The Presence of Memory Through Materiality, Spatial Configuration, and Collective as A System For Sustainable High-Rise Residence

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Cover Page Footnote
THE PRESENCE OF MEMORY THROUGH MATERIALITY, SPATIAL CONFIGURATION, AND COLLECTIVE AS A SYSTEM FOR SUSTAINABLE HIGH-RISE RESIDENCE

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ABSTRACT

This paper aims to explore the multifaceted elements involved in the design of residential buildings, encompassing both landed and high-rise structures, with a particular focus on memory. The ever-increasing urban population density has prompted a shift towards high-rise living, leading many individuals to transition from traditional landed homes. However, in urban environments where closely-knit communities have been the norm, high-rise living is often perceived as a potential obstacle to fostering social interactions akin to those experienced in landed residential areas. This challenge presents a compelling opportunity for designers to create vertical residential spaces that maintain the vibrant communal ambiance found in traditional neighborhoods. To address this challenge, the concept of interiority comes to the forefront, emphasizing the intricate interplay between individuals and their living environments. This paper adopts a design-based exploration methodology, drawing insights from various facets of interiority and integrating them into the design process. Through this exploration, the study underscores the pivotal role of memory in establishing a social ambiance during the transition from low-rise to high-rise living. The manifestation of memory is elucidated through three key dimensions: Spatial arrangements, cultural influences, and the thoughtful consideration of collective activities. These dimensions collectively form a comprehensive framework for developing high-rise residential structures that prioritize and enhance the social bonds among their residents.

Keywords: Memory; Strategy; Socio-spatial; Interiority

1. INTRODUCTION

In regions grappling with rapid population growth, the discourse often revolves around the scarcity of land for residential purposes. A potential solution to this challenge is transitioning from traditional land-based housing to high-rise buildings. Contemporary discussions on housing extend beyond its mere function as a dwelling place; they encompass its role as an economic entity (Betton, 2012; Harani et al., 2022; Marinic et al., 2021) and a workplace (Doling & Arundel, 2022; Werdiningsih et al., 2022) and even as a venue for entertainment (Werdiningsih et al., 2022). This multifaceted perspective underscores the adaptability of a well-designed living space to evolving circumstances (García de Paredes, 2022).

The transition from residing in landed properties to high-rise buildings (de Certeau et al., 1998) undeniably demands significant adjustment, particularly for individuals accustomed to confined living quarters and robust social connections. In the context of urban density, the topic of changing one’s place of residence has also been a longstanding issue.

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Particularly, when currently there is a contemporary concept of a "garden city", a residential paradigm that considers the practical aspects of habitation in the presence of industrialization (Howard, 2013).

Presently, densely populated urban areas face challenges, including the existence of densely populated urban "kampungs." In some regions, the solution has been to relocate these kampungs to high-rise buildings to optimize land utilization (Jantzen & Kaaris, 2007). Engaging the community in the development process of residential areas ensures that physical development is complemented by community growth (Andersen, 2007).

The significance of residential spaces is socially constructed and culturally rooted in the lives and surroundings of their inhabitants (Beer & Faulkner, 2011). Domesticity, in this context, extends beyond the physical confines of a dwelling to encompass the societal environment of its residents (Lawrence, 1981; Verschaffel, 2012). According to Lawrence (1981), social domesticity constitutes an integral aspect of a community's cultural milieu, daily life, and residential surroundings. de Certeau et al. (1984) argue that a neighborhood's cultural domesticity is shaped by the daily lives of its inhabitants, resulting in a distinct environmental atmosphere. While the contemporary discourse on housing underscores the importance of designing residential spaces that prioritize the well-being of their occupants, there has been limited exploration of the social significance of the built environment. The investigation into reconstructing a residential environment by integrating the old ambiance into a new dwelling offers a promising avenue for residential development in communities with strong social connections. Therefore, this study aims to explore into the myriad components that shape the presence of memory in residential buildings, particularly emphasizing the role of social engagement.

This study investigates various facets of everyday life, particularly in landed houses characterized by robust social ties, to establish a foundation for designing high-rise buildings that preserve the traditional ambiance. Interiority, intricately linked with everyday practices and cultures (Atmodiwirjo & Yatmo, 2021), is inherent in habitation quality. Utilizing the concept of interiority as a lens allows us to comprehend better what it means to live in a society marked by high levels of social interaction. This study examines the socio-spatial aspects of everyday life in landed houses to inform the design of high-rise residential structures. The primary focus of this paper is on landed buildings as opposed to high-rise ones.

2. LITERATURE STUDY: THE CONCEPT OF HOME AND MEMORY

Memory is a cognitive process that involves the recollection of past experiences and can be reactivated when exposed to stimuli that recreate the original mental state. It is an integral part of daily life, involving repeated engagement with memories. De Certeau et al. (1998) exemplified memory by reconstructing childhood dialogues and cooking experiences with parents. Zumthor (2006) suggests that ambiance can trigger and activate recollections of events. This study explores how memory can be expressed, relocated, and reconstructed, particularly in residences with strong social interactions. It investigates how the interiority aspects of a lived environment impact memory retention.

On the other hand, the concept of home embodies a profound and emotional connection between individuals and their familiar surroundings (Ioannidou, 2021). It is deeply personal and intimately tied to its residents. Memories of home are shaped by inclinations, routines, and evolving needs that become intertwined with inhabitants over time. These memories are often recounted as personal narratives, rich with diverse experiences and constituent elements. Memories of one's place of origin are inherently linked to an individual and evoke associations with a lasting impact.
The global population surge has led to increased land requirements, prompting shifts in housing trends (Andersen, 2007). High-rise buildings are seen as a solution to address residential density issues, involving relocating city residents from densely populated areas to high-rise housing. This transition from landed housing to high-rises has introduced incompatibilities with traditional lifestyles, resulting in suboptimal structures. High-rise layouts often mimic low-rise houses, leading to increased complexity (Bruyns, 2018; Jantzen & Kaaris, 2007). Embedding a sense of geographical origin within residential structures is a pertinent consideration in contemporary housing discourse, especially in areas with low-income demographics (Beer & Faulkner, 2011). Incorporating memories of previous residences may help inhabitants adapt to unfamiliar surroundings.

Zouwer (2019) describes how immigrant parents transformed their residence's interior to recreate the familiarity of their hometown. Personal and domestic items played a crucial role in preserving memories. When viewed collectively, these items gain significance and offer diverse interpretations to a broader audience.

Salen (2016) discusses using photograms to translate interior spaces and stimulate a dialogue between imagination and memory regarding the representation and meaning of home. Photographic images can impact the recollection and evocation of the ambiance within participants' rooms. Memory is intertwined with an individual's spontaneous thoughts about their current situation perception, highlighting the connection between the physical body and its environment in forming memories (Sudarwanto et al., 2017). Examining how spatial settings evoke residential memories enriches our understanding of memory within architecture, particularly in housing design.

3. METHODS

The present study employs exploratory qualitative techniques (Creswell, 2009) to investigate high-rise buildings characterized by robust social ties, cultural significance, and everyday practices intricately linked to the physical environment. The primary objective of this research is to compile insights by exploring various dimensions of memory within the field of architecture, with a specific focus on space exploration and its interpretation (Wang & Groat, 2013). This study meticulously examines everyday practices by analyzing habits, lifestyles, and their closely associated components, particularly in the context of design.

Data collection for this study involved an extensive literature review utilizing various media sources, including online references and printed materials. The gathered data were categorized based on predefined criteria related to common experiences, design elements, and memory aspects, as Creswell (2009) outlined. The subsequent step involved subjecting these findings to exploratory analysis, incorporating design considerations. The ultimate goal is to generate design recommendations for high-rise residential structures considering daily life's and memory's intricacies.

4. RESULTS AND DISCUSSION

4.1. Memory Tracing through Occupancy Patterns

Inhabiting a physical environment involves the utilization of both physical and psychological faculties to establish a sense of spatial definition. The concept of space extends beyond the observable to encompass sensory experiences. Human response to a space or built environment is deeply intertwined with their inner character, fostering the emergence of intricate body-space relationships. These relationships significantly influence human behavior within a space,
ultimately shaping the overall atmosphere of the environment. Together, these aspects contribute to the experience of inhabiting and defining a space.

4.2. Reading References as a Basis for Understanding the Constituent Elements of Memory

To gain a comprehensive understanding of the components that contribute to the ambiance created by designers during the transition from landed to high-rise residential structures, it is crucial to deconstruct established precedents. In this phase, we draw upon the Sanjaynagar Slum Redevelopment Project as a precedent. This project, situated in Ahmednagar, Maharashtra, was executed by the Community Design Agency (CDA), a Mumbai-based social design and architecture studio, in collaboration with the Ahmednagar Municipal Corporation (AMC) and the non-governmental organization Snehalaya. The rationale for selecting this project lies in its foundation within a setting characterized by robust social connections. The deconstruction of this project's model revealed that the formulation of the design concept was grounded in three fundamental elements: (1) behavior, (2) spatial practice, and (3) atmosphere.

The primary focus of this project is to emphasize the development of a community rather than the construction of physical structures, which is achieved by placing importance on creating a harmonious blend of secure and hygienic individual and shared spaces that augment natural social connections and facilitate human growth. This project is perceived as an initiative fostering strong social cohesion and enhancing communal ties. The investigation of this project revealed that the preparation of the design concept emphasized three key elements, with the initial element being behavior. The customary practices of the individuals who originally inhabited residential properties situated on land encompassed the rearing of livestock and cultivation of vegetation. This study introduces the potential utilization of communal areas for livestock rearing and agricultural cultivation, replicating shared spaces as a viable option for these activities.

Furthermore, located at the residence's forefront, a pathway can be utilized to cultivate vegetation in a containerized growth medium. This feature enables residents to engage in activities within high-rise residential buildings consistent with their prior behavior in low-rise residential dwellings. Figure 1 below illustrates the reference reading involved in this study.
The predominant spatial practice within this community involves using outdoor areas for communal gatherings and social engagements. The design concept incorporated a broader corridor at the front of the house, intended to serve as a communal area. Furthermore, in terms of the atmosphere, two fundamental materials, bamboo, and brick, emerged as hallmarks of landed structures. These materials have been integrated into high-rise buildings to establish a congruous ambiance, albeit as supplementary constituents.

The leading reference provides a foundation for comprehending the fundamental components of memory associated with behavior, spatial cognition, and environmental context. The concept of housing extends beyond providing shelter, encompassing social services and utilities as well.

4.3. Compilation of Memory-Building Rules

It is crucial to identify guidelines based on prior literature queries to present an architectural concept emphasizing memory. This study explores various mechanisms to enhance memory retention in high-rise buildings, focusing on three primary keywords: behavior, spatial practice, and atmosphere. Enabling the transfer of memory from a landed building to a high-rise building involves the identification of rules that can stimulate the design.

Analyzing spatial configuration to memory entails examining the contextual factors surrounding different residential structures in urban village regions. Certain attributes about residing in an urban village within Indonesia are being considered. The idiosyncrasies of their living space encompass the diverse domestic activities that extend beyond its confines (Harani et al., 2021; Lathif, 2020; Yatmo & Atmodiwrjo, 2013). It is possible to engage in, as a group, a variety of activities more commonly performed privately or separately in the urban village area. These forms demonstrate spatial knowledge between various ‘inside’ and ‘outside’ environments.

In domestic activities within a corridor, the ownership of said corridor, which was originally designated as a public space, will temporarily transfer ownership to each occupant, limited to the boundaries of their individual residential unit. These phenomena obscure the perception of both the inside and the outside. The phenomenon of movement between the inside and the outside can be attributed to two distinct mechanisms. The first mechanism involves transferring activities from the inside to the outside and vice versa. The second mechanism pertains to transferring interior objects to the outside setting (Atmodiwrjo et al., 2015). The inside-outside relationship becomes vital in compiling the rules for developing high-rise building designs. The finding in the rules of memory is illustrated in Figure 2.

The habituation of individuals in urban kampungs is characterized by a multifaceted array of elements, including bird cages, hanging plants, and pets. Providing space for planting and raising livestock is a crucial aspect of the daily routine of individuals who maintain robust social ties in these communities.

The study involved two searches, where one focused on community-based high-rise housing design references, and the other directly examined the context of landed housing in Indonesian urban kampungs. The findings indicate that housing residents exhibit diverse elements intrinsic to their daily lives. The presence of intricate components within a given space can lead to the utilization of pre-existing surfaces and the emergence of customary practices unique to the local populace.

These identified aspects permeate residents' daily lives in their homes. To transition from landed to high-rise residential forms, providing a novel living experience to prospective residents is imperative. The process involves transferring the experience through recollections of their former homes. The socio-spatial of everyday practices regarding this study is illustrated in Figure 3.
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**Mechanisms**

- **Material**
  - Using familiar materials
  - Kayu, bata, beton, bambu, kayu, ralo

- **Light Atmosphere**
  - Create space from light and shade
  - Sunscreen on horizontal
  - Use key bambu

- **Misting**
  - Single-loaded corridor
  - Better daylight & cross ventilation
  - Corridor circulation space to outdoors
  - Jack communal spaces

- **Tactile**
  - Vertical planes
  - Benang (kampung batu)
  - Material paving block (napal)
  - Benang logi di kantor

- **Surface**
  - Using corridor surface to make a communal space

**Figure 2** Finding the rules of memory

**Figure 3** Socio-spatial of everyday practices
4.4. Bringing the Experience of Landed Residence to High-Rise through Memory

4.4.1. Spatial Settings

Strong social ties allow for increased flexibility in allocating space within a household to accommodate various activities. The use of inside-outside flexibility rules can facilitate this task. In the design of high-rise housing, the boundaries between the inside and the outside are intentionally blurred. This concept aligns with the desire of contemporary occupants to have a residence that transcends traditional definitions of interior and exterior spaces, living in the transitional space between inside and outside.

Three potential design alterations to achieve space flexibility have been identified in this context. First, residents can keep the space unobstructed, functioning as an entrance yard or balcony, serving various purposes such as a living area, relaxation space, or storage area for household items. Second, the space can be equipped with strategically placed openings to facilitate the establishment of commercial enterprises that require face-to-face engagement with customers, such as food and grocery kiosks. Third, residents can fully enclose this area with doors and windows, creating an additional enclosed space within their dwelling. The illustration of these spatial settings can be found in Figure 4 below.

Figure 4 The possible design modifications based on spatial setting
These flexible spatial configurations allow residents to adapt their living spaces to their specific needs and preferences, creating a sense of continuity between their previous landed residence and the high-rise environment.

4.4.2. Culture

The transition from landed residential houses to high-rise buildings can be facilitated by integrating consistent cultural norms, such as providing communal areas that allow residents to engage in crop planting and livestock husbandry. In traditional cultural practices associated with residing in landed housing, available space was often used for pursuing personal interests or routines, such as crop planting and livestock husbandry. It is essential to consider the integration of these practices to maintain a sense of continuity between the previous landed residence and the high-rise environment.

One approach is to allocate a designated area within the high-rise building’s front hall for farming or planting. Additionally, for animal husbandry, it may be feasible to provide specific surfaces with hooks at the rear of vertical housing structures to accommodate the needs of residents.

The shared spaces near the corridors of high-rise housing can serve as storage containers for planting using containers, contributing to the enhancement of greenery within the building’s vicinity. Furthermore, common areas situated at the base of the building and on the rooftop can function as platforms for residents to cultivate agricultural products. These spaces can also be used for food preparation during communal events, communal dining, or even for selling products to benefit the community.

This illustrates how cultural practices observed in traditional landed houses can be effectively transplanted into high-rise residential buildings, allowing occupants to maintain their customary way of life. These practices result in diverse spatial configurations that primarily involve alterations in elevation. The integration of cultural practices within high-rise residential buildings underscores the role of culture in shaping memory within a new dwelling, expanding the scope of memory considerations in architectural design, particularly for high-rise buildings with strong communal bonds.

4.4.3. Collective Activity

Incorporating collective activities and social interactions into high-rise residential buildings is critical to preserving the sense of community often associated with traditional landed houses. To achieve this, several design considerations can be implemented:

1. Community Kitchen: It is essential to include a communal kitchen within the building to accommodate cooking habits that involve group cooking on occasions like Thanksgiving or for restaurant business purposes. Placing the kitchen at the front of the unit, directly adjacent to outdoor areas, can facilitate its functions. This approach aligns with the idea that residential unit design should not only focus on indoor spaces but also consider the potential of outdoor spaces as extensions for service activities (Yatmo & Atmodiwrjo, 2013).

2. Social interaction spaces: High levels of social interaction that were characteristic of landed-type dwellings need to be replicated in high-rise buildings. Designating areas within the building where residents can freely interact daily without disrupting the building’s main functions is crucial. One effective design approach is to employ a single-loaded corridor type in each building, ensuring a sufficient width for various activities to occur within the corridor without obstructing circulation.
3. Multi-functional surfaces: The surfaces at the front of residential units and in corridors can be designed to serve multiple functions. These surfaces can be used as seating areas, places to display plants, areas for small businesses, and storage spaces. Additionally, furniture inside the units can be designed for efficiency and adaptability to different functions.

4. Communal spaces: Designing wider lift lobbies on each floor can create communal spaces suitable for collective activities such as competitions, religious gatherings, meetings, and social events. The ground floor of the building can also be left empty or designed as a communal area to accommodate larger-scale activities.

These factors highlight the feasibility of recreating memories during residents' transition to high-rise buildings by replicating the ambiance of their former residences. Regulations and design techniques can be employed to preserve memory through spatial configurations, integrating cultural practices, and emphasizing collective activities. The second design consideration involves incorporating cultural practices into existing spaces, such as utilizing them for planting and raising livestock, to present culture. The task can be accomplished through the process of media preparation and the consideration of surfaces as layers of activity. Furthermore, the emphasis on households with robust social ties results in the presence of space as a site for communal engagement, thereby underscoring the significance of collective activity, as the implementation of an interactive surface can be achieved through the utilization of a single-loaded corridor. These considerations contribute to a holistic approach to memory preservation in architectural design for high-rise residential buildings.

5. CONCLUSION

This study underscores the pivotal role of memory in establishing a vibrant social atmosphere when transitioning from land-based residences to high-rise buildings. As manifested through spatial arrangement, culture, and the consideration of collective activities, memory serves as a foundational framework for developing high-rise residential structures that prioritize social ties among their inhabitants. In line with Andersen's assertion (2007) that the construction of physical structures goes hand in hand with community development, this study demonstrates that community-building initiatives can be effectively implemented in high-rise residential buildings by harnessing the memories of past dwelling places.

The concept of interiority, as emphasized by Atmodiwirjo & Yatmo (2021), emerges as a crucial aspect of socio-spatial understanding, particularly in the context of memory. This is evident in the spatial arrangement, which reflects the relationship between the interior and exterior environments. Furthermore, this research highlights the importance of studying the ways of life in traditional landed houses as a foundational step in compiling design rules for high-rise residences, thus optimizing the transition process. This underscores the significance of considering the everyday practices of occupants when designing residential homes. The findings from this study have the potential to evolve into a method for designing homes that prioritize socio-cultural aspects and align with the everyday practices of the residents, in line with study done by Adianto et al. (2021).

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REFERENCES


