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The Production of Mingling Spaces as a Form of Children's Mobility

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Abstract The city of Bandung in Indonesia is facing challenges due to the decreasing availability and high prices of land. This has resulted in settlements that do not meet the basic housing requirements, including providing open spaces or communal areas for residents. As part of the community, children are particularly affected by spatial injustice caused by the lack of space, specifically for playing. Furthermore, children in Bandung often visit play areas in other communities. Preliminary research are indicating some interesting phenomena, including 1) the existence of spaces in settlements that are only used by children from the specific community and 2) the existence of spaces that are shared and used by children from various surrounding settlement areas. These shared spaces, where children from different areas come together to play, are called "mingling spaces". Therefore, this research aims to identify and understand the mingling spaces that emerge from children's activities during their collective play. It was conducted in three settlement areas in North Bandung with shared play spaces. Data were collected by observing the play behaviour of children aged 4-12. Spatial analysis using social constructivism methods provides an understanding of the mingling spaces between two different communities. Mingling spaces in this research are manifested as a "third space" referred to as the 'Dynamic Third Space'. Mingling space is dynamic because it is temporal, tends to disappear at any time, and can be permanent and also mobile. Mingling spaces exist due to shared goals, time, and access. These findings indicate a tendency towards spatial injustice, specifically for children, in obtaining their rights to suitable play spaces.

Keywords Spatial Identification, Mingling Space, Planned and Unplanned Settlements, Children's Play, Mobility

1. Introduction

Bandung, the capital city of West Java province in Indonesia, is known for its high population density of 14,494 people per square kilometre [1]. According to data from the Bandung City Central Bureau of Statistics, the city experiences an annual population growth rate of 0.01% [2]. As the third largest city in Indonesia (after Jakarta and Surabaya), approximately 90.66% of the land in Bandung is already developed [3]. Therefore, increasing population has led to a growing demand for settlements. To meet this demand, various types of settlements are being constructed, catering to the needs of both the middle to upper-class population and those seeking simpler housing options. However, in some cases, the development of these settlements has not been accompanied by the necessary infrastructure, particularly in terms of street access and the availability of Open Space Areas by the Guidelines of the Minister of Home Affairs number 9 of 2009 [4].

Similar to other city residents, children residing in

Bandung face challenges in accessing and utilizing adequate play spaces, particularly those from lower to middle-income settlements [5], [6]. The Regional Regulation of Bandung City, specifically number 13 of 2019, stated the need for every settlement to ensure the provision and easy accessibility of public spaces, focusing on catering to the needs of low-income communities. This concept of balanced housing aims to promote spatial justice by granting all citizens the opportunity to access public spaces, specifically those lacking within their settlements [7]. Unfortunately, the limited availability of play areas within open spaces has resulted in a decline in the prevalence of children engaging in shared play activities with their peers [8]. However, despite these challenges, there are still observed instances where children find opportunities to play within certain residential environments in Bandung. These observations serve as valuable references for further exploration and a deeper understanding of the existing phenomenon.

Settlements in Indonesia sometimes originate from community-driven initiatives without considering the necessary infrastructure and facilities that need to be present. These unplanned settlements are characterized by their spontaneous growth and informal nature [9]. In contrast, planned settlements are typically constructed by developers or the government, adhering to established requirements and standards for settlements set by central or local authorities [10]. Unplanned settlements, which typically emerge first, coexist with newly developed planned settlements. In some cases, these settlements are adjacent to each other without clear boundaries, while in other instances, natural features such as rivers or differences in topography act as dividers. Some are bounded by high walls also known as gated communities. The initial hypothesis suggests that the proximity of planned and unplanned settlements create spaces where children from both types of settlements can engage in shared play. However, this phenomenon is not consistently observed across all cases of adjacent settlements. This observation provides an interesting research topic to explore and gain insights into the shared play areas, known as mingling spaces. The primary objective of this research is to identify and examine the mingling spaces that emerge through the activities of children when they play together.

Similar research by [11] highlighted the key characteristics of an ideal play space for children, emphasizing its location within settlement areas. These include easy accessibility on foot, safety from vehicular traffic, as well as suitability for recreational, sports, and educational activities [12]–[14]. Settlements are expected to have flexible communal spaces or open areas that can be used for various purposes, including the activities of children [15]–[17]. This creates a physical environment and a positive community that fosters good behaviour among children [18]. Dewiyanti research, which focused on observing play spaces in planned settlements, found they were primarily used by children under three in the company of their parents [19]. However, children between the ages of 7 and 12 typically require exploratory play spaces [13], [20]. The research also revealed that children enjoy unexpected play spaces to explore new environments and interact creatively with their features [21]. Rasmussen coined the terms 'places for children' and 'children's places' to describe the phenomenon where children interact not only with formal spaces provided by adults but also with the informal ones that often go unnoticed, due to their mobility patterns [22]. According to the theory of habitus by Bourdieu [23], children residing in unplanned settlements, shaped by their social, economic, cultural, educational, and personal preferences, possess a strong inclination to explore play areas, including those within unplanned settlement areas [5]. This is due to the limited play areas in their environments.

The research findings have several implications, particularly in relation to the identification and understanding of mingling spaces that arise between adjacent planned and unplanned settlements due to the play activities of children. It is evident that children, through their active engagement, play a significant role as agents in creating these mingling spaces. Furthermore, the production of space within the mingling spaces in the studied settlement areas were identified as 1) static and dynamic spaces, 2) temporary spaces, and 3) relational access. These spaces emerge when communities from different settlements with common goals and timeframes come together.

2. Literature Review

2.1. Planned and Unplanned Settlements in Indonesia

In Indonesia, settlements can be categorized into two main types, namely (1) historical and (2) intentionally created. Historical or unplanned settlements refer to those that developed before the rapid growth of a region or city. These settlements are typically self-built by the community and are known by various terms such as spontaneous or illegal [24][25]. They are located near water sources, streets, and important facilities like economic centres, healthcare, and education [26], [27]. Due to the absence of government or developer involvement, these settlements often lack legal aspects. Over time, the government may issue certificates of land use rights to residents, while the land ownership remains with the government or private entities [28]. The second type, planned settlement, is created by government or private entities. These settlements undergo comprehensive planning processes encompassing infrastructure development such as streets, drainage systems, open spaces, urban layout patterns, etc. [10].

However, the establishment of planned settlements often leads to conflicts regarding the eviction of historically developed settlements [29]. These conflicts encompass

various aspects, including social and cultural factors, as well as economic disparities, ultimately leading to spatial injustice [29]. As a result, certain conditions emerge, such as restricted street access, limited availability of open spaces, reduction of natural areas, etc. [30]. A research conducted by Harun [31] in two traditional settlements in Malaysia highlighted the importance of public spaces with accessibility in sustaining the social life of communities. The shared identity and sense of ownership within these communities enable the simultaneous use of public spaces [31].

2.2. Place, Actor, and Activity

Humans, as users of space, are actively engaged with and perceive their environment not only concerning themselves but also in relation to their environment [32]. A behavioural setting approach is valuable to understand human behaviour with space [33]. This approach, initially proposed by Roger Barker in the 1950s, refers to small-scale social systems defined by specific time and place boundaries and consisting of individuals and physical objects [34]. In a behavioural setting, human beings and their activities play central roles, while time and place provide the framework for identifying when and where behavioural arrangements occur [32]. According to Barker, the definition of a behavioural setting, as cited by Laurens, encompasses several key criteria [33]. These criteria include 1) the presence of standing behaviour patterns, which are recurrent behaviour exhibited by individuals or groups observable as a whole or in parts, 2) occurring within a circumfacent milieu, where each behaviour setting may differ according to space and time, 3) a coherent relationship between the standing behaviour patterns and the circumfacent milieu, and 4) taking place within a specific period.

Human behaviour patterns in the environment is due to the dynamic interaction with their surroundings, incorporating social-emotional elements [35]. Humans establish personal space on an individual level, and in a collective manner, they contribute to the creation of social space [32], which is shaped through individual and collective social actions. The social space gives meaning to how a spatial area is perceived and used by those who occupy and engage with that space. This concept is in accordance with the notion of a behavioural setting, which comprises three key components, namely physical (design), social (use), and cultural aspects [32]. Social interactions within the environment can be observed through various environmental, behavioural phenomena or activities, the user groups or actors, and the locations where these activities occur [36]. Hoppler elaborated on this by including additional factors such as partners, relationships, context, and evaluation [37]. Actors within the environment possess unique characteristics influenced by their backgrounds, values, experiences, and expectations. Partnerships denote relationships between individuals or other groups based on age, gender, education, economic status, cultural background, or specific groups. These relationships can be hierarchical or egalitarian. Activities encompass the actions performed within the setting, including playing activities, which are particularly interesting in this research. Context refers to the connection between individuals and specific places, times, or events, which can influence their behaviour and responses within different contexts. On the other hand, evaluation involves the formation of positive or negative judgments regarding the actions taken and their outcomes.

2.3. Playing and Play Spaces

Piaget (1945), Parten & Mildred (1932), and Kudrowitz & Wallace (2009) have contributed to the classification of different types of play. According to their research, play can be categorized into two main types, namely Cognitive Play and Social Play. Cognitive play encompasses various subtypes, including Practice Play, Symbolic Play, Constructive Play, and Play with Rules (which includes activities like video games). On the other hand, Social Play can be further classified into Solitary Play, Parallel Play, Associative Play, and Cooperative Play [38]. The types of play evolve with age, gender, ethnicity, religion, environment, and culture [39].

The play environments of children can be categorized into four main types, namely formal play environments found in schools, home play environments, structured play environments like playgrounds, and informal play environments [40]. Senda [41], [42] further classified these environments into various categories, including natural environments, open spaces, streets, and anarchic spaces. Anarchic spaces refer to unplanned areas that arise from the imagination of children, often involving intense play activities such as tag games and playful fighting. Secret hideout spaces are confidential areas known only to specific groups of children, while urban planners intentionally design planned play spaces.

2.4. Mingling Space

The term “mingling space” is used to describe a physical environment that is conducive to social interactions and the merging of two distinct communities. This is because, humans as social beings, naturally interact within a dynamic societal context. Interactions between individuals or groups can influence and enhance each other while maintaining their unique identity characteristics [43]. Previous research indicates that mingling can occur when certain factors are present [36], including 1) Communication, encompassing both verbal and non-verbal forms of expression, and 2) Social exchange, which leads to shared interests and the formation of relationships. 3) Collaboration involves cooperative activities among two or more individuals, whether obligatory, voluntary, or unintentional. 4) Conflict, a normal aspect of social

interaction arising from personal interests or the desire for control over a particular object or situation, and 5) Competition, a natural occurrence in social interaction aimed at fostering enthusiasm and achieving improved outcomes.

Scholars have examined social interaction and social space, ranging from classical to modern perspectives. Although the terms may vary, they are all related to the conception of social space. For instance, George Simmel (1925) used the term "formal space" [44], while Michel Foucault (1967) termed it "other space" [45], [46]. Henri Lefebvre (1991) introduced the concept of "social space" derived from the theory of "production space" [47], [48]. Furthermore, Soja added the concept of "third space" (1996) [49], [50], Harvey coined the term "the spatial fix" (2006) [51], and Massey discussed "relational space" (1994) [52]. Newer figures such as Low proposed the concept of "relational space", which ultimately led to the idea of "new dynamic space" (2008) [53], [54]. Lapple explored the concept of infrastructure as part of production space (1995) [55], [56]. Ontologically, space is social and real, representing stretched social relationships, and it is socially produced.

Epistemologically, space can be categorized based on the ideas of being "perceived," "enveloped," and "lived," as stated by Lefebvre [47], [48]. Harvey, on the other hand, categorized space as "absolute," "relative," and "relational" [51]. Massey further elaborated on dynamic, interconnected, and mutable space contingent upon power dynamics [52]. Löw, building on the theory of Läpple, introduced the concept of the "duality of space," which recognized space as constantly shaped and transformed through social practices. Löw took a more humanistic approach, highlighting the role of social exchanges, memories, images, and everyday material surroundings in constructing symbolic meanings and landscapes and actions conveying symbolic meanings [53]. The social space production, as discussed by Lefebvre [47], [48] pertained to how spatial practices are manifested through perceptions of the built environment and the networks that connect various social activities such as personal life, work environment, social circles, extended family, and leisure pursuits. Lefebvre described it as a dialectical relationship between lived (spatial and social), perceived, and conceived space.

Aji et al. [57] employed the conceptual framework put forth by Henri Lefebvre, particularly the production of the social space concept in their research on street children in Semarang Indonesia. They examined the process of space privatization, transitioning from a civic centre to a central business district in the Simpang Lima area, a major street in the city. This transformation towards an economically-oriented space since the 1980s has led to the presence of informal economic actors, such as vendors around shopping centres, as well as street children in the Simpang Lima area of Semarang. The existence of street children has elicited various responses, including the formation of a community called "Satoe Atap" concerned about street children's education. This community has created alternative social spaces by establishing play and learning areas for street children and the urban poor in a vacant office space along the same street. The contestation of space between economic and social realms in this area enables the coexistence of privileged and marginalized groups.

Heterotopia theory based on Foucault is used to understand the intangible aspects, such as changes in activity patterns or behaviours. It also aids in understanding their responses to the spaces within their everyday environment in the densely populated villages of Surabaya. Through careful observation, six layers of heterology concepts were identified, including 1) it is not universal or fixed but constantly changing. 2) Heterotopia highly depends on changes over a certain period in which a space exists, resulting in different forms and functions. 3) It has the ability to juxtapose multiple virtual or unreal spaces in one physical place or space. 4) Heterotopia is closely related to time and can encompass the past and future. 5) It functions as a completely enclosed private space and an open public space. 6) Heterotopia can create illusory spaces pitched fences where virtual spaces can reveal themselves as more illusory than physical spaces, and vice versa [58].

Pitsikali [59] conducted research in Greece that examined three public playground sites in the context of public space. The design of these playgrounds unintentionally discourages parents from actively participating in play with their children. The normative classification of these spaces as exclusively for children limits adult involvement. Findings indicate that parental fear often hinders the playgrounds from functioning as intended. Fences are installed to prevent children from leaving the playground and engaging in risky activities. Consequently, the pursuit of joy is accompanied by fear. Parents play the roles of both facilitators and gatekeepers, allowing their children to engage in play, explore, and experience the joys of childhood.

Setiawan [60] employed the theory by Soja in the third space to analyze the case of Trans Jakarta bus shelters. The shelters, designed with well-considered concepts, inadvertently give rise to unforeseen third spaces due to the presence of multiple queuing groups caused by inadequate capacity. The emergence of unexpected spaces within the utilization of the shelters is further reinforced by deviant behaviours such as breaking bus lanes, jumping over fences, and standing in hazardous areas.

Sujatini [61] also used the theory proposed by Soja to examine the concept of residential homes during the COVID-19 pandemic. During this period, limitations on human mobility in public spaces led to the emergence of a fourth space within residential homes. This fourth space is created out of necessity, as individuals seek to fulfil their livelihood needs by establishing formal workspaces,

engaging in economic activities, and conducting learning activities within their homes. Some research have referred to this phenomenon as co-living.

3. Methods

3.1 Locus

This research was conducted in three planned settlements located in the northern part of Bandung, Indonesia, namely Cigadung Lecturer Housing, Kampung Padi Housing, and Sadang Serang National Housing. These settlements share similar housing characteristics and are surrounded by unplanned settlements in the northern part of Bandung. The physical features of the area, such as the presence of plentiful trees, rivers, and undeveloped land, are common to all three locations. Furthermore, the non-natural conditions, including street conditions, public facilities, and social amenities, are considered good conditions.

Cigadung Lecturer Housing is adjacent to Regol and Pesantren Village, as shown in Figure 1. Regol Village is an urban area with narrow streets accessible only to pedestrians or motorcycles. On the other hand, Pesantren Village is an educational institution where children receive Islamic teachings and reside within the area. The boundaries between settlements in Cigadung Lecturer Housing do not have separate fences. The noticeable differences in topography, the presence of a river, and a cemetery help demarcate the settlements. Kampung Padi Housing is adjacent to Tanggulan, RT.06, and Biru Villages, as shown in Figure 2. This settlement is surrounded by various urban villages with undefined set boundaries, as well as variations in topography aided by temporary fences. Sadang Serang National Housing is adjacent to Pasir Kaliki Barat, Sadangsari, and Sekeloa Villages, as shown in Figure 3. All settlements in this area are classified as urban villages. Relatively large streets and a river determine the boundaries marking each settlement.

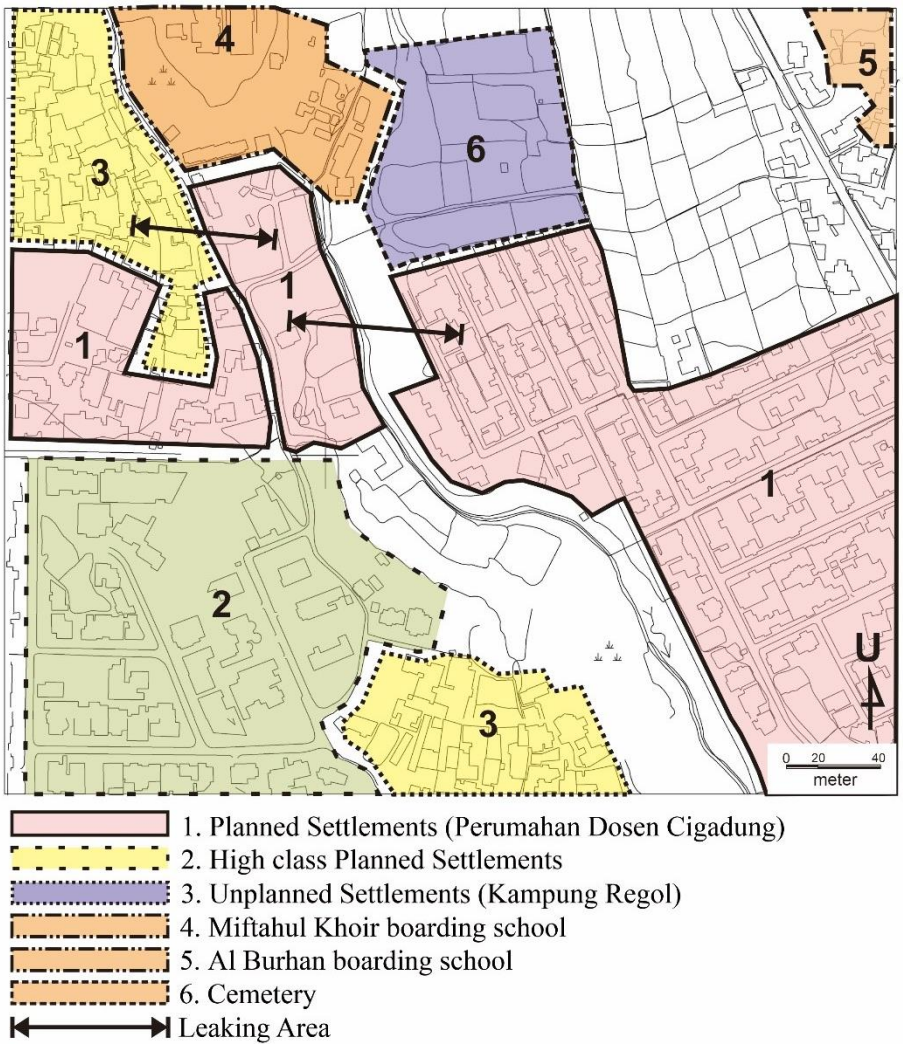

Figure 1. The Situation Map of Cigadung Housing

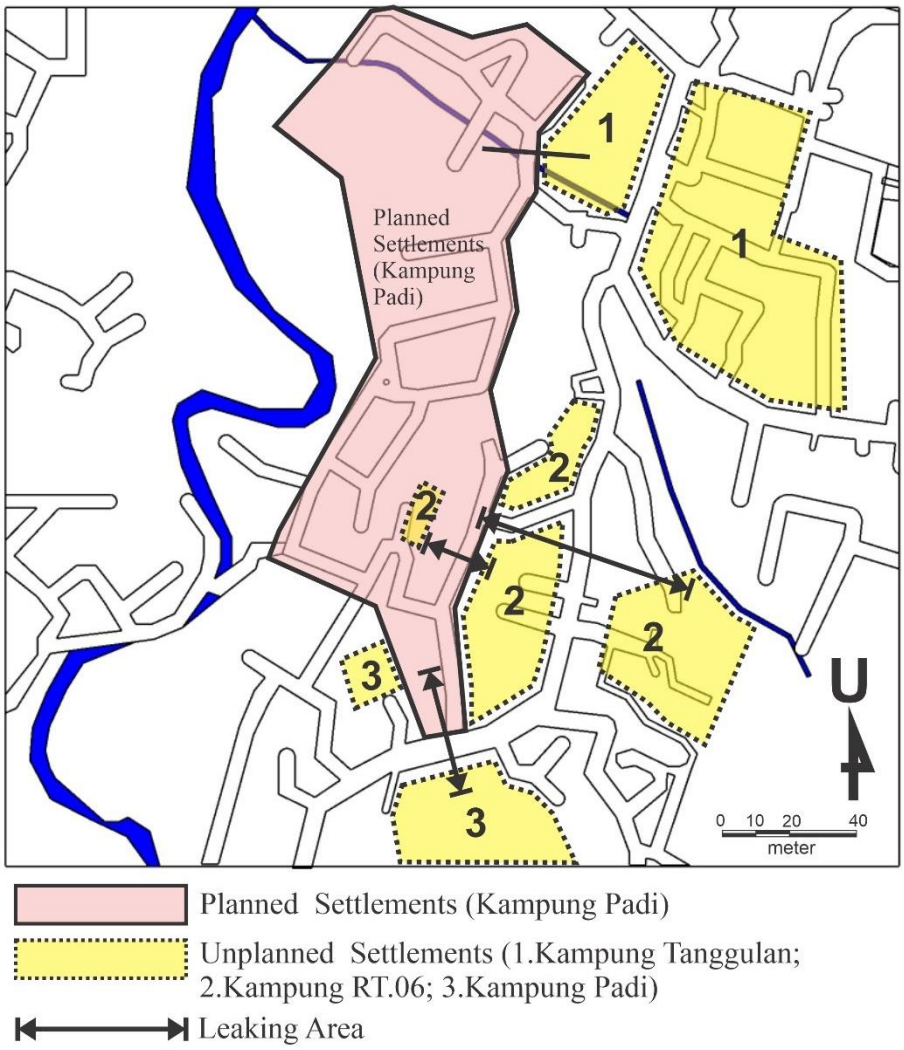

Figure 2. The Situation Map of Kampung Padi

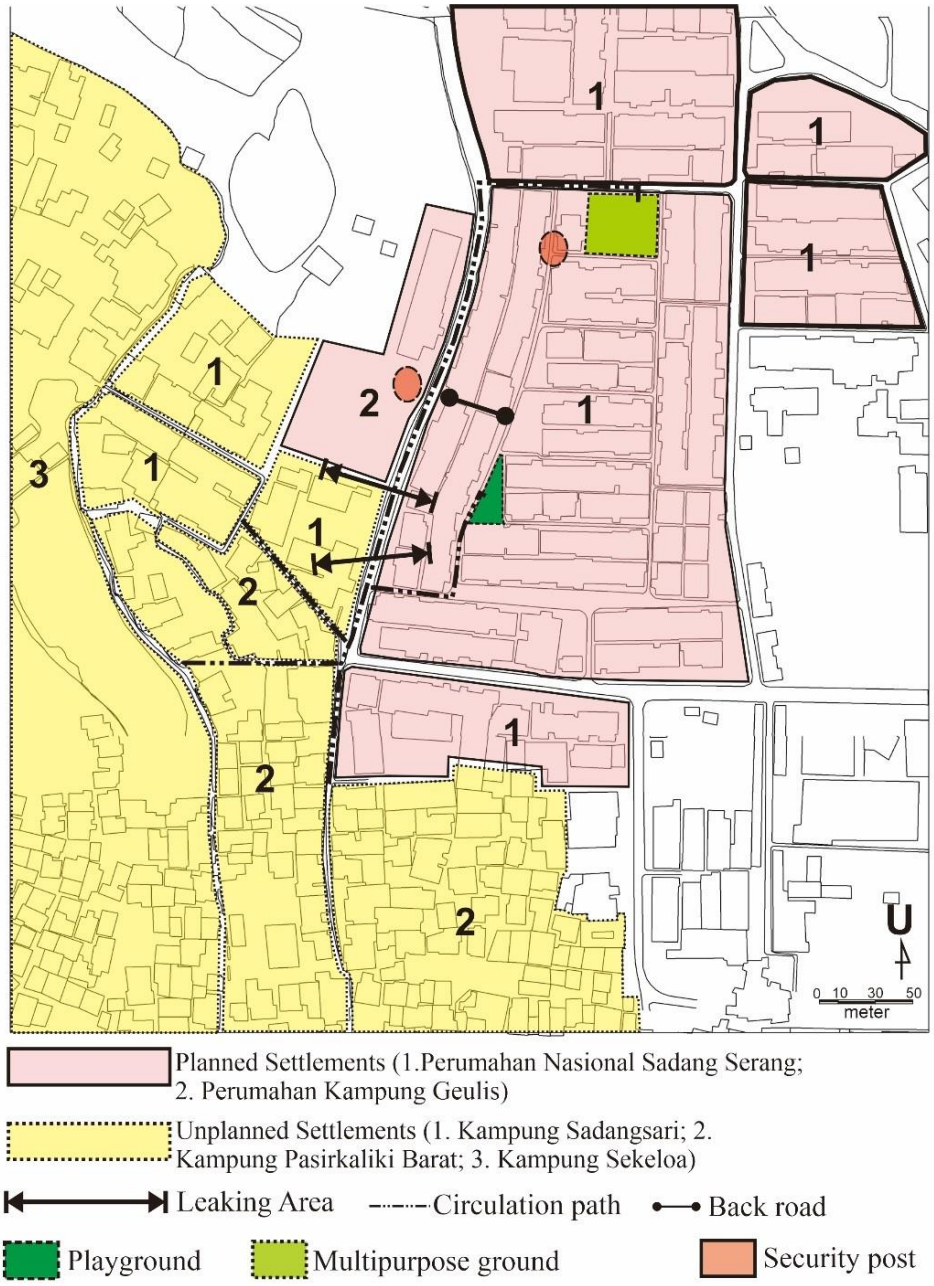

Figure 3. The Situation Map of Sadang Serang Housing

The differences among these three settlements include the presence of sloped land in Cigadung and Kampung Padi Housings, while Sadang Serang Housing is located in a relatively flat area. Cigadung Housing has relatively homogeneous occupants as it is a housing complex for faculty members of a state university in Bandung. The residents are predominantly elderly individuals who have retired, and the presence of children in the area is usually limited to grandchildren. Kampung Padi Housing represents a more heterogeneous settlement with a diverse population consisting of a productive population. This includes individuals of various age groups, such as children between the ages of 5 and 15.

3.2. Data Collection

This qualitative and exploratory research used a social-constructivist perspective to investigate the play behaviour of children [62]. It drew upon the behaviour-setting approach of Barker, as explained in subsection 2.2, as a guide to the initial activities. According to Barker, human beings are considered the central elements, while time and place boundaries are used to identify when and where specific behaviour settings occur. Furthermore, in accordance with Barker's perspective, this research focused on observing children as active participants within the context of settlement environments, as elaborated in subsection 3.1. The observation period, which lasted 30

days in August 2020, was temporarily interrupted due to the pandemic. Subsequently, it resumed from March to October 2022, allowing for a more comprehensive exploration time.

During the observation period, a natural setting was created, in accordance with research by Kumar [63], whereby no stimuli were provided to the environment or participants. This approach aimed to maintain the purity of the results by observing the spaces children naturally preferred for play without the influence or intervention of adults.

The focus of observation is on the places within the planned settlements and their surrounding environment, which are adjacent. These areas encompass natural elements, such as trees, rivers, and terrain, and non-natural elements, including street conditions, alleyways, and public and social facilities. These alleyways or small streets behind rows of houses are typically designated as evacuation routes in emergencies like fire. The observation of Place specifically involves the examination of public spaces within the settlements utilized as playgrounds by children. To conduct this observation, a structured approach known as behaviour mapping was employed [64]. The areas on the map that serve as playgrounds were also marked.

The purposive sampling method was used to obtain data from a sample of elementary school-aged children ranging from 7 to 12 years old, both from the planned and the surrounding settlements [63]. This approach was chosen due to the challenge of communicating with all children in the area. Only children willing to participate as informants were involved in the research. However, a reliability-based approach was adopted due to the difficulty of finding sufficient children willing to participate actively, as proposed by Krippendorff [65]. This involved selecting a sample size of 5-10 children from each settlement to ensure a comprehensive understanding of the research topic. Although the sample size is relatively small, it allows for an in-depth exploration of the issues at hand and the collection of rich information regarding the behaviours, attitudes, and perspectives of individuals and community groups involved. Emphasis was placed on the quality of data rather than the quantity of samples. The sample comprises 30 children, approximately 67% male and 34% female.

The children selected for the research came from both planned and unplanned settlements. The decision to focus on children aged 7-12 years as research participants was based on the observation that most children playing in the three settlement areas fell within this age group. Many of them were in grades 1 to 6 of elementary school. This age range is known for engaging in adventurous play and can be frequently observed playing in various environments [40].

A moderate participation approach was used to observe play behaviour, strategically alternating between insider and outsider roles [66]. For 30 days, the author actively joined and played with the children from noon until evening. This involved observing their activities after school, during departure from home, and during and after playtime. The author actively engaged in play activities, running and walking alongside the children while closely observing their actions. Simultaneous observations were conducted using a camera to capture footage, mapping routes on a map, and applying coding to mark images. The coding included details such as the type of game chosen, paths taken, play spaces, playtime and days, parental involvement, play duration, playgroups, sequence of activities during play, emotions, expressions, and knowledge exchange among the children. About 2-3 assistants helped with recording, mapping, and interviews to facilitate the research process.

To ensure the accuracy of the observed data, interviews were also conducted with the participants. These interviews covered various aspects, including their home location, age, school grade, play motivations, preferred types of games, route choices, preferred entrances to other settlements, favoured play spaces, reasons for their choices, and playtime duration.

During the 30 days of observation, the daily activities of each child were diligently documented by creating a table and map. The activity mapping process started with noting their residence as the starting point. This was followed by tracking where the child passed to the play area, and documenting the route taken and any stopovers made along the way. These stopover locations were identified as play areas, and the types of games played in each location were recorded.

3.3. Analysis Data

3.3.1. Descriptive Analysis Stage

The descriptive analysis stage elaborated and described each case research related to Place, Actor, and Activity [67]. A comprehensive mapping approach was employed to describe each element in detail. The place was described by analyzing the spatial conditions that serve as play areas, providing insights into the physical environments where children engage in play. The actor was described by considering the gender of the children involved in the play, highlighting any notable differences or patterns. Meanwhile, the activity included the playing types, duration, playgroups, and time.

3.3.2. Overlay Analysis Stage

Furthermore, the three data mappings for place, actor, and activity are performed using the overlay technique. This technique combines different data layers to generate new spatial information and explore potential correlations between the mapped data [68]. Figures 4a, 4b, and 4c show the overlay technique for Cigadung Housing, Kampung Padi, and Sadang Serang Housing, respectively.

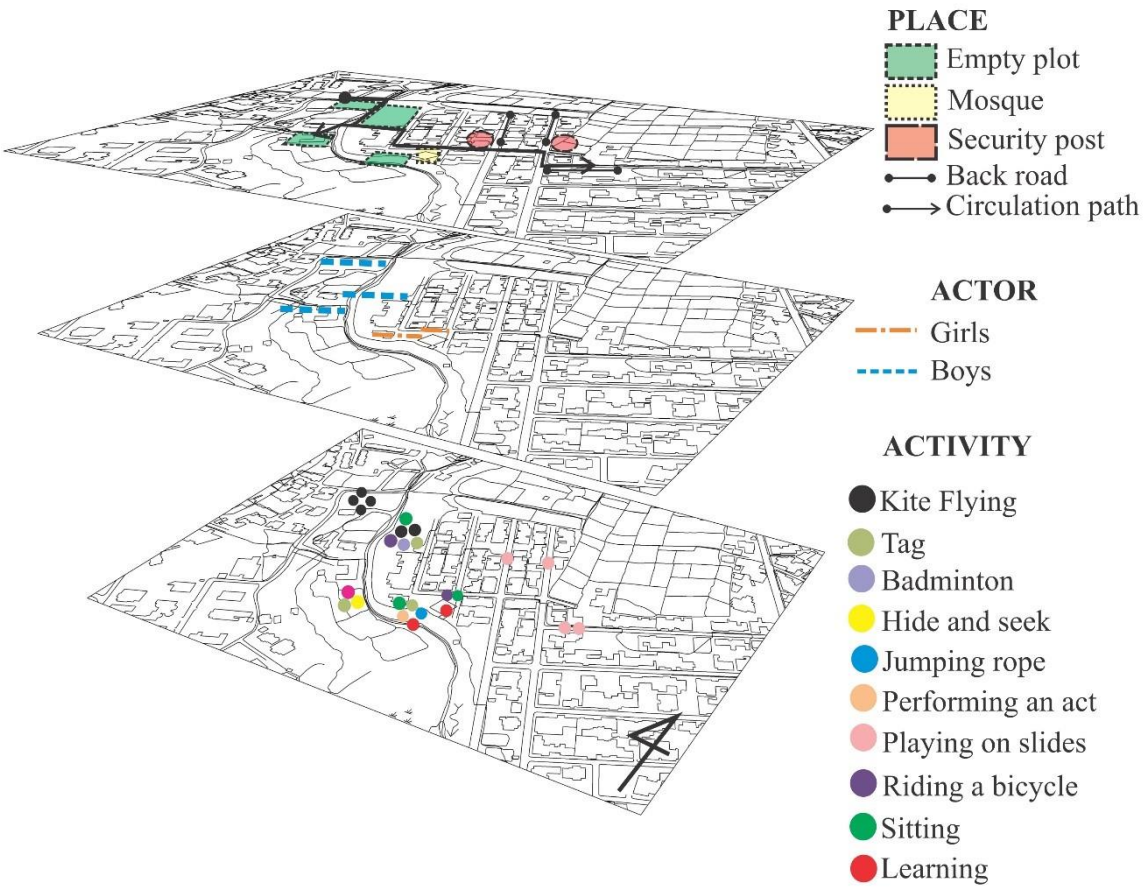

Figure 4a. Overlay Analysis Process – Cigadung Housing

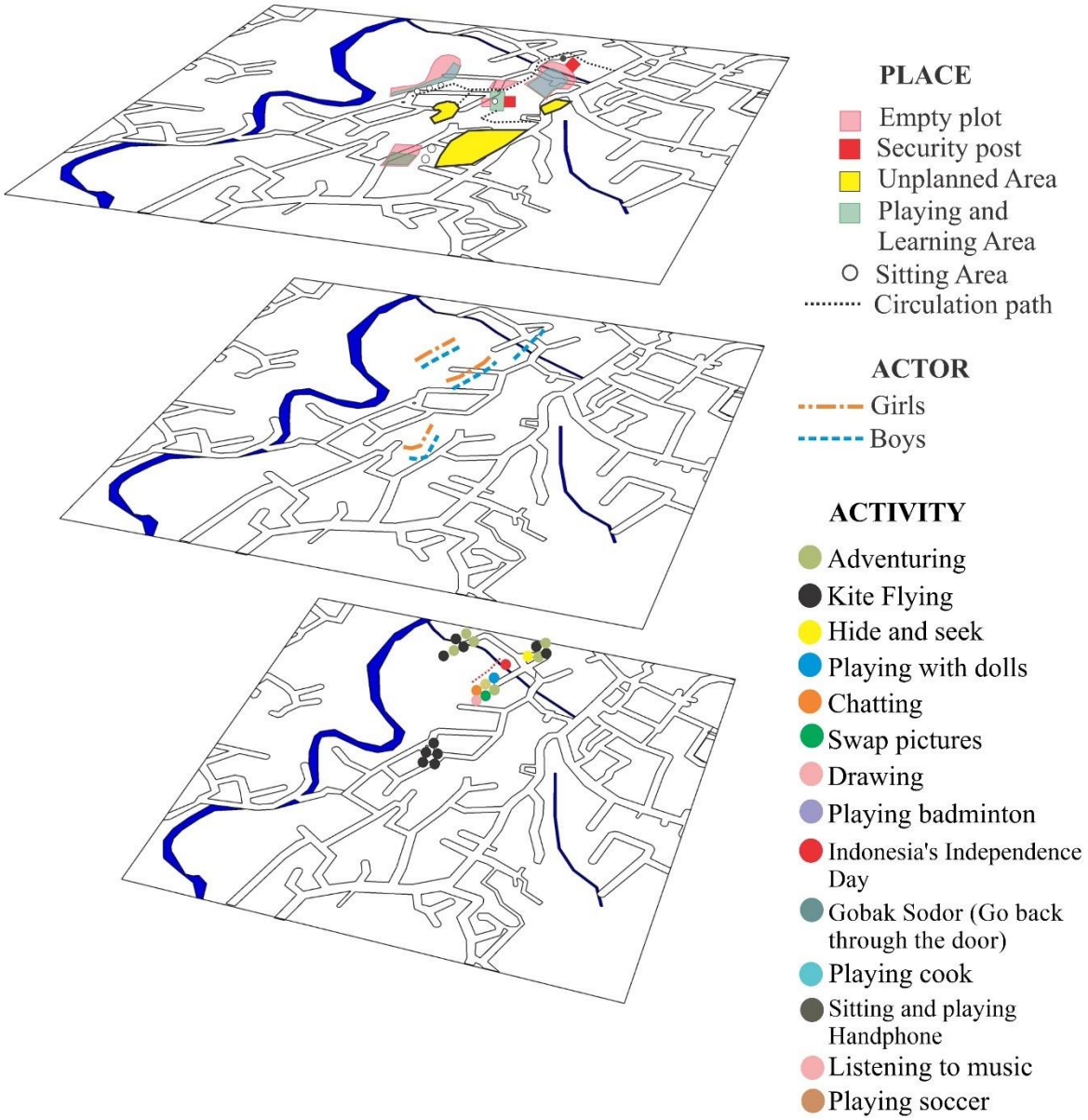

Figure 4b. Overlay Analysis Process – Kampung Padi

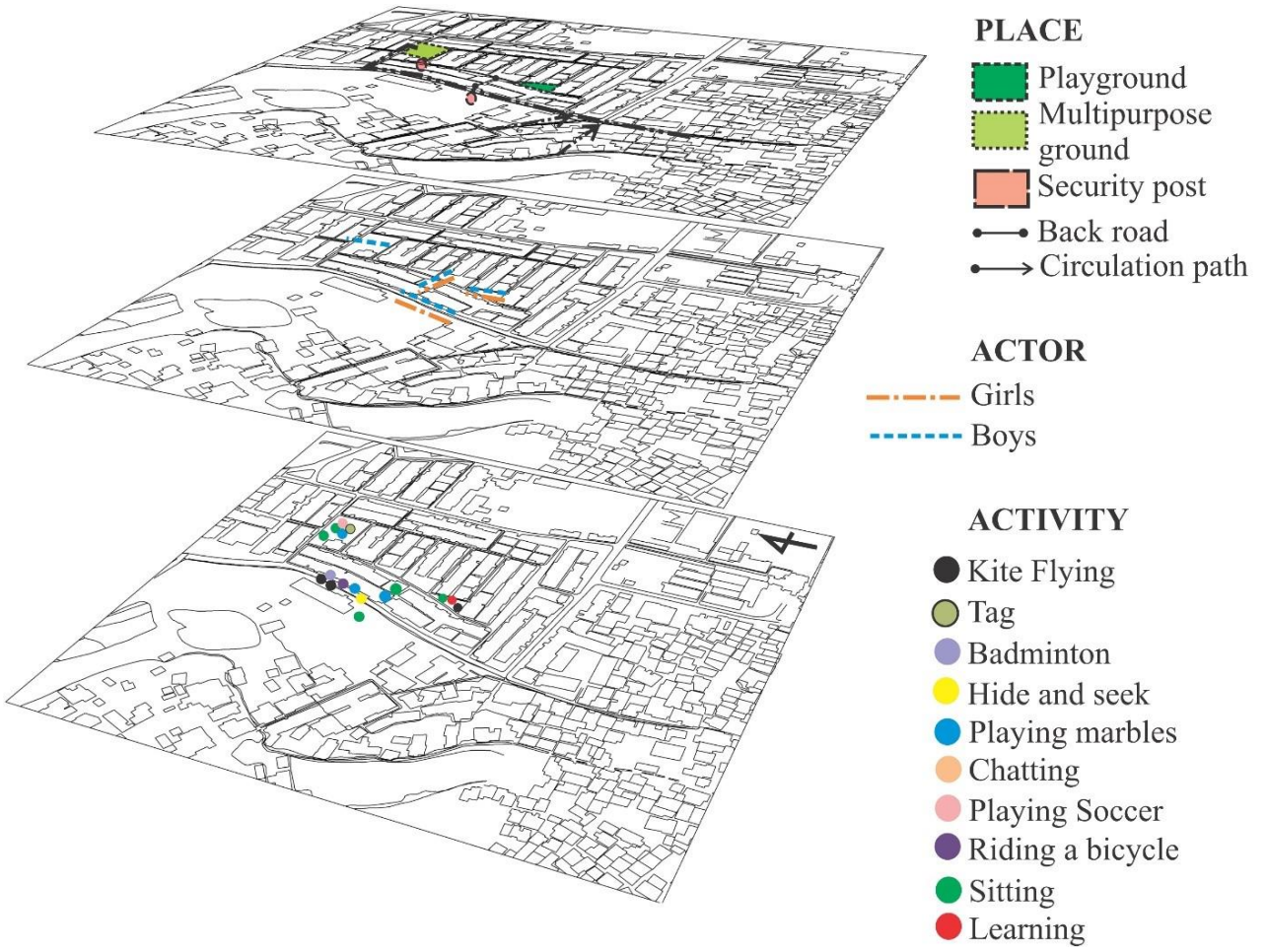

Figure 4c. Overlay Analysis Process – Sadang Serang Housing

3.3.3. Spatial Pattern Identification Analysis Phase

The final result of the Overlay of the place, actor and activity elements shows a diverse spatial pattern within the planned and unplanned settlements, which are situated close to each other.

4. Results and Discussion

4.1. Space Classification of Children's Choice

Based on the observations of the three settlements mentioned in subsection 3.1, the play spaces can be categorized into three spatial groups. These include spaces used 1) exclusively by children from the respective settlement, 2) in planned settlements, 3) and jointly by children from planned and unplanned settlements. In general, structured spaces within residential areas are used as play spaces by children from the local community, while those outside the settlement utilize public spaces like roads and vacant lots. Structured environments exclusively used by children within the community often have designated guardians or facilities designed with enclosed mass compositions to ensure safety and supervision. The games played in these spaces involve two or more children engaging in various activities. Activities such as cycling or playing with friends are commonly observed in structured environments, requiring a minimum of two or more players.

Apart from the spaces exclusively used by each group, there are also spaces preferred by both groups but utilized at different times, ensuring minimal interaction between the two. These shared spaces include roads, fields or gardens, and vacant land along the roadside. Adults typically unsupervised these areas, granting children a sense of freedom in their play. In these spaces, children engage in unstructured play without specific game rules. When observed, it becomes apparent that the games in these unplanned spaces align with the imagination of the children and are adapted to their age categories, as classified by Senda [42].

Shared areas within residential spaces facilitate collective play between the two settlement groups. The three locations of Cigadung Settlement, Kampung Padi, and Sadang Serang are shown in Tables 1, 2 and 3, respectively. These places have common spaces, namely roads and vacant lots, which serve as playgrounds for collaborative play. The games played include tag, hide and seek, kite flying, ball games, and marbles. The play patterns

in these spaces involve cooperation and competition, with winners and losers. Occasional conflicts may arise during play in these shared spaces, often due to misunderstandings, but they are usually resolved with the guidance of older children who provide directions, and the others follow their lead. The presence of older children acting as leaders and mediators contributes to maintaining a harmonious play environment. The games that emerge in these spaces are often characterized by intense play, falling into the Senda category [42].

Children are particularly drawn to playing on roads because they offer freedom and do not require specific permission. Streets become a site for spontaneous play, specifically when children encounter appealing elements such as drains, trees, trash bins, poles, stones, sand, and even animals like cats, dogs, or birds. Figure 5 shows children playing on the street, where they repurpose a cement pole, originally used as a parking barrier, as a marker for the game benteng. Figure 6 showcases a child who discovers a fallen fruit and plays with a detached paving block. Discoveries on the streets spark spontaneously generated play ideas.

However, as a favourite location, streets also have the potential to be dangerous for play. A concern raised by residents of the planned settlement is the issue of children from outside the environment playing on the streets, which often leads to conflicts between two different settlements. Figure 7 shows how children play with a ball without paying attention to passing vehicles.

Figure 5. Street as Favorite Space

Figure 6. Street and Creative Game Idea

Figure 7. Streets and Potential Danger

Table 1. Preferred Spaces and Types of Games in Cigadung Housing

SPACE		GAME													SPECIAL EVENT		
		Moving									Stay						
SPACE GROUP	SPACE NAME	Without Equipment				With Equipment					Without	With Equipment			During certain events		
		Tag Game	Hide and Seek	Exploration	*Gobak Sodor*	Playing Soccer	Cycling	Playing Badminton	Kite Flying	Playing Marbles	Chatting	Puppet Show/Playing with Dolls	Reading Books	Paying with Mobile Phone	Sack Race	Cracker Eating Competition	Other Games
Spaces in Planned Settlement	Flat Street	3	3			2	1	3	3	3					1		
	Steep Street	1			1 2		1										
	Security Post		1								1	1	1				
	Playground									1		1					
	Brandgang			1													
	GSG Field		1			1								1	1	1	1
	Mosque Courtyard		1			1		1		1			1	1	1	1	1
	Empty Land		2	2		3			3	3							
Unexpected Spaces	Rice Field/Garden			1 2													
	Riverbank		2	2													
	Swamp			2													
	Shortcut	2	2				2				2						
	Excess Land by the Roadside			1 2							1 2			1 2			
Description Number	Users within the settlement							1									
	Users outside the settlement							2									
	Shared Use							3									

Table 2. Preferred Spaces and Types of Games in Kampung Padi Housing

SPACE		GAME													SPECIAL EVENT		
		Moving									Stay						
		Without Equipment				With Equipment					Without	With Equipment			During certain events		
SPACE GROUP	SPACE NAME	Tag Game	Hide and Seek	Exploration	*Gobak sodor*	Playing Soccer	Cycling	Playing Badminton	Kite Flying	Playing Marbles	Chatting	Puppet Show/Playing with Dolls	Reading Books	Paying with Mobile Phone	Sack Race	Cracker Eating Competition	Other Games
Spaces in Planned Settlement	Flat Street	3	3	3		3	1 2		3						3	3	3
	Steep Street	3	3	3			3		2								
	Security Post		1 2								2	2		2			
	Playground																
	Brandgang	2	2	2							2	2		2			
	GSG Field																
	Mosque Courtyard																
	Empty Land	3	3	3		3			3								
Unexpected Spaces	Rice Field/Garden			2													
	Riverbank			2													
	Swamp																
	Shortcut	3	3				3		2		2						
	Excess Land by the Roadside			3							2			2			
Description Number	Users within the settlement							1									
	Users outside the settlement							2									
	Shared Use							3									

Table 3. Preferred Spaces and Types of Games in Sadang Serang Housing

SPACE		GAME													SPECIAL EVENT		
		Moving									Stay						
SPACE GROUP	SPACE NAME	Without Equipment				With Equipment					Without	With Equipment			During certain events		
		Tag Game	Hide and Seek	Exploration	*Gobak sodor*	Playing Soccer	Cycling	Playing Badminton	Kite Flying	Playing Marbles	Chatting	Puppet Show/Playing with Dolls	Reading Books	Paying with Mobile Phone	Sack Race	Cracker Eating Competition	Other Games
Spaces in Planned Settlement	Flat Street	3	3				1	1 2	3	2	3				1	1	3
	Steep Street																
	Security Post		2								3						
	Playground							1 2	3				2				
	Brandgang	2								2							
	GSG Field	2				3					3						
	Mosque Courtyard																
	Empty Land		1						3								
Unexpected Spaces	Rice Field/Garden																
	Riverbank																
	Swamp																
	Shortcut						2										
	Excess Land by the Roadside																
Description Number	Users within the settlement							1									
	Users outside the settlement							2									
	Shared Use							3									

4.2. The Relationship between Place, Actor, Activity

Table 4. Choice of Game Types related to Gender and Age

Types of game/activity	Actor							
	Male				Female			
	4-7 years	space	7-12 years	space	4-7 years	space	7-12 years	space
Tag Game	√	moving	√	moving	√	moving		
Hide and Seek	√	moving	√	moving	√	moving		
Exploration	√	moving	√	moving				
Gobak sodor	√	moving	√	moving				
Playing Soccer	√	moving	√	moving				
Cycling	√	moving	√	moving	√	moving	√	moving
Playing Badminton			√	stay			√	stay
Kite Flying	√	moving	√	moving				
Playing Marbles	√	moving	√	moving				
Chatting	√	stay	√	stay			√	stay
Puppet Show/Playing with Dolls					√	stay		
Reading Books					√	stay		
Playing with Mobile Phone	√	stay					√	stay
Sack Race	√	moving	√	moving			√	moving
Cracker Eating Competition	√	stay	√	stay			√	stay
Other Games	√	moving	√	moving	√	stay	√	stay

Figure 8. The Security Post as a choice of play space

Based on gender factors, certain spaces are preferred exclusively by boys or girls, while others are enjoyed by both genders, as shown in Table 4. Similarly, some games are specific to girls or boys only, while others can be played together by both genders. Regarding the type of games, girls tend to engage more in cognitive activities. They find enjoyment in games that have rules, involve role-playing, and require staying in one place. Although they occasionally play active games like tag and hide-and-seek, these activities are less frequent. The preference for static play in a specific location can be attributed to the influence of the hot sun. Girls prioritize security posts and sheltered spaces as their preferred choices, as shown in Figure 8. Additionally, they usually play accompanied by their mothers or younger siblings. When mothers forbid them from engaging in active games, they comply. When playing with their younger siblings, girls are responsible for looking after them by selecting safe play areas.

The play preferences of boys revolve around active social games, such as running, kicking, throwing, hitting, climbing, jumping, and catching. Boys are more adventurous in exploring various types of games and activities when playing with their friends. However, when the number of playmates decreases, the variety of games is usually reduced and may not involve daring activities. In terms of spaces, they typically prefer mobile play areas by frequently moving from one place to another within a span

of not more than 10 minutes. They are drawn to spaces that are perceived as challenging and exciting, such as those with steep contours, open areas with sloping terrain, and overlooked or hidden spaces.

4.3. Mingling Space as a Product of Residential Space

4.3.1. The Mingling Space Exists due to the Availability of Access between the Two Settlements

Children are allowed to play in housing areas as long as they have access to adequate spaces. The gathering of children, both from within the planned settlement and neighbouring areas, is facilitated by connecting streets that link the adjacent settlements. These connecting streets can be classified into two types, namely formal and informal. Formal access refers to the designated main entrance as the gateway to the planned settlement. It often includes a building at the entrance where security personnel are stationed with side entrances. These side entrances are typically equipped with doors that security personnel may close or lock during specific times for safety and security purposes.

Informal access as shown in figure 9, in housing areas is created through shortcuts or existing streets historically used as routes. These informal access points are challenging to close off due to the expansive boundaries of the land and its contoured terrain, specifically in cases like Cigadung Housing and Kampung Padi. The availability of informal access points attracts children outside the planned settlement to enter and freely choose their play areas. These informal access points indicate that children from outside the complex prefer such access because it allows them unrestricted time and lacks security supervision or restrictions.

Figure 9. Informal Access as Connecting

These access points do not only serve as shortcuts but also as spaces and places where children engage in various activities, such as playing, interacting, and socializing. They often ride bikes, have conversations, embark on adventures, and play games like hide-and-seek. This demonstrates that informal access points are highly preferred by children as they provide opportunities for a wide range of active and passive games, with or without equipment.

However, due to the limited land availability in the unplanned settlement, children tend to choose comfortable and easily accessible places to accommodate their play desires. Their positive response to the planned settlement further enhances the sense of comfort and acceptance when interacting with one another. This positive dynamic encourages those inside and outside the complex to meet more frequently and plan activities together. One of the places commonly selected is the flat street. This area provides ample space for various activities such as playing ball, riding bikes, or chatting.

The flat street referred to is actually a motor vehicle road that serves as both a boundary between the planned and unplanned settlements and circulation space within the complex. Although its primary purpose is for vehicular traffic, children occasionally utilize it, which can pose potential risks and accidents due to the continued presence of motor vehicles. Security personnel often discourage the presence of children on the street and advise them to find safer areas for their activities. However, enforcing a permanent prohibition becomes challenging as the children inevitably gather again and engage in various activities on the street.

In the Kampung Padi settlement, where public spaces are limited, certain sections of the flat street are used for larger and more organized play activities, particularly during Independence Day celebrations, such as sack races and other games. This differs from the Cigadung and Sadang Serang Settlements, which have dedicated public spaces like a community hall (GSG) and mosque grounds. This situation shows that the flat street in Kampung Padi has become the preferred alternative space for community interaction and temporary mingling space discovery.

4.3.2. The Mingling Space Exists due to the Existence of Similarities in Activities and Time

Tables 1, 2, and 3 in subsection 4.1 show that the formation of a mingling space between children from both planned and unplanned settlements is only possible when they have the same timeframe and purpose. When different spaces are chosen, or their timing does not align, a mingling space will not be established. Children from both settlements may have different play preferences within the mingling space, leading to the formation of small groups. However, as they unintentionally select the same games or activities, their play preferences quickly merge. Once interactions and shared play start, similar activities are repeated in the subsequent meetings.

4.3.3. Children are Agents of the Mingling Space

Tables 1, 2, and 3 in subsection 4.1 provide evidence of mingling activities between two distinct settlements, indicating that children play a significant role as agents in fostering social interactions between these environments.

Certain spaces create opportunities for children from different settlements to come together and engage in mingling through shared play activities. The process of social interactions among those from different environments is influenced by the role of parents in facilitating these actions. Several understandings from the participation of 4 girls and 6 boys, a girl and 9 boys, 5 girls and 5 boys, 3 girls and 7 boys, 5 girls and 5 boys and 2 girls and 8 boys from Cigadung, outside Cigadung, Kampung Padi, outside Kampung Padi, Sadang Serang, and outside Sadang Serang, respectively are shown in Figure 10. Through this participation, social interactions can occur because most children have obtained permission from their parents.

Children living in planned settlements, particularly Cigadung and Kampung Padi, are more likely to be denied permission by their parents to engage in mingling activities. Meanwhile, all those from the planned settlement of Sadang Serang are granted permission. This difference can be attributed to the socioeconomic conditions in Sadang Serang, which are relatively equal between the planned and unplanned environments. Some parents are concerned about their children playing outside the designated environment in Cigadung and Kampung Padi Settlements, where socioeconomic disparities exist among the surrounding residents. Additionally, in the unplanned settlement of Kampung Padi, certain children are not permitted by their parents due to past conflicts between residents of planned and unplanned settlements, resulting in the closure of specific entrance access points. Similarly, in the unplanned settlement of Cigadung, conflicts among residents led some parents to restrict their children from playing outside the settlement. Interestingly, while children from planned settlements adhere to the imposed restrictions, those from unplanned settlements often disregard their rules. This discrepancy in permission and disobedience among them catalyzes the formation of mingling space. Through engaging in play activities, conflicting residents gradually regain peace. It is important to note that play activities can also sometimes lead to conflicts among residents, particularly when children experience misunderstandings and engage in arguments.

Furthermore, children perceive that playing with peers from other settlements adds an extra level of excitement to the games. It fosters a sense of collaboration, healthy competition, develops leadership qualities and acts as a mediator or peacemaker. The communication established during play extends beyond the playtime, continuing when they encounter each other at school, eventually leading to the formation of friendships. Figure 11 further shows that the mingling process in play often occurs spontaneously and unintentionally. Children from unplanned environments, driven by their need for play spaces and playmates, are motivated to engage in play with children from other settlements. Generally, cooperative games such as ball games, marbles, badminton, and kite flying are popular among children aged 7-12. Meanwhile, younger children aged 4-7 find common ground in games like hide-and-seek and tag, allowing them to interact and play together. Based on the findings in subsection 4.1, boys tend to have a greater tendency to play together as they are more likely to receive permission to explore and play in different environments.

Children who play together may not necessarily have prior knowledge of each other, despite engaging in repeated games, as shown in Figure 12. However, a significant number of children from the Sadang Serang settlement establish meaningful connections and develop close friendships through mingling activities. Those from Kampung Padi and Cigadung are acquainted with each other's names but do not form close friendships. In some cases, children from Kampung Padi and Cigadung do not even recognize or remember their playmates when playing together. This can be attributed to the fact that playing groups often consist of different children.

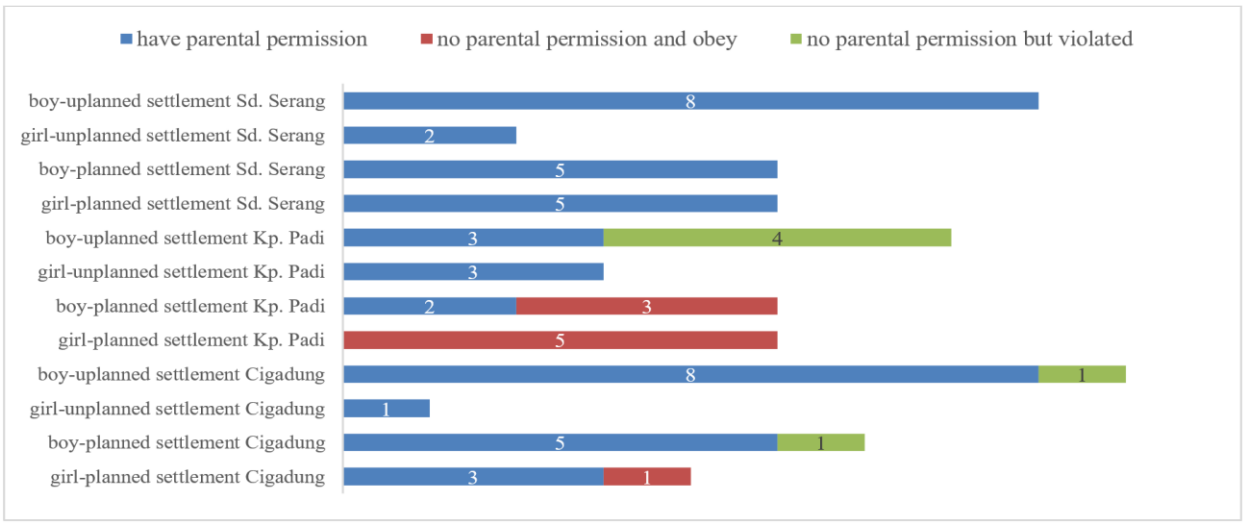

Figure 10. Parental Permission

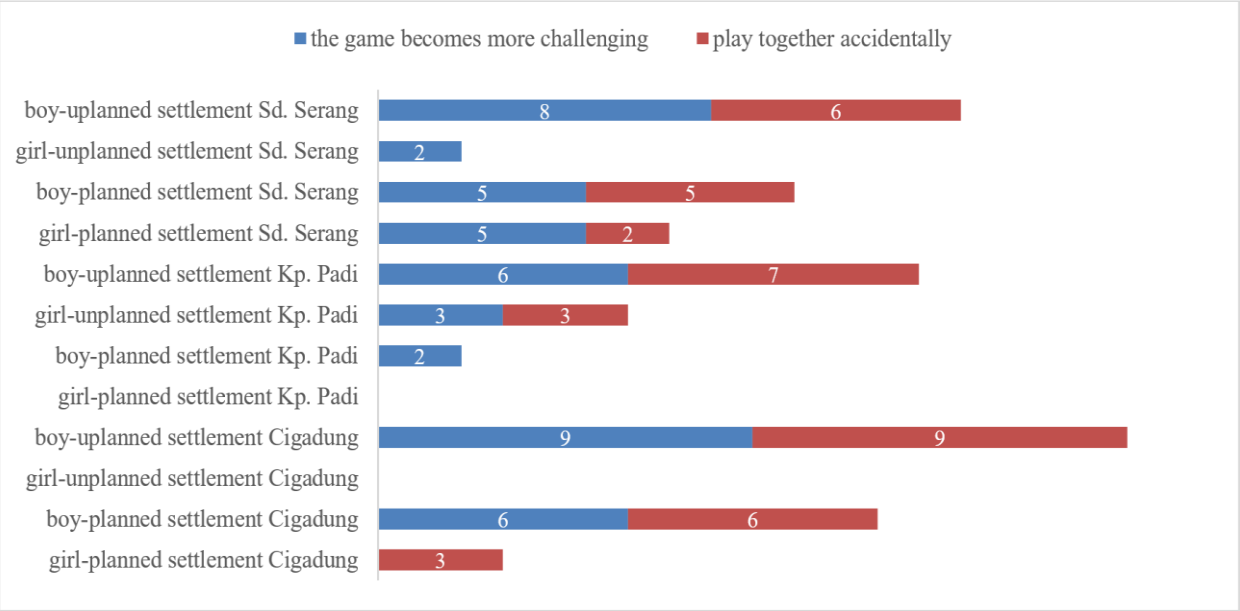

Figure 11. Motivation to Play Together

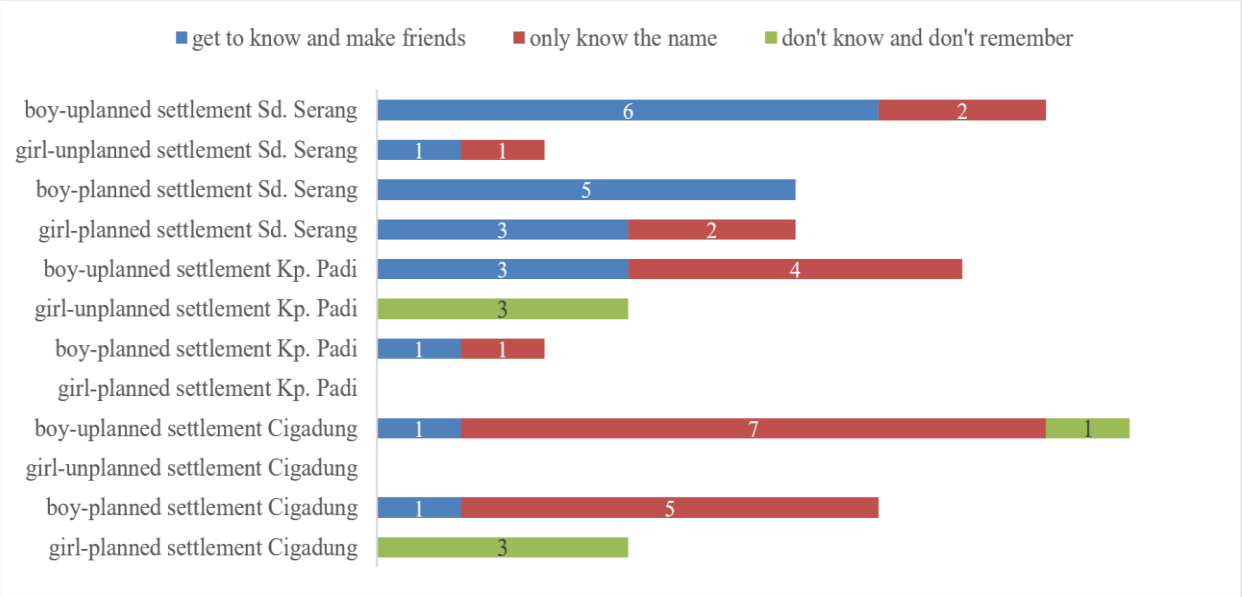

Figure 12. The Friendship Type

In the mingling space, play activities give rise to a variety of social interactions, including communication, social exchange, cooperation, conflict, and a competitive spirit. Furthermore, through play, children engage in communication, which gradually nurtures cooperation and a healthy sense of competition, although conflicts can also arise in this context. Furthermore, social exchange occurs within this space, extending to involve parents from both planned and unplanned settlements. Many children from unplanned settlements come from families involved in temporary labour, such as electricians, construction workers, or domestic workers. The information shared by the children serves as a catalyst for establishing working relationships between parents from both settlements.

4.4. Mingling Space: A Dynamic Third Space

Planned settlements, despite careful allocation and design, sometimes experience deviations in the usage of their spaces and facilities. Figure 13 shows how boundary fences or steep slopes with safety fences have unexpectedly become spaces where children play. However, these areas can pose significant dangers to children, unbeknownst to them. This unintended transformation provides an entry point for children from unplanned settlements to access the planned environment.

Figure 13. "Dangerous" Access Spaces

Figure 14 shows how an empty land filled with construction materials becomes a favoured option for children to satisfy their urge to play. The space serves as a playground where ball games are commonly played. Interestingly, these games often extend beyond the boundaries of the empty land as the children continue playing while walking back home.

Figure 14. Empty Land as Mingling Space

Figure 15 shows a steep land area with nearby electrical cables that surprisingly serves as an appealing space for mingling among children. Despite the lack of supervision, this unsupervised space holds a certain allure for children, particularly boys, who are drawn to its adventurous nature.

Figure 15. Contour Land as Mingling Space

The similarities and differences of Mingling Space characteristics in the three locations are explained in Table 5.

Table 5. Similarities and Differences in the Characteristics of the Mingling Space of 3 Settlements

MINGLING SPACE CHARACTERISTICS		RESEARCH SITES		
		NASIONAL SADANG SERANG HOUSING	CIGADUNG HOUSING	KAMPUNG PADI
		(1)	(2)	(3)
position	setting	▪ not far from the position of the entrance route to the area ▪ very close to the boundary of the planned settlement environment.	▪ not far from the position of the entrance route to the area ▪ very close to the boundary of the planned settlement environment.	▪ not far from the position of the entrance route to the area ▪ very close to the boundary of the planned settlement environment.
	Mingling Space is not far from the position of the entrance area or near the periphery of the planned settlement			
	the furthest area	▪ limited by the existence of a fairly busy neighbourhood street ▪ mingling space area does not cross the border of a busy street.	▪ limited by the existence of a fairly busy neighbourhood, street ▪ mingling space area does not cross the border of a busy street.	▪ limited by the environmental street that is uphill sharply
	The street conditions will affect the coverage of the mingling space			
accessibility	Entrance area	▪ through an alley that is adjacent to the planned area.	▪ Entrance 1 through an alley that is adjacent to the planned area. ▪ Entrance 2 via undeveloped land that is not fenced with permanent boundaries	▪ via undeveloped land that is not fenced with permanent boundaries
	Unclear boundaries become the entrance to the occurrence of mingling space, and this makes it a non-permanent space, which will be lost when this entrance is closed with permanent boundaries or empty land is built by the land owner			
territorial boundaries	Have sloped land	▪ Not found in the area	▪ Differences in land contours, the presence of rivers, and the existence of trees lined up become the territorial boundaries.	▪ Differences in land contours, the presence of rivers, and the existence of trees lined up become the territorial boundaries.
	flat land	▪ Limited by various street classifications	▪ Not found in the area	▪ Not found in the area
	Non-permanent territorial boundaries become entry points for children and provide opportunities for them to play together. For contoured and flat land, the natural condition and street, respectively, act as territorial boundaries.			
the form of space	moving space	mingling space occurs on streets that are relatively rarely passed by high-speed vehicles	mingling space occurs on streets that are relatively rarely passed by high-speed vehicles	mingling space occurs on streets that are relatively rarely passed by high-speed vehicles
	static space	mingling space occurs in the community hall buildings, playgrounds, or structured play spaces	mingling space occurs on the undeveloped land, the remaining land of the division of land territories, which becomes a public property	mingling space occurs on the undeveloped land, the remaining land of the division of land territories, which becomes a public property
	Becomes a moving space when playing activities are carried out on the street so that the position of the space moves along with the movement of the child. It becomes a static space when playing activities are carried out on undeveloped land, remaining land, community hall and playground, or other structured space.			
settlement facilities	Natural Elements	▪ Trees	▪ Trees, different levels of land, small rivers, undeveloped land, remaining land, or dead ends are places that have opportunities as attractive facilities for children	▪ Trees, different levels of land, small rivers, undeveloped land, remaining land, or dead ends are places that have opportunities as attractive facilities for children
	Children like the natural aspect as a trigger to play with friends			
	Built Environment	▪ Security posts, alleys, sewers, playground, community hall	▪ Security posts, fences, mosques yard, alleys, and sewers	▪ Security posts, alleys, and sewers
	It turns out that children do not always need a structured play area. Therefore, adults must realize that certain unexpected spaces have great potential to attract children.			
time		▪ In the afternoon, every day	▪ Around the time of Friday prayer, Asr prayer, and during holidays	▪ After school time until the afternoon or the evening
	The time used by children to play is closely related to the regulations applied by the family, both in the form of permission to play and carry out their obligations related to formal education and worship.			

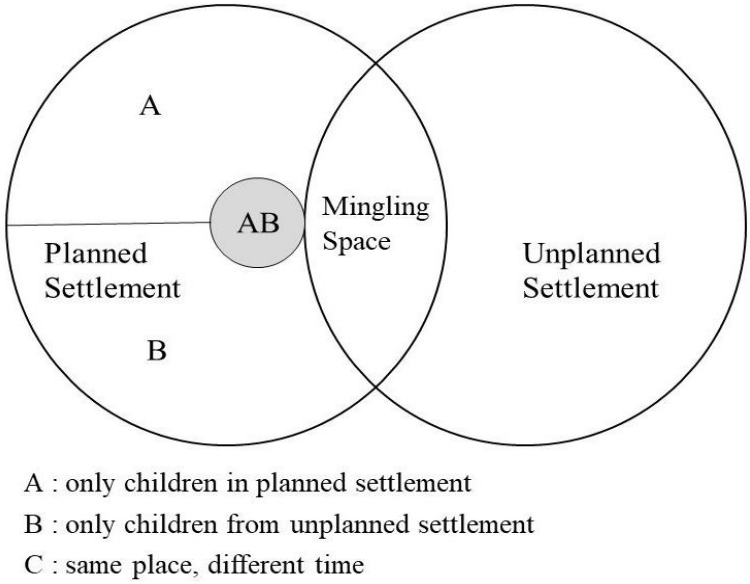

Figure 16. Mingling Space as "Dynamic Third Space"

For children, the mingling space represents a place where they can freely play with friends from different environments, unrestricted by rules. It serves as an extension of their home play area (first space) and the structured planned play area (second space). This concept is in accordance with the notion of the third space introduced by Soja, which refers to a realm of unrestricted freedom separate from the first and second spaces [49]. The third space is characterized as a space where individuals can authentically express themselves, interact with others, and establish meaningful relationships. Within the settlement environment, the mingling space represents the emergence of this third space through collective play activities. In this formed third space, social interactions unfold between two distinct communities, fostering connections and bridging the gap between them.

The mingling space, functioning as a "third space," immediately comes to life with the presence of children engaging in play together. It starts with the formation of various groups based on their individual play interests, which eventually merge into a collective experience. Within this space, a range of events unfold, including observation, greetings, and participation in shared play activities. Furthermore, spontaneous activities such as watching, conflicts, and peacemaking arise within the mingling space. This phenomenon is in line with the concept of Lefebvre on the third space as a representational space, carrying symbolic meaning and serving as a lived experience. The interactions that take place among children, involving individuals from different settlements, suggest the creation of a process of "being" within this mingling space. It becomes a space formed by individuals and community groups, as proposed by Soja, where social bonds are forged and collective experiences are shared.

The play activities conducted by children in the mingling space take place on streets or empty land. These spaces represent unregulated areas, free from strict rules, thereby making their place of preference. However, children are also aware that these spaces are transient because, sooner or later, empty lands will eventually be developed, and streets may be monitored by neighbourhood security officers, specifically when there are issues in the area. Children understand that their play space is temporary and subject to change. This depiction aligns with Michel Foucault's concept of the third space as a mirror, a fusion of the real and the unreal. Sudradjat, quoting Foucault, described this depiction as a Heterotopia, encapsulating both reality and aspiration [45].

The concept of the mingling space as a third space identified in this research aligns with the findings of Aji [57] and Fathoni [58]. However, it does not encompass the breadth of Sujatini's discovery of a fourth space [61]. Nevertheless, in addition to the mingling space, a unique phenomenon is observed in the planned settlements at the three observed locations, including the utilization of spaces within the settlements by the children themselves. The depiction of layered spaces within the settlements is shown in Figure 16. Spaces exclusively used by children within the environment are represented by notation A, which typically refers to structured play areas within the settlements. There are spaces used only by children from outside the settlements but not utilized by the environment, denoted as B. These spaces usually border their respective settlements. Some spaces liked by children from both within and outside the environment, where no mingling occurs due to the lack of simultaneous activities is denoted by AB. Essentially, the mingling space is also an AB space, but due to the shared time and purpose of play, the mingling space is formed.

The formation of the mingling space can be attributed to the absence of clear boundaries between planned and unplanned settlements, which allows for the creation of

spaces facilitating social interactions. The mingling space is characterized as temporary and subject to change because its dynamics are influenced by the movements of children in large and small groups. This phenomenon is in accordance with the perspective of Low on dynamic space [54], which is highly humanistic as it is created by children in their spontaneous play.

5. Conclusions

In conclusion, the identification of mingling space within planned settlements provided a positive environment for children to engage in social interactions through play. Children play a significant role as agents in creating and shaping this mingling space, which has the potential to bring together different communities but can also give rise to conflicts. Mingling space resulting from play patterns is referred to as "dynamic third space" that may eventually disappear.

Several conditions contribute to the formation of the mingling space. Firstly, the presence of a shared purpose or common interest between the participating communities. Secondly, the participants need to be present at the same time, in order to facilitate interaction and play. Thirdly, accessibility is crucial, particularly through informal means, to ensure the natural flow of activities. This is because the dynamic nature of the mingling space is rooted in its temporary existence and the awareness that it is subject to change or disappearance. The mingling space can manifest as both moving and stationary spaces, depending on the specific context and activities taking place.

While these phenomena have been observed in the three studied settlements, further research is needed to draw strong and valid conclusions regarding the theory of the dynamic mingling space. Additional research and valuable insights would greatly contribute to the ongoing discourse and discussions surrounding this topic.

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