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Dwelling Without Walls: Gathering in the Immaterial Architecture of Gather Town

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Abstract

Introduction: Gather town is a 2D web-based space designer for interaction, collaboration, and presence. Different from other virtual meeting platforms, this platform is one of the fruits of the evolving nature of architecture in the context of virtual platforms as it transcends material boundaries and reimagines spatial experience, atmosphere, and dwelling in digital environments.

Purpose: Through the lenses of immaterial architecture and phenomenological theory, this study investigates how Gather Town constructs spatial presence without physical form.

Method: This study takes a qualitative approach by exploring Gather Town through map analysis, user interactions, and firsthand experience on the platform. It blends ideas from immaterial architecture, where space is shaped through interaction and interface, with phenomenological views that focus on how people sense and feel space, even when it's not physically there.

Result: Findings suggest that while Gather Town lacks physical materiality, it facilitates a sense of dwelling without walls by leveraging proximity-based interaction, symbolic spatial layouts, and user-driven habitation.

Conclusion: In the end, the study shows that platforms like Gather Town aren't just a mere digital meeting tools but also as meaningful architectural spaces shaped with intention and capable of creating a real sense of presence.

Keywords: Immaterial architecture, phenomenology, virtual space, dwelling, presence, spatial media

1. Introduction

In the last few years, platforms like Gather Town have changed the way we do online meet, work, and socializing. This system creates an environment where the user, which has its own avatar, could explore the virtual map and be able to interact accordingly with the real proximity. Therefore, it could recreate the feel of physical presence compared to other basic video-based virtual meeting platforms. The birth of this platform shows that there is a growth on digital experience trend that is more immersive and game-like, in which elements are replicated architecture in the real world (Ng et al., 2024; Azmi & Syed Mohamad, 2025).

This trend also got accelerated due to COVID-19 which triggered workplace and even school to enter the virtual environment from 2020 March (Jump, 2020). Lots of platforms like Zoom, Google Meet, Microsoft Teams, and Google Classroom were some of the choices for virtual meetings. As the time goes by, new platforms like Gather Town as a 'more fun' alternative, with 2D map based virtual base, video call, and collaborative tools (KumparanTech, 2021). This platform, which is developed by Gather Presence Inc.,

combines lots of futures like interactive object, proximity based sound, and 8-bit visual which is similar to classic video game in order to create an online conference which feels more spatial.

That's to say, Gather Town is not the only platform that tried to do so. Another platform like Topia, WorkAdventure, and Kumospace also tried to explore the same formula. Topia tried to use the same formula of a more customizable space, but the elements are made not too consistent visually which sort of decreases the immersive value. WorkAdventure, although it is open-source, uses a layout which is almost identical to GatherTown but it is marketed for developers. Kumospace, although popular, doesn't provide avatar-based navigation, which could reduce the presence of the user. Considering that and also Gather Town which got birthed way before the other similar platforms (October 2020, whereas Kumospace (November 2020), Topia and WorkAdventure (December 2020)), Gather Town is leading the 'game'.

This study focuses on Gather Town as a study case to explore the marriage of immaterial architecture and phenomenology in order to know how users experience the digital space which is not real physically (immaterial), with phenomenology approach which emphasizes perception, presence, and experience that is directly experienced. This study also situates itself within the theoretical framework, particularly through the lens of phenomenological interpretation and architectural immateriality. Those will be explained by how spatial tools like avatar navigation, digital threshold, and atmosphere element create a 'dwelling' experience in virtual space. With a qualitative approach which combines spatial analysis and architecture theory, this study placed Gather Town as a platform to to evaluate how design could affect digital presence and architectural experience.

In Gather Town, architecture is no longer built from stone or steel, but from presence, perception, and programmed interaction; raising questions about how space is experienced when it is no longer physically constructed but digitally mediated. Nonetheless, this study not only examines the spatial tools in Gather Town but critically reflects on the nature of architecture itself when it becomes a non-material interface for social experience.

2. Theoretical Framework

2.1.Immaterial Architecture

Historically, architecture seems to always be rooted to materiality which are formed by stone, steel, and physical existence of a form. However, with the birth of digital platforms, immersive media, and spatial computation, this view is getting eroded. Nowadays, architecture is not anymore limited to physical buildings, we as the users have been trying to dwell in spaces that are present in a screen and server, where architecture becomes an experience, not only a structure. This concept is now known as immaterial architecture which is developing in design practice and theoretical discourse.

Antoine Picon (2010) describes this change as a shift from form to interface, where digital technology erases the boundary between building, human, and machine. Now, architects don't create a mere space, but also create a perceptual and behavior experience. With the same concept, Patrik Schumacher (2022) views digital architecture in the metaverse as sequences of social script, where the communication flow and movement replace the function of structural wall and physical boundaries.

The same thought of this shift is also mentioned in Dromology theory by Oaul Virilio (1991), who suggests that acceleration of communication compresses space and time, resulting in what he called "disappearance of architecture". Platforms like Gather Town reflect this condition where a digital environment which is fragmented but functional could recreate perception of presence.

Lars Spuybroek (2004) also added that architecture now has a function as field of affect, where digital design behaves more like software that are sensitive and flexible rather than a hardware. Digital space isn't an empty space but rather it is full of interaction, feedback, and spatial behavior that appear organically.

From another perspective by Beatriz Colomina (1996), it also added that even from the beginning, architecture is always mediated through painting, model, and other visual representations. Digital world isn't an anomaly in this case but rather a continuation and expansion of that logic. Platform like Gather town isn't a media event, and not only and empty space, but a presence that is constructed through screen, symbol, and spacial metaphor.

Lastly, the idea of the space of flows proposed by Manuel Castells (2000) suggests that architecture today is defined less by physical mass than by the circulation of information, people, and digital relationships. In this sense, Gather Town acts as a spatial network, where zones of interaction replace traditional walls and digital presence becomes the medium for dwelling.

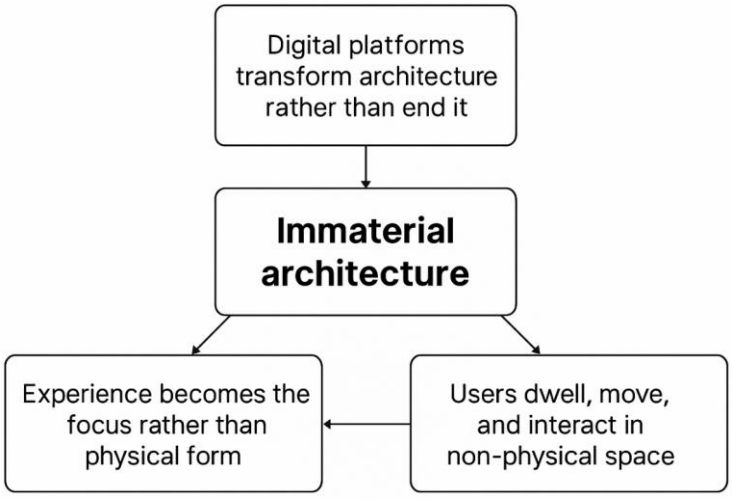


Figure 1. Immaterial architecture on how it is transforming rather than deleting its presence.

Together, these theorists illustrate (see figure above) that digital platforms like Gather Town do not signal the disappearance of architecture but its transformation. Immaterial architecture does not represent the absence of form, but rather the presence of experience structured through perceptual interfaces, movement flows, and symbolic cues. Within the framework of this study, these conceptual tools allow us to analyze Gather Town as a site where architecture becomes performative, ambient, and user-directed; a spatial interface rather than a physical object. This redefinition will guide the phenomenological reading of virtual presence and spatial design in the following analysis.

2.2.Phenomenology of Space

While digital architecture challenges our knowledge of material space, phenomenology allows us to study how space is experienced beyond its physical form. In this perspective, virtual platforms like Gather Town present fundamental questions: can users actually stay in an environment composed of pixels? Can presence and atmosphere exist in a world without walls?

The foundation of architectural phenomenology originates with Martin Heidegger's concept of dwelling, not only occupying a shelter, but being-in-the-world in a meaningful sense. In his article Building Dwelling Thinking (1971), Heidegger argues that true dwelling involves connection, care, and a sense of belonging. In a digital setting like Gather Town, these notions express through how people engage with space and one another, not through physical containment but through social proximity and spatial narrative.

Christian Norberg-Schulz (1980) develops Heidegger's theories with his notion of genius loci, or the spirit of place. He argues that architectural space is successful when it creates a sense of orientation, identity, and presence. Even in virtual environments, the same ideas apply: Gather Town users identify "rooms," "entrances," and "public squares," and return to particular zones not just for function but for familiarity and comfort.

Juhani Pallasmaa (2005) furthers this phenomenological lens by highlighting the multimodal aspect of place. He condemns modern architecture for favoring vision above touch, sound, and memory - a critique that becomes even more pertinent in the digital age. Yet, even in Gather Town, mood may be generated using soundscapes (spatial audio), movement patterns, and behavioral cues that replicate the richness of physical experience.

Peter Zumthor (2006) adds that architecture is not defined by form alone, but by the mood it generates, the nuanced interplay of light, texture, rhythm, and quiet. In virtual settings, atmosphere is not absent, but translated: through music zones, movement signals, or how "private areas" muffle background conversation, platforms like Gather Town generate mood through design logic, not substance.

Recent theorists like Sarah Robinson and Alberto Pérez-Gómez also contend that architecture is always a relational experience – molded by memory, ritual, and cultural clues (Robinson & Pérez-Gómez, 2007). Gather Town's customisable surroundings allow for symbolic gesture, like designating a room "library," or putting virtual sofas around a conference table, which help establish a feeling of placehood and ritual even in non-physical space.

What emerges from this heritage is a notion of place as lived, not merely built. The phenomenological approach helps us explain why users may feel more "present" in Gather Town than in a Zoom call: because they may walk, linger, explore, and relate to the place and to one another. Despite its immateriality, the platform encourages residence, not as physical anchoring, but as intentional presence.

In this context, Gather Town illustrates the transformation of architecture into interface: a space not built from mass and gravity, but from interaction and flow (Picon, 2010; Virilio, 1991). The use of private area tiles to simulate rooms, spatial audio to guide behavior, and symbolic zoning (like lounges, stages, or quiet zones) shows how architecture survives digitally through rules, rituals, and perception, rather than physical materials.

Presence is no longer tied to enclosure, but to social proximity and behavioral familiarity. A user enters a "library," not because there are walls, but because the sound softens, the layout suggests quiet, and objects like bookshelves signal intended use. These dynamics demonstrate that in Gather Town, space becomes immaterial, but architecture remains, redefined by presence, intention, and affect.

2.3.The Digital Platform: Gather Town as Spatial Medium

While Gather Town may appear, at first look, to be a lightweight communication tool, a closer analysis reveals that it acts as a spatial media, one that generates digital landscapes with architectural logic, behavioral constraints, and affective ambiance. Unlike standard video conferencing platforms, Gather

Town introduces movement, distance, orientation, and symbolic zoning, all of which contribute to a user's sense of place and presence.

At the foundation of Gather Town's design is the 2D isometric map, where users wander as pixelated avatars. This movement is not merely cosmetic; it provides a form of embodied agency, where spatial interactions between users matter. Features such as spatialized audio, in which music fades with distance and increases stronger with approach, imitate the aural dimension of real-world space. This builds what Pallasmaa (2005) would call a soundscape, a key, often ignored sensory element in architecture.

Moreover, the platform enables for bespoke layout design: users can establish distinct zones such as lounges, classrooms, or private offices. Each of these zones can be assigned behavioral features (e.g., muting, private mode, interactivity), which operate as unseen architectural elements, thresholds, barriers, and auditory boundaries. These non-physical designations replicate real-world roles like doorways, walls, or intimate corners, recalling notions from Norberg-Schulz (1980) about how spatial boundaries govern movement and meaning.

The behavior of users within these environments is shaped not simply by interface, but by design-coded cues. For instance, seats can be sat on, plants and coffee machines serve as markers, and secluded zones act as "rooms" for contained chats. These interactions strengthen a sense of territoriality, ritual, and occupancy, all fundamental to the phenomenological perception of space (Zumthor, 2006; Robinson & Pérez-Gómez, 2007).

Lev Manovich (2001) describes digital space as navigable interfaces, where movement through the interface is analogous to spatial experience. Gather Town follows this principle: movement across the map becomes a means of interaction, communication, and presence – a dramatic contrast to the rigid, grid-like structure of Zoom or Teams. Sarah Pink (2009) also contends that digital environments are experienced "kinaesthetically," meaning that users develop bodily habits in response to movement and interaction, even in virtual space.

Gather Town, then, is more than a platform; it is a form of immaterial architecture. Its space is not constructed from walls or roofs, but from programmed proximity, ritualized interaction, and symbolic spatial codes. Architectural presence emerges from how users move, hear, gather, and dwell, not from the materials underfoot. This is what Picon (2010) described as a shift from form to interface. Each seating area, muted zone, or interactive object acts not as decoration, but as scripted affordance that guides behavior; echoing Schumacher's (2022) vision of architecture as a communicative framework.

In this immaterial setting, architecture displays new dynamics: temporality (spaces that appear/disappear), relationality (meaning made by interaction), and programmability (design as logic, not form). And yet, users still experience presence, comfort, and orientation. Gather Town thus challenges the assumption that architecture must be material to be architectural and shows how digital platforms can host spatial meaning, even without built form.

2.4.Theorizing Gather Town: Digital Spatiality

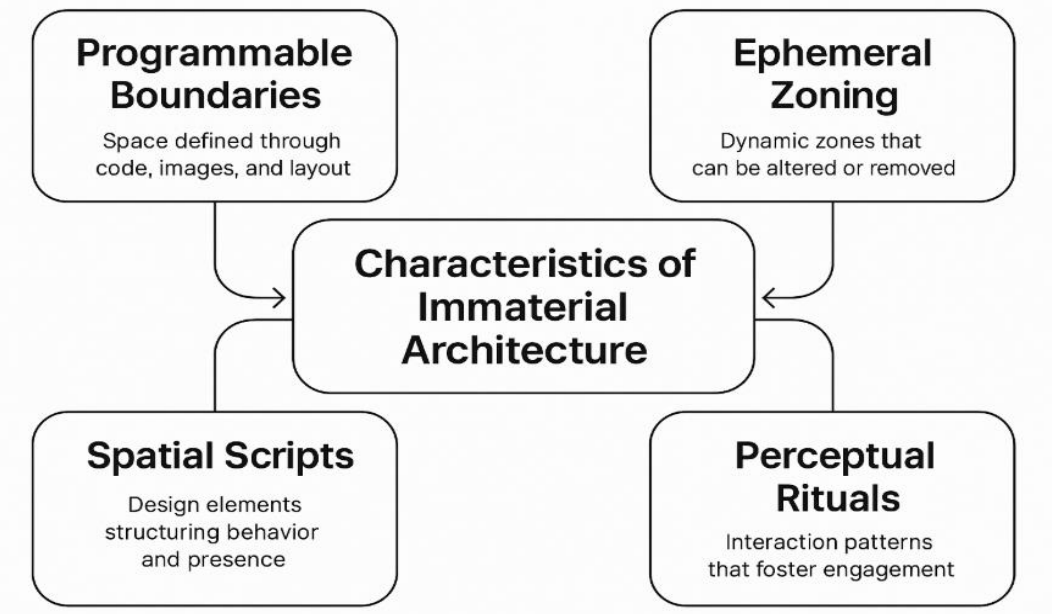


Figure 2.The Characteristics of Immaterial Architecture That Evoke the 'presence' feeling.

To appreciate the architectural relevance of platforms like Gather Town, it is not enough to see them as tools; they must be evaluated as spatial systems rooted in larger frameworks of media theory, urbanization, and digital culture. While they lack materiality, these platforms work as settings where behavior, mobility, and presence are controlled by design, harmonizing with broader theoretical studies of digital spatiality.

One significant concept comes from Marc Augé (1995), who describes non-places as temporary, nameless venues such as airports, freeways, or waiting rooms, settings that are functional but devoid of identity. At first look, Gather Town can seem like a digital non-place: generic, modular, and recurring. Yet, through personalization, social interaction, and symbolic naming (e.g., "main stage," "kitchen corner"), users reclaim these virtual zones, turning them into meaningful, placed places. This echoes Augé's idea of non-places becoming "anthropological places" through ritual or memory.

Lev Manovich (2001) reframes digital worlds as layered interfaces, navigable, interactive, and spatial. In his perspective, the way users travel through these interfaces is essential to how they perceive them. Gather Town follows this concept since spatial movement is not merely ornamental, but intimately tied to how users access others, gain privacy, or engage with activities. This aligns with McLuhan's famous statement, "the medium is the message" (1964), suggesting that the architecture of a platform shapes the kind of social behaviors it permits. In Gather Town, the capacity to walk away, approach someone, or encounter others reproduces spatial sociality, which static platforms like Zoom cannot imitate.

Emerging topics such as platform urbanism and cyber-urbanism also offer important insights. Scholars like Barns (2019) and Leszczynski (2020) explore how digital platforms assume urban-like functions, managing flows of people, constructing virtual "infrastructures," and permitting social encounters. In this sense, Gather Town acts like a tiny metropolis. It comprises circulation networks, gathering hubs, quiet zones, and interaction thresholds. Users behave in structured ways, developing spatial habits comparable to those of commuters, neighbors, or co-workers in actual cities.

Additionally, Adriana de Souza e Silva (2006) presents the idea of hybrid spaces, where digital technologies modify spatial practices and rethink how we conceive closeness and co-presence. Although

her work focuses on mobile interfaces and GPS-based interaction, it resonates with Gather Town's capacity to replicate nearness through interface design and avatar presence. This impression can be described as a felt digital proximity.

Ultimately, Gather Town reveals that space on digital platforms is not neutral. It is shaped by code, images, music, layout, and, more crucially, by how people perceive and navigate through it. These digital places are not only less real than physical ones; they are real in distinct ways. They generate emotion, structure behavior, and build memory, all of which are properties long associated with architectural space.

In conclusion, Gather Town demonstrates that digital platforms are not spatially neutral, they are architecturally active. Through interface design, avatar movement, auditory feedback, and symbolic zoning, they generate orientation, ritual, and emotional engagement. These dynamics are not accidents of technology; they are architectural operations, even if their material substrate is code and pixels. In this way, immaterial architecture displays distinct characteristics: programmable boundaries, ephemeral zoning, spatial scripts, and perceptual rituals. Gather Town exemplifies how users can dwell, not merely connect, in a world built not from bricks, but from interface logic and symbolic interaction.

3. Methodology

Using Gather Town as an example of immaterial architecture and digital spatiality, this qualitative case study approach focuses Understanding how users experience space in a virtual world and whether architectural and phenomenological frameworks can help one to explain that experience. This method specifically evaluates how spatial codes, such as proximity-based audio, behavioral zones, and avatar interactions can be read architecturally and phenomenologically, in line with theories by Picon (2010), Heidegger (1971), and Norberg-Schulz (1980).

3.1.Method of Research Design

The research follows a single-case exploratory design, with Gather Town selected due to its geographic characteristics, changeable environments, and interface-driven user interactions. Rather than a comparison analysis, it treats Gather Town not merely as a visual interface but as an operational spatial system whose architectural and atmospheric qualities emerge through use, rhythm, and coded behaviors (Spuybroek, 2004; Virilio, 1994).

This study employs a single-case exploratory design, focusing solely on Gather Town (Heidegger, 1971; Norberg-Schulz, 1980). The aim is not to compare platforms, but to deeply investigate Gather Town's spatial strategies such as avatar navigation, spatialized audio, and tile zoning and how these elements cultivate a sense of "dwelling" in a virtual environment (Pallasmaa, 2005; Zumthor, 2006).

Observation & Data Acquisition Techniques

1. **Immersive Walkthroughs**
   - The researcher conducted both solo and co-presence virtual visits within two Gather Town maps: the Remote Office Template and a Custom Studio Map.
2. **Spatial Mapping**
   - Layouts, circulation paths, audio zones, and interactive objects were documented using screenshots, sketches, and annotations.
3. **Observational Notes**
   - Behaviors were recorded, including automatic couch-tile seating, movement patterns (e.g., go-kart routes), use of private areas, and social interactions such as dancing or chatting in designated zones.

This methodology captures observable behaviors (linking back to Section 4.2's objectives) as manifestations of phenomenological spatial experience, spaces are not only seen but lived through bodily presence, habits, and memory.

3.2.Techniques of Data Acquisition

The following qualitative techniques were used to probe spatial experience and user perception in Gather Town:

The researcher examined a few Gather Town settings using spatial mapping, that is, by recording map layouts, zones of interaction, travel pathways, and spatial limits. Custom maps, screenshots, and annotated walkthroughs were used to record how space is arranged and perceived. These maps helped identify spatial rhythms, usage density, and perceived boundaries, central to understanding immaterial presence and architectural flow (Castells, 2000).

The researcher performed exploratory visits inside Gather Town alone, interacting personally with the settings and interface. These workshops focused on how space is navigated, perceived, and felt. Occasionally, one other participant joined to aid simulate interaction, particularly proximity-based audio or co-presence behavior. Observational notes, sketches, and screen captures were collected to enable reflective analysis. These immersive walkthroughs functioned as phenomenological exercises, echoing Heidegger's idea of dwelling through bodily interaction and reflective movement.

3.3.Analytical Framework

All data is evaluated through a phenomenological lens, focusing on how space is experienced and inhabited by the user. The analysis is led by the following dimensions:

1. Dwelling and presence: Based on Heidegger's (1971) idea of dwelling, the study observes whether users in Gather Town demonstrate a sense of being "at home" in the space, for example, through repeated use, lingering in familiar zones, or interacting in ways that suggest emotional comfort or belonging.
2. Place identity and genius loci: Drawing from Norberg-Schulz (1980), the study looks at how Gather Town spaces establish a feeling of place, such as through symbolic labeling (e.g., "lobby," "kitchen"), spatial patterns, or the presence of recognizable zones that enable orientation and identity.
3. Spatial thresholds and rituals: The existence of purposeful behavioral cues, such as muting in private locations or entering a designated "room," is considered as a sort of digital spatial ritual, reinforcing boundaries and participation comparable to architectural thresholds.
4. Atmosphere and multisensory engagement: Informed by Pallasmaa (2005) and Zumthor (2006), the analysis explores whether spatialized audio, movement rhythm, and interaction patterns in Gather Town generate an atmospheric experience, even without materiality.
5. Architecture as interface: Using the work of Picon (2010) and Schumacher (2022), Gather Town is considered as an interface that coordinates social behavior, not as a built form. Its layouts, proximity-based sounds, and interactive aspects are read as digital architecture components.
6. Flow-based spatiality: Inspired by Virilio's concept of the disappearance of space and Castells' (2000) space of flows, the study assesses how Gather Town shapes user experience through mobility, interaction, and temporality, rather than bulk and enclosure.

Observation data are interpreted through six key phenomenological dimensions derived from theoretical literature:

Table 1. Analytical Focus of Methodology Used.

Phenomenological Dimension	Analytical Focus
Dwelling & Presence	Are there recurring patterns, emotional comfort, or favorite zones?
Place Identity & Genius Loci	Are areas labeled or marked to aid orientation and identification?
Spatial Thresholds & Rituals	Do behavioral shifts occur when users cross boundaries (mute, pause, etc.)?
Atmosphere & Multisensory Engagement	Do audio, visuals, and silence enhance the virtual environment's ambiance?
Architecture as Interface	How do tiles, objects, and zones shape social interaction and behavior?
Flow-based Spatiality	How do movement, speed, and temporality create dynamic space?

Each dimension guided the interpretation of spatial behaviors observed within the platform, transforming avatars, audio cues, and visual zones into data reflecting the dynamics of non-physical dwelling.

3.4.Observational Results:

Spaces with semi-open configurations (couches near walls, modular pods) encouraged lingering.

Environments with ornamental but non-interactive components (plants, bookshelves) still boosted the atmosphere.

Repetitive use of private zones indicated developing rituals akin to spatial etiquette in real offices.

Table 2. Example of How Some Behavior of The Avatar Going to Be Interpreted Through The Theories

Observed Behavior	Interpretation
Lingering in corners	Reflects Heidegger's (1971) dwelling through comfort and familiarity
Decorative non-functional objects affect mood	Aligns with Zumthor (2006) on emotional resonance of architectural details
Repetitive use of private zones	Suggests behavioral ritual and digital genius loci (Norberg-Schulz, 1980)

3.5.Supplementary Literature:

- Felker et al. (2021) study how Gather Town impacts student engagement via spatial closeness.
- Caines et al. (2022) explore the emotional influence of virtual rooms during distant conferences.

● Maheshwari (2022) outlines how Gather Town delivers a pseudo-urban feel through zoning and navigability.

This case study offered an architectural understanding of immaterial spatial design, highlighting the relevance of interaction, rhythm, and symbolic familiarity in digital atmospheres.

Through these aspects, the study does not analyze if Gather Town replicates real architecture, but whether it operates architecturally, permitting orientation, interaction, and presence in a fully digital setting.

3.6.Limitations

This study focuses primarily on Gather Town and does not include comprehensive comparative analysis with other platforms such as Topia or Kumospace. While this allows for deep attention, it limits generalizability across all virtual spatial platforms. Additionally, data interpretation is focused mostly on the researcher's own embodied experience and publicly available discourse, rather than extensive user testing or quantitative measures. Through these methodological layers, the study attempts to systematically frame Gather Town not as a substitute for physical architecture, but as a legitimate spatial condition shaped by behavioral coding, sensory rhythm, and symbolic interaction; principles central to both immaterial architecture and phenomenological presence.

4. Case Study: Gather Town

4.1.Introduction & Overview

This case study analyzes Gather Town as a spatially-coded digital world that gives insights into immaterial architecture, digital housing, and phenomenological presence. Unlike standard video conferencing solutions, Gather Town generates navigable 2D settings where participants are embodied as avatars, communicating via spatialized voice and visual proximity. These features position it as an appropriate subject for examining how architectural principles might emerge in non-material, code-based settings (Jung & Yu, 2021; Alikhani & Davoodi, 2022I with the aim to explore whether phenomenological principles such as dwelling, presence, and atmosphere can manifest within a purely digital space.

The research utilizes a single-case exploratory design, emphasizing in-depth involvement with one digital platform instead of a comparison analysis. This design enables a focused analysis of Gather Town's spatial strategies, atmosphere production, and ritual-like interactions as they relate to phenomenological experience (Heidegger, 1971; Norberg-Schulz, 1980). The purpose is not to determine whether Gather Town matches real-world buildings, but rather whether it operates architecturally, providing users spatial orientation, interaction, and a sensation of "being-there" (Pallasmaa, 2005; Zumthor, 2006).

Two virtual worlds were selected for immersive investigation:

Figure 3. A Remote Office Template from Gather Town.

A Remote Office Template, supplied by the platform as a default setup for digital collaboration. https://app.v2.gather.town/app/6b53b08e-92c3-42ef-b102-3732bcd31972?copysource=inviteYourTeam

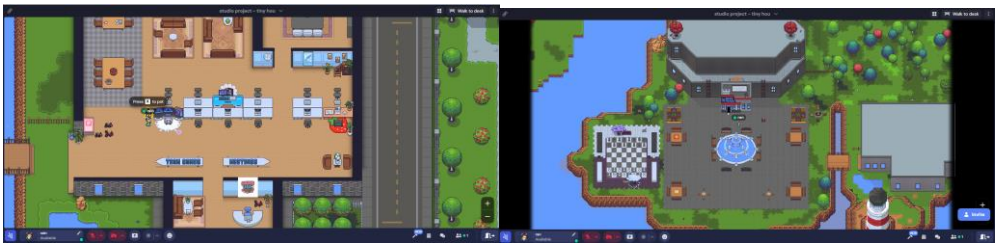


Figure 4. A Remote Office and Outdoor Space Template on Gather Town Used and Customized by Researcher.

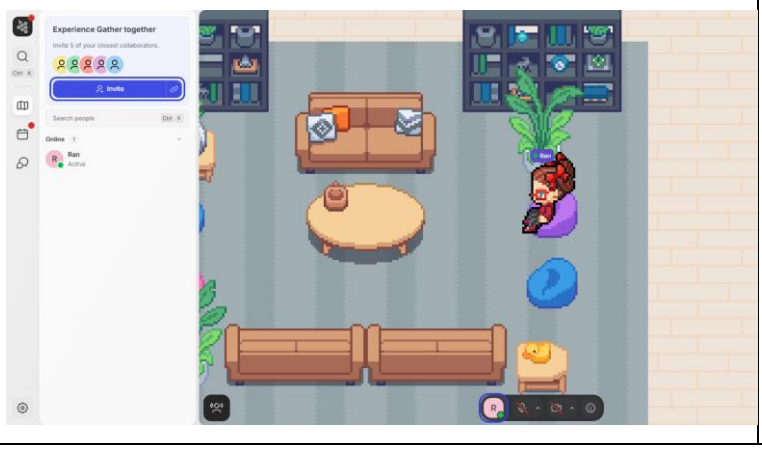
A Remote Office and Outdoor Space Template, previously used by the researcher and her academic peers throughout a remote semester, encompassing multi-zoned configurations including offices, lounges, and event rooms. https://app.gather.town/app/ijVMB61lPf3ngWqU/studio%20project%20-%20tiny%20hou

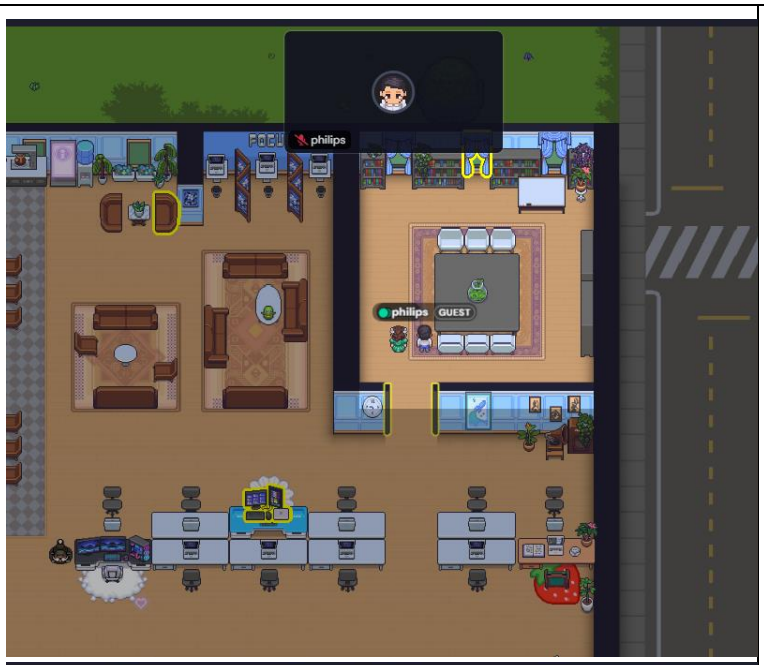
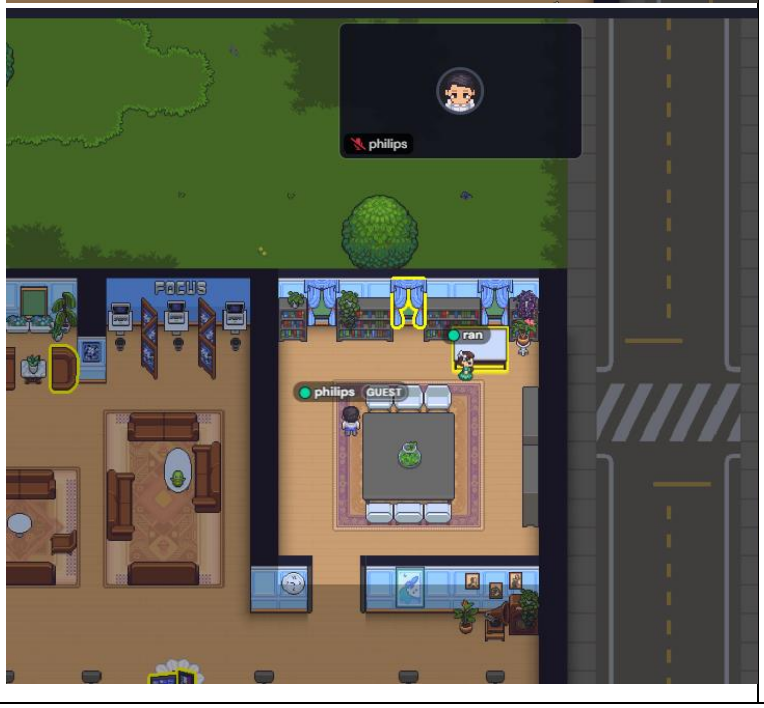
This approach allows the study to follow how users engage with spatial codes, thresholds, and multi-sensory input in Gather Town, and to determine whether these affordances contribute to a meaningful experience of place. The study further assesses how features like tile-based zoning, avatar behaviors, and spatial rituals replace material walls with behavioral limits (Picon, 2010; Schumacher, 2022).

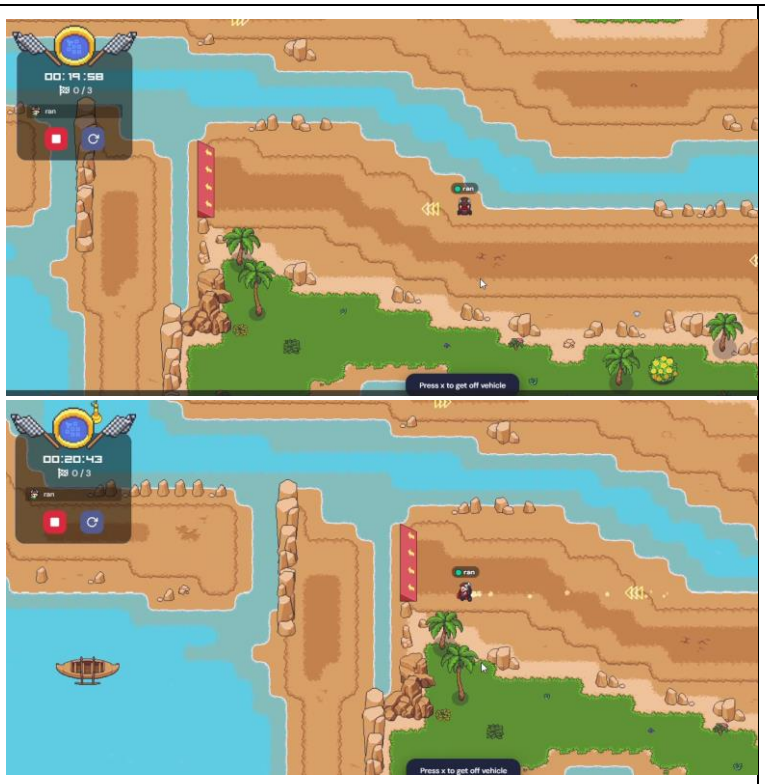
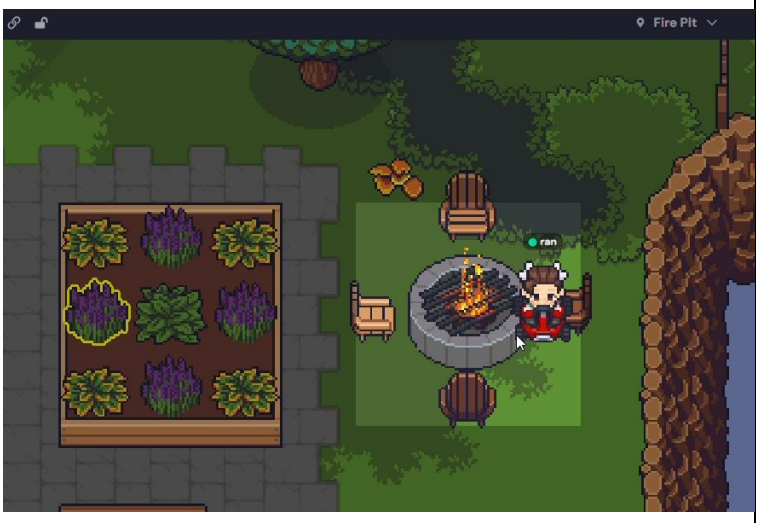
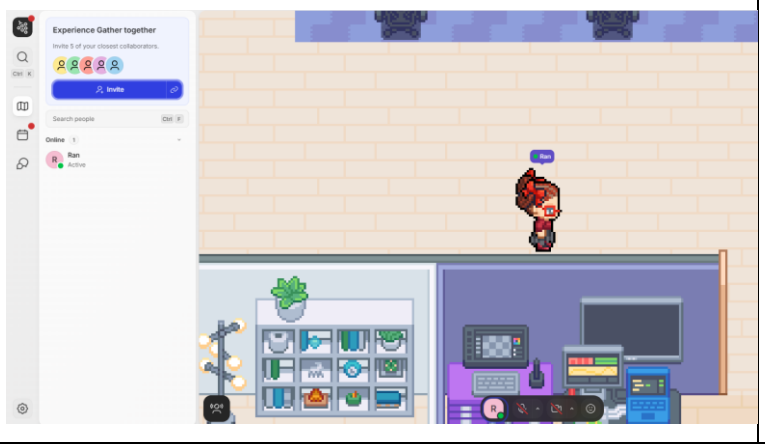
4.2.Observation and Interpretation

This section details core observational findings from immersive walkthroughs and spatial mapping. Based on the Table below, each spatial feature is linked to user behaviors, complemented by (placeholder) screenshots, and interpreted through the six phenomenological dimensions. This structured approach shows how Gather Town's architecture operates via behavior, ritual, and atmosphere.

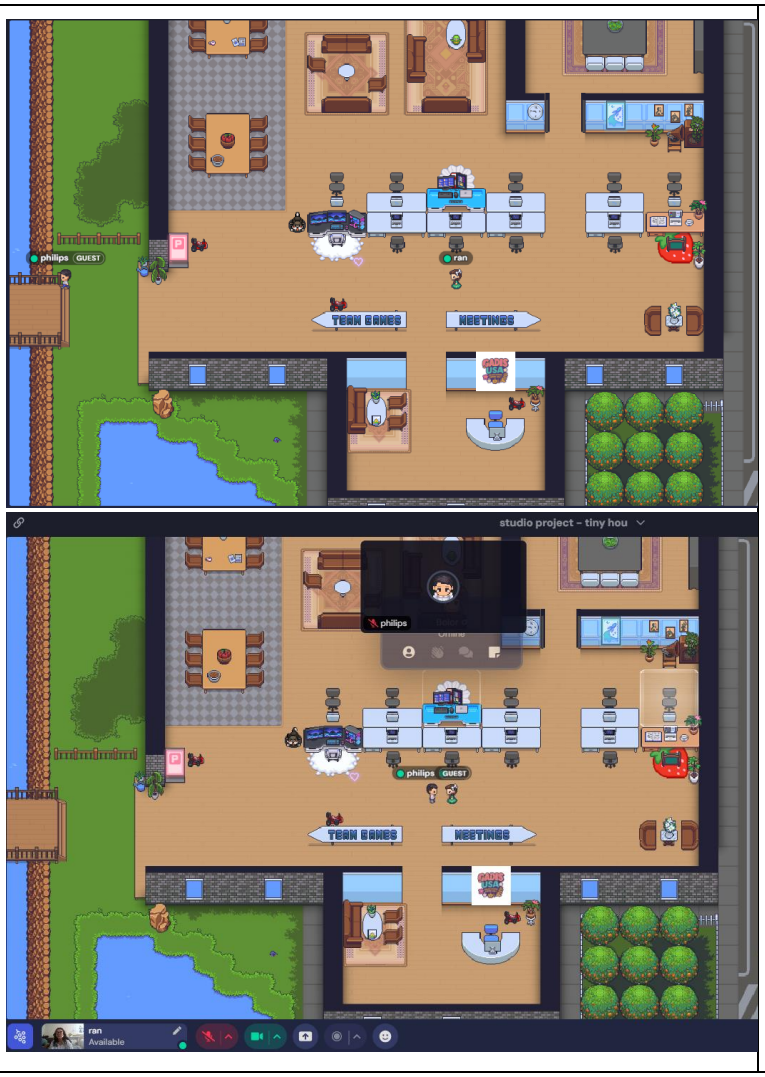
Table 3: Observed Features, Behaviors & Interpretation

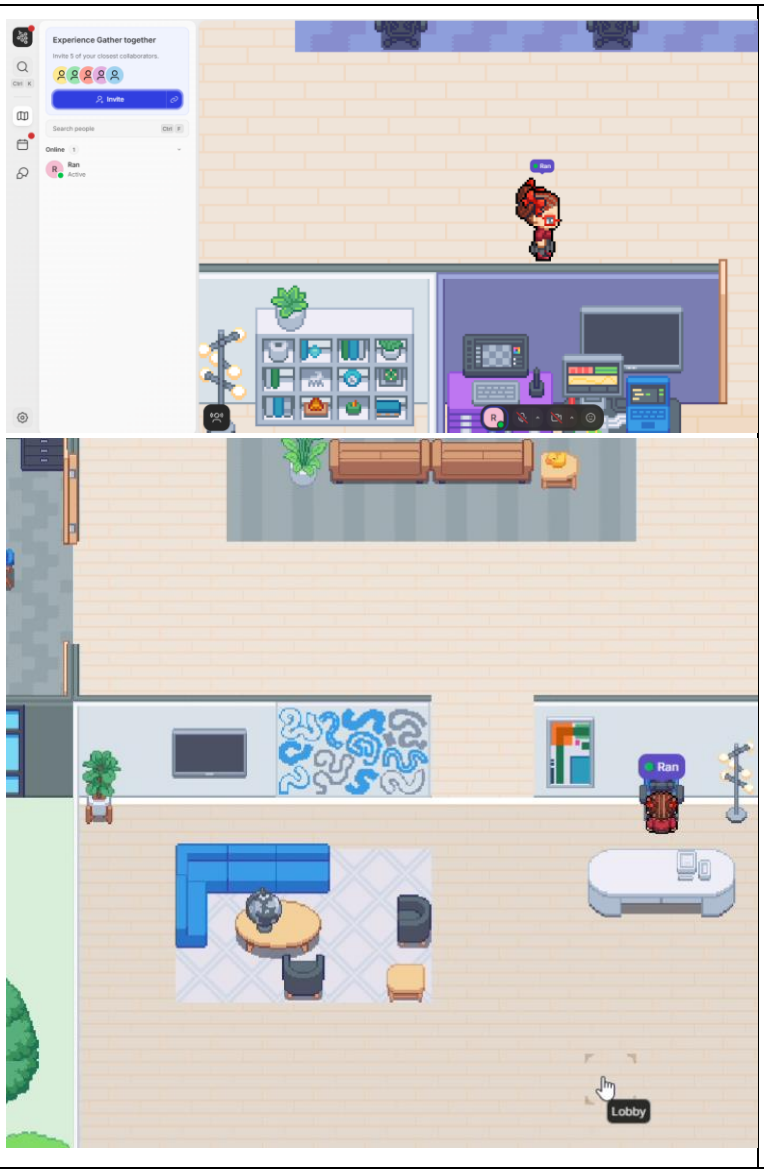
Spatial Feature	User Behavior Observed	Screenshot Placeholder	Phenomenological Interpretation
Couch tile	Avatar auto-sits when stepping onto couch area		Dwelling & Presence – Repeated use indicates comfort and identification with the space.

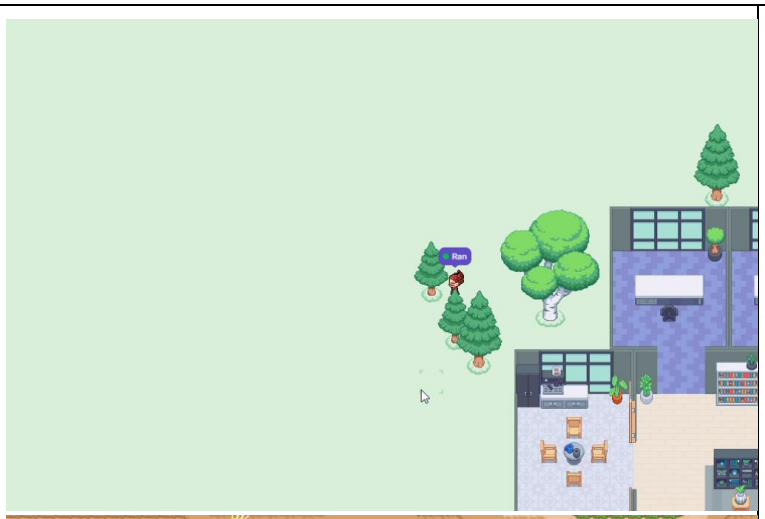
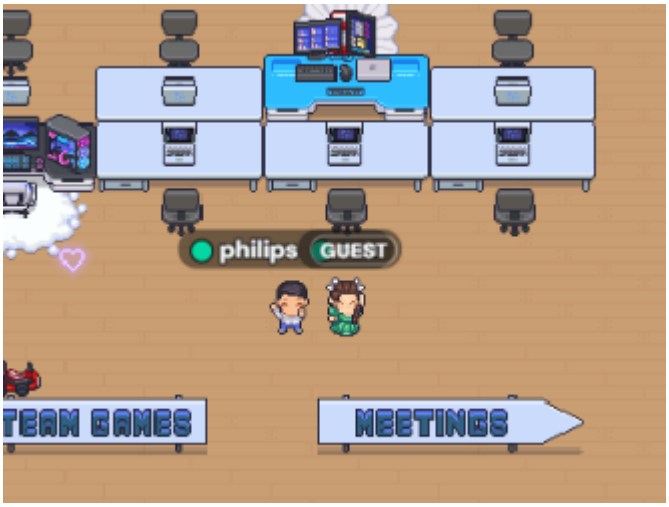
Private-area tile	Only those inside the area could hear. No matter how far or close, if they are inside the same enclosed area, they'd hear each other.	 	Spatial Thresholds & Rituals; Behavioral change marks entry into a private zone.

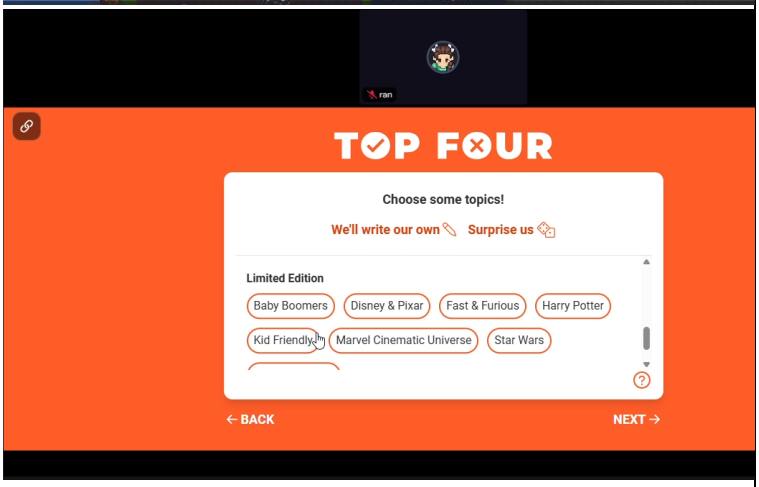
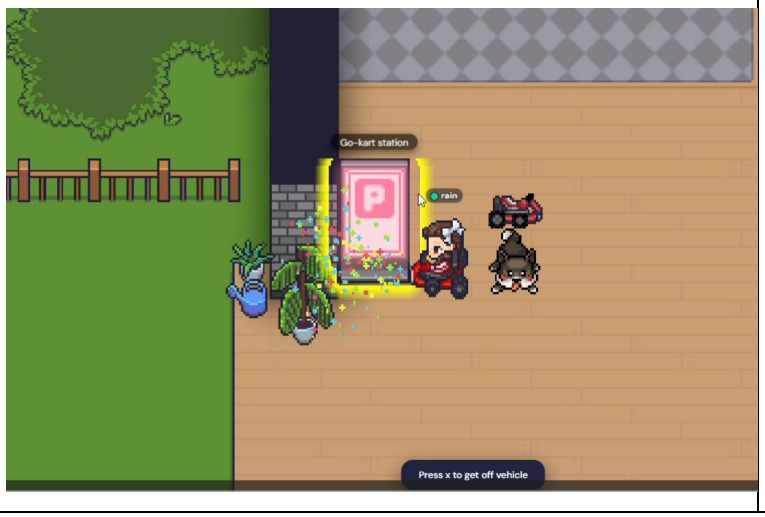
Go-kart path	Avatars speed through corridors, explore beyond gathering nodes		Flow-Based Spatiality – Movement creates rhythm and directional flow.
Fireplace embed + warm palette	Avatars linger, engage in casual chat near fireplace		Atmosphere & Multisensory Engagement – Fire and color evoke emotion and comfort.
Invisible wall	Users pause or turn around at blocked paths		Architecture as Interface – Virtual barriers act as real spatial limits.

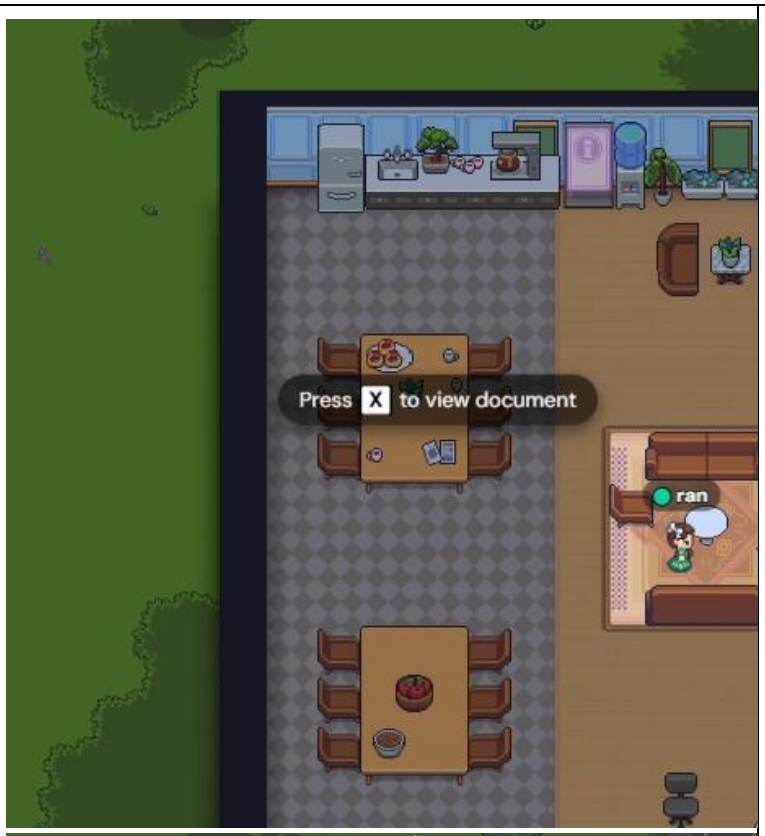
Music zone	Background audio fades with distance; users stop to listen		Atmosphere & Soundscape – Spatialized audio fosters ambiance.

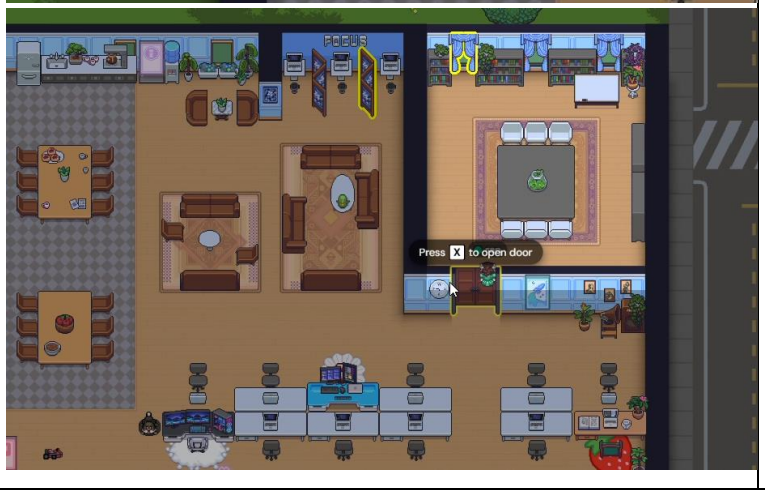
Shared webcam grid	Webcam activates when avatars close to each other		Interface Architecture – Proxemics influence social visibility and interaction.

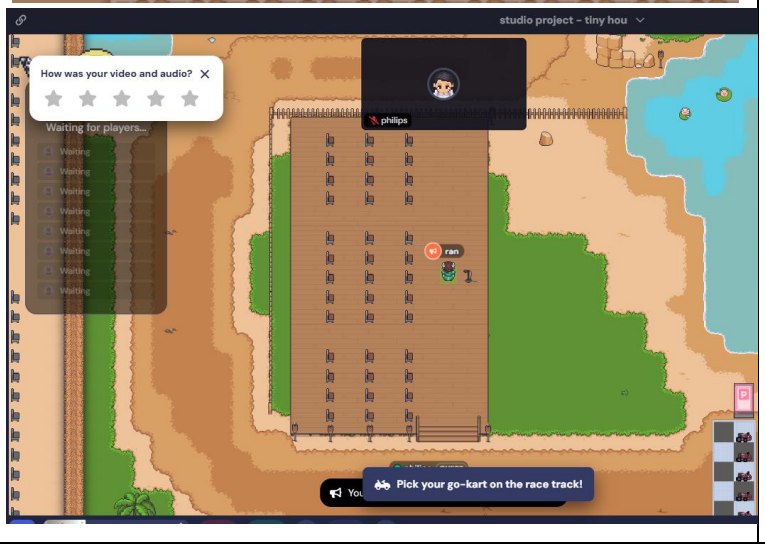
Wall-adjacent pause point	Users pause before moving into open areas		Place Identity – Edges transform into informal social or transitional zones.

		 	
Dance/gather space	Avatars gather and dance together in designated open spaces		Presence & Ritual – Collective activity reinforces community presence.
Impassable tile fence	Users gather near 'fences' to chat or use them as backdrops		Interface Behavior – Barriers become conversational catalysts.

Game-play area	Users engage with embedded mini games together	 	Engagement & Flow – Interactive zones spark rituals and shared presence.
Interactive Objects	Avatars press "X" to use items like whiteboards, posters, or pets.	. 	Encourages purposeful interaction, supports social choreography in space


Press X to view document
ran


Press X to open door

Spotlight Mode	A desired speaker is seen/heard by everyone, even if distant .	 	Represents broadcast architecture, overriding spatial norms temporarily.

Spatial Transitions	Walking through portals transports to another area (e.g., park → race area).		Simulates architectural thresholds, emphasizing separation of zones.

The "Interpretation" column decodes each behavior through experiential theories: sense of home, symbolic place identity, spatial ritual/threshold, multisensory atmosphere, interface-as-architecture, and flow-driven space design. The detail will be explained on thematic analysis in the next part.

4.3.Thematic Analysis

This section analyzes data gathered through the immersive walkthrough, spatial mapping, and observational notes recorded in table from observation and interpretation part. The analysis follows a thematic approach (Braun & Clarke, 2006), driven by your phenomenological framework. This means data is coded, organized into themes, and interpreted according to six predefined analytical dimensions.

4.3.1.Dwelling & Presence

One of the central themes in the phenomenological analysis of Gather Town is the notion of dwelling, a concept rooted in Heidegger's (1971) philosophy of being "at home" in the world. In architectural terms, dwelling does not simply refer to inhabiting a building, but to forming an emotional and bodily attachment to a space that allows for comfort, belonging, and familiarity. This section explores how Gather Town enables such experiences, despite the absence of physical form.

Users often demonstrate patterns of spatial repetition, such as returning to the same corner, pausing in familiar zones, or choosing a specific location to idle during long sessions. These behaviors indicate a developing sense of dwelling within the virtual environment. Through lingering in these areas, avatars appear to claim and inhabit space beyond mere movement, suggesting a kind of territorial comfort or attachment to specific zones.

In particular, the Remote Office template revealed how digital "furniture" such as couches, fireplaces, or desk arrangements created informal gathering nodes where users tended to pause, converse, or sit,

mimicking behaviors commonly associated with domestic or work settings. These actions mirror real-world tendencies to gather in semantically rich or intimate spaces, reinforcing a sense of being situated or "at home" even in immaterial architecture.

The Table of Observation and Interpretation supports this analysis by identifying specific features that contribute to this phenomenon. For instance, avatars automatically sit when stepping onto couch tiles, evoking the bodily memory of comfort and rest. Similarly, users often linger near symbolic elements like bookshelves or potted plants suggesting spatial anchoring despite their lack of functionality. These behaviors resonate with Heidegger's dwelling, Pallasmaa's haptic space, and Norberg-Schulz's emphasis on the emotional quality of place.

In these moments, users are not just moving through a designed environment, they are experiencing a form of settlement, however brief or symbolic. The behavioral patterns and spatial cues observed reinforce the idea that architecture, even when immaterial and interface-based, can foster affective and embodied experiences that constitute a genuine sense of dwelling.

4.3.2.Place Identity & Genius Loci

The idea of genius loci, or the spirit of a place, as developed by Norberg-Schulz (1980), emphasizes the way spatial environments acquire identity, memory, and meaning over time. In physical architecture, this sense of place is shaped by orientation cues, symbolic naming, recognizable spatial structures, and ambient qualities. This section explores how such identity can also emerge in Gather Town through interface design, repeated interaction, and symbolic organization.

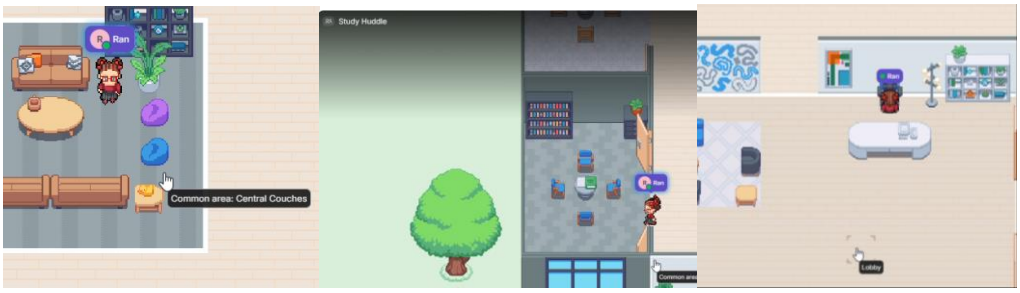


Figure 5. Label of Area Shown on Screen. For a designated private area, it will be shown as label on top (Study Huddle). As for the public area, it will be shown as a 'moving' label along with the cursor.

Although Gather Town environments are constructed from 2D tiles and pixel graphics, the arrangement of space and the labeling of zones (e.g., "Main Stage," "Kitchen Corner," "Back Office") create strong cues that help users build mental maps of the environment. Over time, these zones take on specific social meanings. For example, the presence of a podium with interactive tiles may signify formality or leadership, while a lounge area with couches and plants may imply relaxation or informal interaction.

Observations recorded in the Table of Observation and Interpretation reveal that users orient themselves repeatedly using these named and visually distinct spaces. Even when not functionally necessary, the naming of areas appears to influence behavior, people "gather" in kitchen zones for casual chats, avoid crowding near "private" rooms, or navigate intuitively toward open central plazas. These practices reflect an emergent place identity created not by material architecture, but by symbolic zoning and routine behaviors.

The genius loci of a digital environment like Gather Town emerges through use and memory. Users remember events, encounters, and routines associated with specific digital spots. This imbues otherwise generic templates with meaning, contributing to a sense of rootedness and familiarity. In this sense, the genius loci is not inherited from the design alone, but co-constructed by users' behaviors, interactions, and associations over time.

Therefore, while Gather Town lacks the permanence and texture of physical architecture, it demonstrates how identity of place can be cultivated in digital space through symbolic structure, collective memory, and behavioral cues.

4.3.3. Spatial Thresholds & Rituals

In architectural theory, thresholds, both physical and symbolic, mark transitions between spaces, guiding behavior and shaping spatial experience. These thresholds are not only material demarcations such as doors or corridors, but also social and behavioral cues that signal when one enters a new zone or role (Pallasmaa, 2005; Seamon, 2000). In Gather Town, similar threshold dynamics operate through the logic of interactivity, tile behavior, and the choreography of movement.

Observations detailed in the Table of Observation and Interpretation reveal numerous digital equivalents of spatial thresholds. For example, private tiles automatically mute participants outside a designated area, functioning like invisible acoustic doors. Door-like sprites and impassable tiles also replicate the sense of enclosure and permission. These mechanisms are not incidental, they actively shape how users enter, exit, or linger in a zone, often prompting subtle ritualistic behaviors such as pausing before speaking, adjusting movement paths, or announcing one's entrance.

Similarly, spatial rituals emerge from repeated and codified behaviors: sitting down in meeting areas, stepping onto podium tiles to speak, or gathering around objects like fireplaces or game tables. These actions mimic real-world social norms, reinforcing shared understandings of what a space is for and how to behave within it. The act of entering a 'Quiet Zone,' for instance, often leads to a drop in conversation volume and movement, much like walking into a library or sacred space.

These patterns of ritual behavior help constitute the architecture of Gather Town, not through mass and enclosure, but through transitions and affordances that guide and influence user actions. Thresholds in this digital space are thus not fixed by materials but inscribed into behavior and interaction, revealing how the spatial logics of architecture persist even when their physical form disappears.

Gather Town, then, becomes a landscape of invisible rituals. These spatial patterns, crossing thresholds, initiating interaction, pausing at boundaries, mirror the rituals of physical architecture and embody the notion that space is not only traversed but performed.

4.3.4.Atmosphere & Multisensory Engagement

Atmosphere in architecture is often associated with sensory richness, emotional tone, and the subtle cues that affect how space is felt. Despite its immaterial nature, Gather Town demonstrates the capacity to evoke atmospheric experiences through coordinated visual, auditory, and behavioral stimuli. This aligns with Pallasmaa's (2005) emphasis on multisensory architecture and Zumthor's (2006) reflections on emotional resonance in space.

The Table of Observation and Interpretation shows that users respond not only to visual layouts but also to the overall ambiance shaped by proximity-based audio, lighting hues, and spatial rhythm. For instance, spatialized sound is a core component in Gather Town. As users walk closer to or away from others, sound volume changes. These dynamic fosters an acoustic layering that mimics real-world aural environments and creates spatial intimacy or separation.

Visual elements like fireplaces, bookcases, clustered seating, or warm textures influence how users behave and emotionally engage with the environment. Even if these items are non-functional, their presence guides behavior and anchors mood. When avatars sit quietly near these objects, or when players gather informally around them, it indicates that atmosphere is being constructed not through tangible form but through suggestive visuals and shared behavior.

Rhythm of movement also contributes to the platform's atmosphere. Users tend to slow down near transitional zones or pause when navigating enclosed areas. These embodied rhythms, even in pixelated form, mimic the affective pacing of real architectural experiences.

Additionally, the interplay between interaction design and spatial layout reinforces the affective tone. For example, entering a space labeled as "Relaxation Room" or "Study Zone" often leads to quiet behaviors, even if no explicit rules are stated. This suggests that atmosphere is co-constructed between environmental cues and user behavior, just as it is in physical architecture.

Through this multisensory layering, Gather Town demonstrates that digital platforms can cultivate atmosphere in ways that resonate with architectural theory. It does not rely on mass or material but instead builds emotional tone through light, sound, rhythm, and symbolic meaning.

4.3.5.Architecture as Interface

In Gather Town, architecture is not built from concrete or steel, but from interaction logic, visual language, and coded behaviors. This reframing aligns with Picon's (2010) and Schumacher's (2022) argument that in digital environments, architecture evolves into interface. The structure of space becomes less about enclosure and more about how the environment guides and governs social interaction.

As seen in the Table of Observation and Interpretation, Gather Town employs architectural elements such as walls, doors, and thresholds, but these exist only as behavioral signals. For example, an avatar can only enter a private room through designated tiles, and once inside, audio from outside is muted. This shift in auditory access transforms the space functionally, resembling the role of doors and partitions in physical architecture.

Interactive tiles and embedded objects allow users to open documents, sit on couches, or play games. These are not passive objects but coded triggers that structure spatial routines. The seating logic, for instance, assigns a seated posture automatically when an avatar stands on a couch tile. This interface scripting directs behavior in the same way a physical bench or staircase does in a real-world setting.

Moreover, spatial zones such as "presentation stages" or "quiet areas" are defined not by physical forms but by coded logic and perceptual cues. The moment an avatar steps onto a stage tile, their webcam enlarges, granting them a central presence in the room. This act mimics the social function of raised platforms and is reinforced by user behavior, such as pausing or turning to face the speaker.

These systems show how Gather Town translates architectural principles into digital code, creating what Picon refers to as "architectural scripts" that choreograph user behavior. Rather than acting as background visuals, the layout and its programmed features function like an active operating system, organizing the flow of attention, movement, and interaction.

Thus, architecture in Gather Town is not symbolic ornamentation but an operative interface. It controls social dynamics, sets boundaries, and facilitates presence. Just as traditional architecture shapes how people dwell, move, and connect, Gather Town's interface architecture accomplishes the same in digital space through rules, layouts, and user interaction logic.

4.3.6.Flow-based Spatiality

Gather Town's spatial experience is not defined by fixed structures or solid enclosures, but by movement, interaction, and the temporality of user behavior. This aligns with Virilio's concept of dromology, which views speed and motion as the new parameters of spatial logic, and Castells' (2000) notion of "space of flows," where space is understood through its connectivity and activity, not its material presence.

Within Gather Town, space is organized through walkability, transitions, and circulation paths. As shown in the **Table of Observation and Interpretation**, avatars consistently follow routes that connect key nodes such as lounges, classrooms, and gathering areas. These routes are not enforced by physical boundaries, but shaped by behavioral affordances like portal tiles, audio zones, or visible furniture arrangements.

Flow is also shaped by programmed constraints. For instance, locked zones can restrict access until a specific condition is met, such as being granted entry or completing a task. In other cases, movement is enhanced by Go-Kart tiles, which increase speed and alter the rhythm of navigation. These features allow the space to expand or contract in felt experience, depending on the user's speed and goal, making space dynamic and event-driven.

Temporality also plays a key role. Gather Town spaces often host scheduled events, and the presence or absence of people changes the character of a location entirely. A lounge may feel lively and open at one moment and empty and disconnected the next. This temporal shift echoes Castells' idea that digital space is not permanent, but constantly redefined by flows of information, people, and activity.

Gather Town's logic of space, therefore, is not grounded in permanence or enclosure. It is defined by the user's experience of rhythm, pace, repetition, and orientation. Space becomes something that unfolds and reorganizes as users move, meet, and interact. This reinforces the idea that architecture in the digital realm must account for velocity, transitions, and event-based perception, rather than relying on mass or materiality.

In this framework, Gather Town reveals itself as a space of flows, where the experience of architecture is about journey and participation, not just form. By focusing on how people move, wait, and return to familiar places, the platform captures the dynamic and performative nature of digital architecture.

5. Conclusion

This study reframed Gather Town as more than a tool for virtual meetings, it emerged as an intentional spatial medium that cultivates presence, atmosphere, and architectural legibility through interaction and ritual. By applying phenomenological analysis and engaging with immaterial architecture discourse, the research revealed that digital environments can operate architecturally even in the absence of physical materiality.

Gather Town's features, spatialized audio, movement-based interaction, symbolic zones, and customization, enabled users to dwell in virtual space, establishing behavioral rhythms, emotional comfort, and spatial identity. These elements parallel the phenomenological qualities described by Heidegger (1971), Norberg-Schulz (1980), and Zumthor (2006), reinforcing the claim that architecture is rooted not in material, but in experience.

Despite its visual simplicity, Gather Town demonstrated a capacity to generate memory, place, and intimacy, qualities often reserved for physical space. These findings contribute to emerging architectural discussions around the post-material city and spatial computing, suggesting that platforms like Gather Town should be considered not only as technical products but as architectural environments with theoretical relevance.

Table 4: Summary of Key Findings

Thematic Focus	Gather Town Affordances	Theoretical Link
Dwelling & Presence	Spatial repetition, emotional comfort, interaction rhythm	Heidegger (1971), Norberg-Schulz (1980)
Atmosphere & Sensory Engagement	Spatialized audio, visual rhythm, movement patterns	Pallasmaa (2005), Zumthor (2006)
Architecture as Interface	Mapmaker tools, proximity logic, ritualized navigation	Picon (2010), Schumacher (2022)
Genius Loci & Place Identity	Naming of rooms, private zones, layout familiarity	Norberg-Schulz (1980)
Flow & Temporality	Co-presence behavior, avatar-based navigation, time-based events	Virilio (1994), Castells (2000)

This study examined Gather Town as a site of immaterial architecture, exploring how spatial perception, atmosphere, and presence emerge in a platform defined by pixelated design, avatar-based navigation, and proximity-based audio. By drawing from phenomenological and architectural theory. particularly the works of Heidegger (1971), Norberg-Schulz (1980), Pallasmaa (2005), and Picon (2010), the study demonstrated that even in the absence of physical materiality, digital platforms can produce architectural experiences rooted in orientation, ritual, and embodied presence.

Gather Town was found to support architectural readings through:

- Spatial rituals like entering rooms or muting in private areas,
- Atmospheric cues formed by soundscapes and visual textures,
- Symbolic spatial identity in zones like lobbies or meeting pods,
- And interface-driven design logics that shape behavior.

However, the platform is not without its shortcomings:

Table 5. Shortcomings of What Can be Improved on Gather Town.

Observed Limitations	Design Implications	Potential Improvements
Pixelated aesthetic can limit emotional immersion or appeal to users expecting high visual fidelity	Reduced atmospheric depth compared to more visually rich platforms	Offering scalable visual modes (e.g., high-res or mood lighting layers) could help
Movement constraints on mobile or lower-end devices	Users may feel disconnected or unable to fully interact spatially	Optimizing mobile navigation and improving lag issues can enhance flow

Limited personalization outside of mapmaker admin control	Regular users cannot adapt space based on evolving group needs	Allowing modular furniture/tools for all users may foster stronger spatial bonds
Interface learning curve for non-gamers	Spatial rituals may not feel intuitive for all users	Tutorial-based onboarding or gamified walkthroughs could ease adoption

Ultimately, Gather Town operates architecturally, not by mimicking real-world materiality, but by constructing presence, memory, and orientation through code, sound, and symbol. It becomes a platform where people don't just meet, but dwell, forming rhythms of use and a sense of spatial belonging.

As digital spaces increasingly shape social life, this study emphasizes the need to reframe architecture beyond its physical substrate. Future work can extend these insights across platforms and demographics to ask: how do we design for being in a world without walls?

6. Limitations and Future Research

While this study offers meaningful insight into the spatial, architectural, and phenomenological affordances of Gather Town, several limitations must be acknowledged. First, the analysis is limited to a single platform, Gather Town, without direct comparison to similar immersive meeting tools such as Topia, WorkAdventure, or Kumospace. This singular focus allows for deep analysis, but it also restricts the generalizability of findings across the broader landscape of spatialized virtual platforms.

Second, the primary data relies heavily on the researcher's own embodied experience within pre-selected environments, supplemented by limited simulated interaction with one additional participant. Although this method aligns with a phenomenological approach, it does not fully reflect diverse user behaviors or preferences. Incorporating broader user participation would offer a more complete understanding of how virtual space is inhabited across different demographic and cultural groups.

Moreover, the study focused on specific template spaces such as a remote office and an academic studio, which may not capture the variability of experiences in highly customized or large-scale Gather Town environments. These templates, while practical for observational depth, inherently narrow the spatial conditions under investigation. Technological mediation also poses a challenge; users' spatial experiences are significantly shaped by their devices, connectivity, and familiarity with gamified interfaces, factors that were not uniformly measured or controlled.

In terms of future research, several avenues emerge from this study. First, comparative analysis across platforms could reveal how interface design and spatial logic differ, offering a broader theory of immaterial architecture in digital environments. Second, user-centered methodologies such as interviews, surveys, or ethnographic participation would enrich the understanding of spatial affect, belonging, and ritual within such platforms. Furthermore, research could delve deeper into the multisensory potential of virtual environments, assessing how spatialized audio, visual cues, and interactive objects can be orchestrated to produce richer atmospheric experiences.

Cross-cultural analysis may also reveal how users from various architectural traditions engage with virtual space differently, highlighting potential tensions or synergies between physical and digital spatial expectations. Lastly, the potential applications of platforms like Gather Town in education, therapy, and public discourse deserve focused investigation, particularly in a post-pandemic world where hybrid and remote environments are becoming integral to daily life.

Ultimately, this study lays the groundwork for framing Gather Town as a site of immaterial architecture, while inviting further scholarly dialogue on how design, behavior, and atmosphere intersect in code-based spaces.

7. Acknowledgement

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