feeling and imagination. **[21]**

In 2022, Liu Liting explicitly stated in his master's thesis that game spaces constitute a "habitable medium reality". Their structure must fulfill three dimensions: functionality, immersion, and emotional connection, representing a contemporary expression of poetics

within the digital context. **[63]** Within the digital cultural context, spatial poetics are continually being reactivated.

In 2023, the journal Space and Culture published a research article titled "*Place Branding Viewed From the Perspective of the Poetics of Space*", which highlighted the instructive value of the spatial poetics approach in emphasizing place imagery, identity formation, and cultural communication. **[49]** This study demonstrates that spatial poetics has gradually permeated contemporary expressive practices from literary and architectural theory, emerging as a crucial theoretical foundation for rethinking the relationship between virtual space and emotional narrative.

(2) Theoretical Development of Narrative Architecture

"Narrative Architecture" first emerged in architectural theory as a focus on symbolic spaces such as religious sites and palaces. However, its shift toward media-centric expression in contemporary discourse stems from postmodern and deconstructivist contexts.

In 2004, Henry Jenkins first brought the idea of "narrative architecture" into video game studies in his work *Game Design as Narrative Architecture*. He pointed out that game space is a structural medium that helps move the story forward, and he talked about types of spatial narrative such as "environmental narrative" and "embedded narrative".**[46]**

In 2008, Michael Nitsche studied how 3D game worlds are built and organized in his book *Video Game Spaces*. He put forward the idea of "dynamic narrative structures", suggesting that space plays a key role in shaping players' movement, emotions, and actions, becoming an important part of the narrative process. **[4]**

In 2010, Steffen Walz also wrote about the concept of "ludic architecture" in *Toward a Ludic Architecture: The Space of Play and Games*. "Play" should be an integral part of the design of architectural space – interaction, transformation and narrative unified as a single experience. **[3]**

In recent years, as research into game narratives has deepened, scholars have begun to focus on spatial narratives from non-human perspectives.

In 2022, Hamid Amouzad Khalili explored in *The Architecture of the Video Game Stray* how non-human characters (such as the cat in the game Stray) can experience game spaces. He proposed that this offers a fresh perspective for game design, highlighting the potential of "non-human spatial narratives". **[50]**

Additionally, in 2024, a study called *Understanding the Impact of Perceived Challenge on Narrative Immersion in Video Games: The Role-Playing Game Genre as a Case Study* **[51]** examined how players' sense of challenge affects their story experience in role-playing games. It pointed out that finding the right balance between challenge and story is key to keeping players deeply involved in the game.

(3) The Generation Mechanism of Game Narrative Space

Narrative in games unfolds not through linear textual progression, but through the collaborative generation of mechanics, interfaces, and spatial design. In 2005, Jesper Juul noted in *Half-Real* that games are hybrids of "real-world rules and fictional narratives", where spatial structures serve dual functions: establishing rules and conveying emotional cues.**[43]**

In 2012, Espen Aarseth proposed in *A Narrative Theory of Games* that "path texts" constitute the core structure for understanding game narratives, where players generate personalized story trajectories through spatial choices. **[52]**

In 2014, Mark J.P. Wolf introduced the concept of "subcreation" in *Building imaginary worlds*, positing that every game world constitutes a logically self-consistent, culturally self-contained universe whose spatial structure embeds a unique value system and mythic grammar. **[14]**

In 2015, Marie-Laure Ryan put forward the idea of "Immersion-Interaction Tension" in her book *Narrative as Virtual Reality 2*. She pointed out that when designing game spaces, there should be a balance between giving players freedom to explore and guiding them through the story. **[9]**

In 2019, Clara Fernández-Vara explained in *Introduction to Game Analysis* that game narratives can be understood through three main parts: how space is organized, how players interact, and how the story develops. Among these, she believed that space plays the most important role as the main storyteller. **[16]**

(4) Game Studies from an Architectural Perspective

As architects and designers increasingly engage in constructing game spaces, architectural theory has begun to reexamine the structural characteristics and narrative potential of digital environments. In 2017, Xian Zhuolin noted in *Architecture and Culture* that virtual game spaces possess a tripartite nature of "visual-symbolic-behavioral", representing an extension of architecture's symbolism and contextuality within the medium. **[28]**

In 2020, Erkan Büyükbaykal systematically compared real cities with game cities in his doctoral dissertation, proposing that virtual spaces' characteristics—such as "formal freedom", "controllable rhythm", and "emotion-driven dynamics"—offer counterintuitive insights for real-world urban design. **[42]**

In 2021, Li Bo argued that architects in the digital context are no longer structural designers but rather "narrative directors" and "interaction choreographers" of virtual worlds, emphasizing that architectural expression in games has transcended technology to enter cultural and media dimensions. **[27]**

In 2023, Lombardi et al. noted in *Role-Playing Games And Narrative Architecture In Design Methods-A Systematic Review*: The inter-constructive relationship between game mechanics, narrative pacing, and spatial syntax represents a crucial breakthrough for future architectural design methodologies. **[45]**

Current research and discussions integrating spatial poetics theory with game-inspired urban

design remain relatively scarce. Studies on narrative architecture theory predominantly fall under interdisciplinary research between human sociology and architecture, often appearing as short papers. Consequently, this topic warrants in-depth investigation.

- Virtual Worlds and Architecture

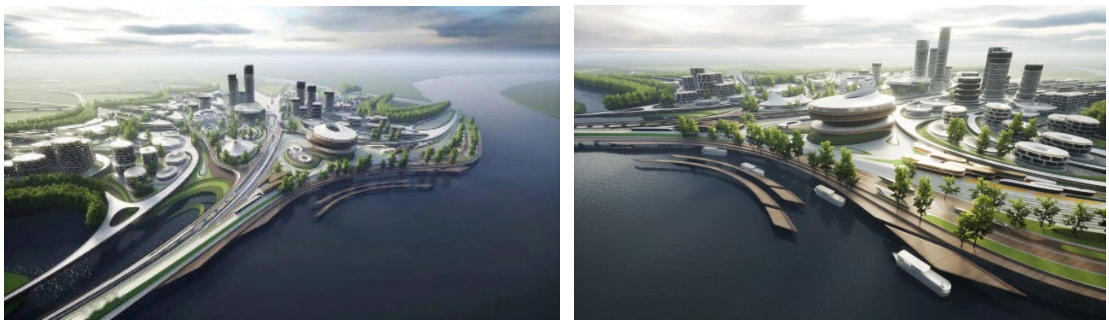
(1) New Opportunities for Architects in Digital World Design

With the growing popularity of the "metaverse" concept, architecture is no longer a discipline that treats the physical world as the sole "sacred" domain. Digital technologies are rapidly dominating discourse and paving the way for new modes of thinking and experimentation.[①] Currently, many architects and spatial designers have joined the ranks of building the metaverse, breaking free from the constraints of traditional steel and concrete to unleash their creativity within this virtual realm and craft distinctive works.

In the first half of 2022, London-based Zaha Hadid Architects unveiled their metaverse design proposal: Liberland. This virtual city consists of futuristic, curved structures where residents can purchase land using cryptocurrency and access digital buildings via avatars. Liberland features a town hall, collaborative workspaces, shops, a business incubator, and galleries showcasing NFT[②] art. It aims to foster a community emphasizing self-governance and minimal regulation.

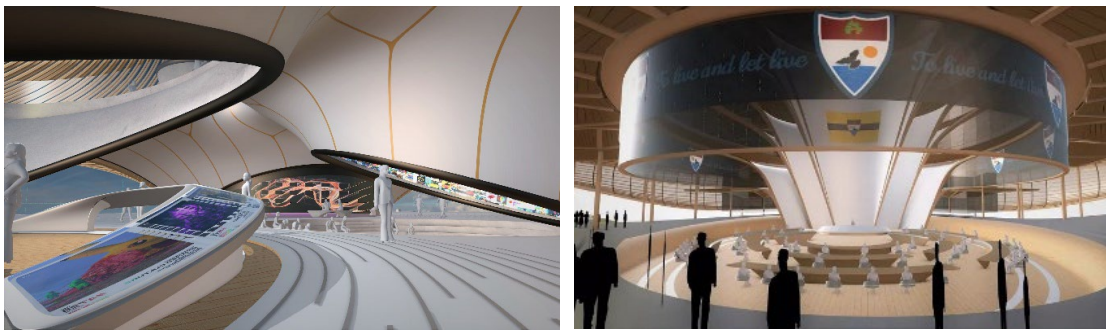
Liberland is based on a micronation claimed in real life by Czech politician Vít Jedlička, which has not received official recognition from international organizations like the United Nations. This 2.7-mile stretch of land lies between Serbia and Croatia, neither of which asserts sovereignty over it. Jedlička's goal is to realize libertarianism with minimal government.

Figure 2-3: Liberland Metaverse by Zaha Hadid Architects



① Jencks C, Kropf K. Theories and manifestoes of contemporary architecture[J]. 2006.

② **NFTs (Non-Fungible Tokens)** are unique, non-replicable cryptographic tokens that exist on a blockchain. They can represent digital collectibles or real-world assets such as artworks and real estate, and by "tokenizing" these tangible assets, NFTs make buying, selling, and trading more efficient while making counterfeiting significantly more difficult.



Resource from: *https://www.mytaverse.com/*

"Liberland Metaverse aims not only to develop the libertarianism of this microstate but also to function as an independent virtual reality domain", stated Patrik Schumacher, principal of Zaha Hadid Architects.

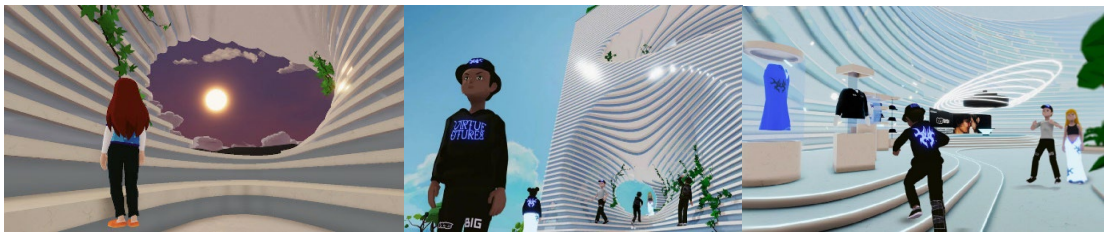
People can access the Liberland metaverse through Mytaverse, a cloud-based platform for creating 3D environments. Schumacher believes the core advantages of virtual environments lie in their global accessibility, adaptability, and parametric scalability. Since virtual spaces lack urban planning constraints, he is confident the Liberland metaverse can serve as a catalyst for parametric design. "Parametric design is the architectural and urban paradigm that best aligns with principles like differentiation, evolution, and multi-creator collaboration in the urban sphere", he stated. Schumacher envisions the metaverse as the future of the internet, yet physical worlds will persist alongside it, with their integration deepening. "As long as we possess physical entities, we require physical environments", he explained. "Virtual environments are as real as physical ones, and social reality seamlessly bridges this divide. Virtual and physical environments should be designed in tandem".

Subsequently, Zaha Hadid Architects launched the exhibition "Meta-Horizons: The Future Now" at the newly built Dongdaemun Design Museum in Seoul. Spanning digital technology, artificial intelligence, NFTs, and virtual reality, the exhibition showcased the firm's cross-disciplinary achievements. Highlights included a demonstration of Freetown and "NFTism", a virtual gallery exploring architectural and social interactions within the metaverse.

Like Zaha Hadid Architects, an increasing number of architectural firms are turning to the construction of virtual architecture within the metaverse. For instance, the renowned Danish architectural studio BIG created a virtual office building named Viceverse for employees of the media company Vice Media Group in 2022, marking the studio's first completed metaverse architectural project. This newly opened Viceverse office, situated on a Decentraland parcel, serves as the agency's virtual innovation lab, offering employees the opportunity to work within NFT spaces and other digital environments within the metaverse. "It's a very organic building—we can install an entire floor in a single day—so we see it as an

experimental playground and a canvas for construction", explained Morten Grubak, Global Innovation Executive Creative Director at Vice's creative agency Virtue Futures.

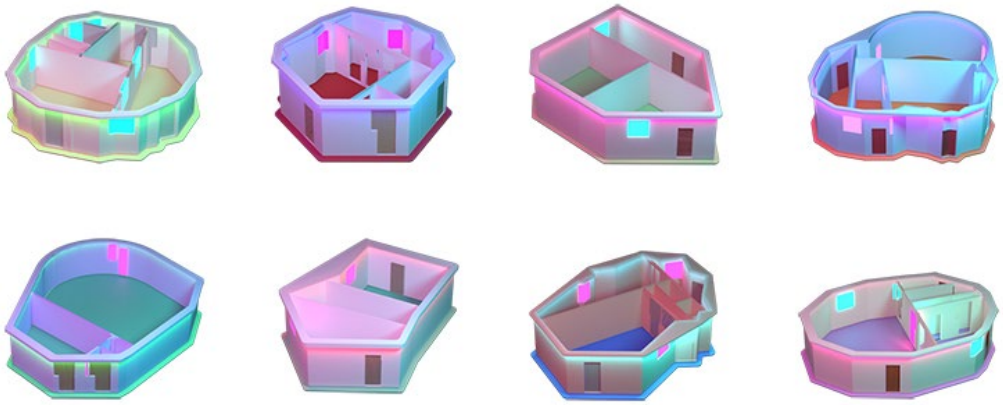
Figure 2-4: Viceverse's Virtual Office Building



Resource from: *https://decentraland.org/*

Technically speaking, anyone can become an architect in the metaverse. In Decentraland, users can build using the platform's native tools, or import models designed in other software such as Blender or SketchUp. Nevertheless, as demand for real estate in the metaverse continues to grow, the need for the services of "metaverse builders" has also risen sharply. Many virtual landowners lack the design expertise required to construct buildings and do not possess the skills needed for 3D design and development on Decentraland. These unmet market needs present an opportunity for virtual architects to showcase their abilities. Faye, a licensed architect who has worked across the technology and architecture sectors for nearly a decade, noted: "I've seen people offer between USD 200,000 and 300,000 for custom designs created by virtual metaverse builders". As a member of a team composed of tech professionals with architectural backgrounds, she launched an architectural NFT project called Metakitex, aimed at making the metaverse more accessible. Metakitex uses an algorithm to generate *meta-architecture* at affordable prices, with interior spaces that are fully accessible and interactive.

Figure 2-5: Metakitex's Generative Design "Meta-American Dream" Residence



Resource from: *https://www.architecturalrecord.com/articles/15625-inside-the-metaverse-architects-see-opportunity-in-a-virtual-world*

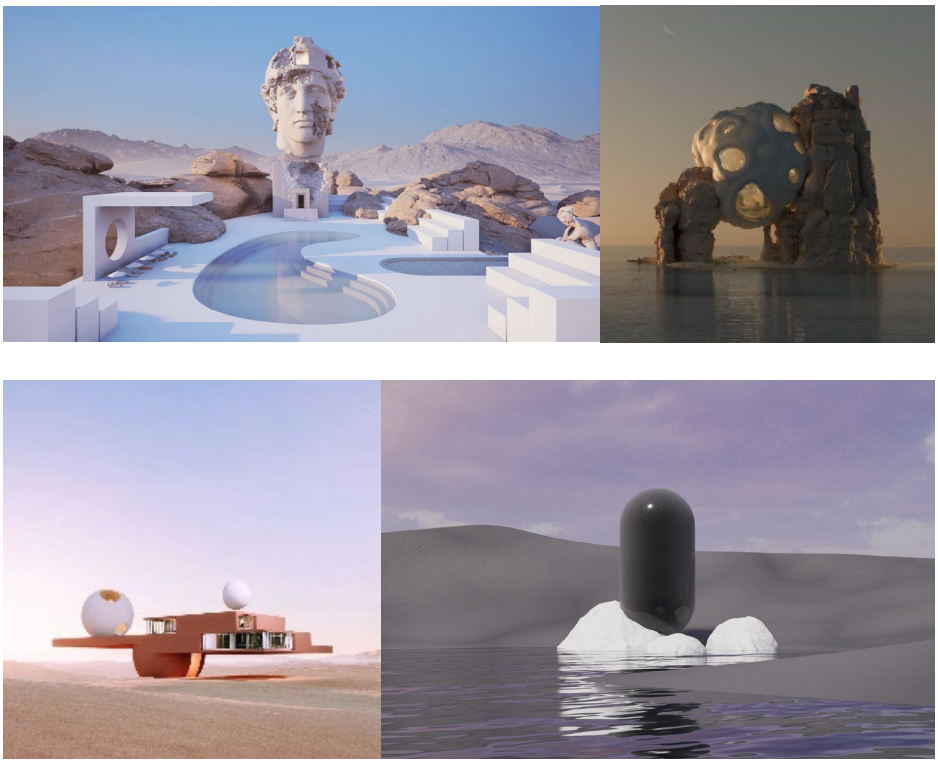
Start-ups have identified this emerging niche and are offering services to landowners and virtual real-estate developers. Polygonal Mind, a studio dedicated to designing architecture for virtual worlds, has already participated in numerous Decentraland projects, including galleries, parks, gyms, pedestrian walkways, and corporate headquarters.

Figure 2-6: Tomb Chaser 2 and Aetheria Block Museum

Resource from: *Polygonal Mind*

Everyrealm and The Alexander Team, metaverse real estate developers, have partnered with The Row—an exclusive, members-only metaverse real estate community—to make an exceptionally authentic attempt at building intangible assets, pushing the creative boundaries of the metaverse. In 2022, they invited a roster of globally renowned artists and designers to launch a series of virtual architecture projects. This membership-based metaverse community unveiled a total of 30 virtual real estate offerings, created by Daniel Arsham, Misha Kahn, Andrés Reisinger, Alexis Christodolou, design studio Six N Five, and Hard. Architects.

Figure 2-7: The Row Virtual Real Estate Projects



Resource from: *https://s.muz.li/go?link=https://www.designboom.com/architecture/row-metaverse-architecture-reisinger-arsham-sixnfive-christodoulou-07-26-2022/*

Each design will be sold as an NFT. Invited artists will develop and construct each striking digital architectural landmark within "The Row", deployable across a suite of metaverse platforms within The Row's designated zone. Elite membership to The Row is invitation-only and will open upon completion of the virtual zone's development.

In real life, architects shape human habitats. In the virtual realm, architects will fulfill social

responsibilities and missions just as they do in the physical world. Within the boundless metaverse, architects' imaginations are fully matched by this absolute freedom. The most significant distinction between the metaverse and real architecture lies in the nature of space itself. Real-world constraints—such as gravity, structural stability, climate challenges, or physical laws—hold no sway in the metaverse. Thus, architects can freely transcend existing constraints to create extraordinary environments and authentic works of art.

(2) The Virtual World May Emerge as a New Frontier for Architectural Preservation

As buildings collapse due to natural or man-made disasters, the metaverse can serve as a platform to preserve architecture for future generations within this digital reality. It can be viewed as a means to express and explore architectural heritage, enabling users to engage in immersive interactions with environments and one another online.

The Shigeru Ban Capsule Tower in Tokyo, a significant Metabolist architecture work demolished in the physical world, was announced for reconstruction in virtual space in 2022. Kisho Kurokawa Architect and Associates (KKAA), the studio of the tower's designer Kisho Kurokawa, and Japanese investment firm Laetoli are auctioning the rights to rebuild the tower on the metaverse platform OpenSea. Two ongoing NFT sales projects are underway: one permits the winning bidder to reconstruct Kurokawa's Capsule Tower anywhere globally, while the other offers a digital version within the metaverse.

Figure 2-8: The Shigeru Ban Capsule Tower will be reconstructed in the metaverse

Resource from: *https://www.dezeen.com/2022/08/16/nakagin-capsule-tower-rebuild-auction/*

As a flagship work of Japan's Metabolism architectural movement, Tokyo's Capsule Tower was built in 1972. It comprised 140 prefabricated micro-capsule homes connected to two concrete towers. KKAA states that auctioning and reconstructing the Capsule Tower on the metaverse platform aligns with Metabolism theory, which advocates for adaptability. "The

core concept of Metabolism architecture lies in rethinking how society utilizes buildings to achieve change, speculating on the transformation, growth, and evolution of architecture", KKAA explains. "By entering the digital realm, Metabolism theory can further evolve and reflect contemporary and future societies".

- Video Games and Architecture

Within the context of digital games, architects are compelled to confront new propositions: When materials become code, when gravity can be altered, and when boundaries become indistinct, what does architecture still signify? Players, as a new breed of "inhabitants", experience more than just a visual spectacle or tactical competition within games—they engage in perceptual training and identity transformation within digital spaces. Virtual architecture carries not only the "gameplay" mechanics but also complex structures concerning spatial cognition, emotional resonance, and visions of the future—qualities that define the essence of architects and architecture itself.

(1) Architecture Aids Video Game Design

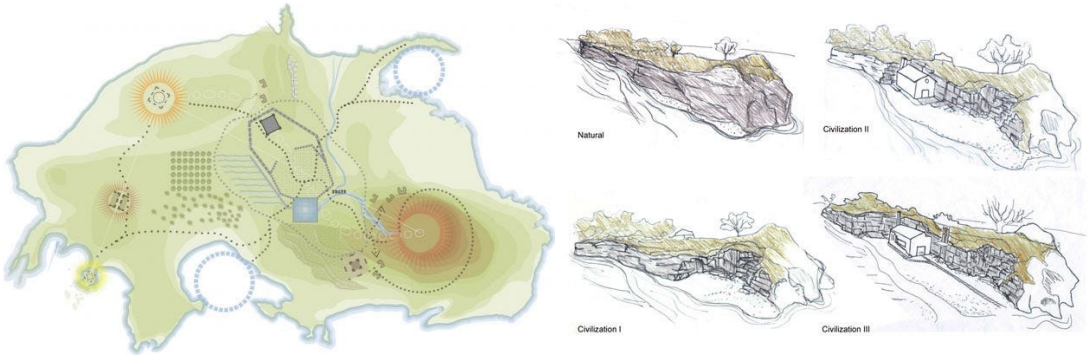
The creation of an outstanding game invariably relies on the collaboration of numerous professionals. Among these, As one of the core elements of game design, "scene" design often involves the participation of professionals closely related to spatial environments, such as architects, landscape designers, and architectural historians. One of the most iconic recreations is the one of Florence in 2009's Assassin's Creed II. This historical action game from Ubisoft Montreal recreated the architecture of Renaissance Italy, building digital structures of cities like Florence and Venice. Through the authentic depiction of historical monuments, such as the Cathedral of Santa Maria del Fiore in Florence, Giotto's Bell Tower and Palazzo Vecchio, this game shows how architectural formulation can generate very physically convincing multi-sensory and spatial logic conditions within virtual environments.

Figure 2-9: Screenshot of *Assassin's Creed II* gameplay footage

Resource from: *https://assassinscreed.fandom.com/wiki/Florence*

In 2010, the game team collaborated with architects to develop The Witness. Jonathan Blow and his hired architects integrated architectural design into gameplay with unprecedented depth, pushing scene details to their limits using architectural knowledge. Together, they created The Witness. Deanna van Buren, founder of FOURM Design Studio and one of the game's architects, initially observed that many architects preferred practicing design in the physical world, even dismissing virtual architecture as lacking real-world relevance. Many also lack understanding of game development processes, mistakenly equating game design with programming. However, this gap in understanding the gaming industry isn't solely the architects' fault. Game developers often overlook architects' professional value, viewing architectural design as vastly different from game art or finding architects' expertise too costly. In reality, this mutual bias hinders cross-disciplinary collaboration between the two fields. Yet once bridges of communication are built, architecture and gaming can not only complement each other but also push the boundaries of their respective domains.

Figure 2-10: *The Witness*- Concept Art



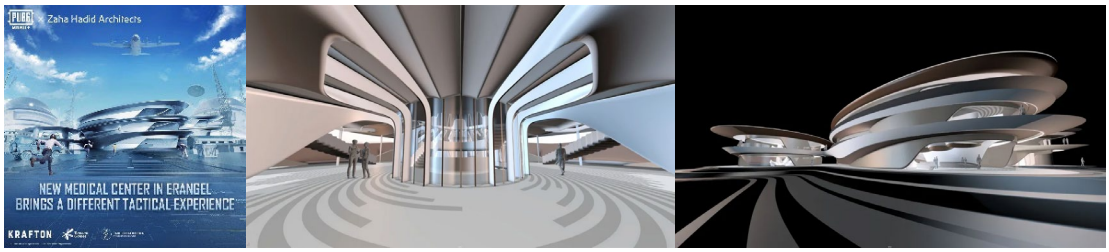
Resource from: *https://www.gamedeveloper.com/art/architecture-in-video-games-designing-for-impact*

The Witness: Concept Art and In-Game Screenshots In 2022, Zaha Hadid Architects (ZHA) collaborated with the renowned game PUBG Mobile to create a futuristic "Medical Center" within the game. Positioned at the heart of the game's virtual map, the structure employs ZHA's signature fluid curves, superstructural forms, and parametric modeling logic. This project not only extends the firm's architectural philosophy—shaped by insights from game development, computer graphics, and virtual production pipelines—but also reflects its ongoing exploration of "cyberspace" and the "metaverse".

More than just a design experiment translating architectural language into the digital realm, the game-based project invites millions of players to "inhabit" and "experience" future architecture via a virtual world on the gaming platform. The design of the medical center--with game features like cover, loot hunting and tactical movement--evokes a sense of place around these things in an immersive way. This cross-disciplinary project demonstrates how architectural design can be used to subvert narratives in virtual games, and recast buildings as players which are authoring the experiences they take part in, and potentially even

symbolic game "characters".

Figure 2-11: PUBG Mobile Medical Center



Resource from: *https://mp.weixin.qq.com/s/Eh4whDkazFZyhDTrRDxeeA*

Architects are not outsiders to the gaming industry but rather collaborators with immense potential. They can enrich the construction of virtual worlds through fresh perspectives, rigorous spatial logic, and poetic design language, so that video games could have a richer balance in between technology and art.

(2) Video Games as Architectural Design Aids

We used to make perfect homes or cities as a kids by attaching LEGO bricks together. Not only did this set fire our imagination and creativity but it also taught us problem-solving and construction skills. With the advent of digital entertainment, physical games have become a thing of the past, and players are turning to mobile phones or tablets to play these games. For architects and lovers of design, these games are rich zones of the imagination and are critical tools for exploring unconventional design not tethered in reality and everyday construction.

American urban designer and landscape architect David Fletcher developed a preference for designing within game engines after contributing to the open-world RPG The Witness. While working on The Witness, Fletcher also began experimenting with renovating San Francisco's dilapidated South Park, the city's oldest park. Fletcher reached out to Diego Lima, another architect who designed architectural elements for The Witness, to help migrate the South Park renovation project into a game engine. The two architects sat in their office, navigating a virtual South Park through their computers to assess the feasibility of design proposals.

Figure 2-12: South Park, San Francisco, USA

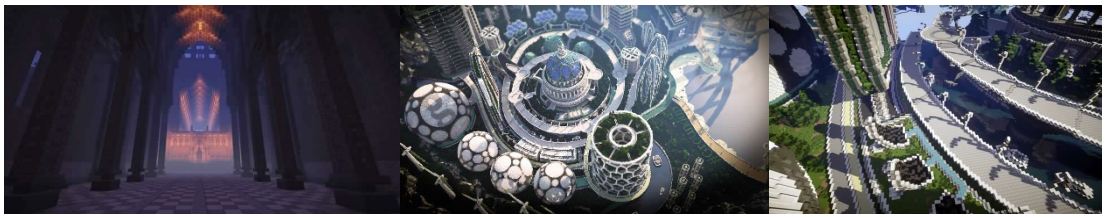
Resource from: *www.fletcher.studio*

Through that experiment, he discovered that game engines could also be used to design real-world architecture. Since then, Fletcher has migrated all his studio's projects into game engines. "We don't do 2D design. We always design in a 3D environment. I don't trust flat things".

In 2011, the game Minecraft came out with its central play mechanic of "building" itself. Players can create their own worlds by freely assembling them from modular pixel blocks, a system that subverts the distinction between "designer" and "inhabitant". This in-game architectural design experience is not only about 'use of buildings' but instead being 'made' or 'becoming' an architect. Such a demystified design processes grants that the game space could be approached as an "architectural laboratory".

British architect James Delaney has spent years building cities within Minecraft. After forming friendships with fellow players on one particular server, he began exploring ways to monetize his in-game creations. By 2013, at just 17 years old, he and three friends launched their own server: Blockworks. Initially, Blockworks primarily produced YouTube content for Minecraft. Gradually, they began accepting commissions from players to design maps for virtual game worlds and urban environments. As the business grew, the design company led by founder Delaney continuously expanded its revenue streams. In 2015, Blockworks partnered with the Museum of London to build a digital model of Old London within the Minecraft platform. This meticulously recreated the cityscape as it existed before the Great Fire of 1666, featuring landmarks like St. Paul's Cathedral alongside thousands of residential homes destroyed in the blaze. The map was later made publicly available for download, allowing the public to visually experience London's urban transformation before and after the fire.

Figure 2-13: Blockworks' digitally reconstructed models and fantasy cities within the gaming world



Resource from: *https://www.youtube.com/watch?app=desktop&v=h1oNn2Bs48c&t=1m05s* **and** *https://www.planetminecraft.com/project/climate-hope-city/*

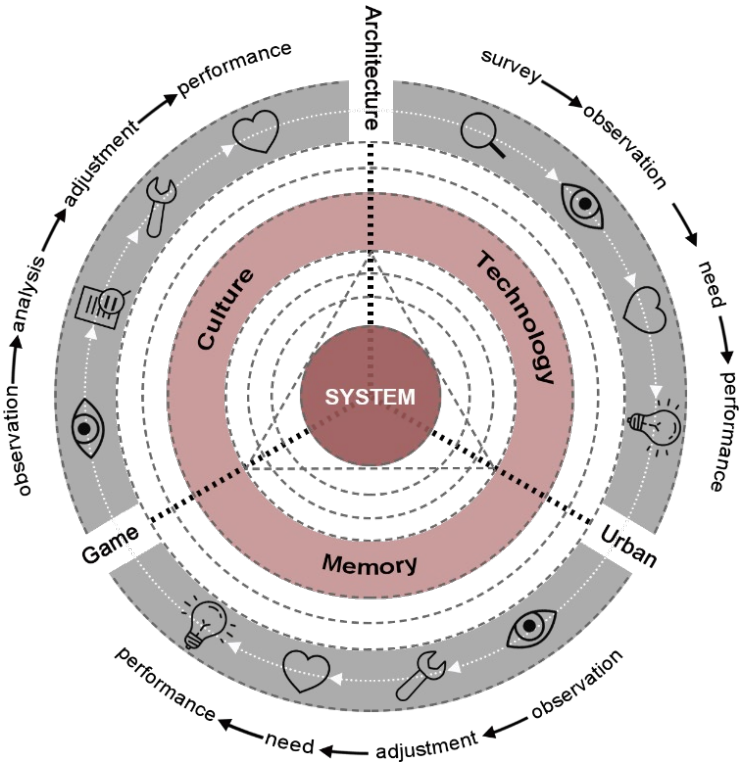
By 2017, Delaney, then 21, was still enrolled in Cambridge University's architecture program while running the company part-time. That summer, he was invited to Indonesia to participate in a workshop organized by Block by Block, a charity launched in 2016 by Microsoft and UN-Habitat. Delaney's task was to guide participants in using Minecraft simulations to design residential spaces on urban wastelands. Even though most of them had never played the game, their skills in communication and collaboration on this virtual platform quickly became

their common language.By working together over a period of three days, participants created a new public park with Indonesian cultural elements. This demonstrated the potential of digital tools in community-driven design.

2.3 Research Methods and Structure

- Research Approach

Figure 2-14: Thesis Concept Map



Resource from: Self-drawn by the author

Taking "game urban design" and "narrative architecture" as its academic starting point, this research uses spatial poetics to analyze architectural narrative generation systematically within virtual space and the implications of this for real-world urban design. Following the paths that spatial poetics and narrative architecture have trodden through philosophy, architecture and media arts, this research first discusses their conceptual changes and theoretical frameworks in virtual space. Next it looks at virtual cities and architectural spaces inside open-world games, defining residentiality, guidance, emotion and habitations. It then turns their spatial mechanisms and participatory logic inside out, using dimensions like environmental storytelling, path guidance and emotional mobilization to display the symbiotic relationship between dynamic narratives and readable construction. Finally, by way of models from deeds, the research distils strategies for setting up game cities in spatial organization, stylistic unity and experience; Meanwhile, it turns the focus to real world cities, showing how game architecture can impact inner-urban design via spatial cognition and

human centric reasoning. This research aims to establish a cross-media narrative spatial methodology framework applicable to architectural education, urban renewal, and game development, driving theoretical innovation and practical expansion of architecture within the digital context.

- Research Methods

(1) Literature Review Method

Through extensive review and analysis of Chinese and English literature in fields such as spatial poetics, narrative architecture, and game space design, key concepts, theoretical frameworks, and research trajectories were clarified. Building upon existing research, the compositional logic of game narrative spaces was theoretically defined, providing a solid theoretical foundation for this study's analytical perspective and experimental design.

(2) Case Study Method

Exemplary game or narrative architecture cases were chosen for a detailed examination of their spatial structures and narrative mechanics. By comparing and synthesizing typical cases, constituent elements and expressive methods that are highly relevant to game narrative architecture have been extracted, which will serve as empirical support and creative inspiration for the theoretical construction and design practice of this study.

(3) Visual Representation Method

Throughout the research process, integrating textual and visual information uses logical diagrams, flowcharts, spatial illustrations and other forms to express graphically. Visual representations are an improvement on pure text narratives. They more effectively demonstrate the complex connections between ideas, making discourse clearer and more comprehensible.

(4) Interdisciplinary Approach

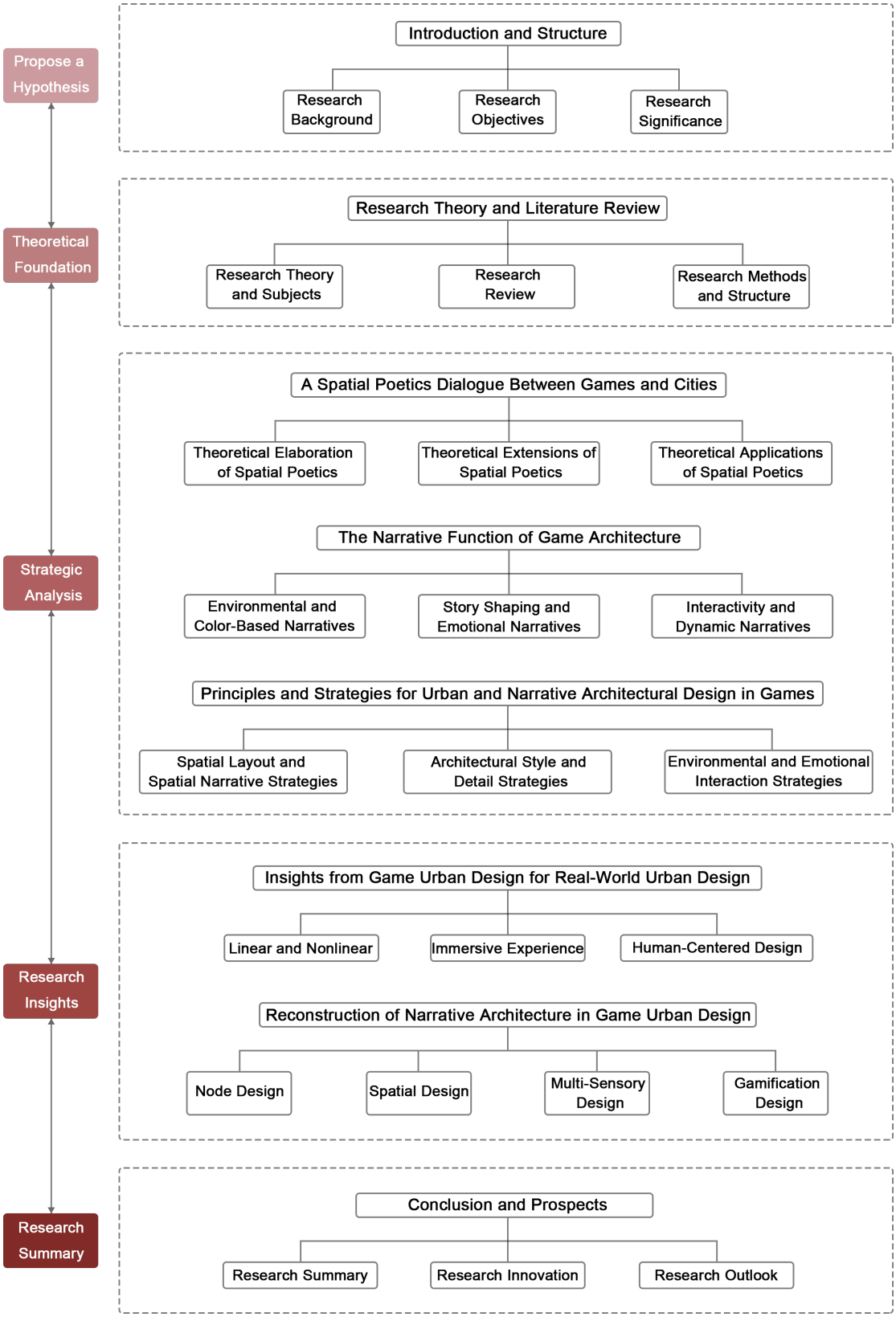
In order not to study in a narrow perspective, it combines the theory of architecture and aesthetics theory, narrative theory, communication studies and other relevant theories of multi-levels analysis. It broadens research frontiers and generates an even more open and interpretative conceptual framework by means of interdisciplinary conversation.

(5) Questionnaire Survey Method

A targeted survey questionnaire was designed to collect data on gamers' spatial perception, immersive experiences, and narrative engagement. Respondents were categorized based on their preferred game genres, completion frequency, and playtime duration. This approach aims to gather firsthand insights from the player perspective regarding virtual space acceptance and emotional resonance, thereby enhancing the empirical validity and persuasiveness of the research.

- Research Framework

Figure 2-15: Thesis Framework



Resource from: Self-drawn by the author

Chapter Summary

Chapter 2 begins with the theoretical foundations of spatial poetics and narrative architecture, offering a concise overview of their development across literature, architecture, and digital media, and highlighting the conceptual shift from space as a material container to space as an emotional and narrative medium. By tracing the interdisciplinary evolution of game spatial narratives—from structuralism and post-structuralism to the digital era—the chapter analyzes domestic and international research to reveal how virtual environments exhibit increasingly distinct architectural qualities in narrative mechanisms, emotional construction, and spatial cognition. It further identifies the growing convergence of roles and methodologies among architects, urban designers, and game designers within virtual worlds. Altogether, the chapter establishes the scientific background and theoretical framework for this study, providing a solid academic foundation for the subsequent analysis of spatial mechanisms.

Part 3 Spatial Poetics and Narrative Logic Between Games and Cities

Chapter 3：A Spatial Poetics Dialogue Between Games and Cities

A space only gains meaning when inhabited by people.

——Gaston Bachelard

3.1 Similarities and Differences in the Essence of Gaming Space and Urban Space

- Differences

(1) Physicality and Virtuality

The city is made of material things (brick, concrete, stone, metal), and it is also bound by the laws that determine how these objects behave (gravity, toughness). Their design and development must also take into consideration natural systems and engineering limitations. Game spaces, however, are procedurally generated and can flout natural laws—floating cities, infinite subterranean mazes, or spatial configurations that completely defies three dimensions. So game spaces are more fantastical than city spaces.

(2) Functionality-Driven and Playability-Driven

The primary purpose of urban spaces is to ensure the smooth functioning of human society—including traffic flow, housing, safety, and commercial activities. Design is grounded in practicality, with aesthetics and experience as secondary considerations.

Game space design revolves around the player experience, highlighting a level of difficulty (in hard to reach spaces), discovery (as in secret sanctuaries) and success (every time you solve a puzzle successfully). Functionality gives way to narrative and thrill; virtual cities

themselves are typically filled with irrational, but dynamic spaces.

(3) Rigid and Flexible Rules

Urban space rules are dictated by political, legal, economic, and technological systems—traffic laws, building permits, fire codes—constituting rigid rules whose violation leads to accidents or legal consequences.

Game space rules are set by developers and can be broken, expanded, or restructured through updates or player actions. For example, numerous sandbox games allow players to "break physics"—such as by using glitches to walk through walls or altering spatial forms directly with the use of mods. The kind of flexible rule-bending hackery just isn't possible in real cities.

(4) Participating Roles and Time Scales

People living in cities are inhabitants or citizens with durable spatial identity. Spatial participation is the business of everyday life — travelling, recreation, socializing.

People in a game-space are players: people who engage in space for utilitarian, purpose-drive reasons - entering when necessary and leaving just as quickly. Theirs is an episodic kind of engagement, with a focus on immediate gratification rather than steady daily routine.

(5) Sense of Boundaries and Freedom

Urban spaces develop through time, laying down layer upon layer of history, with "the thickness of time" described as historical traces (old district intertwined with new one, ruins juxtapose to modern) that is a city.

Game space boundaries are programmatively defined, ranging from explicit and static (such as the small battlefields in some strategy games) to dynamically generated space. Within games, physical space can be "reached" but it can also be "realized" by players at will--a degree of freedom that cannot be matched in societal reality.

(6) Handling of Spatial-Temporal Characteristics

Urban spaces develop through time, laying down layer upon layer of history, with "the thickness of time" described as historical traces (old district intertwined with new one, ruins juxtapose to modern) that is a city.

But game-spaces can, in contrast, shape and contort time itself – accelerating it; trapping it in continuous loops; reversing its flow or stopping it altogether. In some game levels, space shape would be constant while time shape in this example just changes through cycles; which is against the linear concept that we are used to in real world history.

Table 3-1: Differences Between Game Space and Urban Space

Dimension	Game Space	Urban Space
Form of Existence	Virtual construction, transcending physical limitations	Physical existence, constrained by nature and engineering
Function-driven	Centered on experience and narrative	Centered on survival and functional needs
Rule Characteristics	Flexible rules, subject to modification and exception	Rigid rules, dependent on legal and practical norms
Participant Role	Gamers, short-term goal-oriented	Residents, long-term daily participation
Boundary Features	Boundaries fixed or dynamically generated	Boundaries blur as geography and society evolve
Temporal Characteristics	Time can be accelerated, looped, or frozen	Time progresses linearly, with history and updates coexisting.

Resource from: Self-drawn by the author

- Similarities

(1) Spatial Organization and Order Construction

Organisational logic for spaces of play and spaces of urbanityGame spaces as well as urban places need to be committed to a determined organisational logic in order to manage action and behaviour. In both, whether the city's grid in the Assasins' series or Paris roads in reality, you see spatial order precipitating. Formation of strong cognitive maps which help orient and navigate people is enabled by the layout of spatial paths, distribution of nodes, and positioning of points-of-interest.

(2) Symbolism and Narrative

Urban places are more than just functional: they carry symbolic and narrative meaning, like when it comes to Paris's Arc de Triomphe, which represents national triumph. Games are using architecture and alleys and decorations and soundscapes to tell stories of virtual worlds soaked in class warfare and religious conflict. It's world is story, its environments static places in which to tell dynamic narratives.

(3) Immersion and Experientiality

A great urban space design can be one that carries its mood through its atmosphere. The pattern of squares, churches, and markets contributes to the feeling of community. The physical limits of the game space are also fundamental to it, since a well-conceived game space engulfs players through vision, sound, light and spatial structure. Seeing spaces prompts sensory input, which triggers emotions such as belonging, exultation, curiosity or

anxiety—a mechanism highly consistent across cities and games.

(4) Social Function

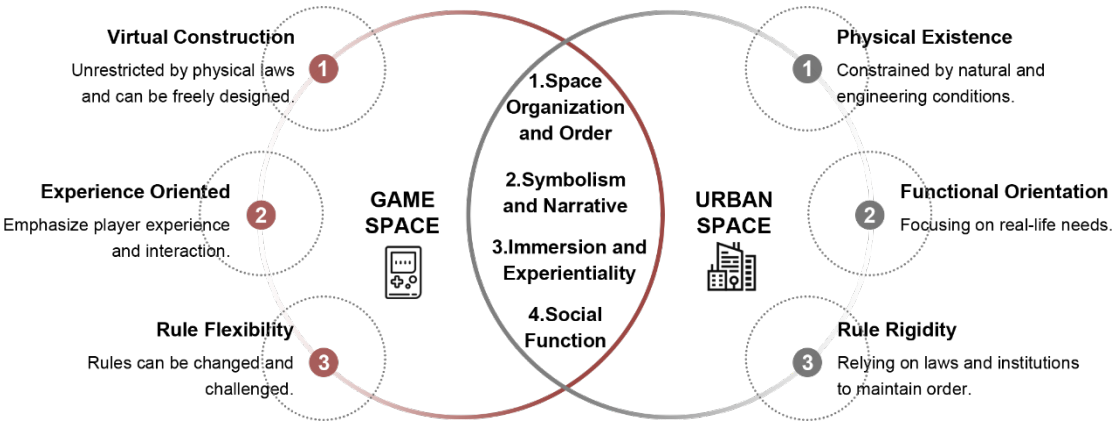
Whether in real-world social squares or in-game social hubs, space serves as a vessel for social relations, facilitating human interaction, conflict, cooperation, and communication. It provides a shared setting where people meet, exchange ideas, and build connections, turning ordinary environments into meaningful places of collective experience.

Table 3-2: Similarities Between Game Space and Urban Space

Dimension	Game Space	Urban Space
Spatial Order	Rules guide actions, charting paths and milestones.	Planning streets and squares, organizing movement and daily life
Symbolism and Narrative	Environmental storytelling, where spaces carry virtual narratives	Landmarks and layouts convey historical and cultural narratives
Immersion and Experientiality	Lighting, sound, and layout enhance immersion	Spatial ambiance evokes emotion and a sense of belonging
Social Functionality	Provides virtual social and collaborative platforms	Offers real-world social interaction and public gathering spaces

Resource from: Self-drawn by the author

Figure 3-1：Similarities and Differences Between Gaming Space and Urban Space



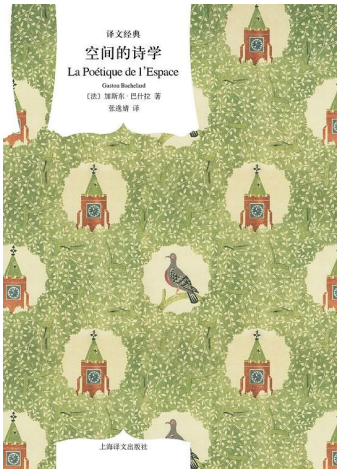
Resource from: Self-drawn by the author

3.2 Spatial Poetics Theory

French philosopher Gaston Bachelard (1884-1962) is considered one of the most prominent theorists on phenomenological aesthetics in the 20th century. His work as a philosopher is known for its interdisciplinary character, stretching the discipline of philosophy towards literature, psychology and art theory—in order to develop what he calls a "phenomenology of imagination". He particularly focused on how everyday objects and micro-spaces bear

human emotional experiences, evoking profound spiritual activities through intricate mechanisms of perception and association.

Figure 3-2: Gaston Bachelard, *The Poetics of Space*（*La Poétique de l'Espace*）



Resource from: *https://book.douban.com/subject/24845883/*

Space is not a physical container for human activity but a kind of field generator for perceptive experience and symbolic senses and emotive charge. As a spatial theory transitioned from physicalism to perceptualism, space was no longer an extension of function, but became instead the poetic realm of subjective phenomenological experience. Within that shift of thinking, the French philosopher Gaston Bachelard's understanding of spatial poetics provides deep and nuanced ways of seeing. He insisted that space, then, is not an object to be seen but a thing to be "felt"—an affective mode of being entangled with intimacy, significance and reflection. The above analysis will lead to some exploration of the generative mechanisms of poetic space from Bachelard's spatial poetics, as well as mediations on architects' modern praxis in spatial perception and the digital virtual space's contemporary interpretation. This provides a theoretical underpinning for future consideration of the perceptual experiences of game space.

- An Overview of Gaston Bachelard's Spatial Poetics

French philosopher Gaston Bachelard, in his seminal work *The Poetics of Space* (1958), proposed a poetic theory of space that transcends traditional rational conceptions of spatiality. He argued that space is not merely a physical, geometric, or functional entity, but also a vessel for emotions, memories, and symbols. In his view, space is not simply a container to be "used", but a medium that evokes inner experiences—a "form of externalization of inner experience". Thus, truly poetic spaces are those that trigger profound psychological responses and imaginative activities within individuals.

In this context, one of Bachelard's most representative core concepts is that of the "intimate spaces". He pointed out that each of these types correspond to the microcosmic, enclosed

forms which are commonly associated with intense emotion and memory within individual consciousness by virtue of their protective, secretive, and symbolic qualities (such as corners, cellars / attics / drawers / wardrobes). They are not simply functional spaces, but also symbolic containers for psychological projections. The attic symbolizes spiritual elevation and detachment, the cellar connects to the unconscious, instincts, and dark collective memory, while the corner may serve as a retreat for the solitary, a sanctuary for emotions. The significance of these places is not inherent to their architecture, but based on human society's ongoing intention in attaching meaning to them through both experience and the imagination.

Moreover, Bachelard attributes to space powerful symbols. He argues that spatial objects are not neutral things, but part of a "poetic image generator". Monuments such as towers, doors, stairs and corridors perpetually produce symbolic meanings within human culture and individual experience: The tower is isolation and transcendence; the door presents a boundary or passage; the stairway manifests psychological movement across vertical dimensions. These spatial images are not symbols spoken by the language, but rather symbolic energies produced spontaneously through perception of the relationship between the body and the seeing space. They have non-linear, illogical and even dreamlike mechanisms of association.

Bachelard, furthermore, highlights the importance of "embodied perception" in experience of space. He notes that space is not an inert thing to be looked at, but instead it is in fact "embodied" through the body's comportments: entering, hesitating, clinging, and listening. Space becomes a "vessel to be remembered" purely because it is thoroughly entangled with bodies experience. As he poetically expressed: "Space is a verse written for the body". The symbolic nature of space is not the result of abstract reasoning, but gradually emerges from bodily experience and perceptual actions.

Long before Bachelard, the French phenomenologist Maurice Merleau Ponty emphasized that perception is never abstracted but embodies itself in bodily transaction with the world. He argued that the mere movement of the body in space is, itself meaning.[①] Consequently, while each has a unique point of departure one toward poetical imagination and the other toward phenomenological philosophy Bachelard and Merleau-Ponty exhibit not only an affinity but also quite astonishing homophony in addressing space as existential being. Bachelard's "intimate space" can be seen as a current literary response (and extrapolation) to Merleau-Ponty's notion of "spaces of bodily perception", together, they are bringing about a

[①] The central ideas in Merleau Ponty's *Phenomenology of Perception* (*Phénoménologie de la perception*, 1945) are particularly concentrated in his discussion of the "proper body" (le corps propre).

movement from thinking in terms of viewing space to “experiencing space”.

In more recent theoretical developments, Brian Massumi further proposes “affect” as the dynamic mechanism within the perceptual process, emphasizing that the emotional states evoked by perception constitute the true source of spatial power.[①]

This suspended hotel
leaves its guests disoriented
—He Xiaozhu, *Paradise Hotel*

Homes suspended high above modern cities resemble temporary lodgings built upon illusions of “paradise”—neither true places of belonging nor vessels for stable memories and dwelling experiences. Residents imagine them as intermediate states between heaven and hotels, yet lose their sense of direction within, ultimately reducing these dwellings to prolonged “transitional spaces”. Like the Tower of Babel, these skyscrapers that appear simply to rise for no particular reason, are not “poetic spaces” in Bachelard’s view. He explicitly states: “Urban buildings possess only external height. Elevators have nullified the feat of staircases. Living closer to the sky offers no advantage whatsoever”. Contemporary space, vertically expanse, desolves the intimate bond between space and body, remove from space its ability to be a “container of time”.

Bachelard, however, would go on to argue that the real importance of space is as a “container of compressed time in countless tiny locations”. Its precisely this smallness of scale that, transited by memory, locates one in time. Like organs of memory and feeling, houses arrest the flow of time’s rapid flood into an extended continuum, giving breadth to the interior space of the self. There are only these intimate, symbolically charged spaces that feel good for bodies and brains to be in, so recalled and resonated with that we stay alive there poetically.

- Space and Perception: The Mechanism of Poetic Experience Formation

The complexity of space in the field of spatial poetics does not stem simply from its utilitarian division and arranging, but rather these are based on deep and active relationships among perception, recognition, memory. It is in this multidimensional relationship between all these dimensions where poetic space takes shape, developing exactly at the fascinating intersection when sensory immersion and psychological projection meet, producing a woven web of perceptions which goes well beyond that strictly physical.

① From Brian Massumi’s 2002 seminal work *Parables for the Virtual: Movement, Affect, Sensation*

(1) The synergy of visual and tactile perception forms the foundation of poetic experience.

The refraction of light, the texture of materials, and the enclosed versus open relationships of spatial boundaries all evoke emotional states through sensory engagement. Corners bathed in soft light, the warmth radiating from rough stone walls, the echo of footsteps on wooden planks—these elements collectively form the sensory dimension of space. As Peter Zumthor observes, the true power of space lies not in its physical form, but in its capacity to engage perception, enabling one to "quiet down and converse with oneself".[①]。

(2) Memory structures are deeply involved in spatial construction.

Space gets under your skin not just in sensual terms but in the pulling of emotional memory. They sink repeatedly into memory these hand-drawn places of childhood, the frontyard of an aged residence and the drawers in grandmother's house, they become part of one's emotional matrix. Space, remembered becomes poetic in depth.

(3) Space is quite often symbolic in and of itself by virtue of how it is shaped or arranged.

High rising towers can create daydreams of loneliness, fantasies, or challenges; deep closed forests are often a psychological projection onto the unknowable and unconscious. This figurative process not grammatically registered, rather an emotive, unlogical; innately internal one.

(4) Space is always produced in meaning as part of human behaviour practices.

Michel de Certeau likens the city to a structural schema constructed by "cartographers" or power institutions—through architecture, planning, naming, etc.—while ordinary people, the "walkers", recreate the city through their bodily actions, path choices, and temporary pauses—acts of "spatial writing". He contends that these everyday practices constitute a "narrative" that transforms abstract space into meaningful places, rendering the city a perceptible, experiential text of life.[②] This theory also offers explanatory power for understanding players' exploration and path-finding behaviors within game spaces: players' actions are not an act of obedience to predetermined paths, but rather an act of "inscribing" their own spatial experiences onto the virtual map.

Therefore, the mechanism for generating poetic space does not stem from technical means or formal grammar, but from the deep connection between space and human senses,

[①] From Peter Zumthor's work *Atmospheres*, this passage summarizes Zumthor's core concept of architectural "atmosphere."

[②] The core idea of this passage originates from Michel de Certeau's 1980 work *The Practice of Everyday Life*.

emotions, and the symbolic world. Space becomes a field for emotions, a shell for memory, and a vessel for symbols—a medium that carries and evokes the individual sense of existence.

- Contemporary Expressions of Spatial Poetics: From Architecture to Digital Space

With the evolution of media, spatial poetics have been developed in various contemporary forms. From modern architecture to digital gaming spaces, space—as the practical vehicle for "perceptual poetics"—has grown increasingly rich and liberated in its manifestations.

In more recent architectural movements, figures like Peter Zumthor and Tadao Ando have continued and deepened the practice of spatial poetics. They emphasize spatial ambience, material textures, and the presence of light, constructing contemplative domains "to be sensed rather than seen". As Zumthor emphasizes, his interest lies in the psychological states people experience while moving through space, not merely what they can see.

Concurrently, digital spaces and game design have emerged as new platforms for spatial poetics. Within virtual realms, architecture transcends physical constraints, enabling spaces to infinitely expand, float, rotate, and cycle. Game designers employ sound, light, color, and player perspective to construct "poetic scenes" rich in symbolism and contemplative resonance. In this process, space ceases to be merely a narrative backdrop and instead becomes a trigger for the flow of player experience, emotion, and imagination. The concept of "intimate space" is thus perpetuated and transformed in a different form. Enclosed or hidden places within virtual spaces—such as corners, narrow passages, and secret chambers—not only serve as turning points for game mechanics but also, like the corners and cellars described by Bachelard, evoke players' desire to explore and their emotional projections. Though lacking physical reality, these game spaces create "perceptible intimacy" through light, music, color, and visual rhythm. They extend the spatial experience of what Bachelard termed "psychological shelters", enabling players to "inhabit" the digital world.

Therefore, whether it is the "playful spirit[①]" in modern architecture, or a "perceptual experiment[②]" in virtual space, Spatial poetics has transcended medium-specific forms in contemporary practice, evolving into a profound aesthetic methodology for exploring

[①] The earliest systematic conceptualization of the "play spirit" originated from Johan Huizinga's work *Homo Ludens*. Architectural scholars frequently draw upon this theory, viewing architecture not merely as functional containers but as spaces that stimulate humanity's potential for "play." Le Corbusier similarly proposed in *Towards a New Architecture* that architecture should embody an "esprit de jeu"—a free interplay of form, proportion, and light and shadow, constituting an artistic compositional activity. He likened architects to children stacking blocks in space, creating order through the act of "play."

[②] In *Phenomenology of Perception* (1945), Merleau-Ponty emphasizes that the body serves as the medium of perception. Spatial experience is not a rational measurement but emerges through the interaction between the body and its environment.

human-space relationships. This spatial approach eschews functional and structural considerations, instead focusing on how space is “sensed”, “imagined”, and “inhabited”, ultimately becoming a poetic encounter between the individual and the world.

3.3 Transformation of Spatial Poetics in Game Design

- Poetic Translation of Architectural Imagery

The relationship to architecture is more than visual reproduction in game design. By means of poetic translation, the cultural memories and bodily connotations inscribed in traditional architecture are translated into virtual spaces that may be activated by players. A lot of game background scenes are based on and abstracted from the architecture or scenic spots in reality, such as Gothic Cathedral, Oriental garden and some famous urban sceneries to create new emotional expression through the story narrative with virtual space. For example, we can increase the sense of space by manipulating a combination of light and sound in a spatial way, steering players towards the intentional exploration within spaces through interactive events that induce recollections or dreams connectable to particular historical situations or cultural circumstances.

This generation of spatial imagery stimulates players’ memory images and builds a common culture. For example, the past architecture recreations in Assassin’s Creed are about more than showing pretty pictures. They are rich in social and historical textures of various times. But as players wander through virtual Florences, Parises or even ancient Egypts they are not just engaging in visually sumptuous details; they are also sinking into remarkable historical and cultural contexts. This approach to designing - focusing on the minute and also cultural symbols is a way for players to appreciate that spaces are more than just shells, but have an emotive connection historically as well.

In addition, the expression of architectural Imaginary is embodied in the kinetic interactivity of virtual spaces. Rather than the passive nature of real-world settings, game spaces use interactive elements to serve in a narrative capacity. The investigation of architectural space itself becomes a narrative pursuit, and interactive events and environmental transformations, moment by moment uncover the fictions/history concealed inside. For instance, in games based on historical backgrounds, when a player enters a particular building, related historical events or conversations between characters will be elicited; Plant proposed that these architectural spaces can become channels linking the flow of historical narratives with the emotional resonance of players. Through this approach, virtual architectural spaces transcend mere visual representation, evolving into vibrant, poetic realms capable of sustaining profound emotional resonance.

- Mechanisms for Creating Serene Spaces and Contemplative Experiences

Peaceful places as a unique approach have become a trend in the design of games, relying on advanced space shape and atmospherics in order to help immerse a player into conditions of self-awareness and emotional focus. From the perspective of Gaston Bachelard's spatial poetics, such serene spaces can be viewed as a transformation of the intimate spaces he described. Intimate spaces serve as vessels for human emotions and memories, carrying profound psychological and spiritual resonance. This theoretical position is used by game designers to turn Bachelard's intimate spaces into actual experiences of quiet places within carefully constructed virtual worlds. This means that this practice gives virtual spaces the ability to become tangible receptacles for emotive memory and self-reflective experience.
To achieve this, designers typically employ low-intensity ambient sounds, soft and gradually shifting lighting effects, and enclosed or semi-enclosed spatial layouts. This design approach to create a feeling of psychological privacy and security promotes the players' transition into engaged states of introspection.

For example, action puzzle games may deliberately include inexposed and hushed space of tranquility in order to lead the players who do not only enjoy emotionally narrative of atmosphere but also desire deeper adventure and reflection amidst a still place. These spaces are typically accompanied by meticulously crafted ambient sounds—such as leaves rustling in the breeze, distant trickling water, or occasional bird calls—to reinforce the tranquil atmosphere. At the same time, levels are frequently laid out with twisting hidden paths to encourage players to experience game content in a purposeful but focused manner that encourages contemplation.

This way it is not only possible to minimize external sensory noises in the normal world but also facilitate strong emotional relationship between players and the virtual space, through immersive experiences.

For example, in *Gris*, players follow the protagonist as she moves through a world that is slowly coming back to life with color. The lights, spatial landscapes and chromatic progressions reflect the character's inner healing process and his increased consciousness. This contemplative, symbolically layered space creates an opening for meditation on personal trauma as well as healing, transmuting the tale of the game world itself into a poetically eloquent narrative. With its symbolic environmental design, *Gris* brings players into a sense of perfectly immersive emotional and spiritual engagement that intertwines spatial sensations with affects. This spatial design strategy not only amplifies the game's emotional narrative dimension but also contributes to the continued development and examination of theories of spatial poetics in digital media.

Figure 3-3: *Gris*

Resource from: *https://store.steampowered.com/*

- Space as a Container for Existence and Experience

In the field of gaming, space is more than place and presentation it stands as primary receptor through which players come to understand themselves in existential terms. Through its spaces, players build a kind feeling of empowerment and strengthen their feeling of presence. Game creators have a knack for designing spaces where the environment is tightly linked to players' emotional growth and cognitive transformations.

The slow change of play scenes, the dilapidation or construction of buildings, for example, are frequently emblematic of shifts in the psychological state and development arc items experienced by player characters. This intertwining of story and landscape enables players to experience time passing and the metaphor of life's journey within the virtual world. The spatial interaction system is carefully polished to help players contemplate the significance of your own existence, and even cause deep philosophical thoughts.

Concurrently, Heidegger posited that "the philosophy of beings places itself in works, namely art.[①]" As entities created and placed into the world by human beings, spaces inherently constitute an art form. We inhabit our own and one another's being in these spaces, which are activated with poetic resonance through creation and encounter. Simultaneously, as vessels for existential experience, spaces reveal powerful philosophical dimensions in game design. They also function not simply as narrative devices, but as the mechanism by which players interface with the virtual world. In game spaces, players participate in levels of self-reflection and empathy games cannot give us anywhere else. And that emotional exchange turns space a truly poetic and philosophical container of existence, and accelerates the new formulation of spatial poetics theory in digital media. Here, players do not merely "observe" space but "encounter" it—experiencing, understanding, and forging entirely new emotional connections through these encounters.

① Heidegger points out in *The Origin of the Work of Art* that art is not a means of reproducing reality, but rather "the revelation of truth within the work."

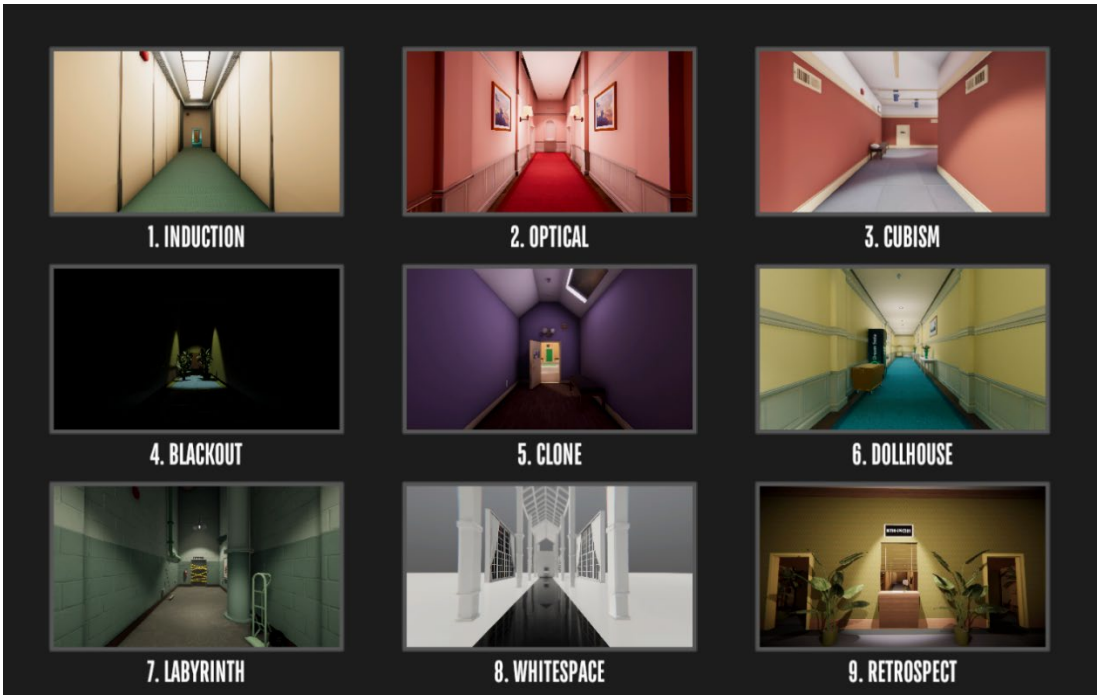
3.4 Game Virtual Space from the Perspective of Spatial Poetics

From the perspective of spatial poetics, game virtual spaces are not merely technologically constructed illusions but poetic domains capable of activating player emotions and transcending sensory perception. Through wireless time, bodily reflection, and emotional resonance, virtual spaces move beyond simple simulations of reality toward a poetry of existence.

- The "A-Temporality" of Virtual Space

Within game virtual spaces, time is frequently abstracted or restructured, challenging the norms of linear temporal progression. Players are no longer bound by the passage of natural time but can intervene in time itself through specific mechanisms—such as acceleration, deceleration, or even reversal—causing time to momentarily transcend convention and become a "reconfigured time[①]". In this context, time ceases to be a unidirectional straight line, instead manifesting as fractured, spiraling, and overlapping multiple forms. The entire spacetime system may thus be sustained in a nonlinear, illogical state, disrupting the causal sequence relied upon by traditional narratives and creating an experience akin to poetry: fleeting environmental disorientation and instantaneous flashes of imagery cause players to oscillate between reality and fantasy, experiencing time as both dense and abundant.

Figure 3-4: *Superliminal* Level Interface



Resource from: *https://store.steampowered.com/app/1049410/_Superliminal/?l=schinese*

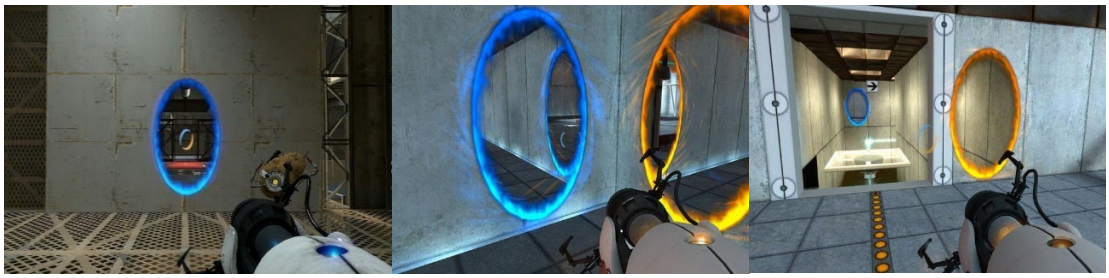
For example, in the video game *Superliminal* players make their way through a reality of

① Paul Ricoeur proposed in his 1983 work *Temps et récit.*

warped illusions as time and space frequently becomes distorted and reset. The sizes and distances of objects are determined by visual perception, not the laws of physics, creating a sensation that players travel through not just space but also a time stream molded by personal perception. This intentionally ruptured façade of spatiotemporal regularity removes the experience from mechanistic causality and closer to the liquid, fractured rushes of time evident in dreams.

And not to mention, virtual spaces frequently exhibit bizarre ideas removed from time and space. Via the door's movement, spatial-temporal coordinate shift, and dream mode players can travel amongst different noncontinuous dimensions freely. The Portal games capture this idea beautifully: by employing "portals", players manage to achieve instantaneous spatial transport while hijacking time/space perceptions. Linear narratives, which depend on futurition of time are also dislocated here. Instead it is a kind of heterogeneous mode of organizing; based on leaps between different spaces and temporal indefiniteness. This intertwining of temporal structuration dissolves the single timeline of traditional narratives, creating a complicated and shifting spatiotemporal grid. In this way, what it feels like to be a player is constantly undermined and reconstituted. The reason is combined with the feeling, the reality and illusion intertwined make the virtual space complement to physical consciousness and emotion.

Figure 3-5: *Portal* In-Game Screenshots



Resource from:

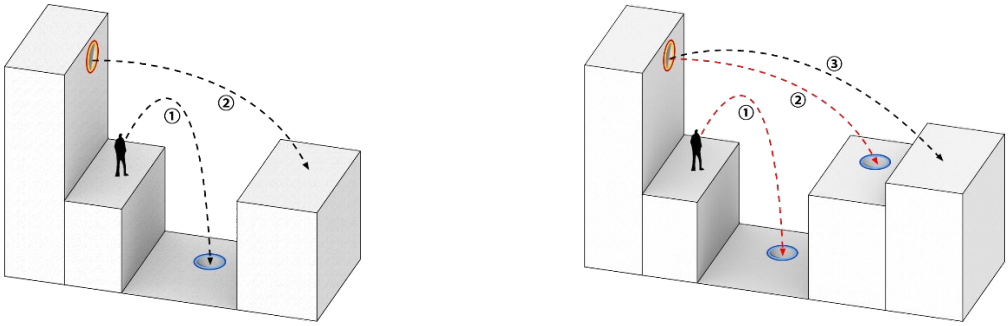
https://store.steampowered.com/app/400/Portal/?l=schinese&curator_clanid=28673811

Players solve puzzles using the Aperture Science Handheld Portal Device (the "portal gun"), a portal projected device that can create a temporary wormhole between any two flat surfaces. The Portal Gun can create blue and orange portals, which visually and physically connect in three-dimensional space. There is no inherent distinction between an entrance and an exit portal. Any object (including the player) passing through one portal will emerge through the other at a different location. A key feature of portals is momentum redirection: when the player traverses portals rapidly, their stored momentum is preserved and its direction is reset to match the orientation of the exit portal. In its basic state, when a player jumps into a blue portal, the downward momentum from free fall is converted into forward linear momentum upon exiting the orange portal, enabling access to otherwise unreachable locations. Simply put, the downward velocity upon entry is preserved until exiting the portal, ensuring

consistent velocity at both entry and exit points. In an advanced technique, after completing the basic teleportation and exiting through the orange portal, the player must immediately activate a blue portal in mid-air at the estimated landing point. Re-entering the orange portal unites both the initial linear and vertical momentum out of it into more linear momentum, sending the player further up and/or forward. This crossing type realizes additional relative descent distances over the old one, and in principle it brings the application of acceleration theorem to crude applications. Unfortunately you can't wrap that bit, so there still is a limit to speed.

Figure 3-6: *Portal* Game Mechanics Explained

Basic Portal (Left) Advanced Portal (Right) Portal Mechanics Explained



Resource from: Self-drawn by the author

Past and future intertwine within the open world, causing time to loosen and disperse, transforming into a poetic, fluid existence. Each player's movement and discovery re-edits fragmented time, continuously generating personalized temporal experiences. It is just this free play of the imagination which sets the virtual world free from the tyranny of mechanical time, endowing it with a kind of time approaching that of dreams, and poetry. This turns the virtual space into an area in which emotion, memory and imagination mingle wildly.

- Redefining the Body-Perception-Space Triadic Relationship

In a virtual game space, the body, the sense and space are combined to form such a system. The body comes before spatial experience in that it is an entity, perception comes between body and space in that it mediates their relationship, and space depends on the participation of body and perception as a living process.

(1) The body serves as the starting point for players to perceive and experience virtual space.

Like Gaston Bachelard emphasized that the body is the origin of our perception of the world. In games, through actions like walking, climbing, and jumping, players are not mere observers but active agents. The body directly enters the space, leaving an imprint of existence. This bodily entry is not merely physical movement but an existential experience and emotional immersion, endowing every observation point in the virtual space with individualized depth.

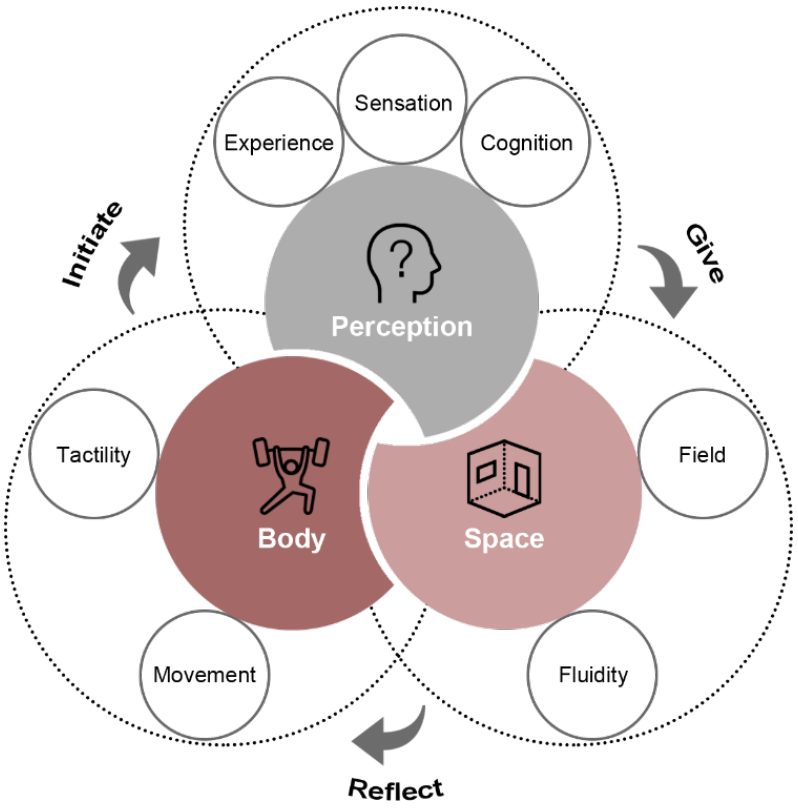
(2) Perception is an action and acts as a medium between body and space.

Perceptual symbols such as color, sound, and even the physical reflections of objects in virtual environments draw players into particular settings. Here, the immediate spatial experience intersects with the player's inner cognition, generating emotional shifts—ranging from belonging and alienation to uncanny transformations. Perception ceases to be passive reception; instead, it dynamically co-generates with the space through bodily action. This process unfolds through layers of perceptual shifts—surprise, dread, climax, and profound depth—constituting the primary encounter between body and space, achieving a fluid connection between bodily sensation and spatiality.

(3) Through the participation of body and perception, space transforms from a passive landscape into an active presence.

Players are no longer mere observers but co-authors of the experiential structure with the space. Through players' actions and perceptions, virtual space is continually restructured and deepened, forming a fluid field imbued with individual memory and emotional resonance. This field transcends physicality, becoming an emotional terrain—a disembodied world that transcends environmental materiality and enters poetic perception.

Figure 3-7: Body-Perception-Space Triadic Relationship



Resource from: Self-drawn by the author

In this way, the body initiates perception, perception imbues space with meaning, and space reflects back onto the body while continually restructuring itself. And these elements that form a persuasive proposition for breaking out of the artificial simulation – to take this transformative leap into an incredibly immersive and poetic experience that transcends across many layers of consciousness.

- From Immersion to Resonance: Expressive Potential of Poetic Space

Traditional game studies often interpret virtual spaces as profound experiential foundations, viewing immersion as the pinnacle of gaming experiences. However, such interpretations frequently overlook the potential for poetic expression within virtual spaces—where space transcends mere realism through symbolic, scenographic, material, and musical treatments. These elements collectively craft a perceptual field that approaches poetic space through suggestive, contextualized means.

When virtual space ceases to strictly mirror the real world's structural logic and spatial positioning norms, it enters an ambiguous state rich with contextual perception. This state diverges from traditional physical environment simulation, approaching instead a dynamically generated perceptual field that defies complete grasp. For instance, in certain game scenarios, dense fog, repetitive routes, and randomly shifting sounds interweave to generate an expansive, unpredictable atmosphere. This draws players into a migratory connection with boundless unknown realms, fostering profound immersion accompanied by a sense of humility and caution.

In this sense, virtual space is no longer a totalizable, mappable and observable static entity. Instead, it is similar to that "unfinished" the emotional field created in and developed during poetic constructing which grows perpetually — during the experience of playing the game. This contour formation allows a virtual space to be no longer merely interior environmental-imitation or paper-like stereoscopic presentation, rather into an emotional like surging and flowing-space, sometimes clear and unobstructed, distant and long-standing; and sometimes vague and disorderly, mysterious and elusive. Among these spaces, the brothers' feelings vibrate together and thrum in unison.

Furthermore, the poetic expression of virtual space manifests in its orientation toward the "unknown". Poetic quality is not a fixed beauty but a fluid, precarious, and ever-shifting existence. Unpredictable sounds within game scenes, overlapping combinations of multiple environments, distortions, and transitions between contexts all become building blocks of this "unfinished" space. As a new form of text, games shift from observable, distant physical spaces into experiential, perceptually grounded situational spaces. This transformation is also a

journey from sedimentation to resonance.

Statistician Ernst Cassirer once argued that humans are not "rational animals" but "symbolic animals[①]", We construct our environment and perception through symbolic systems. In virtual spaces, poeticism evolves into a series of symbols—from what is seen and heard to the indescribable atmosphere—all achieving a form of nonverbal orientation. Players resonate with the space through this symbolic system, ultimately completing an experience that transcends given meanings and the materiality of the environment.

To conclude, the poetry of virtual gaming terrains is not only in its superficial appearances but also in the ability to trigger players' emotional encodings, uncover untapped spatial heights and project them through phantasmagoric realms that become braidmangled with their perceptions. The result is a discursive form that exceeds meanings imposed by traditional society, social structures and linguistic systems.

Chapter Summary

Chapter 3 compares game spaces and urban spaces, exploring their differences in terms of physicality, functionality, rules, and modes of participation. This comparison introduces the notion of "the poetics of space", which comes with associating space not only as a physical container but also as a field where meaning, emotions and memories are being produced. The poetics of space is about how we feel, perceive and communicate emotion in relation to space. Therefore, space also becomes a poetic and symbolic space that has the potential to provoke deep affective responses and intense experiences. Game spaces, because of their pliability and interaction possibilities -mostly through the player's agency and sensory experience- but also through the vast virtual world must bring credibility to place as a "poetic place". In games, space design is not just for functionality or beauty, it also applies narrative and emotional measures to make the player emerge and produce an effect of taking interest or caring. The contact between the player and virtual world turns the space into an emotional/meaningful transmission vehicle that makes it actual, dynamic and poetic.

Chapter 4: The Narrative Function of Game Architecture

4.1 Environmental and Color-Based Narratives

- Environmental Atmosphere and Sound Design Narrative

The atmospheric environment is one of the most important narrative components in digital

[①] In his later work *An Essay on Man* (1944), Ernst Cassirer wrote with remarkable clarity: "Man is a symbolic animal."

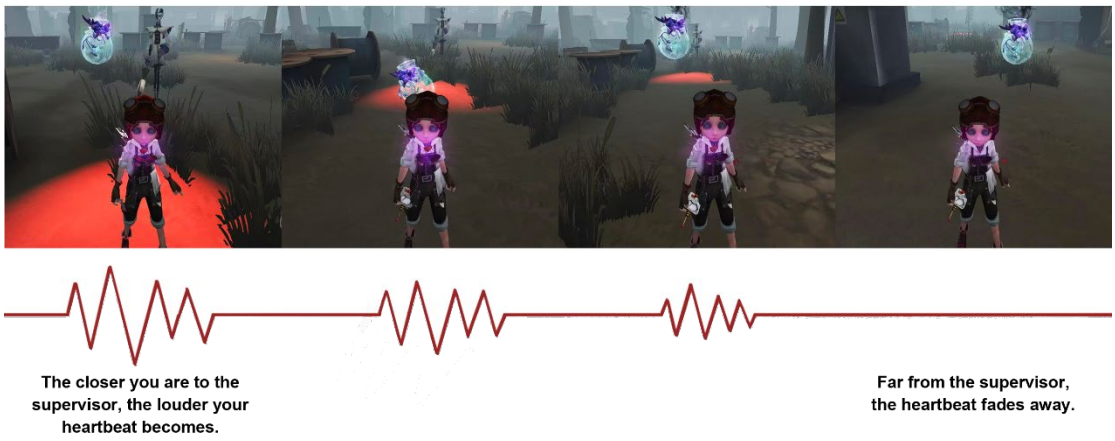
games. It's not just atmosphere that it creates to pull players in, but a less obvious manipulation of players' emotional expectations, pushing and pulling the pacing of narrative without you realising it. Unlike traditional tales narrated by words, literary backgrounds are formed of the orchestration between visual and auditory narration. This is especially so for suspenseful, horror or psychotense fiction, in which environmental ambiance and sound design often become consubstantial within a highly synchronised "perceptual grammar". This creates an opportunity for potent emotional gestures and spatial significance to be created without relying on explicit narration of plot.

Against this backdrop, a game like *Identity V*—alleged to sound the most narratively powerful note through its environment and how it utilises sound design as a whole. His Gothic ambience, use of classical architecture, and psychologically suspenseful approach to spatial form afford ample testament to this. The game is rather late-Victorian in design, with scenes mainly depicted in cooler, more subdued colors. Chipped walls, broken furniture, overgrown gardens and great stone masses lend the film a sense of claustration; a prison which is not imposed only by its physical confines but also by the grey nosed religious quality that prevails. These environmental symbols come preloaded with metaphorical meaning; death, decadence, power and taboo—spatial projections of character destinies and narrative backstories.

Supporting the atmosphere is a highly detailed sound design of the game. Sound and music are no simply ambient, subaltern fillers; they actively contribute toward narrative structure to make up an "auditory spatial order". During gameplay, people routinely have an emotional reaction to sound before they do the same to visuals. For example, when the survivor controlled by a player approaches the regulator, before he or she reaches it the heartbeat sounds gets faster. This beat isn't just background music, but an "interactive sound effect". The sense of movement is a core part of the progression, directly responding to how the player positions themselves in space to create an ever-changing tonal pulse. The players are therefore receiving aural information about how much space is between them, and will become more alert. Here, sound design serves as a narrative driver.

The game's "footstep" mechanism is particularly expressive. The distance, rhythm, and directional cues of footsteps are often used to signal the approach of the regulator, serving as the core basis for players' strategic decisions—whether to flee, hide, or lure the enemy. Here, sound effects not only signal enemy presence but also forge an intangible spatial pressure. Though players occupy the same map space, guided by these auditory cues, they experience constantly shifting "safe zones" and "danger zones". The boundaries of their psychological space are continually reconfigured, forming a highly tense "auditory map".

Figure 4-1: *Identity V* Heartbeat Status



Resource from: https://id5.163.com/ and Self-drawn by the author

Additionally, the game changes according to its spaces by interpreting ambient audiosounds: *Identity V* employs soundscaping to create a narrative web in their spaces. For example, in some scenes players can hear faint sounds played through loudspeakers in quiet rooms — a baby crying, the sound of a door creaking or leaves rustling in the wind. It is these covertly amplified whispers that often reveal "unspoken narratives" silently unfolding. They don't have to be directly related to the Adventures, but should stimulate the players' creativity and sense of discovery so that they venture out into or unearth forgotten lore and history. Here, ambient soundscapes play the role not of "emotion triggers", but of paths for narrative insinuation. They direct the player toward non-linear spatial and temporal readings of it and makes for a more deeply layered narrative world.

This mood even applies to interface and "delay" sound logic. A lot of sounds don't occur at the same time as you hear them, they are locked for a certain locati0n and just then turn on when player reaches an area or does something. This "responsive sound design" focuses attention on player manipulation of the environment as a generator of feedback, further reinforcing game space's 'dynamic' and "immersive" character. Just when you think barren reaches serve as safe havens to recuperate, sounds of footsteps, screams or metal scraping produce sudden jolts that pour ice water over preconceived notions of environmental safety. The world around is no longer a static, backdrop but an entity that may "awaken" at any time to let suspense grow perpetually.

From a narrative perspective, this synergy between environmental atmosphere and sound design forms an "emotion-first" storytelling strategy. Players perceive a space's danger, secrecy, or tragic qualities not through textual information, but through the interplay of sight and sound. Sound is oftentimes even more intrusive than an image, and carries emotional weight without 'seeing' anything. This thus affords it special facilities for constructing oppression, fostering unknown fears, and exciting subliminal fancy.

Furthermore, integrating sound design and atmosphere intensifies the association between space and emotion as well as creating a "bond" of expressionist experience between 'character and space'. Each escape, hide or kill, rescue takes place inside this tight space and its auditory undulation. Space becomes a "memory-bearing" structure, where auditory cues awaken players' lingering perceptions of past gameplay experiences, forming a narrative loop akin to an "echo".

- Narrative Construction of Color and Spatial Cognition

In the spatial narrative systems of digital play, color functions as much more than a vehicle for visual style: it's also fundamental to driving players' spatial cognition and emotional affect. In contrast to material environmental construction and literal sound design, the narrative labor performed by color is often understated and powerful—it doesn't just determine a space's emotional resonance, but also directs players in making quick assessments of the temporal cadence, mental shape, and metaphorical interpretation of virtual locales.
The figurative narrative of color is the most clearly visible in its role as a manipulator of spatial visions. In numerous "cognitive illusion games", color serves as an implicit component of "spatial strategy", collaborating with pathfinding, visual perspective, and other mechanics to create concepts that are both physical and counter-intuitive. One of the most characteristic pieces in this regard is *Superliminal*.

This first-person puzzle game developed by Pillow Castle structures its narrative around dream logic, immersing players in a virtual space saturated with visual illusions and spatial paradoxes. It tells no linear story and asks players to "experience the narrative" through spatial exploration—frequently shifting object sizes, rotation, lighting and paths so that one is forced to undergo a psychological journey of self-realization. It is in this process that color becomes an atmospherical gesture but also a rhythmical mechanism and source of meaning.

Levels are primarily composed of basic color blocks—red, blue, yellow, white—which function both as spatial dividers and crucial psychological cues. In the early stages, the player's environment is dominated by soft, warm tones, paired with minimalist cubic structures and high-saturation lighting. This creates a visual illusion of "rationality, safety, and control". This spatial order instills trust in the player, making it easier to enter a puzzle-solving mindset. However, as the story progresses, the space abruptly begins to distort. Red and black alternate dominance in the visual field, walls repeatedly display "EXIT" yet escape remains impossible, while passages employ twists, mirroring, and repetitive structures to create an intense sense of disorientation. Here, color shifts from guidance to deception, from reassurance to disruption, and the narrative rhythm transforms from "guidance-exploration" to "denial-breakthrough".

Throughout this process, color becomes the pivotal variable that either sustains or dismantles spatial cognition. The excessive hue and high contrasts contribute to players becoming visually destabilised and also feelings of emotional dissonance. This is enhanced when color starts to "distort"—corridors becoming monochromatic rooms, wall-mounted blocks of color and shadows reversing the distinction between surfaces—whooshing into players' rational comprehension through an ever-changing environment. Space is no longer a map, but becomes a perpetually changing, unpredictable labyrinth of perception.

By reducing and exaggerating the use of its chromatic frame, *Superliminal* puts on emphasis borrowing the base premise that "cognition is gameplay", that is to say it now challenges and reshapes those thinking habits of the player, as well as his/her visual experiences. The configuration of color is not mere artistic screen; it is strategic narrative formation, a vital means of marshaling cognition, emotion and action. In some case, floors, walls and ceilings are painted the same red. This borderless treatment serves to give players a false sense of "spatial dissolution", disorienting them while invoking instinctive discomfort. In certain levels, the appearance of blank white spaces typically indicates narrative "transition zones" or cognitive "reset points". These empty places are not "void", but lines of incredible emotional tension and concentration, narrative breaks and shifts.

On a symbolic level, color also plays an important role in storytelling. In the game's concluding moments the spaces suddenly snap back to real-world imagery — corridors, cafeterias, offices — and colors turn neutral: light brown and gray-blue, presenting a jarring psychological juxtaposition. This change is not, in and of itself, simply an artistic choice but an unintentional narrative trick: it represents the dream's ending return to normality; subtly suggesting something to the player – that what you take for "reality" here may be another artificial construction. Color enters as a symbolic machine that ceaselessly disrupts the player's subjective appraisals by transforming the space proposed in or by virtuality into a mirror of their own perceptual apparatus and mental set.

In a poetics of space sense, in *Superliminal* color isn't just the surface language that makes up space but is the very thing that animates it – as a physical-mechanical determiner of visual cadence and affective modulation. It sets in motion the generative mechanism of what Bachelard has called, a little misleadingly in English translation, "poetic space"; it is space that is looked at and yet more than seen; but also regarded with curiosity, uncertainty, and interpretation. Through it, the game uses minimal color to control complex emotion and turns poetic experience into mechanism of gameplay by a four-layer system called "color-path-emotion-cognition". With every hue-change players sense the churning of time, the surging of space, and their own awkward self-consciousness.

Figure 4-2：*Superliminal* Level 1

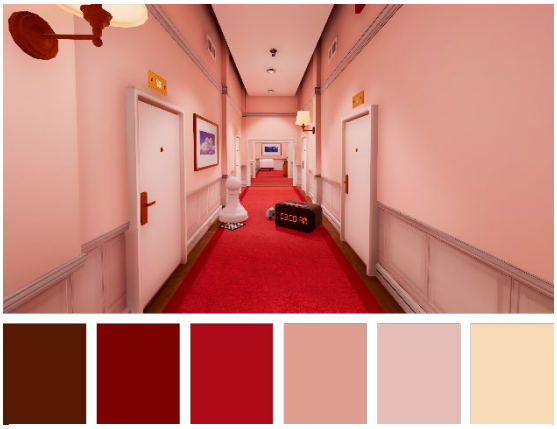
Induction (Green and Orange Piece Room) Potential Unease

Color Characteristics: Green, khaki, golden yellow, and bright orange create stark contrasts with sharply defined boundaries.

Spatial Narrative: The green carpet and beige walls evoke a classroom or playground, fostering childlike whimsy and a sense of order. Yet oversized orange-yellow pieces and blocks dominate the space, hinting at imbalance and latent discomfort.

Narrative Function: Here, color shifts toward "gamified irrationality", transporting players away from reality. Green symbolizes stability, yet the oversaturated orange-yellow gradually destabilizes the space, heralding the prelude to "order spiraling out of control".

Figure 4-3：*Superliminal* Level 2



Optical (Pink Corridor) Warm Colors—Illusion of Safety

Color Characteristics: Dominated by light pink, beige, and burgundy, with red carpets and wooden details reinforcing a sense of order.

Spatial Narrative: This is a classic "daily life" scene palette, conveying order, warmth, and security. The combination of pink and red evokes familiarity and stability, convincing players they are within a rationally structured space.

Narrative Function: As the game's opening space, soft hues and minimalist composition jointly create an illusion of "trust" and "control." This lowers cognitive defenses, facilitating player immersion and acceptance of subsequent "cognitive traps."

Figure 4-4：*Superliminal* Level 3

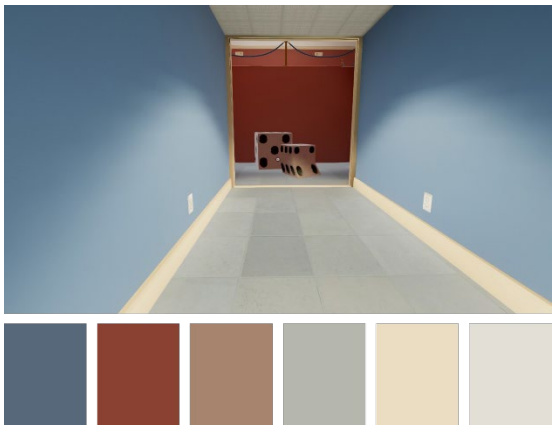
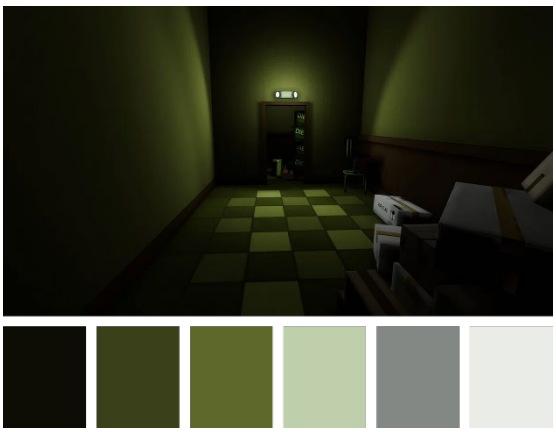


Figure 4-5：*Superliminal* Level 4



Cubism (Blue Walls and Red Dice) Geometric Conflict

Color Characteristics: The blue-gray walls clash with brick red, creating a stark contrast between cool and warm tones with a strong geometric feel.

Spatial Perception: The massive dice serve as the visual focal point. The blue walls symbolize rationality and stability, while the red dice appear abrupt and absurd, disrupting the spatial logic.

Narrative Function: The dice symbolize "chance," amplified here as spatial obstructions. The clash between rationality (blue) and absurdity (red) embodies the dissolution of spatial logic.

Figure 4-6：*Superliminal* Level 5

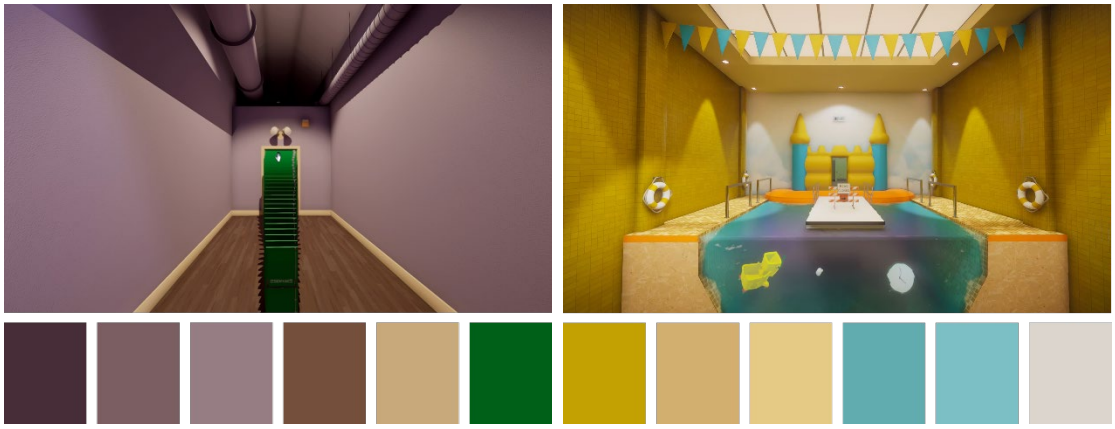
Blackout (Green Shadow Room) Fear

Color Profile: Dominated by deep green and black, complemented by low-brightness gray-green and dark brown.

Spatial Perception: Sparse illumination, blurred boundaries, space swallowed by shadows. The oppressive color scheme diminishes players' sense of direction and security.

Narrative Function: Dark levels use color to evoke fear and uncertainty. Green, meant to symbolize safety exits, becomes ineffective in shadows, transforming into "false hope." This marks the turning point where players' perception gradually descends into disorientation.

Figure 4-7：*Superliminal* Level 6



Clone (Purple-Green Corridor)

Logical Distortion

Color Characteristics: Low-saturation purple walls, brown flooring, with green elements appearing extremely jarring.

Spatial Perception: Purple evokes dullness, while green doors undergo endless cloning and infinite replication, completely disrupting spatial logic.

Narrative Function: The cloning level creates cognitive traps through infinite replication of "green doors." Green, originally symbolizing an exit, now becomes "misdirection," trapping players in a looping illusion that symbolizes the fragmentation of logic and self.

Dollhouse (Yellow Pool Paradise)

Bright and Absurd

Color Characteristics: High-saturation yellow covers the walls, contrasting with blue-green water surfaces and light gray.

Spatial Perception: Bright, cheerful colors initially evoke childlike wonder, but as yellow saturates the entire space, boundaries dissolve, creating an oppressive atmosphere.

Narrative Function: "Excessive childishness" transforms into "uneasy absurdity." Yellow shifts from warmth to harshness, inducing distortion and discomfort, plunging players into visual disorientation.

Figure 4-8：*Superliminal* Level 7

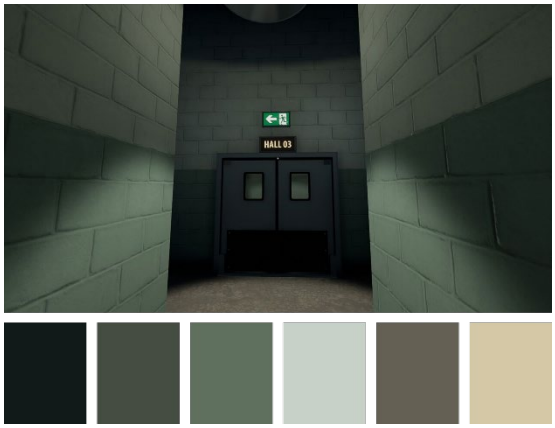
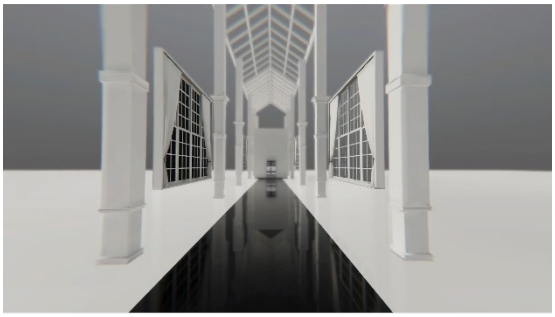


Figure 4-9：*Superliminal* Level 8



Labyrinth (Green Narrow Corridor) Loop Dilemma—Sense of Being Lost

Color Characteristics: Dark green, grayish green, and cool gray tones create a monotonous, oppressive atmosphere.

Spatial Cognition: The narrow corridor forces players to choose "left/right." Yet whichever path is selected, it ultimately loops back to the starting point, forming an infinite cycle.

Narrative Function: The maze level uses monotonous colors and cyclical corridors to create "false choices." Green exit markers repeatedly appear, yet directional decisions prove futile, amplifying the narrative sense of entrapment and despair.

Whitespace (Black-White-Gray Hall) Conclusion—Reboot

Color Palette: A minimalist triad of black, gray, and white, stripped of all decorative hues.

Spatial Narrative: Monochromatic tones create a sense of "void," dissolving boundaries and infinitely expanding the space.

Narrative Function: Black, gray, and white symbolize calmness and conclusion, resolving the preceding chromatic chaos and signaling the player's entry into the finale. This signifies both a "reset" and an "implication of reconstruction." This pure-color minimalist space carries narrative discontinuity, ultimately forming an allusion to the "termination of the dream."

Resource from: *https://store.steampowered.com/app/1049410/_Superliminal/?l=schinese* r

Figure 4-10: *Superliminal*-Narrative Pacing Curve

Resource from: Self-drawn by the author

In the end, color is no longer a visual rhetoric that defers to space but now serves as one of the grammars of the game system itself. It bridges structure and perception, logic and symbolism, perspective and action—serving as the pivotal device that transforms space into "poetic experience". In the context of digital media, this color-narrative strategy provides key possibilities for immersive architectural design: space must be "read" not only visually, but also as language and constituently by the body, emotion and imagination in a collective manner.

4.2 Story Shaping and Emotional Narratives

In digital games, the visual language—including environmental color, structure, rhythm, and light-and-shadow shifts—is intricately woven with players' emotional experiences. Through meticulously designed spatial layouts and visual imagery, games often evoke complex emotional responses and narrative associations without relying on extensive text, achieving a "metaphorical narrative" at the perceptual level.

Journey provides a striking example of the concept "emotion as narrator" through its highly symbolic storytelling and wordless narrative approach. The game opens with a long shot overlooking a vast desert, guiding players' attention toward distant mountain peaks—the spiritual goal and spatial symbol of the entire game. Though the game eschews traditional chapter divisions, its natural scene transitions and escalating emotional rhythms naturally divide the experience into five distinct phases: [Sand], [Valley], [Tower], [Snow], and [Mountain]. Each phase centers on shifting emotional states that propel the narrative forward while facilitating symbolic transformations.

In the initial【Sand】phase, players find themselves in a vast, boundless desert. The landscape is desolate, dotted only with tombstone ruins, stone pillar remnants, and cloth banners fluttering in the wind. Dominated by golden and orange-red hues, the sun-drenched dunes create a warm and gentle visual effect. This stage symbolizes the journey's commencement, evoking the player's initial state of solitude, curiosity, and uncertainty. Players freely explore without prompts or verbal guidance, the environment's silence reflecting the emptiness after civilization's demise while mirroring the psychological state of an individual confronting the unknown. The "serene beauty" of this phase echoes the opening imagery of ruins in the film *WALL-E*[①], demonstrating the narrative power of "negative space" within environmental storytelling.

[①] The animated science fiction romance film *WALL-E*, directed by Andrew Stanton and produced by Pixar, was released in 2008. The first half of the film features almost no dialogue, relying instead on music, facial expressions, and movement to convey emotion—a major breakthrough in animated storytelling.

The 【Tower】 stage offers a transitional emotional experience. Towering ruins stretch before visitors, hinting at a once-advanced civilization that declined for unknown reasons, evoking feelings of insignificance and helplessness. This enclosed, soaring space is divided into multiple levels by water features, hanging banners, and light. Players must activate mechanisms to illuminate symbols, gradually reviving the tower layer by layer. As each level lights up, light and shadow ascend within the tower, establishing a rhythm of tranquility, sanctity, and ritualistic solemnity. The interactive mechanics themselves function as a narrative device: with each awakened layer, players undergo a metaphorical awakening and reconstruction of their inner consciousness. The tower's verticality and ascending motion reinforce the symbolism of "ascending toward the divine", while also hinting at the player's gradual approach to the spiritual core of their journey.

Upon entering the 【Valley】 phase, the spatial atmosphere undergoes a significant shift. The color palette turns blue-black, suggesting unknown dangers and a gloomy, oppressive dread. Topographically, this is also the lowest elevation among all terrains. Players are drawn into a dark, enclosed subterranean canyon. Diminished light and intricate structures, alongside colossal stone statues and lurking mechanical serpents, instill tension and oppression. This phase disrupts the desert's vastness and tranquility, emphasizing peril and confinement instead. Players' emotions shift from initial serenity to anxiety and vigilance. The oppressive environmental structure forces players to alter their approach, shifting from free exploration to cautious stealth. This spatial design not only heightens gameplay challenge but also symbolizes the crises and fears encountered on an individual's spiritual journey: the deeper one explores, the more likely they are to confront subconscious anxieties.

The 【Snow】 phase marks the escalation of narrative conflict and the peak of emotional tension. Blizzards sweep across the land, visibility plummets, and characters struggle through the freezing cold. The mechanical serpent reappears, intensifying the threat to survival. The environmental palette shifts to blue-white and gray-black, while sound is suppressed to a near-silent, low-frequency background. The blizzard setting serves not only as a gameplay challenge but also visually and aurally constructs an atmosphere of "extreme survival". During this phase, the player character repeatedly stumbles, collapses, and struggles to advance—a design conveying profound emotional resonance: human fragility, exhaustion, and the brink of surrender. Through spatial language, *Journey* depicts the traveler's dual collapse—both mental and physical—subjecting the will to survive to a brutal interrogation.

Upon reaching the 【Mountain】 stage, the player's relentless climb culminates in an emotional crescendo. The earlier oppressive gloom gives way to a luminous, pristine sanctuary high above. The space sheds its cold heaviness, transforming into lightness,

openness, and brilliance. The character gains flight, traversing weightlessly through layers of cloud seas and beams of light. Colors now lean toward pure white, gold, and interwoven blue-purple hues. Light and shadow shift rapidly, the rhythm noticeably quickening, creating an intense visual impact. The spatial design of this phase carries a distinct sense of ritual and celebration. Each leap the player makes becomes a tangible embodiment of "liberation", symbolizing the journey's fulfillment and spiritual transcendence. The mountain is no longer a distant goal but an immersive reality—the culmination and sublimation point of the entire spatial narrative system.

Figure 4-11: *Journey*-Scenes

Resource from: *https://store.steampowered.com/*

In *Journey*, emotional experience lies at the heart of the game. Game designer Chen Xinghan learned from Joseph Campbell[①]'s works how the profound hero's journey is constructed. The most crucial narrative structure of the hero's journey revolves around a person's transformation. For instance, a farm boy becomes a hero who saves the galaxy, a hacker becomes a savior, or even more abstract stories like a lion cub becoming king. These linear turning points in life reveal the core logic of transformation within the hero's journey. Chen Xinghan realized that this three-act structure of tension extends beyond specific character

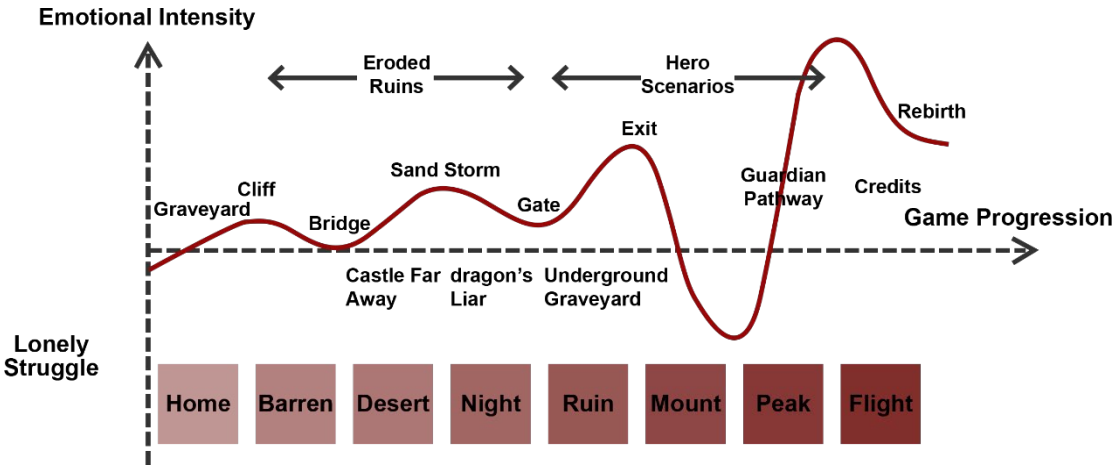
[①] Joseph Campbell, a renowned American mythologist, proposed the theory of the "Hero's Journey," comprising Departure, Initiation, and Return. He posited that myths from around the world follow a common structure, symbolizing universal human psychology and the journey of growth.

arcs—it can even be abstracted into the emotional curve of "a human life": from birth, exploration, and loss to awakening and return. Life itself forms a complete and moving narrative thread. "I aligned the transformation of the hero's journey protagonist with the tension curve of the three-act structure. I realized that a person's life journey from birth to death forms a perfect, linear arc. A human life is itself an exquisite three-act hero's journey. That moment stunned me. It was so perfect—a design method filmmakers had long understood. We had to try it in games", he said.

Throughout *Journey*'s environmental design, its five primary stages are not isolated functional zones but rather interwoven, progressive, and mutually referential, forming a coherent narrative chain that extends from physical journey to spiritual symbolism. The game's environments not only serve visual presentation and operational challenges but also establish a complete "sensory narrative logic" through structural rhythm, color transformation, and spatial momentum. Each step the player takes through the space corresponds to a shift in consciousness; every change in light, wind, sand, or terrain hints at the rise or fall of an emotional arc.

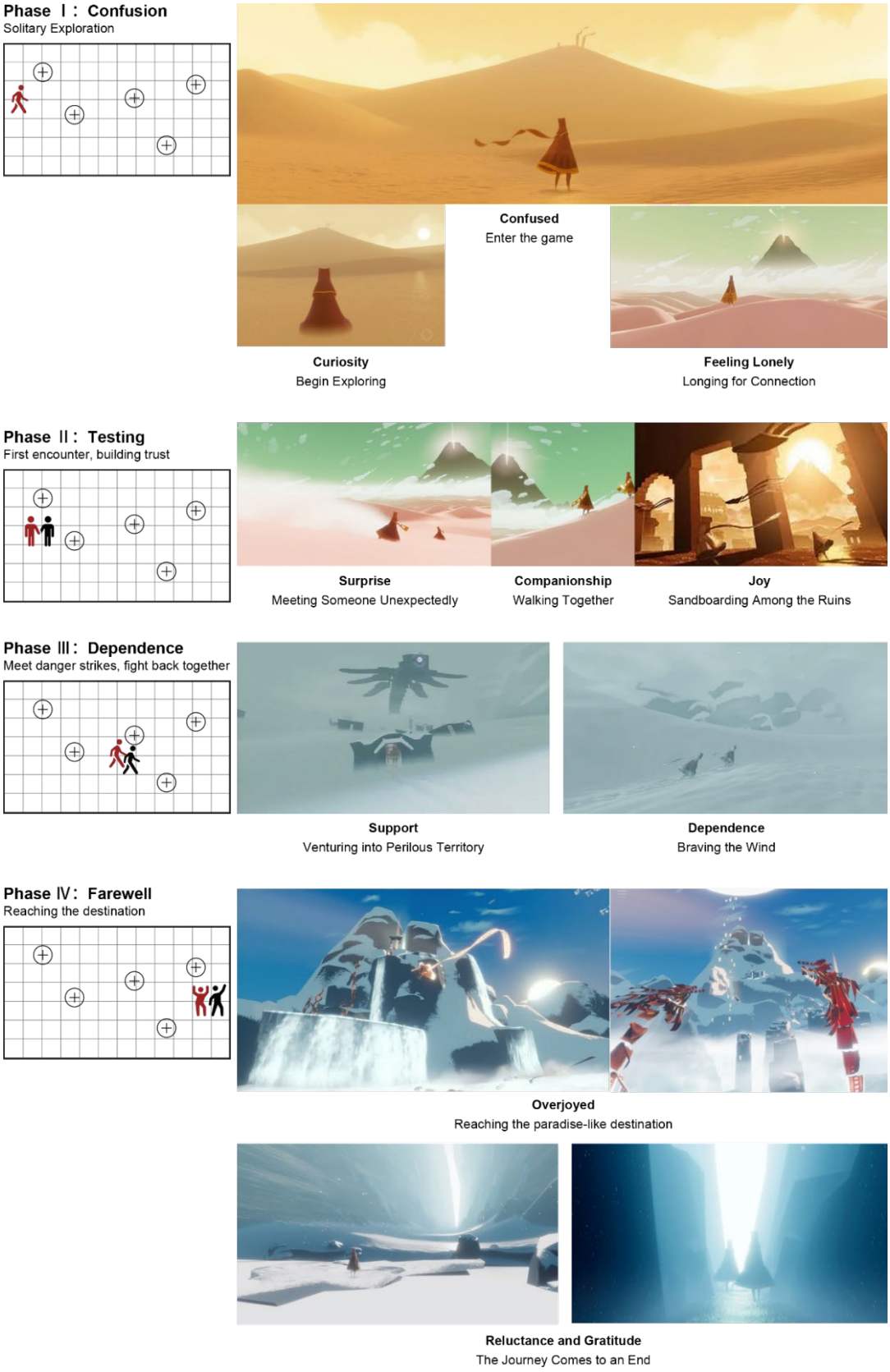
Even more impressively, *Journey*'s cinematography, sound design, musical rhythm, level structure, elevation changes, scene color palettes, and even the subtle shifts in the protagonist's cloak color are all deliberately unified along a single emotional narrative curve. These elements transcend mere technicality, collectively serving the player's emotional journey. Without a single line of dialogue, the entire experience generates profound emotional resonance. Through this synergy of space, sound, and physical action, Journey crafts an immersive emotional experience that transcends traditional storytelling. It masterfully overlaps the "journey" with "life", forming one of the most poetic and compelling emotional narratives in gaming history.

Figure 4-12: *Journey*-Emotional Curve



Resource from: Self-drawn by the author

Figure 4-13: *Journey*-Storyline and Emotional Experience Flow



Resource from:

https://store.steampowered.com/app/638230/Journey/?l=schinese&curator_clanid=35618450 and

Self-drawn by the author

4.3 Interactivity and Dynamic Narratives

Monument Valley is a puzzle game released in 2014. Players guide Princess Ida through mazes composed of optical illusions and impossible geometric structures, manipulating and rotating parts of buildings to create pathways to her destination. In *Monument Valley* the shape of the monuments not only acts as a visual cue but is also a main structural actor in its space composition and in its navigational logic. The Level Design team used architectural ratios, progression rhythm and structural logic to create paths that are both guiding in nature as well as disorienting, forcing players to re-construct their field of view over the course of solving the puzzle. It is this "architecturalized" mentality that liberates the game from its dependence on narrative or character dialogue. Rather, it leads players to understand the plotline and achieve emotional effect via manipulating architectural installations and dynamic environments.

Interactivity has increasingly become a core feature of building virtual architectural spaces in digital game design. *Monument Valley* is one of the iconic examples, architectural features which serve as spatial tools that players can operate into new shapes. The game facilitates a comprehension of, involvement in, and ability to generate space through what is done in it by virtue of its dynamic, manipulable spatial designs. It represents a highly interactive experience.

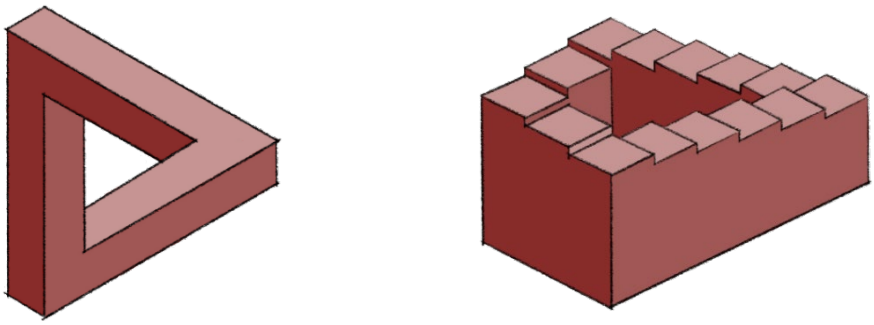
The key feature of *Monument Valley* is its architecture being used as a way to solving puzzles, the space gets confusing as you progress further. Features such as towers of blocks, spinning platforms, invisible floors and shifting staircases are activated through gesture-based controls by exerting a wave or hands and arms. For example, a tower can be rotated to fix a previously broken path, or a wall slid to convert a solid cube structure into an open passage. These spatial pieces look static but are game with complex interactive logic. This method of "interaction-generating-space" release the game from typical narrative or character dialogue, and instead leads players through interaction with operable architecture installations and dynamic spaces to understand plot twists and emotional resonance during their exploration. But more interestingly, this interactive mechanism is not being only based on visual input or operational feedback, but in the player's understanding of space. The game makes heavy use of visual illusions (such as the Penrose triangle[①] and Penrose stairs[②]) interfere with its own

[①] The "Penrose Triangle", also known as the "Impossible Triangle", is a visual illusion consisting of three rectangular beams connected on a two-dimensional plane. It appears to form a continuous and stable triangular structure, yet it cannot exist in three-dimensional reality. This structure was first drawn by Swedish artist Oscar Reutersvärd in 1934.

[②] The "Penrose Stairs", also known as the "Impossible Staircase", is another impossible structure proposed by Lionel Penrose and his son Roger Penrose in 1958. It forms a closed loop staircase that appears to extend upward or downward in each segment, yet the entire structure perpetually returns to its starting

sense of space. Players then need to "fix" these fractures by playing the game and re-establishing the space into common, usable routes. For example, a regular impassable vertical wall becomes passable if the player rotates an adjancent node. This operation "closes" the separation and connects the discontinuous path in a visually solid surface, over which the character can go from one side to another. These spatial "errors" do not interrupt gameplay; they depend instead on interaction for their resolution and in this emphasize how players are always already in the act of intervention in space through manipulation, and making order through action.

Figure 4-14: Penrose triangle（Left）Penrose stairs（Right）



Resource from: Self-drawn by the author

This very malleable construction of space is also what triggers players' "kinesthetic awareness".

Throughout *Monument Valley*, the player remains in constant physical contact with the environment and can free to interact intuitively with structures in this world like swiping, tapping, and rotating. This is no longer in response to presentation, but also emerges from the feedback loop between action and world. Every time an actuator is triggered, a Platform lifted or an Angle leaned — this constitutes a physical-spatial interactive exploration: a spontaneous adaptation of the virtual architectural order. Interactivity in this case is more than just trying to solve the puzzle – it's a key agency shaping how the space appears and makes sense.

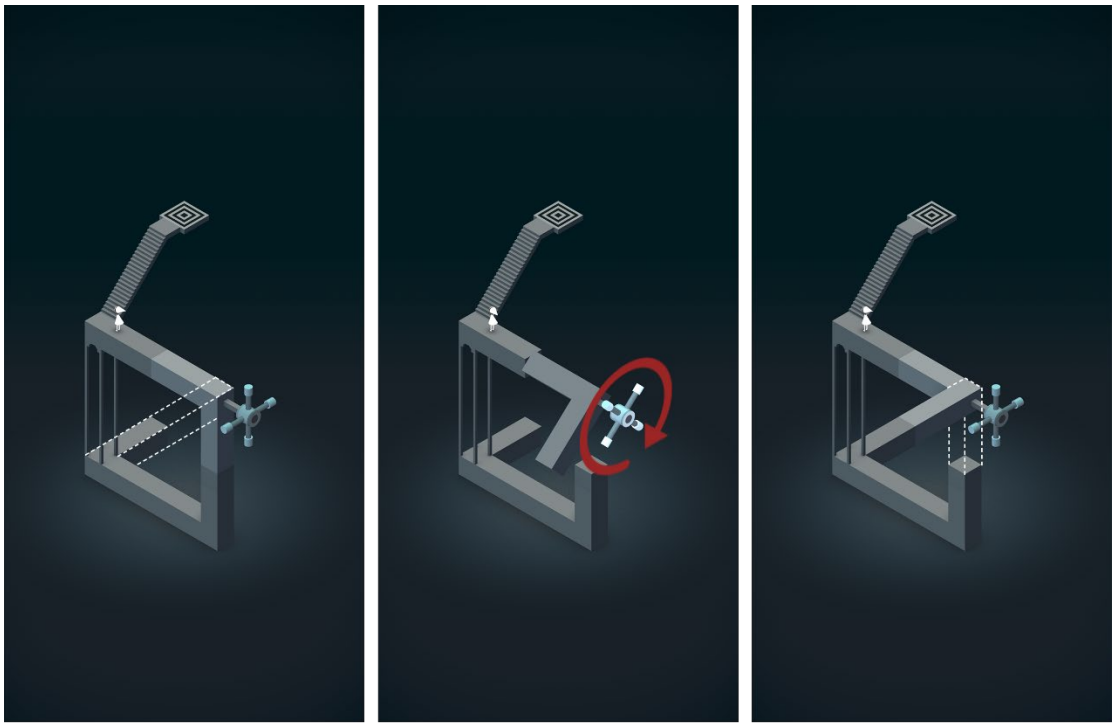
Interactivity further manifests through a distinctive "adaptive logic": the space does not force players into specific behaviors, but rather employs a gentle yet clear logical structure to encourage exploration of diverse operational paths, gradually revealing its underlying rules through the process. This logic stays behind the scenes, not in proximity to textual cues but to architectural responses eliciting animated feedback and small changes of sound through which a game talks at and to players. In other words, the space is not merely "viewable" but 'testable'—it invites players to "touch", "manipulate", and "adjust", gaining understanding through bodily intuition.

point, creating an illusion of infinite ascent or descent.

And this interaction system embodies the design wisdom "delayed reactions and rhythmic shifts", too. In *Monument Valley* there are not a spatial response, instantaneously provoked to every act. Certain mechanisms have to be operated from a certain point of space, like foot actuated switches or gradually 'revealing' paths. Such characteristics turn spatial reactions into rhythm and ritual based procedures that are "spatial performance-like" in nature.

Interactivity also appears in the "non permanence" of building structures. While traditional design emphasizes stability and fixed functionality, *Monument Valley*'s building components are mutable, misalignable, and concealable. Platforms turn, walls split open, floors ascend and descend — the whole system is designed to function as a kind of live machine, waiting for you to take some particular set of actions before it switches on. It is this uncertainty and fungibility that make the game dynamic—the next interaction causes it all to be built anew, in a different arrangement.

Figure 4-15: The Dynamic Transformation of *Monument Valley*



Penrose Triangle **Rotary switch** **Forging a new path and space**

Resource from: Monument Valley-Game Screenshots

Beyond spatial form, *Monument Valley*'s interactivity also explores the redefinition of architecture's function within a digital context. In reality, walls separate spaces while staircases connect them. Within the game, however, a staircase may simultaneously become a "superimposed entity" of both wall and path after a visual shift; a wall may transform into a passageway through a rotation mechanism. This structural ambiguity transforms pyhiscally interior space from a "functional architecture" to an "interactive structure", symbolising the dynamic and transformative character of architectural function. Despite their visual dependence on the game's art mode, these changes are ultimately rooted in a tightly

controlled system of interaction—players “generate functionality” through certain sequences of actions, endoweding space with significance by fondling it.

All player actions do not only change passageways, but are directly involved in the mechanic of spatial origination. The architectural space constructed through this interactivity ceases to be a static, enclosed object, becoming instead a fluid, perceptual, behaviorally activated experiential field. This heralds a new trend in narrative architecture for the digital age: dynamic, participatory, and process-oriented.

Chapter Summary

Chapter 4 looks at how architecture and space in games are put to use narratively. By examining the case studies in games, it suggests that space and color as well as interaction are factors forming a narrative mode. By these cases, color and actions guide the player’s emotional journey into the story (emotional atmosphere), color act as a psychical cue, ticking the narrative backbone to create tension or relief and most importantly interactivity lets players become co-authors of their own experience in exploration and actionism letting them live through narrative instead of listening to it. This chapter discusses architectural space in games as not only a backdrop, but an outlet for feeling and meaning.

Chapter 5: Principles and Strategies for Urban and Narrative Architectural Design in Games

5.1 Functional Layout and Spatial Narrative Strategies

In game cities, spatial layout not only serves as a structural organizer but also functions as a narrative device. Through the control of form, proportion, pathways, and rhythm, it invites players to create stories by experiencing spaces. The concept of spatial narrative privileges “the development of experience” so that the experiences and actions as people move in space is what ultimately drives a narrative. As a result, the spatial form of a city is not only a setting but also rather “language-like” medium and in fact as such it can mediate to players order, emotion and meaning without using text.

At this level, spatial layout becomes the foundational narrative strategy of the game city. It employs functional zoning, path guidance, and spatial sequencing as primary structural mechanisms, establishing a dynamic narrative experience through the synergy of visual order and action logic. As players traverse, explore, and make decisions, they perceive shifts in the city’s rhythm while developing psychological and emotional flows between spatial transitions.

- Functional Zoning

The functional zone is the cornerstone of city building in general, but when it comes to cities in game space, it plays an important role as a backbone to narratological layering. The functional divisions found in traditional cities—such as residential, commercial, industrial, religious, and recreational spaces—primarily serve the purposes of usage efficiency and traffic order. Within the context of game narratives, however, these divisions take on additional symbolic and psychological significance. Each zone not only accommodates distinct real-world activities but also establishes meaningful distinctions on cultural and perceptual levels. By orchestrating the functions of spaces, game designers lead us through a complex dance between order and chaos, familiarity and novelty, at the centre or on the edges. This spatial progression determines the pace of the story and its emotion.

Table 5-1: Functional Zoning and Narrative Structure

zoning	Spatial Characteristics	Narrative function	Emotional Atmosphere	Symbolic meaning
Residential	Regularly laid-out streets and alleys, soft lighting	The Starting Point for Establishing Safety and Order	Calm and friendly	Home, Reason, Order
Commercial	Neon signs, crowds of people	Displaying Desire and Conflict	Excited, nervous	Capital, Consumption, Overload
Industrial	Steel structure, dimly lit environment	Symbolizing the collapse of order and crisis	oppressive, cold	Power, Mechanization
Religious	Soaring domes, symmetrical structures, and mysterious light	Implications of Faith and Transcendence	Solemn, reverent	Redemption, Taboo, Spirituality
Recreational	Squares, green spaces, water features, bright	Rhythm Buffer and Mental Relaxation	Relaxed and free	Natural, balanced, harmonious
Ruins	Dilapidated buildings, fragmented spaces	Implied Memory and the Subconscious	Desolate, lonely	Time, Decay, Rebirth
Threshold	Roads, bridges, tunnels, riverbanks	Nodes of Connection and Transition	Nervousness, anticipation	Boundaries, Change, Revelation

Resource from: Self-drawn by the author

(1) Spatial zoning establishes a hierarchical narrative structure and emotional gradient.

In most game cities, space is purposefully constructed as a layered continuum that transitions from “everyday life” to “extraordinary events”. For example: the residential area uses warm colors, well-behaved streets, soft lights to create a sense of security and belongingness, as

described in the heart of an civilized and rational society, As players move beyond residential zones to industrial sectors, commercial centers, subterranean tunnels, ruins or fringe areas of the city they are in, chaotic architecture, loud environmental noise, cooler color tones and less sources of light instantly affect emotions. It indicates that the story is about to take a tense, oppressive, or unfamiliar turn. This cascading spatial structure and emotional cadence turns the city into a metaphor for psychic journey: The progress from "home" to "place of adventure" consists not merely in movement across geographic space but in psychological passage from comfort to disquietude, from order to disorder. In this design, the player's "movement" is not merely gameplay action but a type of narrative participation. Spatial shifts function as plot turning points, with each entry and exit from a district acting like chapter dividers, signaling shifts in function and player psychology.

(2) Functional zoning creates a regenerative semantic structure within the narrative.

The type of zoning in the city limits is typically static, but game stories intentionally subvert this stasis—places are constantly being changed by the players' activities, advancing events or changing time frames. For example, regions may completely change in meaning depending on the stage: a mundane residential district can be the childhood home in one player's memory flashback and someone else's ruins that collapsed during a dream, only to end up becoming something like "a place of renewal" where it appears after the finale. An established place turns into not so much a redundant return as the "regeneration of function". As players re-encounter the same space at different points, we grasp its physical familiarity contrasted with a psychological juxtaposition of "reunion", becoming a carrier for feeling and memory. This semantic restructuring liberates the game's cityscape from the functional singularity of traditional architecture, transforming it into a dynamic narrative mechanism.

(3) Functional zoning carries cultural symbolism within the narrative.

Within games, specific city sectors frequently emerge as embodied representations of ideology and cultural psychology. For instance, commercial areas with neon-lighted signs, massive advertisements and mass of people in a modern society with its desire, information overflow and capital supremacy. Conversely, desolate plazas, enclosed churches, or abandoned docks symbolize solitude, the silence of faith, or time suspended. In a surrealist or dystopian game, spatial symbolism is even more overt: that empty lot is not just for parking cars in but a literal manifestation of social decay; the church is also where you get your Gods and their interdictions. In this contested terrain space tells stories about society in visual language, and it mirrors value systems in spatial arrangements. Each player's journey through the game becomes an act of decoding "meaningful spaces". They take hold of feelings through color, light and shape; they hang on to story themes with a vocabulary of space. Functional zones are then no longer static maps, but active signs in the generation of

meaning.

(4) The boundaries and transitional spaces between functional zones become critical narrative zones.

Cities are not made up of standalone functional cubes so much as one interlocking thousands upon thousands of liminal spaces — roads, bridges, riverbanks, tunnels, staircases, subway entrances — for use within narratives large and small. The movement by which characters pass through these spaces frequently signals mental and emotional transitions. For example, leaping from a tall bridge to the bottom of a deep chasm can be interpreted as descending into the subconscious, while diving into an abyssal ocean might represent crossing over to a dream plane or another dimension. Each of these liminal spaces ensures narrative coherence and respect. They are spatial connectors — and essential loci of narrative delivery. Throughout this process, the city will be eternally composed and re-composed. Clear functional boundaries dissolve: Commercial billboards hang at the gate of churches, and new houses mushroom on ruins; crumbing old neighborhoods slumber behind the sleek modern towers. This translucency undermines the logic of functional zoning, giving the story a hectic lyricism —such that the city is no longer partitioned off into discrete boxes and becomes instead as an organism that develops, gives off shoots and branches, constantly reshapes itself.

- Path Guidance

In the city, highways become lines of passage, in which what appears to be a static structure forms into a meaningful unfolding temporal process. Things like roads, bridges, plazas, staircases and tunnels all form part of a vast webbing of “walkable narrative threads”. The players’ movement in these spaces is a literal physical action as well as one of discovery and narrative progression. Game designers command the direction and emotional rhythm of players with path morphology, scale curvature and sunlight angle variations, breathing life into urban spaces.

(1) paths serve as narrative organizing threads.

Mostly, they are linear and outreach like connection lines between areas of use across the entire city. Paths provide directionality and sequencing to space so that participants may experience the sequential progression of a narrative through movement. Their turns, inclines and rhythms determine pacing: straight roads stand for order, and also for smooth progress; winding paths equal exploration, unequal temporality.

The plot of these games is often not clicked through in text so much as simply “walked” through. How the ascending path of the desert in *Journey* serves as a symbol for spiritual

uplift and redemption, where also the overcoming of our fear to embrace an unknown adventure that which lays past the ridge. The path itself is a narrative thread — every move forward represents moving the story along.

(2) paths shape the game's rhythm and psychological tempo.

The pace of urban narrativity is not only determined by events, but by walking velocity and corporeal feeling. A player's quickness, how often they turn their head and line of sight all slightly adjust the tension within the story. Wide, well lit corridors bring an aura of composure, reason and order; narrow, poorly lit or sharp-turning pathways immediately create unease and anxiety. This rhythmic inversion is more than just an ingenious game design maneuver; it's also a form of spatial narratological technique. Path variations create a "psychological topography": openness equates calm, constriction with pressure; ascents represent hope and challenge, descents suggest plunge and the unknown. While there, the players engage in a mental journey guided by building form as they move through space.

(3) paths serve guiding and controlling functions.

Great games don't tell you what to do, or "where to go", directly; they guide through visual and even spatial cues instead. Elements like the direction of light and shadow, the orientation of ground textures, distant landmarks, or towers subtly establish a "path consciousness". Players are subconsciously drawn toward certain directions rather than being forced. Take *Journey*, a semi-open, linear narrative game. While players freely explore deserts, ruins, valleys, and snowfields within each chapter, these spaces feature invisible boundaries and unidirectional paths—drifting too far from objectives triggers wind-blowing back or automatic transitions into blinding light. That provides for limited freedom in the context of an essentially linear spatial layout. Within each of the scenes, players roam freely yet are gently ushered toward "the mountain ahead".

This "subtle guidance" establishes the narrative control principle: guiding players by pacing and attention through spatial layout but maintaining the player's autonomy for answering exploration questions. So the path is struck between narrative control and freedom.

(4) paths create both predictability and surprise in space.

Paths serve not only to orient but also to generate "deviations". When you think you know how games move, they often break the rule and fracture or loop the way forward into damaging paths with another story from that of stability to calamity. Such as in *Superliminal* where repeated corridors and mistaken exit labels trap players inside an experience of "getting lost while moving forward"; the path is no longer a way to reach something, it's now

a trap for exploring cognition. This "misleading guidance" spiritually deepens the text, as the participants are forced to reckon with the idea that following direction is just another phony illusion.

- Spatial Sequence and Displacement

If paths determine the linear direction of narrative, spatial sequence dictates its temporal rhythm. Through the rhythmic shifts of "opening—closing—contracting—expanding", it transforms the form of architectural spaces into beats, allowing narrative to flow within the breathing rhythm of space. The undulations of architecture, the scaling of dimensions, and the opening and closing of the city compose spatial musicality, granting time a perceptible form within architectural continuity.

Yet what truly imbues spatial narrative with depth is not singular sequence, but spatial dislocation. When space no longer holds, and system turns in on itself, story moves from the linear spatial logic of storytelling to the anti-linear orgiastic logic of consciousness. Displacement sucks time of its fistulae, giving space a dreamlike buoyancy.

In traditional architectural narrative, sequence signifies order, proportion, and control. In game narrative, however, sequence is often deliberately disrupted to create perceptual uncertainty. Doors return to the homes of their creation, corridors turn in on themselves and the orientation of light and gravity briefly slip—within this discordance players can feel the collapse of time as well as the jagged edges and ruptures of one's own cognitive faculties.
This dislocation is not mistake but a rhetorical strategy of design, forcing players to reconsider their orientation in space: if direction fails us, memory may guide; if logic gives way, then perception becomes the only reality.

Spatial dislocation is often accompanied by a "subtly differentiated repetition". Returning to the same location, players discover a painting replaced, a door vanished, or an extra window in a room. These changes provide no direct narratorial guidance, but render the space a "subject with memory". Stories are told no longer in the forward movement of the plot but by cropping, superimposition and resonance.

When scene repetition transcends concrete function to become abstract symbolism, space acquires temporality: it not only "exists" but "remembers".

Players wander through such a space, experiencing a peculiar state between déjà vu[①] and

[①] Déjà vu is a French word meaning "already seen", translated as "a sense of both sight and familiarity". It is a phenomenon where, in a state of wakefulness, even though it is the first time experiencing a scene, there

jamais vu[①]—like stepping into another world. This disrupted spatial sequence does not signify true chaos but rather a predetermined arrangement within fixed rules. Order and dislocation are not mutually exclusive in game narratives but rather interdependent forces that coexist.
The progressive spatial sequence of desert—ruins—snow-capped mountains—Palace of Light in *Journey* establishes a path of emotional transcendence, while the repetitive corridors and mirrored rooms in *Superliminal*, along with the disorienting perspective of objects shrinking and expanding, immerse players in the deconstruction of cognition through fractured logic. Though their narrative approaches differ entirely, both converge on the same conceptual layer—"spatial temporalization"—with the former generating poetic resonance through rhythmic progression and the latter evoking philosophical reflection through dissonant cycles. The spatial sequences and dislocations collectively form the "temporal language" of game cities, while the tension between the two creates the most captivating trait of game spaces: players continuously reorganize their perceptual order between continuity and rupture, between the expected and the unexpected.

The opening and closing of space, the looping of paths, and the folding of time together form a flowing system. Within this dynamic framework, space acquires the character of "poetic time"—it does not narrate stories, but allows them to grow within its embrace.
This is precisely the aesthetic that distinguishes contemporary gaming architecture from real-world architecture: it sustains fluidity through dislocation, generates rhythm through repetition, and rediscover order in the dissolution of order.

5.2 Architectural Style and Detail Strategies

- Style Unity

Architectural style is the most intuitive visual language in the narrative of a game city, shaping spatial atmosphere and constructing the believability of the game's world. Stylistic coherence is not the repetition of a single form but a design approach that maintains logical consistency among diverse elements. Through systematic control of materials, proportions, colors, symbols, and construction methods, it enables players to instantly recognize and immerse themselves in a specific narrative context upon entering the game. The unity of architectural style serves not only aesthetic harmony but also the integrity of storytelling—it is the foundation that sustains the existence of a fictional world.

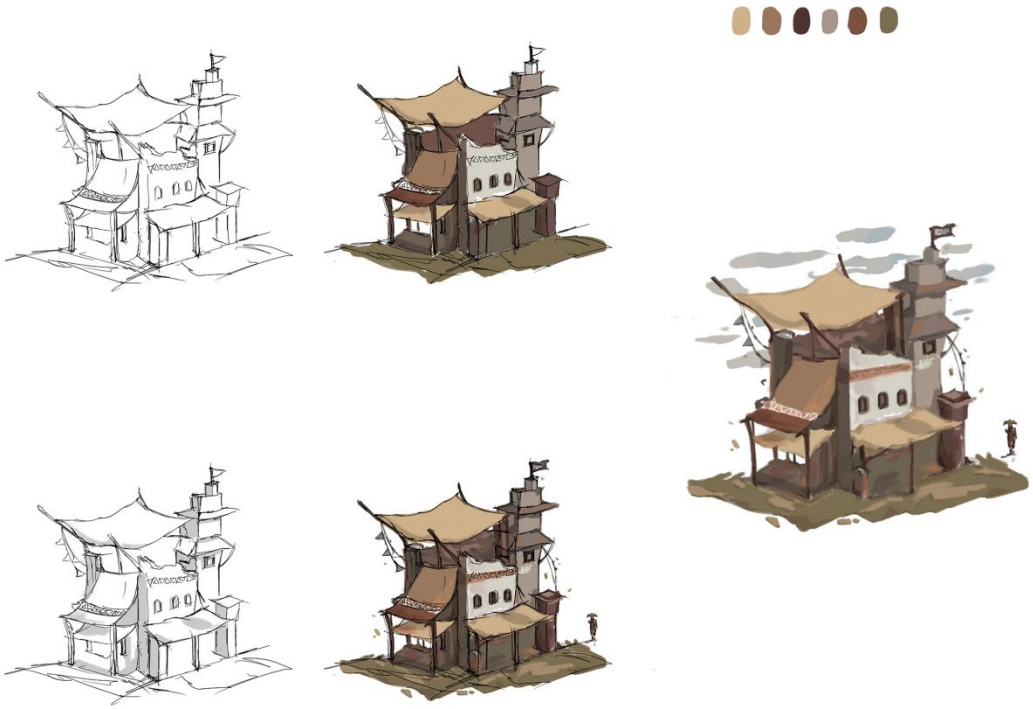
In game design, the choice of architectural style is typically based on the narrative world-building setting.

---

is a feeling of familiarity or as if it has been experienced before.
[①] Contrary to Déjà vu, a sense of unfamiliarity with things that are already very familiar can arise.

The thatched huts and totems of the primitive tribal style create an atmosphere of nature, ritual, and primal faith, reinforcing the symbiotic relationship between humans and nature. This architectural style is typically constructed with natural materials such as wood, stone, grass, earth, and fabric, emphasizing the authenticity of handcrafted textures and natural patterns. The structures are simple and modest in scale, often arranged in enclosed layouts to form communal spaces, symbolizing unity and kinship ties. Elements like totems and murals serve not only decorative purposes but also act as vessels of belief and storytelling, representing ancestral worship, spiritual communication, and the cycle of life. Players experience in such settings are not merely tribal spaces in a geographical sense but also a form of primal spiritual solace.

Figure 5-1: Primitive Tribal Style Game Architecture Design



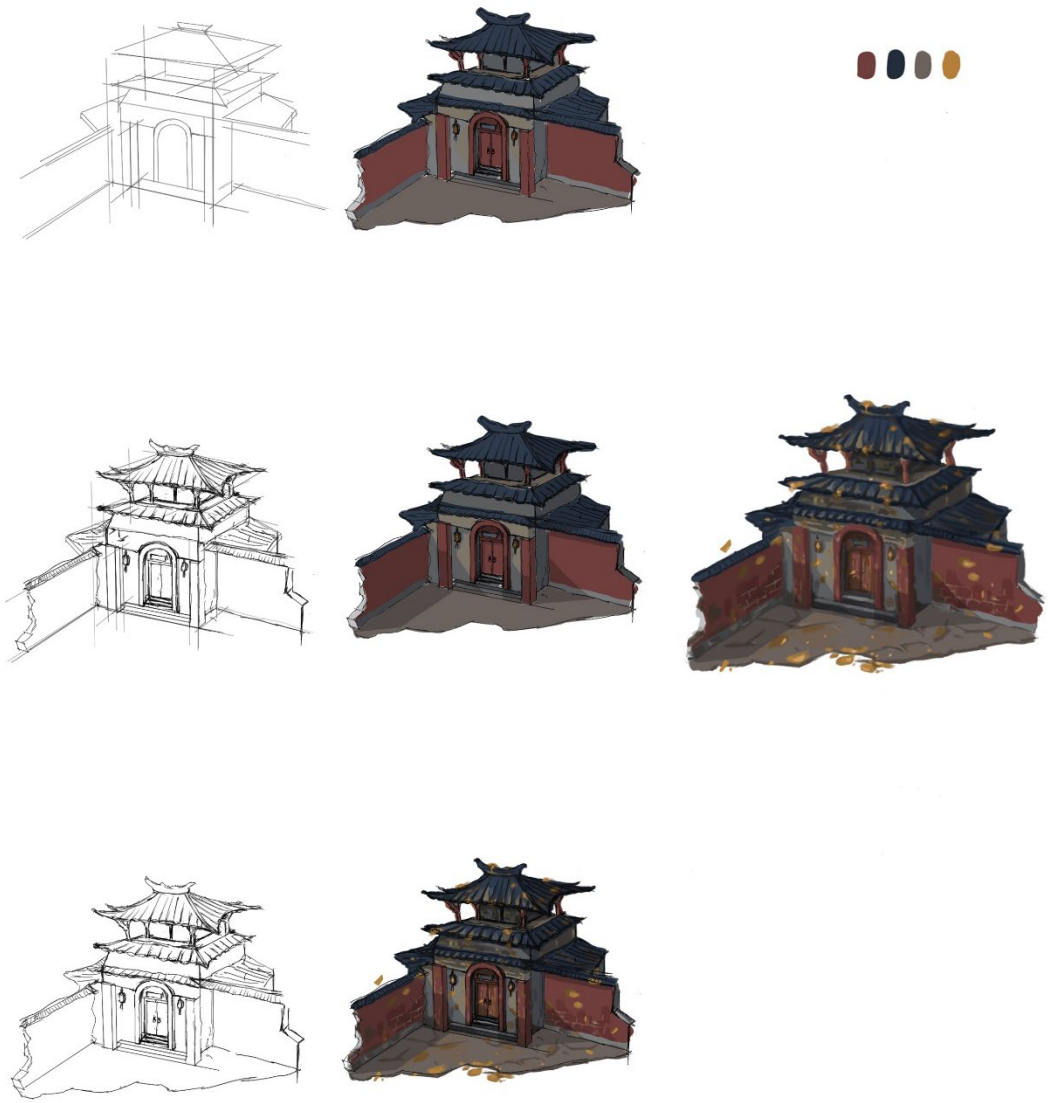
Resource from: Self-drawn by the author

The traditional Chinese style eaves, bridges, and blue tile structures convey the philosophical imagery of "Harmony between Heaven and Man[①]" in Eastern narratives through spatial processing of "symmetry," "layering," and "virtuality and virtuality. This architectural language is rooted in the ancient Chinese cosmology and ritual system, and its spatial order reflects the harmonious relationship between humans and nature, individuals and groups.

[①] The concept of "Harmony between Heaven and Man" is an ancient Chinese philosophical idea that holds humans and the natural world—heaven, earth, and all things—form an integral whole. Humans are part of nature and should follow its laws, coexisting harmoniously with heaven and earth.

The protrusion and curvature of the eaves are not only an extension of the structure, but also a response to the sky - it blurs the boundary between architecture and nature, giving the space a sense of breathing. The color contrast between blue tiles and red walls also reflects the visual philosophy of "yin and yang coexist". The traditional Chinese architectural style in game cities not only serves the function of cultural representation, but also becomes a symbol of cultivation, dialogue, and enlightenment.

Figure 5-2: Traditional Chinese Style Game Architecture Design



Resource from: Self-drawn by the author

The Japanese anime style creates a warm and lyrical spatial world with soft colors, delicate brushstrokes, and human proportions. Architecture often has a sense of life and poetry, evoking emotional experiences about time, memory, and youth. The visual features of this style are not simply "cartoonish" expressions, but rather an aesthetic language that transforms everyday spaces into narrative emotions. Architecture does not win with grandeur,

but rather establishes emotional resonance through the warmth and closeness of details, such as small shops on street corners or narrow alleys. Its proportions are often softened to weaken the oppressive feeling of reality, such as the slightly rounded lines of roofs, window frames, and streetlights, giving the world a touch of being gently polished by time. In terms of color application, high brightness and low saturation color schemes are often used, such as light blue, pink orange, and beige, to create a quiet and flowing atmosphere.

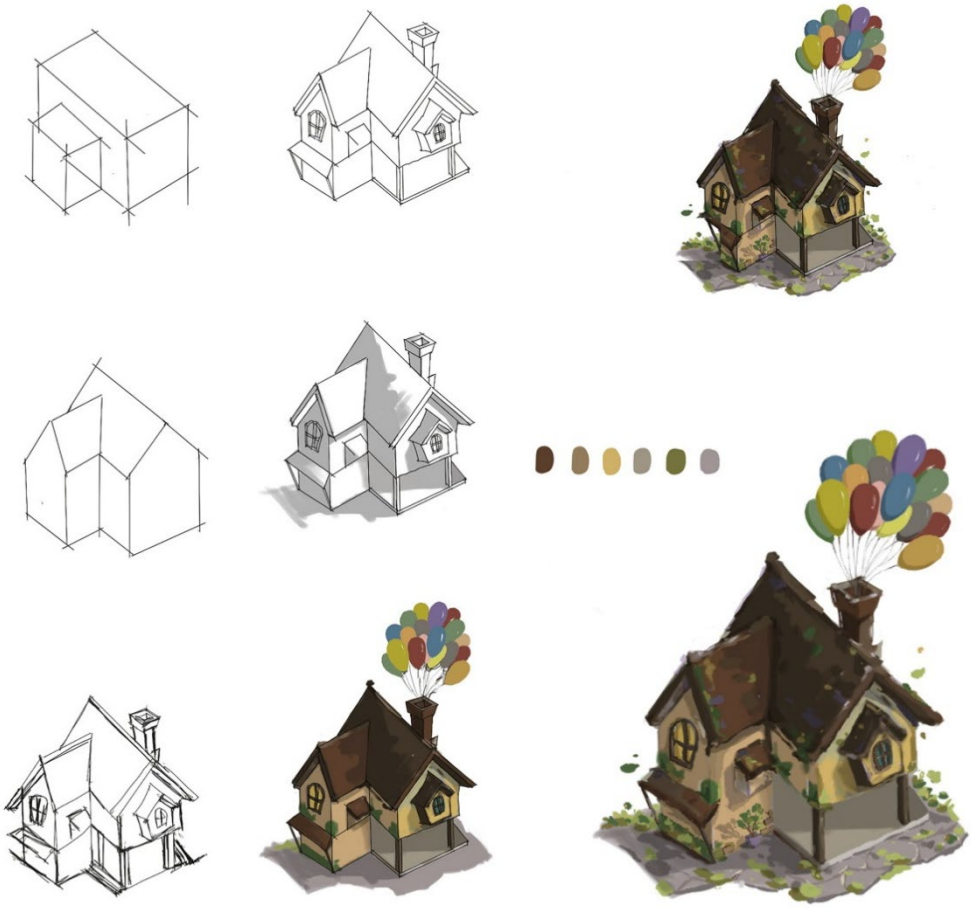
Figure 5-3: Japanese Anime Style Game Architecture Design

Resource from: Self-drawn by the author

The fairy tale style of European towns features an idealized nostalgic landscape composed of colorful facades, semi wooden structures, and cobblestone streets, creating a safe, pure, and fantastical narrative atmosphere. The architectural language of this style originates from the romantic imagination of the Middle Ages, which pursues the intimacy of proportion and the tenderness of composition in form, evoking humanity's original memory of "home". The

exposed wooden beams on the facade, the attic roof, and the staggered windows create a visual rhythm that keeps the space lively between order and casualness. The cobblestone streets and windowsills with flower boxes all enhance the sense of detail and regional affinity in daily life. These elements together create a 'fairy tale dream' that makes people feel both safe and secure.

Figure 5-4: European fairy tale style Game Architecture Design



Resource from: Self-drawn by the author

Players space sensibility is not based on any real-world experience of dimension, but simply the consistence of style. When streets, buildings and terrain adhere to some sort of pattern the players can construct a "credible fiction" - that people have lived in this town long enough for it to evolve naturally and culturally from the game.

For example, the "Night City" in *Cyberpunk 2077* creates an illusion of a future city with a high degree of stylistic consistency. The vertical layering of skyscrapers, chaotic density of blocks, and the combination of neon lights and reflections on rainy nights create a visual order of information overload and survival oppression. During the process of walking and

driving, players can understand the political logic and cultural ecology of the city through the continuity of style without the need for written narration.

Of course, this logic in the game does not require absolute consistency in style. As the plot progresses, the architectural style can also undergo subtle evolution, such as gradually evolving from intact classical style to ruin and fragmentation, to reflect the decline of civilization or the collapse of consciousness.

Figure 5-5: *Cyberpunk 2077*-Game Screenshots

Resource from: *https://www.cyberpunk.net/jp/zh-cn/*

- Landmark Architecture

In the narrative structure of the game city, landmark buildings are not only nodes of spatial positioning, but also the core of spatial memory in the game city. They become reference points for players to understand the world and position themselves in unique forms, volumes, or symbolic meanings. Similar to real cities, landmarks not only have spatial guidance functions, but also play a role in narrative and emotional cohesion - they are the anchor points of memory and the center of urban image, making virtual cities have a "memorable" visual focus.

Landmark buildings often symbolize the gathering points of power, faith, memory, or destiny. High towers, castles, squares, temples, or monuments are often designed as "narrative focal points," players' movement paths and exploration motivations often revolve around these landmarks, forming a narrative experience centered around architectural clues.

Meanwhile, landmark buildings serve as visual anchors and directional guidance. It provides players with directional references, enabling exploration activities to achieve goals. In open or semi open worlds, landmark buildings often form distant focal points through differences in height or volume, becoming directional markers for players to search for in space. This visual orientation is not only a map function, but also a narrative strategy: as players approach landmarks, they are actually pushing the pace of the story forward. For example, the Notre Dame Cathedral, Hagia Sophia, and Leaning Tower of Pisa in the *Assassin's Creed* series are not only navigation points, but also overlapping fields of historical narrative and personal

memory. During the process of climbing or overlooking these buildings, players experience the fusion of historical time and physical space. Display landmark building maps

Within the stylistic system, different types of landmarks correspond to distinct narrative attributes, enabling players to visually "decipher" the core themes of the worldview. For instance, the spires and fortresses in medieval cities stand for order, power and vigilance; those colossal towers symbolize also desire, surveillance or fascination; the Orient architectures like memorial arches or pagoda temples are systems of rites, hierarchy and spiritual symbols that reflect upon the combination of authority with religion; future cities possess floating landmarks as well as glowing constructions which represent technological control over space operating at a level beyond our understanding.

Even more importantly, the meaning of landmark architecture is dynamic. It is not a static symbol but undergoes semantic shifts as the narrative progresses. Landmarks thus become vessels for "visualizing narrative nodes": shifts in their form, color, or state often directly mirror plot twists. For instance, when players reenter a once-familiar tower or temple only to find it destroyed, weathered, or occupied by new forces, its narrative meaning immediately shifts—from 'goal' to "ruin", from "place of hope" to "witness of loss". In surreal or apocalyptic games, the collapse, levitation, or distortion of landmarks often constitutes narrative elements themselves, symbolizing the demise of the old world, the dawn of a new order, or the fragmentation and reconstruction of personal psyche.

In addition, landmark buildings also serve as storage facilities for emotional memories. Players unconsciously use landmarks as emotional coordinates during their long exploration and backtracking. When they purposefully approach a landmark building and get closer, they experience a sense of excitement and stability. However, when they move away from a certain tower, a sense of unease surges up. If they return to that tower again, it triggers memories and resonance, thus generating the emotional power of "revisiting". Therefore, landmark buildings are not only geographical entities, but also emotional structures that make the image of the city an extension of the story.

- Detail Depiction

If landmark architecture forms the narrative center of a city, then the depiction of details constitutes its narrative texture. Architectural details — such as the proportions of doors and windows, the texture of materials, the layers of ornamentation, and the refraction of light and shadow — are all key to creating a sense of realism and immersion.

In a game city, architectural realism does not lie in replicating real-world buildings so much

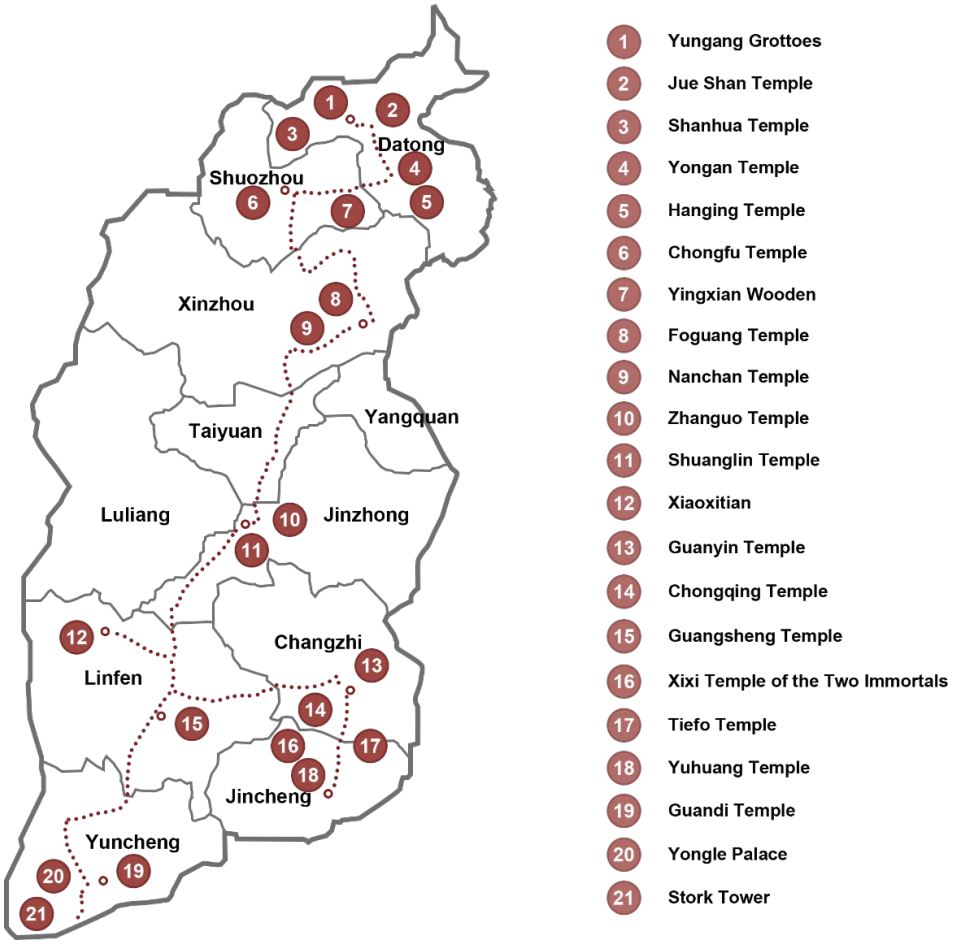
as it lies in translating them to the limits of the virtual world. As such, players are able to feel "warmth and weight as well as the 'traces of time'" that add psychological veracity to virtual spaces visually and haptically.

The contribution of architectural detail in narrative is initially considered on a sensory basis. Scene elements and character detail directly drives to the player's immersion and emotional attachment. As you journey through digital streets and alleys you'll also be treated to aspects of breath and life in the form of aging walls stripped by time, weathered wooden doors revealing history, light reflecting off rain soaked pavement and curtains swaying gently in the wind. These small details release the virtual world from rigid, mechanised stasis and render it organic, dynamic. To the point as well, that players are no longer simply "watching" a world; through interaction with its minutiae, they slowly start to feel and become a part of it, eliciting stronger emotional responses from them toward the game.

Architectural details are not mere decoration, they also deepen the cultural context. Within a unified stylistic framework, the details of different civilizations reflect diverse modes of thinking and aesthetic values. For instance, *Black Myth: Wukong* uses architectural details as a symbolic system of cultural storytelling: the beast motifs on the roof tiles, the soaring eaves of temple halls, the inscriptions above mountain gates, and the relics left by monks all originate from traditional Chinese architecture, yet they have been reimagined as visual languages of fate and redemption.

It is worth noting that these details are not purely the product of imagination but are deeply rooted in the real world. According to incomplete statistics, the scenes in *Black Myth: Wukong* are based on 36 real-world locations in China, 27 of which are located in Shanxi Province. The development team made extensive use of on-site photogrammetry for many of the detailed objects. The structure of dougong (bracket sets), the brushstrokes of decorative paintings, and the weathered surfaces of stone steles have all been faithfully reproduced in the game. This interweaving of reality and virtuality not only enhances the visual credibility of the environment but also endows the virtual space with a profound cultural weight, allowing players to experience a sense of presence — as if they were truly there — during their exploration. For example, in the scene of "White Horse Temple", the damaged Buddha statues in the murals contrast with the flickering flames of battle, symbolizing the rupture and reconstruction of faith; In the 'Falling Flower Valley', the falling petals, collapsed stone railings, and reflections on the water surface become metaphors for the changes in Wukong's mood. Game designers establish a cultural texture of worldview by reorganizing and refining these details, allowing players to perceive the logic and spiritual direction of civilization at the aesthetic level.

Figure 5-6: *Black Myth: Wukong*-Location map of Shanxi



Resource from: Self-drawn by the author

Figure 5-7: Hanging Temple

Figure 5-8: Chongfu Temple

Figure 5-9: Foguang Temple

Figure 5-10: Nanchan Temple

Resource from: https://gamesci.cn/

When the tactile sensation, sound, and lighting of the building remain consistent at the level of detail, the player's perception system will naturally accept the authenticity of this world. The echo when a door opens, the reflection of water stains on one wall, and the faint contrast between floor tiles, these details combine to create "sensory trust". This trust that details are not rhetorical art embellishments, but rather a narrative psychology strategy: by simulating the tactile sensations of reality, it activates players' emotional investment in the world.

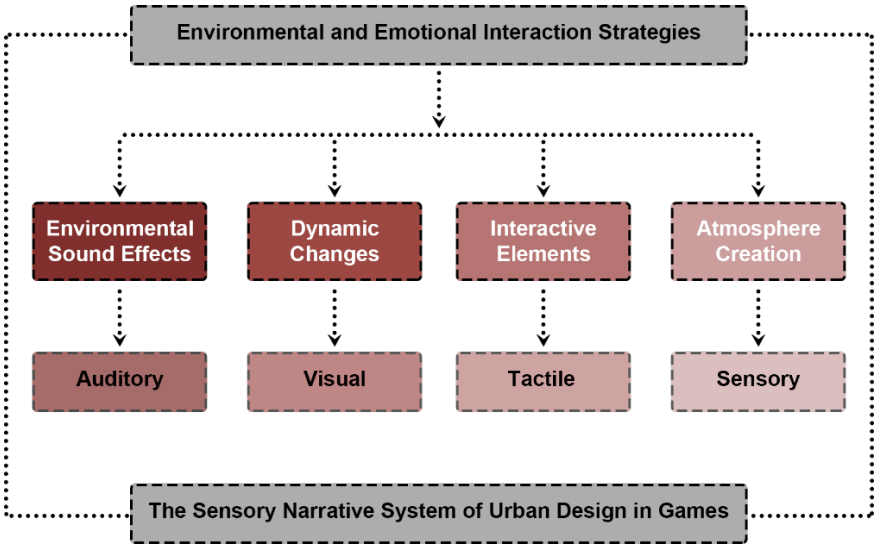
In a sense, landmark buildings and detailed depictions constitute the two poles of the game's architectural narrative, one representing macro level symbolism and the other representing micro level tactile sensations. The former establishes the spiritual height of the city, while the latter fills the temperature of its life.

5.3 Environmental and Emotional Interaction Strategies

The grand spatial structure can determine the logic of a city, while the details of the environment determine its soul. In the urban design of contemporary games, multiple perceptual clues such as the echo of the wind, the floating of dust, and the breathing and footsteps of characters collectively form the basis for players to understand space and experience narrative.

Environmental details not only shape the realism of the space, but also guide players to establish resonance with the virtual world on a psychological level. It generates the narrative of the game through four dimensions of "auditory-visual-tactile-sensory", allowing players to "hear the breath of space and feel the emotions of architecture" during the experience.

Figure 5-11: Sensory Narrative System of Urban Design in Games



Resource from: Self-drawn by the author

- Environmental Sound Effects

Voice is often overlooked but the most penetrating narrative language. In the game city, environmental sound effects are used to simulate the acoustic atmosphere of the real world, shaping the flow of time, the rhythm of emotions, and the echo of memories in an intangible way, giving the virtual city a sense of music. As R. Murray Schafer pointed out in "The New Soundscape," "Space is not defined by sight, but awakened by sound[①]."

In *The Last of Us*, the environmental sound of the ruins city almost becomes the soul of the narrative. What players hear is not only the low rustling of the wind and the pounding of the rain, but also a ubiquitous' lonely echo '. When the wind passes through the broken glass, when the iron sheet is struck with rhythm by rainwater, and when the footsteps of animals echo in the distance, these sounds together form the psychological map of the post apocalyptic space. Sound is no longer just background music, but a fluid of emotions - it fills the void of destroyed cities and implies the continuation of life in ruins. The game creates a sense of suspension through a "sparse sound layer", allowing players to perceive the "weight of silence" in auditory perception. This kind of 'audible silence' can better express the silence after trauma than any language.

Figure 5-12: *The Last of Us*-Game Screenshots

Resource from: *https://www.playstation.com/ja-jp/the-last-of-us/*

On the contrary, the urban soundscape of GTA V is filled with noise density and social tension. Traffic noise, the din from shopping malls, promotional overtures from radio stations, the chatter of crowds and cop car sirens all blend into an urban repertoire. This aural overload envelops and players sense the restlessness and agitation of the capital city. Sound detaches from its objects to become a metaphor of social harmony: low-frequency machines sounds

① *The New Soundscape* is one of the early representative works of Canadian composer and sound researcher R. Murray Schafer, and it is also the source of his later proposal of the "Soundscape Theory".

for the centre of gravity and social power, high frequency street noise for chaos and boundary. When players look down on the city from the tops of skyscrapers, differences in sound are almost a physical representation of class.

Figure 5-13: *GTA V*-Game Screenshots

Resource from: *https://www.rockstargames.com/zh/gta-v*

The sound in *Journey* represents another extreme - "minimalist poetry". The game has only one melody that is constantly repeated from beginning to end, and in different scenes, the music is composed of five different instrument variations, each with distinct and distinguishable tones. At the beginning of the game, white noise is gradually added to the orchestral music, and then when the character first appears in front of the player, the music is composed of electronically synthesized white noise and gradually strengthening orchestral music, and then abruptly stops. At this point, before the third scene, the music only had the whimpering sound of the wind and the monotonous low hum. Through this means, it made people feel that the physical space was very vast, like walking in a deserted desert, conveying a desolate and lonely atmosphere. In the third scene, the music shifts from atonal buzzing to soothing wind instruments. In the final scene, crossing the snow capped mountains and arriving at the amusement park, all the previous instruments were added to the background, forming a symphony that symbolizes reaching the peak. And at the end of the farewell, the music changed from symphony to cello solo, echoing the beginning of the game, returning to "me", the performer's main melody, melodious rotation. Match the beginning and end, draw a perfect period. In the game, the cello is used to represent the player, and there are two instruments used to represent others: the harp and the viola. When the player encounters other players, the playing of the viola and harp seamlessly integrates into the music; The strength of the medley depends on the distance between the two players. The closer they are to each other, the louder the music, as if it resonates. This change in music adds layers and complexity, enhancing the overall aesthetic appeal.

The resonance between the wind and the music constitutes the emotional rhythm, while the low murmurs of the desert, the howling of the snow capped mountains, and the echoes of the light palace form the narrative structure. The changes in sound are synchronized with the spatial rhythm, and every transition in timbre signifies a transition in the psychological layer.

When the wind and music vanish together, both are succeeded only by the gentle abrasion of footsteps, and in hearing this aural "gap," space is refigured as the residue of soul. It's at this point that from audible forms the "invisible narrator", it directs players to move completely between externally exploring and internally understanding.

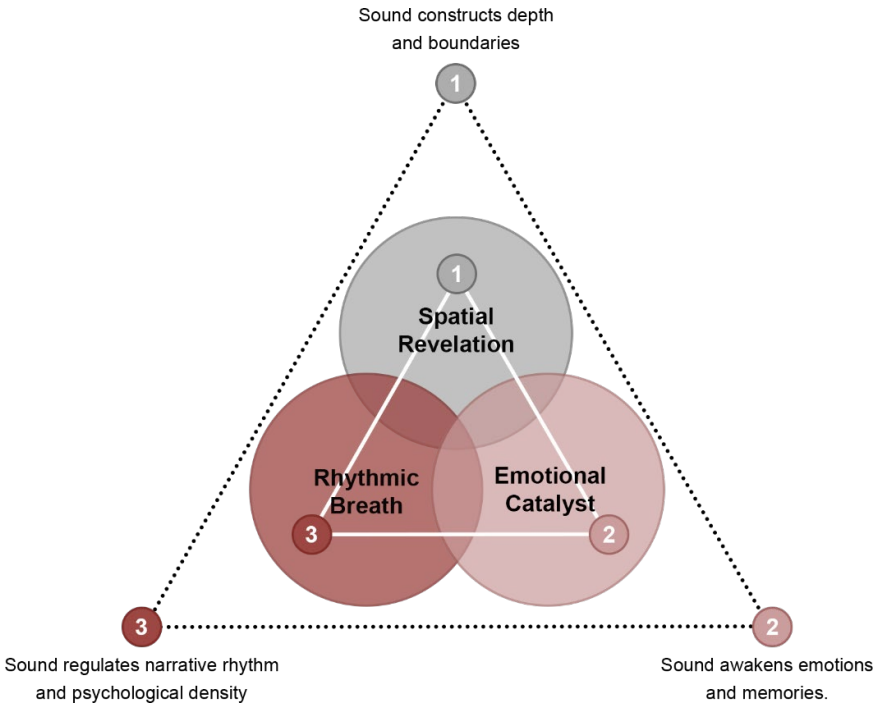
From the perspective of spatial mechanisms, environmental sound effects serve a triple narrative function:

(1) It constructs a sense of depth and spatial boundaries. Through the scheduling of echoes, reverberations, and distance levels, players can "hear" the differences in building volume and materials, thereby perceiving the structure of the city.

(2) It awakens emotions and memories. Repetition and variation form a psychological cycle, and sound becomes a catalyst for emotional recall, allowing narrative to extend in the "auditory time".

(3) It regulates the narrative rhythm and psychological density. The changes in tone and rhythm give the game a dynamic breathing sensation, slow low frequencies bring safety and contemplation, and dense high frequencies create tension and anxiety.

Figure 5-14: Triple Narrative Function Diagram of Environmental Sound Effects



Resource from: Self-drawn by the author

When the sound of the wind replaces dialogue, echoes replace narration, and silence replaces language, the architecture itself begins to "speak". As Kengo Kuma said in "The Sound of Architecture", "Architecture is not meant to be seen, but to be heard[①]". The existence of

[①] From Kengo Kuma: *The Sound of Architecture*, this book includes 32 of his representative works from the past 10 years. The book uses "onomatopoeic words" to express the mutual perception between building materials, spatial relationships, touch, and hearing.

architecture is not a closed form, but a sound that resonates with the environment. The world of the game is therefore redefined by hearing: vision constitutes form, while sound endows the soul. This is precisely the core significance of environmental sound effects in game narrative architecture - it gives virtual cities an "emotional temperature" and allows silent spaces to truly be "heard".

- Dynamic changes

If sound gives space breathing, then dynamics give it pulse. Static buildings are frozen time, while dynamic environments allow time to flow again. In the game city, the shuttling crowds, the transformation of light and shadow, the movement of clouds, the fluttering of birds, and the swinging of objects together shape an "organic motion system". This rhythm is not a superficial visual change, but rather a transformation of the city from a structural existence to a "living organism" through continuous movement and subtle fluctuations.

The primary function of dynamic elements in game narrative is to construct a "vivid texture" of the world. The vividness of traditional architecture relies on human use, while the vividness of game architecture originates from its own movement.

In *Black Myth: Wukong*, the dynamic design further embodies the "charm" of Eastern aesthetics. The natural flow echoes the emotions, actions, and strength of the characters. The bamboo forest undulates with the wind, fallen leaves scatter with footsteps, and dust rotates with stick shadows. Every detail is reinforcing a poetic logic of "harmony between heaven and man". When Wukong dances his golden cudgel, the wind rises and clouds surge, and leaves scatter; When the battle is over, the smoke and dust dissipate, and the wind returns to silence. This rhythm of ups and downs is not only a physical phenomenon, but also an emotional structure - it makes the environment an extension of emotions and nature a metaphor for character psychology. This dynamic narrative style allows players to experience the aesthetics of their emotions.

In contrast, the dynamic handling of Journey is closer to minimalist spatial poetics. There is no text or dialogue in the game, and the narrative is entirely based on the player's "rhythm of movement". The flow of sandstorms, the flickering of light and shadow, and the changing speed of characters sliding together form a silent symphony. Players participate in storytelling through their body movements: uphill symbolizes effort and pursuit, while downhill signifies release and calmness. Here, dynamics become the "silent narrator", with every physical phenomenon bearing a psychological direction.

Dynamics not only generate aesthetic experiences, but also construct psychological

expectations and narrative tension. When the pace of the environment accelerates - storms come, leaves dance wildly, shadows roll, birds dance frantically - players' psychological tension rapidly increases, as if sensing the "approaching of some event". On the contrary, when the air is still, the light is steady, the bird flock stays, and the rhythm slows down, the spatial atmosphere immediately turns towards tranquility and safety. This rhythm control technique synchronizes the player's emotions with the narrative, dynamically becoming a "psychological soundtrack" that regulates the experience. Designers manipulate the flow of emotions through physical movements on an invisible level, completing a structured narrative progression between the fluctuations of rhythm.

Dynamic elements also have the function of "evidence of existence". The swaying of grass, the movement of shadows, and the passing of clouds have gained 'sustainability'. Even if the player leaves the scene, the wind still blows, the grass still sways, and the light still turns. This "independent presence" makes the world transcend the player's perspective. It makes virtual space no longer dependent on "observers", but become a "self-sufficient and independent life form".

Moreover, dynamism imparts 'temporal plasticity' upon the game space. This is, in part, because the time of narrative games does not flow non-linearly but rather becomes folded into space and expanded. Everyone knows the traces of time in daily life: rainwater gathers into puddles, fallen leaves piling on stone steps and shadow play on walls. The gradual variation in space continuity means the growth of both world and time, which is narrative function of dynamic design – it's not just a heap of visional plane, but also an organization system for narrative rhythm. It is these dynamic ingredients that make virtual cities come alive.

- Interactive Elements

If sound gives space breathing and dynamics give it pulse, then interaction gives space consciousness. Interaction is the most dynamic mechanism in game narrative - it transforms players from "spectators" to "participants", making buildings no longer static landscapes but "responsive existences". In the process of interaction, space gains perception and the player's body gains narrative power. This bidirectional sensing of "body space" enables virtual cities to transcend visual forms and become a tangible sense of participation.

The core of interaction lies in "leading by example narration". Architectural scholar Juhani Pallasmaa pointed out in *The Eyes of the Skin*[①] that "very touching experience of architecture

[①] One of the representative works of Finnish architect Juhani Pallasmaa, hailed as an important document of "phenomenological architectural aesthetics", is a critique of the visual centric architectural view and a renewed call for multisensory architectural experience.

is multi-sensory; qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle". Architecture is not only experienced with the eyes, but also felt with the entire body.

Unlike traditional texts that rely on language to advance, the narrative of games is activated through actions. Every action of the player - climbing, jumping, pushing, destroying, touching is involved in the construction of the story. In *Black Myth: Wukong*, the interaction between Wukong and his environment is endowed with strong symbolism. He shattered rocks, walked on waves, and climbed peaks, these actions are not simply combat operations, but metaphors for cultivation, resistance, and awakening. Every physical extension is accompanied by a warming of emotions; Every landing vibration strengthens the connection with the earth. Climbing becomes a path of spiritual sublimation, destruction becomes a declaration of rebellion against order, and jumping becomes a moment of transcending constraints. Interaction here is not just about operation, but is endowed with symbolic meaning.

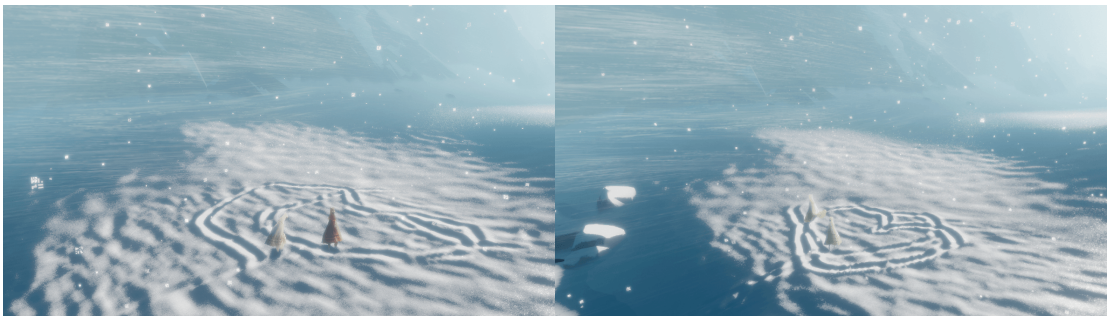
As game designer Shigeru Miyamoto once said, "The story is not what the game designer writes, but what the player experiences[①]." This open interaction breaks the "narrative being told", making each action an independent narrative node. For example, in Journey, players cannot use language or recognize the identity of others, and the only way to communicate is through vocalizations and body movements. You meet, climb together, and guide each other in the right direction. This "silent tacit understanding" forms an extremely pure emotional connection - a physical communication that transcends language, where every movement, collision, cooperation, and pause becomes a plot node. This interdependent shared experience makes "action" itself a narrative.

Interaction is also a medium for emotional construction. When a player pushes a heavy door, breaks an old wall, or lights up a lonely lamp, the system establishes a feeling of "being responded" through feedback. This immediate feedback strengthens the relationship between players and the world - the world is no longer indifferent, but "alive". In the game, potential is activated through this feedback, and every wall that can be climbed, every floor that can be destroyed, is summoning players' actions with "possibilities". This "invited exploration" stimulates players' initiative and sense of participation in the game. It is through this binding of "physical labor and emotional gain" that interaction becomes an ethical experience - players are forced to reflect on the meaning of their actions. When a player

[①] Shigeru Miyamoto is a game designer and creative director at Nintendo Co., Ltd. in Japan, widely regarded as the "father of modern video games". His pioneering approach of integrating narrative, spatial design, and player action laid the foundation for both interactive narrative and embodied gameplay. Miyamoto mentioned this statement in several interviews — including Nintendo Power, Edge Magazine, and The New Yorker's feature article "Master of Play". (2010).

triggers an object or environmental event, the game world will give you the answer: changes in lighting, air fluctuations, music modulation, character expression adjustments - these details form an emotional circuit that shifts the player's relationship with space from "control" to "empathy". It makes players bear the consequences of their actions, making every trigger an echo of value judgments. This is particularly touching in Journey. When reaching the final snowy scene, many players spontaneously use their footprints to draw a "love" pattern in the snow to express their reluctance and gratitude for the unfamiliar players they meet who accompany them all the way to the end. The other party also responds with a "love".

Figure 5-15: *Journey*-Interactive heart-shaped painting in the snow



Resource from: *https://blog.shuspieler.com/450/*

At that moment, there is no dialogue or script, but there is a primitive human empathy flowing. These subtle character feedback not only make the characters more vibrant, but also create real emotional weight for the player's choices in the narrative, and further strengthen the emotional connection between the player and the virtual world.

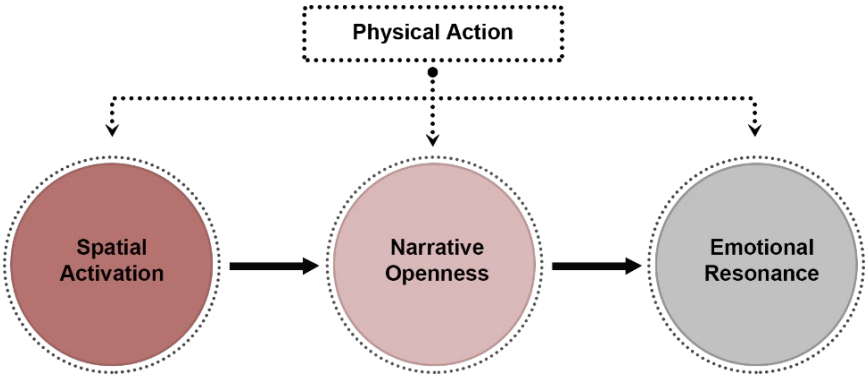
In summary, the role of interactive elements in game cities presents three levels:

(1) To participate in the generation of space——action awakens the world, and space gains life through the body;

(2) The openness of narrative structure——experience is the construction of the story, and behavior itself is the narrative event;

(3) The emotional resonance loop——feedback shapes the shared experience, and bodily actions form an emotional cycle.

Figure 5-16: Logic diagram of interactive elements in the game



Resource from: Self-drawn by the author

This narrative style, which uses the body as a medium and interaction as a language, is the spiritual core that distinguishes game architecture from real architecture. When players experience the world through their bodies, and when the architecture responds to actions with light, sound, and force, narrative is no longer a predetermined script, but a psychological journey arranged by players themselves.

- Atmosphere creation

Atmosphere is the softest yet most profound architectural language in game storytelling. In architectural theory, German aesthetician Gernot Böhme defined atmosphere as "an emotional aura that exists between the subject and the object", which is a "perceived way of being[①]". In the design of game cities, atmosphere is the key to building players' psychological resonance and spatial memory.

(1) The construction of atmosphere relies first and foremost on the shaping power of light and shadow.

In games, light is not merely a tool for illumination — it is an apparatus that establishes the tone of the experience. It determines the emotional temperature and defines the warmth or coldness of the game's spatial environment. In *Journey*, light serves as the spiritual axis of the narrative — from the golden glow of the desert to the icy whiteness of the mountain, and finally to the pure radiance of the Hall of Light. These passages depict transcendence and the salvation of the soul. Beams of sunlight slicing through the dust storm itself create sanctified tracks, giving an aura of transcendence to what we are witnessing. Light and shade as the thermometer of atmosphere: warm light soothes, cold light desolation, flickering light disorients and undermines all security.

(2) Color is another essential strategy in atmosphere creation.

In *Gris*, color becomes a chronological thread of emotional healing: gray signifies numbness, blue sadness, red anger, and yellow awakening. Each color transition accompanies a narrative progression, allowing players to feel the protagonist's emotional fluctuations through shifts in palette. In *Black Myth: Wukong*, the contrast between golden halos and ink-wash landscapes intensifies the tension between "spirituality and the mortal realm".

(3) Sound and materiality endow atmosphere with a kind of "tactile memory".

The echo of metal, the warmth of wood, the low hum of stone walls, and the murmur of the

[①] Gernot Böhme defined "atmosphere" in his work *Atmosphäre: Essays zur neuen Ästhetik* (1995) as an "emotional field between subject and object" (*eine zwischen Subjekt und Objekt schwebende Stimmung*), which is a "perceived way of being" (*eine Weise des Daseins, die gespürt wird*)

wind — these details give space a “physical emotion”. In *The Last of Us*, players can infer the size of a space from echoes or sense the material texture of the environment through sound. These non-visual cues enhance presence and immersion. When light and sound work in harmony, space transforms into a “tangible narrative”, and the city ceases to be an external environment — it becomes an extension of emotion. This “empathic atmosphere” allows players to experience a sense of “understood loneliness” — as if the space itself is listening and responding.

The design of atmosphere is, at its core, a form of “emotional architecture”. As architect Peter Zumthor once stated, “The meaning of architecture lies in its ability to create atmosphere”. He emphasizes that architecture is not a collection of objects but a “composition of sensations”. The atmosphere of a game world is an extension of this idea — through the interplay of light, sound, temperature, and color, it builds an emotional resonance between the player and the world. When players pause in an alley woven with light and shadow or walk alone through snow accompanied by the sound of the wind, what they feel is not just a visual landscape but a state of existence wrapped in emotion.

The creation of atmosphere grants the game world a “spiritual climate”. In such a city, every sound and hue whispers stories — stories of how architecture becomes a dwelling for the soul, and how narrative flows through the very air of emotion.

Chapter Summary

(1) Spatial Structure Principle: Through functional zoning, path guidance, and spatial sequencing, players naturally enter the narrative as they walk and explore, making space itself a vehicle for storytelling.
(2) Architectural Expression Principle: By means of stylistic coherence, landmark placement, and detailed design, the game establishes a believable worldview, reinforces cultural symbols and emotional memory, and endows architecture with narrative language.
(3) Environmental perception essence: experience an environment that becomes more and more realistic (in ambient sound effects, based on dynamics, interaction and atmospheric design) so the player can immerse in the story” via several senses make up emotional resonance whilst turning a virtual city into alive.
These principles and strategies serve a single purpose: to ensure that cities and architecture in games not only serve functional roles but also actively “tell stories”.

Part 4 Game-Inspired Methods for Urban Spatial Innovation

Chapter 6：Insights from Game Urban Design for Real-World Urban Design

Digital cities in games may not exist in reality, yet they offer new possibilities for reimagining real-world urban spaces in terms of spatial logic, sensory strategies, and participatory mechanisms. The carefully designed paths, nodes, sensory systems, and behavioral feedback loops within game spaces reveal people's psychological needs and behavioral patterns when engaging with space. For architects, these experiences and insights are not fictional illusions but valuable resources that can inform and inspire the design of real cities.

6.1 Linear vs. Non-linear: How Do Cities Encourage Exploration?

- Integration of Main and Secondary Pathways: From "Quest Lines" to "Urban Wandering"

In game design, the "main quest–side quest" path structure is one of the fundamental logics shaping player experience. Main quests usually guide players forward through clear objectives and well-defined routes, ensuring coherence in overall narrative and pacing. Side quests, on the other hand, are distributed more freely and openly across the space, stimulating players' curiosity and encouraging autonomous exploration. This coexistence of linearity and nonlinearity not only builds the depth and complexity of the game world but also provides crucial insights for real-world urban planning — a city should not be merely a traffic machine determined by functional logic; it should become an experimental field that combines "accessibility" with "explorability". In other words, spatial structure should not only "point toward a destination" but also "invite deviation". The true value of a path system lies not just in enabling people to "arrive", but in guiding exploration.

Under the influence of modernist urban planning, city transportation systems often emphasize efficiency and rationality: main roads are straight and wide, with clear directional logic. Yet, because of this excessive "rationality", they often deprive people of the possibility of getting lost in the city. Game design experience reminds us that order and chance can — and should — coexist. While constructing primary traffic axes, cities should simultaneously embed a variety of secondary path systems at the micro level — meandering walkways, non-orthogonal alleys, and shortcut passages weaving between buildings — so that people have the freedom to deviate within the established structure. Such spatial strategies can spark a desire for exploration, transforming walking itself into a form of play rather than merely a means of arrival.

The Marais district in Paris exemplifies this "main route–side route" urban strategy: the main streets identify legible direction and a primary layer of conveyance efficiency, while an underpinning system of secondary routes — medieval alleys and covered walks — infuses the

area with complexity and surprise.

This design strategy enriches the spatial layers of a city, at the same time reactivating social dynamics. The presence of side alleys and walks enables commerce, public art and street performers to take root along the route which adds spontaneity and variety to community life. In addition, nonlinear itineraries have psychological meanings and that accompany them: they are the possibility of action, of a choice to be active agents, where individuals could become active explorers and discoverers rather than the passive subject handling with the urban space.

Additionally, a spatial logic that combines linear and nonlinear elements contributes to a more inclusive urban experience. Traditional directional design often serves commuters with clear goals and routines. However, by introducing nonlinear structures, cities can also provide more suitable walking environments for those who move with the purpose of "experience" — such as pedestrians, tourists, children, and the elderly. This approach, which encourages unplanned wandering, better responds to diverse user needs and enhances the city's social accessibility and psychological affinity.

The synthesis of primary and secondary pathways abstracted from game spaces is not a mere structural imitation; it is a new design philosophy. While main roads provide stability and orientation, secondary paths spark curiosity, encourage exploration, and create moments of chance. Their organic integration not only deepens spatial perception and enhances experiential quality but also offers a new way to balance order and freedom in contemporary urban design.

- Node-Based Spaces that Stimulate Exploration: From "Triggers" to "Urban Experience Catalysts"

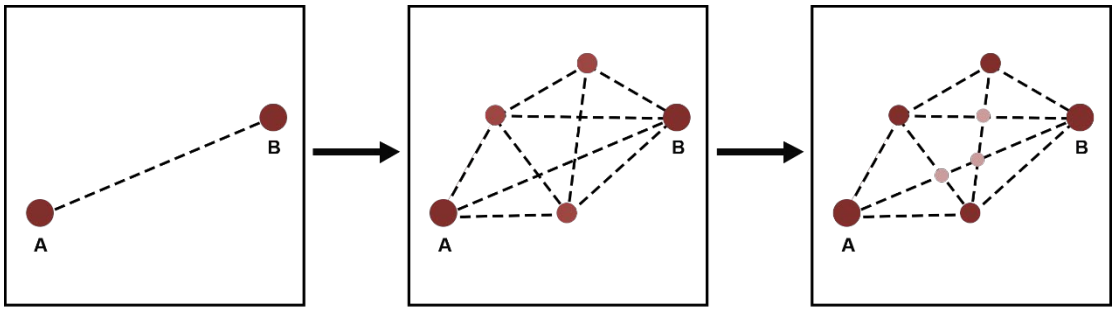
In game space design, nodes are essential mechanisms for guiding player behavior and shaping experience. Nodes are not merely geographical intersections — they are aggregating points of action, narrative, and perception. They often possess a "triggering" quality: quests begin here, stories advance here, and interactions occur here. A monotonous journey can easily lead to attention fatigue and diminished enthusiasm for exploration, but the emergence of a node acts as a "spatial event" that reignites players' curiosity, prompting them to pause, interact, and even alter their original route. This design logic of "node-triggered behavioral regeneration" carries profound implications for the design of public spaces in real cities.

In games, what we remember is not the journey itself but the moments worth stopping for and looking back on along the way. Game designers cleverly leverage this psychological

mechanism through node-based design, transforming space from a mere background to pass through into a destination worth staying in.

This concept is equally powerful for real-world public space design: if a city's pathways are merely linear structures connecting point A to point B, human behavior becomes mechanical. However, when rich nodes are embedded along the routes, the experiential dimension of the city expands dramatically.

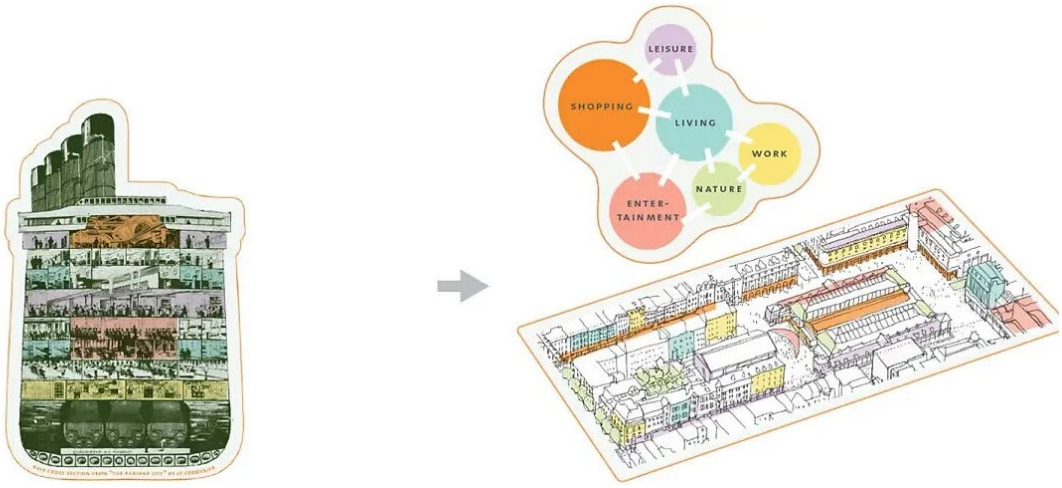
Figure 6-1: Application of Node Space



Resource from: Self-drawn by the author

Covent Garden in London is a prime example of how the "node logic" can be successfully translated into urban design. Although the area is essentially a transportation hub, designers have transformed it into a series of "experience trigger points" through spatial strategies and functional planning. The central square serves as a stage for street performances; the arcades are filled with craft shops and independent brands; and the open spaces regularly host seasonal markets and festivals. These layered nodes create diverse zones of behavioral attraction, constantly "interrupting" and "reshaping" people's walking routes. Original transit paths are thus infused with spontaneity and playfulness, while the city's "flow" is transformed into a cyclical process of "pause — interaction — continuation".

Figure 6-2: Covent Garden's mixed-use development



Resource from: *https://www.kpf.com/story/covent-garden*

Figure 6-3: Node Design of Covent Garden

Garden Nodes | Potential Nodes | Landmarks

Resource from: *https://www.kpf.com/story/covent-garden*

As people walk through the city, they often deviate from their original destinations, drawn in by an independent bookstore or a hidden courtyard, and in doing so, they gain an experience far beyond mere "transit". This strategy of "node-based activation" not only enhances the spatial experience of the city but also produces positive social and economic effects.

(1) It reshapes the rhythm of spatial movement, transforming the city from a mere tool for "going somewhere" into a process that can be experienced.

(2) Nodes often serve as catalysts for public life and social interaction — the exchanges between street performers and audiences, conversations among strangers, and the occurrence of community events all rely on these spatial points that attract and anchor human behavior.

(3) Nodes help stimulate the city's economic ecosystem: small shops, pop-up stalls, and cultural activities often cluster around these points, forming a flexible and vibrant micro-cycle of urban life.

Nodes don't need to be enormous square plazas or transport boulevards, they can even be small-scale spatial breaks: cafe located at the end of a short alley, an interactive art wall, a temporary pop-up installation, or the humble bench and fountain of a street corner. Although those "micro-nodes" are not the function main node, they create a psychological feeling of surprise and discovery, enable people to experience the interesting spatial rhythm changes in the corner walk at their daily walk. As with minor quests or hidden "easter eggs" on videogames that make us remember more than the story this micro nodes are where urban memory and emotions lies.

The "node-trigger" model derived from game space provides a new way of thinking about the construction of space in modern cities. Even once we are able to gather in them again, it reminds us that cities need to do more than meet the requirement of "arrival", but also create opportunities for pausing, interacting, and encountering. Future urban design should shift

from a linear, destination-oriented mindset to an event-driven strategy, where the planning and distribution of nodes infuse urban space with rhythm, emotion, and narrative. When every pause has the potential to spark a new experience and every node can become the starting point of a memory, the city transcends its purely functional framework and transforms into an open narrative to be explored.

- Spatial Legibility and Navigability: From "Quest Guidance" to the Reconstruction of the Urban Cognitive Map

In the design of open-world games and large-scale virtual environments, legibility is a core principle that ensures players can smoothly explore the world, complete tasks, and form spatial memory. Without good spatial legibility, players are likely to feel lost and frustrated, diminishing their engagement. Designers therefore construct a "cognitive map" through landmarks, spatial hierarchies, visual cues, and informational prompts to help players quickly orient themselves, identify goals, and plan routes within a complex world. This design logic is equally applicable to real-world urban planning and experiential design: it reminds us that the value of space lies not only in its *existence* but also in its *comprehensibility*.

Such design is not merely about providing directions; it is a cognitive guidance strategy. It ensures that players retain a sense of direction and agency while exploring freely, preventing them from descending into disorder or confusion.

The idea of spatial legibility offers significant insights for real cities. As urban environments become increasingly complex and multidimensional — with transportation, commerce, housing, and cultural functions intertwined — the absence of a clear system for organizing spatial information can easily cause people to lose their sense of direction or experience cognitive disorientation. Traditional urban planning has often emphasized the *existence* of roads and buildings while overlooking their *intelligibility*. Game design experience shows that cities should not only be *used* but also *understood*. This means that, during the design process, deliberate efforts must be made to construct spatial narratives and cognitive cues.

Among these cues, landmarks are particularly important. Indeed, as Kevin Lynch explains in *The Image of the City*, landmarks act as points of reference within a city's cognitive map to facilitate people assigning mental orientation and spatial memory. In games this function is fulfilled by distant, visible structures like towers, mountain tops and lighthouses. In actual cities, a landmark building or sculpture or "distinctive bridge or street-corner object" has both an aesthetic and a cognitive function: Such objects are transformed into "coordinate points" for spatial judgment. Signature symbols like the Hachiko Statue in Shibuya, the Eiffel Tower in Paris, or the Colosseum in Rome are impossible to replace visual keels within the cognitive

structure of their cities.

Information-based navigation systems are also a key component of legibility. In games, mission markers, dynamic arrows, and interactive maps provide continuous spatial feedback. Similarly, urban design can employ signage, intelligent wayfinding systems, dynamic neighborhood maps, or AR navigation devices to help people maintain their sense of direction in complex environments. An emerging trend is narrative-based navigation: instead of merely providing directional information, it integrates cultural, historical, or storytelling elements so that the path itself becomes part of the experience.

Figure 6-4: The Use of Landmarks and Signage in Urban Design

Resource from: Self-drawn by the author

Spatial legibility influences not only people's behavioral efficiency but also their emotional attachment to a city. A clear and intelligible spatial structure can reduce anxiety and feelings of unfamiliarity while enhancing one's sense of safety and control. Conversely, a disordered spatial environment can easily lead to feelings of disorientation and alienation. One important lesson from game design is that when players are able to quickly build a "cognitive map" and grasp the spatial logic, their desire to explore the world increases significantly. Likewise, in real cities, strong spatial legibility can motivate people to walk more actively, explore more deeply, and make greater use of public spaces — thereby enhancing urban vitality and sociability.

Drawing on the principle of legibility from game design, future urban planning should shift its focus from merely "constructing physical structures" to "designing cognitive structures". Cities should be not only seen, but read. By the definition of recognizable landmark system and wise navigation tools, urban spaces can not only be converted from "cool physical space" to "emotional narrative map" through easily memorizing. This development not only

contributes to enhancing the accessibility and quality of urban life, but also constructs a theoretical basis for promoting emotional bonds between people and the city.

- Creating Spatial Diversity and Layering: From “Level Rhythm” to the Narrative Structure of Urban Experience

Diversity and layering of space are among the most “playable” design features in game worlds. Excellent level design never lets players mechanically progress through a monotonous spatial structure. Instead, it uses dynamic changes in scale, perspective, structure, and function to keep the experience in a state of constant evolution. This “rhythmic” spatial construction offers an important insight for real cities: urban spatial experience need not take place on the flat or be homogeneous — instead, it should proceed like a story, with rises and turns and climaxes that will turn walking into its own kind of journey.

And the philosophy of “diversity and layering” that underpines this approach equally speaks to urban planning, as well as spatial experience. Modern cities often emphasize functional zoning and circulation efficiency, which leads to monotonous spatial structures: commercial streets with repetitive scales, uniform plaza layouts, and residential communities with highly replicated appearances. The urban space consequently turns into a “background to be used” and not an ”event to experience”. Game design teaches us that spatial variety has a kind of narrative power all its own: through a succession of differences and alterations, we enable people to remember things and feel things as they move.

Urban design can achieve this “narrative spatial rhythm” in various ways.
(1) Scale transitions are one of the most direct strategies.

Alternating between large plazas and narrow alleys continuously shifts bodily perception and psychological states, creating a sense of rhythm.

(2) Vertical layering can also deepen the experience.

Shibuya in Tokyo, for example, uses a combination of elevated walkways, pedestrian bridges, underground passages, and rooftop platforms to extend the urban experience from a two-dimensional plane into a three-dimensional structure — turning movement into a vertical adventure.

(3) Functional layering further enriches space across both temporal and behavioral dimensions.

The convergence of diverse functions within a single node transforms the space into distinct

usage patterns at dawn, noon, and night, thereby generating new "scenario fragments" in the urban experience as time unfolds.

But more crucially, diversity is not pursued for its own sake — it serves a process-oriented narrative. Just as the pacing of game levels is designed to shape emotional highs and lows, urban spatial diversity should form a sequence of experiences. Hopping from a crowded commercial street to a serene green space, or from an open plaza into a secluded courtyard, makes streetscape into a kind of "novel", with each transition akin to the turning of a page on the story. This kind of spatial structuring amplifies a city's memorability and return potential; it can be difficult to tire of somewhere for which every walk has the potential to release new emotional resonances and layers of sensory overload.

Moreover, spatial layering fosters behavioral diversity. Monotonous spatial structures tend to support only singular activities (such as passage or shopping), while spaces with layered experiences can accommodate a wide range of activities — resting, socializing, art performances, spontaneous gatherings, and more. In games, new gameplay opportunities often emerge from changes in spatial design; similarly, the "multiplicity" of urban space expands possibilities for use and community engagement. This transformation — from "functional singularity" to "functional polyphony" — marks an essential shift in contemporary urbanism: from being merely planned to being actively inhabited. As the phenomenologist Christian Norberg-Schulz put it: "Architecture means to visualize the genius loci, and the task of the architect is to create meaningful places, whereby he helps man to dwell[①]".

The concept of "spatial diversity and layering" distilled from game design is not merely a formal strategy — it also calls on architects to transcend functionalist thinking and envision the city as an ever-unfolding narrative space, where the body, senses, and emotions of its inhabitants are continually activated and engaged through movement. Future urban spaces should resemble a multi-chapter novel or a carefully crafted game, guiding people to explore, pause, be surprised, and form memories through progressively unfolding spatial structures.

6.2 Immersive Experience: How Do Games Enhance the Perception of Real Cities?

- Multi-Sensory Design to Strengthen Realism

In game worlds, the sense of immersion — the feeling of being truly "present" — does not stem solely from realistic visuals or compelling narratives. Its deeper cause lies in how games activate multiple human sensory systems, transforming the player from a passive "observer"

[①] From architectural phenomenologist Norberg Schulz Christian, *Genius Loci: Towards a Phenomenology of Architecture.*

of the world into an active "participant" *within* it. Vision, hearing, touch, as well as spatial and temporal perception, together form the foundation of immersive experience, granting virtual worlds a sense of perceptible reality. This design philosophy has direct implications for real-world urbanism: cities should not merely be *seen* — they should be *felt*.

Human spatial perception is inherently multimodal: tactile, auditory, and olfactory information all play crucial roles in how we understand and relate to our surroundings. If modern urban design seeks to foster a true sense of *presence* and *belonging*, it must reactivate these often-overlooked sensory dimensions.

Real-world cities can draw significant inspiration from the "multisensory strategies" of game design.

(1) Auditory design remains significantly undervalued in urban experiences.

In games, sound serves as the primary shaper of spatial mood: bustling markets resonate with clamorous voices, while mysterious ruins echo with low-frequency reverberations. Different soundscapes directly influence how people emotionally perceive a place. Real cities can similarly enhance spatial ambiance and sense of place through "sound environment" design—incorporating the sounds of water features, rustling leaves, background music, or wind chimes.

(2) Tactile Design and Bodily Scale: Touch and bodily experience are equally crucial in strengthening spatial authenticity.

In games, walking speed, jumping height, and climbing difficulty are all carefully calibrated to ensure a harmonious match between the player's virtual body and the virtual environment. Urban design, likewise, should focus on bodily interaction: the texture of paving materials, the comfort of step heights, the tactile quality of wall surfaces, or the grip of handrails — all constitute a kind of "bodily language" between people and space. For example, the pedestrian path of Omotesando in Tokyo, with its finely textured stone paving and dappled interplay of light and shadow, creates a *tactile walking experience* that invites people not just to "pass through" space but to truly *feel* it.

(3) Olfactory perception and climate awareness are elements in the game that are rarely mentioned but actually have far-reaching implications.

In cities, the scents of plants, cafés, and markets become "olfactory landmarks" that help build emotional memory. Climate-responsive design — such as wind corridors, water features, and daylight control — can also add a tangible *touch* to the urban environment.

(4) Lighting and environmental perception are also indispensable.

Light intensity, color temperature, and material contrast in games often signal shifts in spatial emotion. Similarly, cities can use these "atmospheric codes" to guide sensory perception.
The incorporation of multisensory strategies not only enhances the realism and depth of spatial experience but also brings about positive social and psychological effects. Environments rich in sensory stimuli are more likely to evoke emotional resonance and foster memory formation — people's attachment to and identification with a city are often sparked by these "non-visual" details. Moreover, multisensory design can improve spatial inclusivity: for people with visual impairments, for instance, auditory cues and tactile paving are often more meaningful than visual signage. This principle of "sensory equity" represents an important direction for future cities seeking to become more human-centered and inclusive.

The idea of multisensory experience drawn from game design offers a new path beyond visual-centric urbanism. Cities should not aim merely to create buildings that "look beautiful" but should instead construct perceptible environments through soundscapes, textures, scents, temperature, and more. When people's bodies are activated by space and their senses are fully engaged, the city transforms into a deeply participatory living environment — not just a backdrop for life, but a stage on which life is felt in its fullest dimension.

6.3 Human-Centered Design: How Do Games Reimagine the City?

- "Play" as a New Form of Spatial Practice

"Play" in the world of games is not merely an act of entertainment — it is a profound mode of spatial practice. Players are not passive "users" of space; rather, they actively test, explore, and create it. Through actions such as jumping, climbing, building, conversing, and solving puzzles, they transform the virtual world from a static environment into a dynamic stage.
The Dutch cultural scholar Johan Huizinga pointed out in *Homo Ludens* [①]: Games are not merely by-products of culture but its very source — "play" itself is a vital way through which humans understand the world, construct order, and form social relationships. This idea offers important insights for urban design: if we extract the concept of "play" from the context of virtual worlds, it can become a new paradigm for organizing public spaces and reshaping urban life.

For example, *Minecraft* grants players a high degree of creative freedom, allowing them to dismantle, reassemble, and reshape entire spatial structures; *Animal Crossing*, on the other hand, enables players to participate in the "everyday construction" of space through daily interactions, social activities, and small events. In these designs, "play" is not merely about entertainment — it becomes a reinterpretation of space: space is no longer a fixed stage but

① Huizinga J. Homo ludens ils 86[M]. Routledge, 2014.

a site that can be transformed, occupied, and redefined.

Traditional urban planning often regards public space as a "place of use" — predetermined as squares, green spaces, streets, or transport hubs with clearly defined functions. As a result, people's behaviors are constrained within fixed categories such as "passing through", "resting", or "consuming". However, game experience teaches us that the true value of space lies in its ability to stimulate "unprogrammed" behaviors, inviting people to actively participate and assign new meanings to it. When public space shifts from "visibility" to "playability", and from being "used" to being "played with", urban life itself undergoes a fundamental transformation. This transformation has already begun to emerge in innovative urban practices around the world. A typical example is Superflex Park in Copenhagen: rather than designing it as a conventional park, the designers envisioned the space as a "city playground", embedding skateboard ramps, movable furniture, interactive installations, and multicultural elements that encourage residents to freely combine and create activities. As a result, space is no longer a predetermined functional site but a "stage for action" — one that can be continuously reinterpreted and reactivated.

Figure 6-5: Superflex Park, Denmark

Resource from: *https://www.superflex.net/works/superkilen*

These projects collectively demonstrate that when urban spaces possess "playability", people's behaviors shift from passive lingering to active exploration, from individual actions to collective interactions, and from spaces of consumption to spaces of creation.

In fact, "play", as a deep-seated mechanism of human behavior, has long transcended the realm of entertainment. As behavioral studies have pointed out: "We are designed by nature and evolution to keep playing throughout our entire lives[①]", The meaning of this statement lies in the fact that "play" is an instinctive human behavior essential for adapting to the world, sustaining creativity, and maintaining social connections — it is not merely a transitional activity confined to childhood. If urban design overlooks this reality, spaces risk losing their

[①] Tanghe K B. Homo Ludens (1938) and the crisis in the humanities[J]. Cogent Arts & Humanities, 2016, 3(1): 1245087.

most vital potential for interaction.

Another layer of this analysis is that “play”, when conceived of as spatial practice, can challenge dominant orders and power relations. Video games, players defy rules, transcend expectation and “misuse” space in ways that reflect the diversity of spatial deployment (play) as well as the emancipating power of play. A square is no longer just a public space — it can become a skate park; a street corner is no longer only a traffic island — it can be used for impromptu art performances; an abandoned industrial building is not simply a “ruin” — the community may turn it into shared kitchen or cultural center. “Play” gives urban spaces openness and plasticity, so they can change to meet changing social or cultural uses.

The logic of “play” furthermore involves a participatory dimension within urban design. Our traditional forms of planning are frequently led by experts, and by the state, they write, whereas “playable” spaces depend on residents to continually participate in the reproduction of space through its use: what people do when they are occupying one. Like in *Animal Crossing*, where players slowly bend the island’s ecosystem to their whims through small-scale everyday activities, public spaces in real cities can change organically over time through playful community co-creation, participatory design and temporary installations. This “play” not only nurtures a sense of residents’ belonging and responsibility, but also brings dynamism, openness and bottom-up character to the making over urban space.

The logic of “play” distilled from games is not merely a metaphor for entertainment — it is a profound philosophy of urban space. It reminds us that the value of public space does not lie in being “planned” but in being “activated”. Future urban design should not be limited to meeting basic needs for survival and mobility but should become a place for people to play, experiment, interact, and create. When “play” becomes a core mode of urban life, people’s use of space will no longer be constrained by function or regulation — it will become richer, more open, and more creative.

- Gamification: Enhancing Civic Participation

Gamification design incorporates elements of play into urban planning, community building, and public affairs to stimulate active citizen participation and collaboration. Urban design can make use of game mechanics — such as point systems, rewards, and competitive modes — to encourage public involvement in city governance and community activities, thereby strengthening citizens’ sense of belonging and responsibility. Strategies like urban treasure hunts, virtual missions, and city-based storylines can guide users to explore unknown spaces and hidden landmarks.

The core value of game design is not merely to provide entertainment; it is a systemic structure capable of stimulating participation, driving behavior, and reinforcing motivation. "Gamification" refers to the application of game thinking, mechanics, and behavioral logic to non-game contexts in order to inspire users' enthusiasm and creativity. In digital games, players are willing to invest time, interact continuously, and explore proactively because designers skillfully employ mechanisms such as goal-setting, reward feedback, level progression, and competition or cooperation — thereby creating a closed-loop system where "participation has value".

This mechanism offers profound insights for urban governance and development: if cities could be "designed like games", they might transform residents from "managed subjects" into "active participants".

In location-based games like *Pokémon GO*, players' actions do not occur solely on the screen — they are deeply intertwined with physical space. Through mechanics such as capture missions, experience points, leaderboards, and reward unlocks, players are encouraged to explore public spaces, historical landmarks, and natural landscapes across the city. This experience not only allows players to rediscover the city but also leads them, often unconsciously, to participate in the reuse and reactivation of urban space. Underlying this is a fundamental chain of logic — behavioral motivation — spatial action — social connection" — in which people's actions are no longer driven by external compulsion but by intrinsic interest and the desire to participate.

Figure 6-6: *Pokémon GO*

Resource from: *https://www.linkedin.com/pulse/3-ways-pok%C3%A9mon-go-going-change-marketing-kara-delost*

This logic provides a highly promising strategic tool for urban governance and public space design. One of the central problems that confronts modern cities is a lack of public engagement: whether it's in community management, maintaining the environment,

participating in cultural activities or taking part in public decision-making, citizens seem to have little dynamism and long-term commitment. Such model of gamification can "re-engineer" the logic even of a citizen participation in urban plans at this level. Thanks to scores, badges, levels, quests and challenges, cities can transform abstract, complex, and unappealing public affairs into processes that are goal-oriented, challenging, and rewarding. For example, a city could design a "walking points program" to encourage residents to walk instead of drive in order to reduce carbon emissions. Or it could implement a "community mission" system that motivates residents to take part in cleaning public spaces, planting trees, or organizing cultural events — rewarding them with points redeemable for public service discounts or local shop offers. Essentially, these mechanisms turn "participation" into a form of "game", making actions themselves enjoyable, rewarding, and meaningful.

Going further, gamification can also become a medium for urban storytelling. A game's "quest system" not only drives participation but also guides users to explore the culture and history embedded in space. For example, Paris once created an AR-based "urban treasure hunt" where residents and tourists, while completing different missions, gradually learned about the city's historical sites, literary stories, and architectural styles. Similar "storyline" mechanisms allow citizens to build deeper urban identities *while playing*, transforming public spaces into carriers of memory and emotion.

Another major value of gamification lies in fostering social collaboration and community cohesion. Many games are not designed to encourage individualism but instead require collective goals and team cooperation to achieve ultimate success. Likewise, cities can use community competitions to encourage neighborhood collaboration or set collective goals that motivate different groups to jointly participate in environmental improvements, public art projects, or social services. In this way, urban participation is no longer a one-way relationship between "government and individuals" but becomes a "society-to-society" collaboration network, cultivating stronger public consciousness and a shared sense of belonging.

It is important to note that gamification is not merely surface-level decoration — it represents a deep design philosophy. Its value does not lie in simple points or rewards but in restructuring the relationship between behavioral motivation and spatial use. A successful gamification system should allow residents to feel satisfaction, achievement, and self-realization throughout their participation. As the "flow" theory[①] in game design emphasizes,

[①] "Flow" is a core concept proposed by Hungarian-born psychologist Mihály Csíkszentmihályi to describe the optimal state of experience achieved when humans engage in an activity with heightened focus and joyful immersion.

when challenge and ability are balanced, goals are clear, and feedback is immediate, people experience continuous pleasure and intrinsic motivation in their actions. If cities can integrate this "flow-oriented" participation design into governance, transportation, culture, and environmental systems, they could establish a sustainable model of public engagement.

The concept of gamification derived from games is more than a supplementary tool for city management — it is a deep strategy for transforming how cities operate. By turning complex public affairs into engaging and meaningful task systems, it stimulates citizen initiative; by building multi-level reward and feedback mechanisms, it sustains behavioral engagement; and by introducing social dynamics of collaboration and competition, it strengthens community cohesion and collective identity. In the future, if cities can become as "playable", "participatory", and "rewarding" as games, they will no longer be merely governed spaces — they will become shared, co-created, and co-shaped "films of urban life".

Chapter Summary

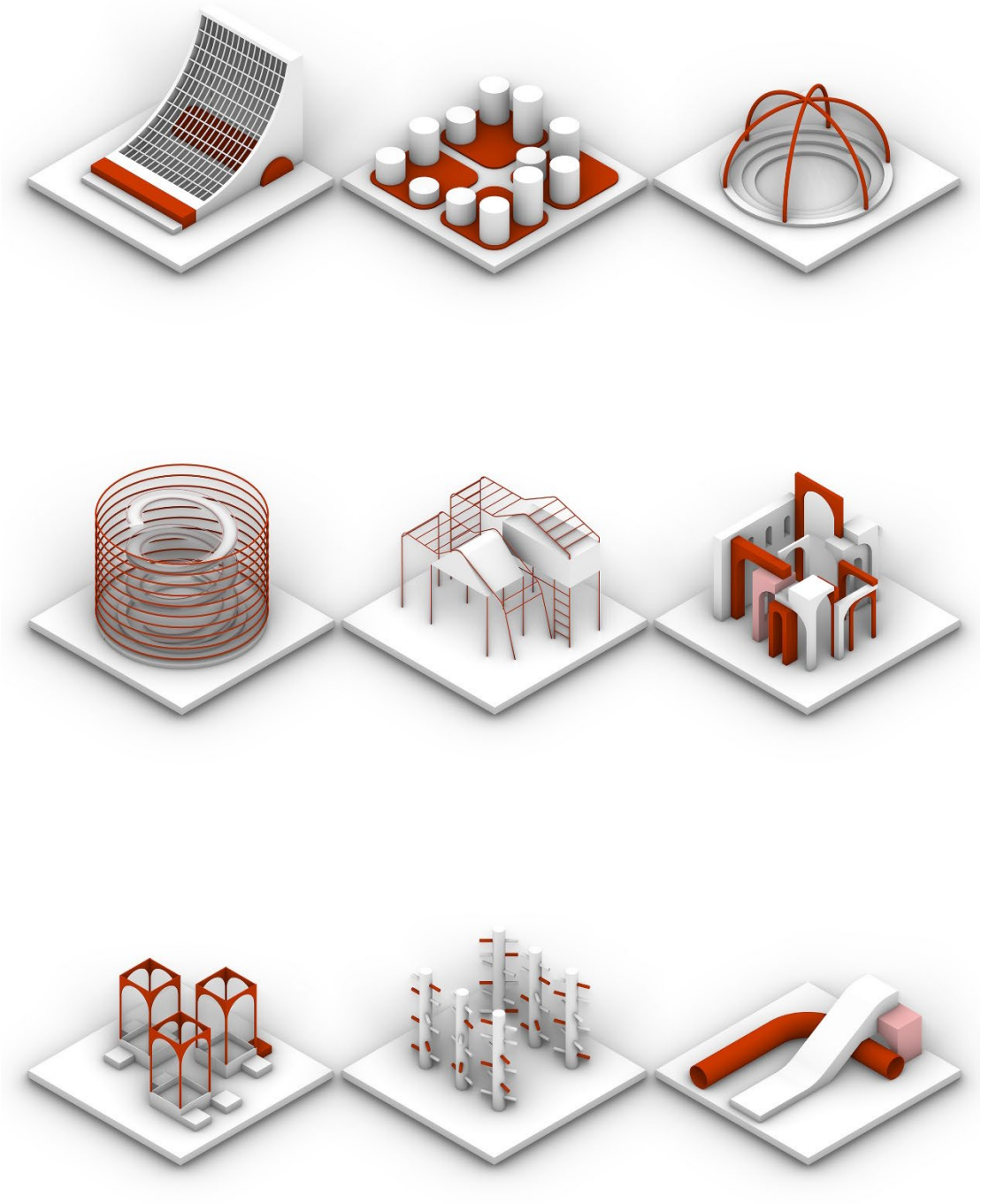
Chapter 6 draws out elemental wisdom gained from game-based urban design to support real physical cities. The space game logic teaches us that cities should not concentrate only on movements but they have to integrate main and secondary routes, building ponctuation nodes in the city fabric that stimulate the walk and makes it a fun experience. Similarly, games stress the importance of spatial legibility, meaning a real-world city would potentially improve wayfinding and security through identifiable landmarks and easy to use navigation systems. Experientially, the multi-sensorial aspect of games leads to a high-fi amplification of design, in cities becoming broader strategies on light, material and atmosphere. Finally, the ideas of "play" and "gamification" indicate that cities should stimulate active involvement and creativity among citizens, rendering public spaces more-open ended, engaging and lively.

Chapter 7：Reconstruction of Narrative Architecture in Game Urban Design

7.1 Node Design

As pivotal touchpoints in spatial narratives, nodes serve as core units that connect places, stimulate interaction and construct experiences. In future urban design, each node is not merely a functional stopping point but also a "plot twist" and "experiential event" within the narrative structure. Through specific spatial forms, atmospheric design, and behavioral possibilities, it transforms the city from a mere sequence of connected pathways into a dynamic system of readable and participatory scenes. This creates a dynamic scene system imbued with a "playful spirit", allowing citizens to experience the narrative rhythm and emotional flow spontaneously generated by space during their daily journeys.

Figure 7-1：Different Nodes



Resource from: Self-drawn by the author

(1) In terms of formal language, nodes primarily employ abstract geometric compositions.

Interestingly, through a variety of different construction techniques – curved surfaces and columns, frames and spirals, arcades – they interfere with the stability of conventional spaces, highlighting structures' ability to be climbed and traversed as well as seen. For example, inclined grid surfaces of installations encourages physical posture exploration or rhythm and

challenge are reinforced through staggered cylindrical platforms to stimulate user active participation.

(2) Functionally, nodes evolve from mere "decoration" into "behavior generators".

Circular structures induce gathering and conversation, while framework installations provide stages for climbing and observation. Maze-like volumes create a psychological journey of "exploration-disorientation-rediscovery". This multi-layered functionality transforms nodes into mediators of human-space interaction, allowing spatial narratives to emerge organically through users' physical actions.

(3) Nodes are of narrative significance as "rhythmic points" of the spatial sequence.

Varied in type, nodes also suggest different emotional experiences and narrative roles: some stand for arrival a connection; others portend culminating action; still others act as points of rest the finish line. Together, they make up the "chapter structure" of space-turning urban or game settings from "maps" into experiential worlds pulsing with events and narratives.

Through this nodal design, space transforms into a dynamic stage characterized by "playfulness", "narrativity", and "participation". The diversity and interactivity of nodes infuse the overall design with openness and extensibility, enabling users to continually explore, perceive, and create within it. This process facilitates a shift in identity from "space user" to "story co-creator".

7.2. Spatial Design

The richness of the space stems not only from the innovative forms of individual nodes, but also from the orchestration of their interconnections and the layered construction of the overall structure. In this design, nodes exist not in isolation but are interconnected through transitional elements like pathways, stairs, and ramps, forming a spatial system with rhythm, hierarchy, and narrative logic. This layout transforms the space from a "collection of points" into a "cohesive field", offering users diverse experiential paths and narrative threads.

(2) Diversity manifests in the interplay between node functionality and perceptual experience.

Each node serves distinct spatial purposes: some activating physical potential through height and challenge (climbing elements), others establishing social space through enclosure and circulation (circles, arcades), while still others invite exploration and contemplation through complexity of path (labyrinthine structures, forest-like column installations). This progressive journey—from "dynamic" to "serene", "open" to "enclosed", and "direct" to 'metaphorical'—transforms the space into a multi-sensory, emotionally layered "play narrative field".

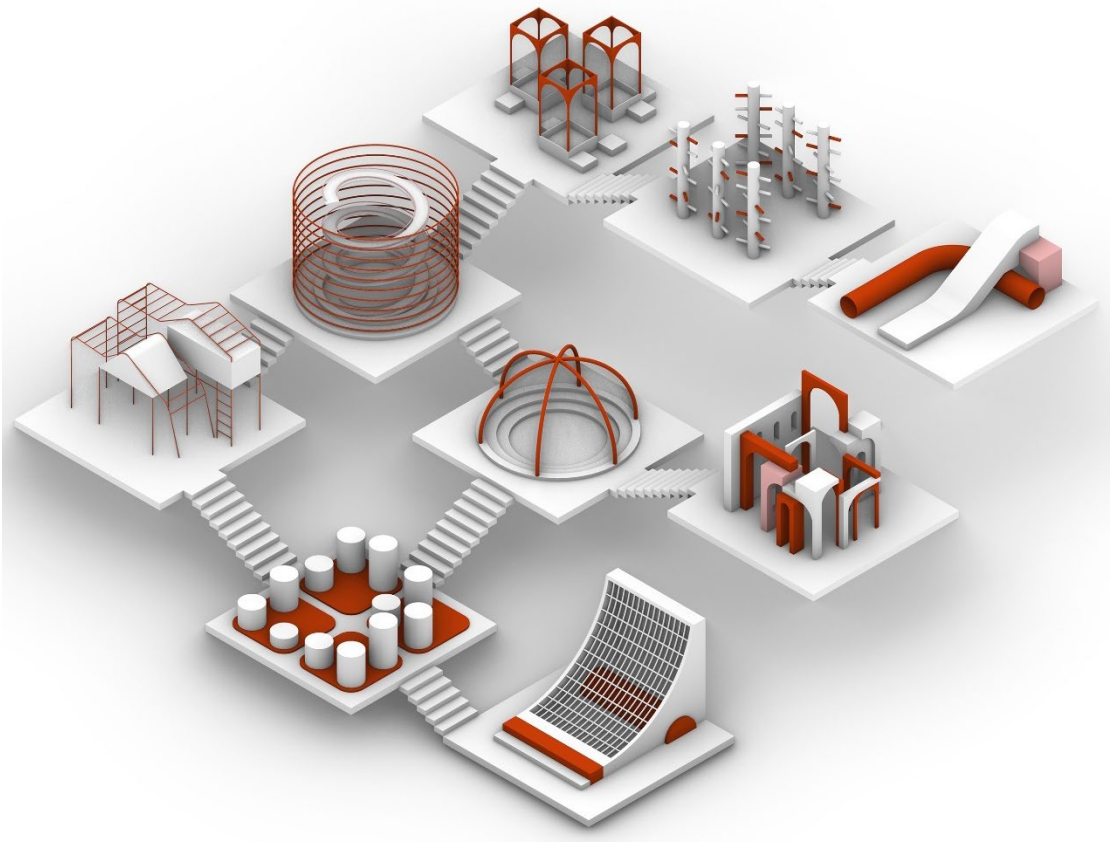
(2) Spatial depth is achieved through staggered elevations and layered arrangements.

Vertical stacking and horizontal extension of nodes transform users' trajectories from linear pathways into "story maps" brimming with choices and turns. Stairs, platforms, and transitional structures not only connect elements but also visually establish sequences of "distance-proximity", "up-down", and "inside-outside", imbuing the space with a dramatic unfolding logic. Each turn, ascent, and downward glance represents a shift in perception and an advance in the narrative.

(3) This fusion of diversity and layering endows the space with the potential for "self-growth".

The combinations and flows between different nodes can be continually reconfigured and reinterpreted, while users' path selections and experiential journeys vary, transforming the space into a dynamic system brimming with possibilities.

Figure 7-2：Spatial Diversity and Layered Experiences



Resource from: Self-drawn by the author

Through the organization of nodes and the layered design of spatial structures, the entire venue transcends the singular logic of functional zoning. It transforms into a composite space that integrates playfulness, narrative, and exploration, inviting people to continuously "discover—experience—rediscover". Within this progressive sequence of multiple perceptions, a deep interactive relationship with the space is cultivated.

7.3 Multi-Sensory Design

Spatial design transcends mere visual presentation; it is a holistic process involving the body, perception, and emotion. Through multi-sensory engagement, space transforms from an "object to be viewed" into an "experience to be lived". By employing multi-dimensional design techniques—such as tactile elements, spatial scale, and physical movement—users develop deeper cognitive memories and emotional resonance through their interaction with the environment.

- Scale

Scale is the most direct language in multisensory design. It concerns not only the size and proportions of structures but also determines the relationship between people and space, as well as the possibilities for physical engagement. In this design, the scale of nodes is consciously set to be adjustable according to users' physical differences, thereby achieving the design goal of "adults and children sharing the same scene".

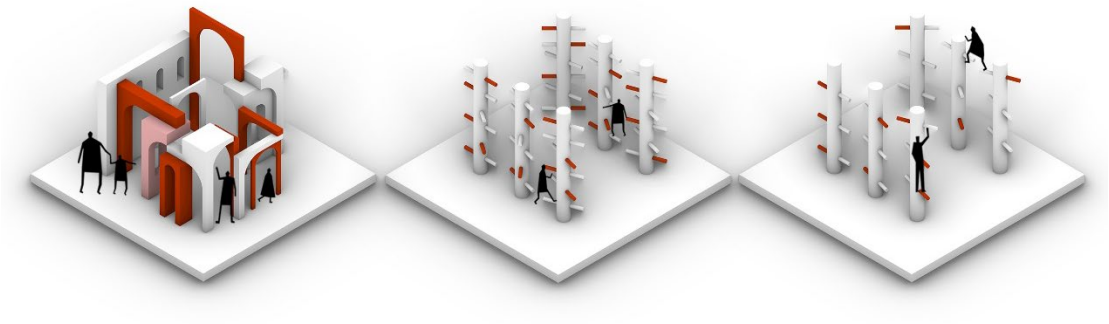
Specifically, the installation's height, spacing, and climbing point placement feature meticulously calibrated proportions: lower entrances, accessible arches, and ground-level structures facilitate children's free exploration, traversal, and climbing; while elevated horizontal bars, vertical posts, and more challenging pathways provide adults with space for stretching and adventure. This coexistence of multiple scales not only broadens the age range of users but also makes physical engagement a vital part of the spatial narrative.

Moreover, the "variable" scale here suggests "multiple" perceptions. As children wander through the forest of columns, suddenly we are in a huge labyrinth; as adults enter this same scene, they are challenged by a three-dimensional installation that requires certain physical strength and strategic moving around. These divergent corporeal experiences operating at multiple scales contextualize a layered spatial narrative, elevating the site from a monofunctional playground to an open-air theater that addresses diverse bodies and senses through narratives.

By scale design's adjustment, the space is no longer just specifically for one group and it

becomes a “symbiotic” place: responding to children’s curiosity and their way of exploring the world but also adults’ physical and sensory need. So through the body, it opens up a multisensory conversation between people and space, and between people.

Figure 7-3：Different scales correspond to different user groups



Resource from: Self-drawn by the author

- Color

In multisensory design, color stands as one of the most direct and emotionally potent elements. It not only shapes a space’s visual expression but profoundly influences users’ psychological responses and behavioral patterns. Through careful selection and harmonization of hues, a space can convey distinct emotional atmospheres, narrative contexts, and interactive intentions—elevating the experience beyond mere sight into the realms of psychology and perception.

(1) Color possesses the ability to evoke emotions.

Bright warm hues (such as orange-red and coral) stimulate vitality and a desire for exploration, fostering a positive and open mindset; These hues are typically employed in areas encouraging interaction and movement, signaling the space’s “action-oriented” and “participatory” nature. Conversely, soft cool tones (like light blue, mint green, or pale purple) cultivate a tranquil, soothing atmosphere, guiding people to slow down and focus more on

subtle sensory experiences and emotional connections. Such colors are often used in nodes designed for exploration, socializing, or immersive experiences.

(2) The narrative of color changes spatial layers and meanings.

The same form can be given very different perceptual contexts by two different color strategies: an arch system, conveyed with its structurally legible, structural integrity in a vitally playful orange-red becomes solemn and ritual if rendered in bronze tones. The same space, enveloped in soft hues, transforms into a stage for dreamlike and fantastical narratives. This "color as narrative" approach enables spaces to "shift personalities" according to user perception and thematic contexts, enhancing the venue's adaptability and multiplicity of meaning.

(3) Color serves directional and identification functions.

Within complex spatial sequences, color variations provide users with directional cues and functional recognition. For instance, high-luminance color blocks can mark entrances or key nodes, while dark transitions signal shifts in spatial rhythm. This color strategy not only optimizes spatial legibility but also enhances users' "narrative perception" during their journey.

Figure 7-4: Different colors bring different visual experiences

Resource from: Self-drawn by the author

Through strategic color application, space ceases to be a neutral container and instead becomes a perceptual vessel imbued with “emotion”, “semantics”, and “story”. Color enables people to not only ‘see’ space but also “feel” it, achieving a profound connection between people and place across visual, psychological, and emotional dimensions.

7.4 Gamification Design

The notion of gamification in current spatial design focuses not so much on the integration with pleasure, rather the activation of the spatial potential through variability, participation and interaction. It enables users to become active creators of spatial narratives through the act of “play”. Guided by this approach, this design employs three strategies—”modularity”, “combination”, and “multiple pathways”—to construct an open experiential field imbued with a playful spirit.

(1) The flexible configuration of modules lies at the core of the spaces playful nature.

The rendered cylindrical units are individual modules which can be reconfigured and merged as per site size, the number of users, or type of function. The product of this is different path types, different intensities of climbing skill required and thereby difference patterns of interaction. This “malleability” gives life to the space, which is not just a rigidly-functioning system but instead becomes alive with potentiality.

(2) The increased involvement is achieved by a two-way communication between “players and space”.

This logic is profoundly co-constituted by users, who build with it, explore within, and test against—no longer just transit through or gaze upon. Kids can see the modules as launching pads for them to create their own clear-the-level paths, while adults get a work-out by climbing and moving on structures. In this sense, the meaning becomes no longer monolithically determined by designers, but it is continually “rewritten” through its various usages and reuses.

(3) This gamified design philosophy encourages social interaction and cooperation.

Different factions can interact with the same installation in different ways, and on the contrary the identical module itself could cultivate brand new play experience and story by various people. And this “open-ended” structure gives the area a continued sense of togetherness and renewal.

Through modularity and free combination strategies, gamified design liberates spaces from

static functional constraints, transforming them into multidimensional venues that encourage exploration, creation, and sharing. People engage not merely with the installations themselves, but with the very possibilities of the space. It is precisely within this process of "possibility" that the venue gains its most enduring vitality and charm.

Figure 7-5：Freely combinable real-life game installations

Resource from: Self-drawn by the author

Chapter Summary

This chapter, envisioning "the city as a game", proposes strategies for reconstructing narrative architecture in future urban design, emphasizing that space should evolve from a purely functional carrier into an experiential field rich in narrative, participation, and playfulness.

(1) Node Design: Nodes can be static resting points or receive narrative roles as turning points and experiential events. Through climbable and perceivable structural language, users generate spatial stories through bodily engagement.

(2) Spatial Design: By organizing the relationships and hierarchical layouts between nodes, a rhythmic and multi-path "story map" is created, shaping spatial experiences that flow from openness to convergence, and from exploration to reflection.

(3) Multi-sensory Design: Emphasizes the role of scale and color in evoking emotion, guiding bodily participation, and shaping narrative atmospheres, thus enabling a coexistent experience for diverse users—both children and adults.

(4) Gamified Design: Through modularity, combinability, and multi-path strategies, spaces gain variability and collaboration potential, encouraging users to co-create spatial meanings through the act of play.

Part 5 Conclusion and Prospects

Chapter 8：Conclusion and Prospects

With the deep integration of digital media and spatial design, games are no longer merely a vehicle for entertainment — they are gradually becoming a crucial methodology for understanding, experiencing, and reconstructing urban space. The shift from asking *"Can a city be played?"* to realizing that *"The city itself is a game"* marks a fundamental reconstruction of spatial cognition. Under this new paradigm, architects, urban planners, and even ordinary citizens are no longer passive users of space but active participants and co-creators of spatial narratives.

8.1 Review of the Study and Theoretical Foundation Reaffirmation

Reviewing the entire text, this study adopts spatial poetics as its theoretical foundation and centers its analysis on digital game spaces to systematically examine the intrinsic mechanisms of "space-narrative-experience". Traditional urban design has long been dominated by functionalism and material logic, treating cities as ordered physical containers while neglecting the subjective dimensions of space in perception, memory, and meaning-making. The emergence of digital game spaces offers a new perspective to transcend these limitations: through node-based structures, multisensory stimulation, task-triggered mechanisms, and behavioral feedback loops, games transform spaces from being "observed" to being "experienced—narrated—co-created". These spaces become sites where emotions flow, meanings emerge, and actions accumulate. This study's analysis demonstrates that games are reshaping how people understand and engage with the real city.

To elucidate this new spatial logic, this study returns to two key theoretical foundations. First is the "Spatial Poetics". **Gaston Bachelard**'s Spatial Poetics lays the theoretical groundwork for understanding the intrinsic relationship between "space-emotion-memory". **Maurice Merleau-Ponty**'s phenomenology of perception emphasizes that bodily action is the starting point for meaning generation, rendering space an "embodied field" continuously experienced and constructed through action. **Peter Zumthor**'s sensitive writings on materiality, light, and atmosphere provide an architectural foundation for the sensory experience of space. **Michel de Certeau**'s core concept that "walking is the writing of space" further reveals how spatial meaning emerges from users' everyday actions, making the "path-behavior-narrative"

relationship a crucial methodological approach to understanding spatial experience. Concurrently, **Johan Huizinga**'s "Play Spirit" concept in Homo Ludens positions 'play' as a universal mechanism for cultural and meaning generation, providing the cultural and philosophical foundation for participatory and poetic experiences in virtual spaces. Collectively, these theories form the core theoretical framework for this study's exploration of "how space is experienced and narrated".

On "Narrative Architecture". **Roland Barthes**' concept of spatial legibility positions architecture as a narrative medium that can be "read"; **Kevin Lynch**'s theory of urban imagery provides structural elements such as pathways, nodes, boundaries, and landmarks for spatial narratives; **Christian Norberg-Schulz**'s "Genius Loci" emphasizes the deep connection between space and cultural symbols. The architectural experiments of **Bernard Tschumi** and **Peter Eisenman**—exploring event-driven, scenographic, and fragmented forms—propelled narrative architecture from symbolic expression toward action-based generation, providing the methodological foundation for this study's proposed "Three-Layer Structural System of Narrative Architecture". Through this framework, narrative architecture is reinterpreted as a mechanism for meaning production rather than a formal decorative strategy.

In summary, the interdisciplinary integration in this study is not a simple juxtaposition of architecture, phenomenology, and media studies. Instead, it constructs a coherent conceptual framework based on these two theoretical traditions, enabling spatial poetics and narrative architecture to achieve unified interpretive power within digital environments. Thus, the core question posed at the outset of this paper receives a clear response: introducing gamified spatial logic into urban design is not only theoretically necessary but also practically feasible. Gamified spaces demonstrate how cities can transition from "built entities" to "narrative organisms", shifting from functional provision to experiential generation, and from material construction to co-created meaning. This research thus provides systematic academic foundations, analytical frameworks, and methodological pathways for "reinterpreting and reimagining real cities through a game-theoretic lens".

8.2 Summary of Core Findings and Key Insights

Based on the findings of this comprehensive study, the research unfolds its argumentation through three theoretical pathways: spatial poetics, narrative architecture, and gamified spatial logic. This approach distills the following four core discoveries. These key insights not only address the research questions but also provide directional inspiration for paradigm shifts in future architectural and urban design.

(1) Cities are transitioning from “spaces to be used” to “spaces to be experienced and engaged with”.

Traditional urban spaces emphasized physical construction and functional provision while neglecting the importance of user experience and participation. Research indicates that gamified spatial logic introduces new value judgments to urban design: spatial appeal depends not on scale or function, but on its capacity to stimulate exploration, narrative potential, and depth of engagement. Cities are transforming from static backdrops into dynamic experiential fields, where spatial value shifts from “being occupied” to “being perceived, participated in, and narrated”.

(2) Narrative architecture functions as a mechanism for meaning production, not merely a formal expression.

Its essence lies not in thematic landscaping or symbolic collage, but in using space as a medium to evoke emotion, memory, and cultural identity. This study highlights how material textures, light-and-shadow layers, scale variations, symbolic meanings, and spatial rhythms collectively form “readable spatial texts”. Users generate meaning through physical movement, sensory engagement, and emotional projection, transforming architecture into an active field for narrative emergence and reproduction, thereby reconfiguring the relationship between people and space.

(3) Multisensory and immersive experiences will become a key trend in urban design.

Research indicates that future urban design must move beyond “visual centrism” toward immersive experiences that engage multiple senses. Perceptual elements like soundscapes, tactile sensations, light and shadow, color, temperature, and ambiance collectively shape spatial moods, transforming cities from physical entities into experiential mediums imbued with “emotional warmth” and “memory touchpoints”. This marks urban design’s entry into an “experience-driven perceptual era”.

(4) Participation and interactivity will become key indicators of urban vitality.

Gamified spaces reveal the essential logic of spaces “emerging through participation”. Real cities should similarly establish co-creation mechanisms, transforming citizens from mere users into co-producers of space. Through community engagement, contextual design, and interactive systems, cities can foster social reconnection and a sense of belonging. Their vitality is no longer measured by construction scale or speed, but by interaction density, narrative renewal capacity, and participation depth.

In conclusion, this study finds that the logic of gamified spaces, narrative architecture methodologies, and immersive experience mechanisms are collectively propelling urban design from a functional rational paradigm toward an experience-generating paradigm. A space no longer derives importance from its physicality, but rather the ability to function as a site for meaning-making, story creation, and emotional attachment. These core results establish the argumentative basis for theoretical developments in subsequent chapters.

8.3 Theoretical Innovations and Conceptual Contributions

Building on interdisciplinary integration, this research advances and innovates studies in spatial poetics, narrative architecture, and urban gamification, resulting in three original and forward-looking theoretical contributions.

(1) The concept of "Gamified Spatial Logic" is proposed, expanding the theoretical scope of spatial poetics in the digital era.

In traditional spatial poetics, space is imaged in terms of emotions and ideas on dwelling place: how people associate with a locati0n through memory, perception and imagination. Based on this framework, the study brings in game-based narrative mechanisms, interactive experience models, and behavior-generative logics, leading to formulation of the concept of Gamified Spatial Logic which emphasizes interactivity, generativity, narrativity and participatory experiences in space. Reviewed through the lens of a "dynamic experience" to be distinguished from "static perception", this new paradigm — wherein space is no longer perceived but lived, experienced and inhabited — gives spatial poetics further explanatory power which in turn provides critical theoretical insights into immersive spaces, hybrid realities and future urban experiences.

(2) A three-layer structural system for narrative architecture is constructed, providing a systematic methodological tool for research in this field.

To address the long-standing ambiguity and fragmented approaches in narrative architecture, this study proposes a three-layered model consisting of *Visual-Symbolic Narrative, Spatial-Structural Narrative,* and *Participatory-Behavioral Narrative*:

- **Visual-Symbolic Narrative:** builds narrative identity through cultural imagery, stylistic expression, and symbolic systems;
- **Spatial-Structural Narrative:** develops narrative progression through routes, spatial rhythm, and sequential staging of scenes;
- **Participatory-Behavioral Narrative:** activates user engagement through interaction mechanisms, positioning users as co-creators of narrative.

This system reveals the logical mechanism through which narrative occurs in architecture, offering an operational analytical framework for design, teaching, and research. It effectively addresses the fragmentation and decorative tendencies in narrative architecture studies by returning to the essence of meaning-making.

(3) The concept of the "Game City" is proposed as a new paradigm for future urban development, establishing a cross-media integrative framework for urban studies.

Viewing games as a model for future spatial production, this research extracts transferable principles from virtual spatial logic and introduces the concept of the *Game City* (Playable City). The paradigm emphasizes that cities should be explorable, participatory, and generative, shifting from single-centered narratives to multi-agent co-created narratives, and understanding the city as an evolving experiential system rather than a static built object. By bridging architecture, philosophy, human-centered experience design, media studies, and game studies, this research provides a narrative-driven, interactive, and affective theoretical framework for urban studies, offering new interdisciplinary support and methodological foundations for future city research.

In short, the model of spatial poetics from this study can add to the theoretical system in this aspect, and it gives the novel views with theoretical ways for narrative architecture and the future city; hence has a conceptual contribution to disciplinary frontier.

8.4 Practical Value and Future Prospects

This study not only proposes a new cognitive framework for understanding real-world space at the theoretical level, but also offers clear practical implications, providing actionable insights and developmental directions for future architecture and urban design.

(1) The reduced concept of the "Gamified Spatial Logic" outlined by this research provides a methodological basis for a role reversal from urban design as provision organization to composite creation organisation.

Gamified thinking focuses on engagement, interaction, and generativity and offers a tangible route to move toward a design paradigm focusing on the experiential qualities and meaning-making power of technology. The city is motivated to shift from solid building to plastic operation in this way, and spaces can be renewed and developed by user activities, enriching the vitality of city and emotional attachment.

(2) The “Three-Layer Structural System of Narrative Architecture” proposed in this study holds strong practical applicability and implementation value.

It can directly guide the planning, design, and renewal of architectural and urban spaces: it clarifies narrative themes and expression logics during the conceptual stage; provides a structural framework for organizing circulation, establishing nodes, and shaping spatial rhythm during design; and supports the planning of interaction mechanisms and public engagement during the operational stage. This system helps create narrative spaces with cultural memory, emotional warmth, and experiential depth, serving as a replicable design tool for future architectural practice.

(3) This study provides forward-looking insights into future urban development trends.

With the growing integration of immersive media technologies and hybrid virtual-physical experiences, cities are shifting from being “built once” to becoming “continuously generated”. The concept of the “Game City” indicates that future urban development will no longer rely solely on top-down planning; instead, cities will evolve dynamically through resident participation, interactive experiences, and co-created narratives. This shift enables cities to play a greater role in cultural activation, community connection, and social sustainability, aligning with the development needs of human-centered urbanism, co-built communities, and the experience-driven economy.

Looking ahead, as digital technology, narrative thinking, and spatial design become further integrated, research on gamified cities still holds broad potential for expansion. Future practical studies may focus on cross-disciplinary collaboration, user experience evaluation, and pilot projects linking virtual and physical spaces, to test the adaptability, sustainability, and social impact of gamified urban models in different urban contexts. Moreover, balancing participatory and experiential innovation with cultural respect, ethical boundaries, and public interest will become an essential topic for future research.

In general, the theoretical framework and practical insights proposed in this study open new possibilities and directions for urban design. Through learning from gamified logics and narrative architectural thinking, cities could transform from material builds to experiences cultivation, spatial occupation to meaning sharing and functional containers to emotional and cultural living. There will be more than a city to use, but a lively space for human stories, networking, and an unprecedented co-authorship of collective urban narratives.

Bibliographies and References

Book

[1] Bachelard, Gaston: *The Poetics of Space*. Paris: Presses Universitaires de France, 1958.

[2] Lynch, Kevin: *The Image of the City*. Cambridge, MA: MIT Press, 1960.

[3] Walz, Steffen P.: *Toward a Ludic Architecture: The Space of Play and Games*. Raleigh, NC: Lulu Press, 2010.

[4] Nitsche, Michael: *Video Game Spaces: Image, Play, and Structure in 3D Worlds*. Cambridge, MA: MIT Press, 2008.

[5] Rouse, Richard III: *Game Design: Theory and Practice*. Sudbury, MA: Jones & Bartlett Learning, 2004.

[6] Bakker, T.; Alexander, K. "The Interplay of Architecture and Gameplay in Dark Fantasy: Urban Open-, and Post-Apocalyptic Videogames." In *Architecture and Videogames*. London: Routledge, 2025, pp. 17–27.

[7] Burden, Ernest E.: *Visionary Architecture: Unbuilt Works of the Imagination*. New York: (Publisher unspecified), 2000.

[8] Corbellini, G.: Review of *The Architecture of the Jumping Universe* by Charles Jencks. London: Academy Editions, 1997.

[9] Ryan, Marie-Laure: *Narrative as Virtual Reality 2: Revisiting Immersion and Interactivity in Literature and Electronic Media*. Baltimore: Johns Hopkins University Press, 2015.

[10] Phillips, J.: Review of Janet H. Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. Cambridge, MA: MIT Press, 2016.

[11] Bachelard, Gaston: *The Poetics of Space* (Trans. Maria Jolas). Boston: Beacon Press, 1994. (Original work published 1958)

[12] de Certeau, Michel: *The Practice of Everyday Life*. Berkeley, CA: University of California Press, 1984.

[13] Lefebvre, Henri: *The Production of Space*. Oxford: Blackwell Publishing, 1991.

[14] Wolf, Mark J. P.: *Building Imaginary Worlds: The Theory and History of Subcreation*. New York: Routledge, 2014.

[15] Huizinga, Johan: *Homo Ludens*. London: Routledge, 2014.

[16] Fernández-Vara, Clara: *Introduction to Game Analysis*. New York: Routledge, 2019.

[17] Juul, Jesper: *Half-Real: Video Games between Real Rules and Fictional Worlds*. Cambridge, MA: MIT Press, 2011.

[18] Galloway, Alexander R.: *Gaming: Essays on Algorithmic Culture*. Minneapolis: University of Minnesota Press, 2006.

[19] Ash, James: *The Interface Envelope: Gaming, Technology, Power*. New York: Bloomsbury Publishing USA, 2016.

[20] Tuan, Yi-Fu: *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press, 1977.
[21] Bruno, Giuliana: *Atlas of Emotion: Journeys in Art, Architecture, and Film*. London: Verso, 2002.
[22] Tan, Ekim: *Negotiation and Design for the Self-Organizing City: Gaming as a Method for Urban Design*. Delft: TU Delft, 2014.
[23] Jencks, Charles; Kropf, Karl: *Theories and Manifestoes of Contemporary Architecture*. London: Wiley-Academy, 2006.
[24] Norberg-Schulz, Christian: *Genius Loci: Towards a Phenomenology of Architecture*. New York: Rizzoli, 1980.
[25] Schafer, R. Murray: *The New Soundscape*. Don Mills, Ontario: BMI Canada Limited, 1969.
[26] Pallasmaa, Juhani: *The Eyes of the Skin: Architecture and the Senses*. Chichester: Wiley-Academy, 2005.

Article

[27] Li Bo. "The New Battlefield of Architects in the Digital World: Preface to the Translation of *Architecture in Games: Designing for Influence*" [J]. *Times Architecture*, 2021(02): 55-57. DOI: 10.13717/j.cnki.ta.2021.02.010.
[28] Xian Zhuolin. "Analysis of Architectural Element Attributes in Virtual Spaces of Video Games" [J]. *Architecture and Culture*, 2017(05): 83-85.
[29] Ye Yang. "Design Trends of Game and Architectural Art Spaces" [J]. *Literature and Art Weekly*, 2022(05): 89-92.
[30] Wei Shi. "Towards the Integrated Metaverse: The Transformation of Video Games and Digital Bodies" [J]. *Research on Literary Theory*, 2023, 43(01): 52-60.
[31] Wang Yuan. "A Critique of Kevin Lynch's *The Image of the City*" [J]. *New Architecture*, 2003(03): 70-73.
[32] Liu Yan. "Game Technology: Hardcore Technology 'Delayed' by Fun" [N]. *Science and Technology Daily*, 2022-07-14(006). [28] *History of Computer Game Development* [J]. *E-Commerce*, 2005(07): 38-40.
[33] Wang Jing, Si Zhanjun, Jin Chang. "Design, Development, and Production of Linear Games" [J]. *Computer Knowledge and Technology*, 2019, 15(21): 94-95.
[34] Ren Jun. "Future Space Concepts in Science Fiction Films and Art" [J]. *Architect*, 2006(06): 47-54.
[35] Ying Shen, Hou Siyuan, Su Junru, Chen Yebin, Chen Xueye, Guo Renzhong. "On the Characteristics of Game Maps" [J]. *Journal of Wuhan University (Information Science Edition)*, 2020, 45(09): 1334-1343.

[36] Zhu Han. “From *‘The Witcher 3’* to ‘*The Legend of Zelda: Breath of the Wild’* A Brief Discussion on the Impact of Open Worlds on Gameplay” [J]. *Business Stories*, 2018(16): 16+18.
[37] Ling Po. “Virtual Reality: A New Thinking in Architectural Design” [J]. *Journal of Architecture*, 1998(12): 24-27.
[38] Wu Lingling. “From Literary Theory to Game Studies and Art Philosophy: A Review of Video Game Aesthetic Research in European and American Countries” [J]. *Guizhou Social Sciences*, 2007(08): 87-92.
[39] Bereitschaft B. Gods of the city? Reflecting on city building games as an early introduction to urban systems[J]. Journal of Geography, 2016, 115(2): 51-60.
[40] Juraschek M, Herrmann C, Thiede S. Utilizing gaming technology for simulation of urban production[J]. Procedia CIRP, 2017, 61: 469-474.
[41] Tanes Z, Cemalcilar Z. Learning from SimCity: An empirical study of Turkish adolescents[J]. Journal of adolescence, 2010, 33(5): 731-739.
[42] Büyükbaykal E. Correlation between architecture and video games: Virtual world and real world comparison[D]. Başkent Üniversitesi Sosyal Bilimler Enstitüsü, 2020.
[43] Gottwald D, Turner-Rahman G. The end of architecture: Theme parks, video games, and the built environment in cinematic mode[J]. The International Journal of the Constructed Environment, 2019, 10(2): 41.
[44] Doma O O. Architectural experience in video games: spatial, temporal and narrative[D]. Bahçeşehir Üniversitesi Fen Bilimleri Enstitüsü, 2014.
[45] Lombardi D, Zeng Z, Dounas T. Role-Playing Games And Narrative Architecture In Design Methods-A Systematic Review[J]. 2023.
[46] Jenkins H. Game design as narrative architecture[J]. Computer, 2004, 44(3): 118-130.
[47] Krzywinska T. Blood scythes, festivals, quests, and backstories: World creation and rhetorics of myth in World of Warcraft[J]. Games and Culture, 2006, 1(4): 383-396.
[48] Dickinson K. Steven Poole, Trigger Happy: The Inner Life of Videogames[J]. NEW MEDIA AND SOCIETY, 2001, 3: 250-253.
[49] Kim J E, Park E S. Place Branding Viewed From the Perspective of the Poetics of Space: The Case of Aesop’s Signature Stores[J]. Space and Culture, 2023: 12063312231213294.
[50] Khalili H A, Ma R. The architecture of the video game Stray (2022): the feline quadruped cyberpunk player[J]. Edinburgh Architecture Research (EAR), 2024, 38(2): 6-31.
[51] Domingues J M, Filipe V, Carita A, et al. Understanding the impact of perceived challenge on narrative immersion in video games: The role-playing game genre as a case study[J]. Information, 2024, 15(6): 294.
[52] Aarseth E. A narrative theory of games[C]//Proceedings of the international conference on the foundations of digital games. 2012: 129-133.

[53] Ampatzidou C, Vervoort J, Falay von Flittner Z, et al. New Insights, New Rules: What Shapes the Iterative Design of an Urban Planning Game?[J]. Urban Planning, 2022, 7(2): 295-305.

[54] Reinart B, Poplin A. Games in urban planning–a comparative study[C]//REAL CORP 2014–PLAN IT SMART! Clever Solutions for Smart Cities. Proceedings of 19th International Conference on Urban Planning, Regional Development and Information Society. CORP–Competence Center of Urban and Regional Planning, 2014: 239-248.

[55] Tan E. The evolution of city gaming[C]//Complexity, Cognition, Urban Planning and Design: Post-Proceedings of the 2nd Delft International Conference. Springer International Publishing, 2016: 271-292.

[56] Deanna Van Buren. *Architecture in Video Games: Designing for Impact*

[57] Tanghe K B. Homo Ludens (1938) and the crisis in the humanities[J]. Cogent Arts & Humanities, 2016, 3(1): 1245087.

[58] Liu Yu, Zhang Hongjun. *Ubiquity and Reconstruction: "Cross-media Narrative" and Its Spatial Construction Logic*. Journal of Journalism & Communication Studies, 2019, 26(9): 26–37.

[59] Shao Ping. *Digital Narrative of Large-scale Video Games*. Publishing Science, 2016, 24(3): 106.

[60] Gu Zhengtong, Lu Zhangping. *Meaning Construction and Organizational Order of Narrative Themes in Virtual Cultural Space*. Journal of Shenzhen University (Humanities & Social Sciences), 2023, 40(2): 58–68.

[61] Wang Nan. *The Spatial Poetics of Digital Immersion: A Study of Scenes in Game Narratives*. Contemporary Animation, 2020.

Research Essay

[62] Zhang Xinyan. *City, Game, Me* [D]. Kunming University of Science and Technology: 2007.

[63] Liu Liting. *Habitable Games* [D]. Nanjing University of the Arts: 2022. DOI: 10.27250/d.cnki.gnjyc.2022.000182.

[64] Li Xiaoyi. *A Study on the Design of Open World Game Maps from the Perspective of Urban Image Theory* [D]. Jiangnan University: 2023. DOI: 10.27169/d.cnki.gwqgu.2023.001551.

[65] Wu Dan. *Media Art and Architectural Design in the Digital Age* [D]. Shanghai: Tongji University, 2005.

[66] Wang Liang. *Research on Sandbox Video Games* [D]. Shandong University, 2022.

[67] Mao Haohuo. *Learning from Multimedia Games: A Preliminary Study on the Characteristics of Virtual Spaces in Multimedia Games* [D]. Southeast University Master's Thesis, 2010.

List of Figures

List of Tables

Appendix 1

The game mentioned in this study

Game Name	Year	Douban Rating[①]	Number of raters
Portal	2007	9.4	6518
Assassin's Creed II	2009	9.3	13458
Minecraft	2009	9.5	22140
Journey	2012	9.3	14850
The Last of Us	2013	9.6	10277
GTA V	2013	9.7	7952
Monument Valley	2014	9.6	43402
The Witness	2016	8.8	2563
Pokémon GO	2016	8.2	2815
PUBG	2017	7.5	11425
Gris	2018	9.0	8855
Identity V	2018	7.5	8579
Death Stranding	2019	9.3	18658
Superliminal	2019	8.8	2149
Animal Crossing	2020	9.5	30992
Cyberpunk 2077	2020	8.6	29201
Elden Ring	2022	9.4	21308
Black Myth: Wukong	2024	9.2	45956

Statistical Deadline: November 16, 2025

[①] Douban Rating is a user review system provided by the Chinese social media platform Douban, widely used for rating and reviewing cultural works such as movies, TV series, books, games, and music.