Intensifying Gated Exclusiveness of Apartment Complex Boundary Design in Seoul, Korea

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The proliferation of private residential development is evident worldwide. In Seoul, these developments have distinctive spatial and morphological characteristics. Originally, government housing policies drove the construction of apartment complexes to ensure massive housing supply. Over time, development shifted, becoming more market-driven, aimed at the middle class, and built by the private sector. During the late 1990s, an increase in luxury high-rise apartment complexes increased, reflecting a tendency to live in a socioeconomically homogeneous community and propelling the proliferation of self-contained gated communities. To understand the continually increasing exclusive nature of apartment complexes in Seoul, we examine two areas with apartment complexes of different periods and development methods: Mok-dong, where the 1980s 'Housing Site Development' resulted in the simultaneous construction of multiple apartment complexes according to a single master-plan, and Geumho-dong, a neighbourhood transforming by apartment complexes under 'Housing Redevelopment' from the 1980s to the present. The research focused on 28 complexes, and measured the surrounding vertical borders, pedestrian paths, and roadways, and access control. Tracing these features over time, we investigated the increasingly exclusive nature and decreasing public nature of apartment complexes, consequences of development for physical and social space during different periods, and degree of public or private intervention.

Keywords: Apartment Complex Boundary, Urban Design, Increasing Exclusiveness, Comparison in Housing Development Methods

Introduction

Neighbourhood privatisations have increased globally over the past half-decade. Scholars recognize the universally increasing gated features of settlements as a reappearance of the fortified, enclaved ancient urban forms of the late 20th century (Judd, 1991; Blakely & Snyder, 1997; Morris, 2013). Modern privatised urban development can be attributed to the neo-liberalist and capitalist emphasis on privatisation, policies that benefit private capital interests, and global citizens' desire to live a privileged lifestyle. (Blakely & Snyder, 1997; Coy, 2006; Bekleyen and Yilmaz-ay, 2016). In particular, the modernization process of urban development led by public-private partnerships or primarily driven by private companies has resulted in gated and access-restricted residential communities targeting the upper and middle class (Roitman, 2005). In addition, Grant and Mittelsteadt (2004) cite growing concerns with property values, personal safety, and communal amenities that increase the number of gates and barriers to protect one's territory.

In Seoul, which has experienced rapid urbanisation and intense development, housing supply is a vital concern, and several government policies promote the construction of extensive apartment complexes. Today, many apartment complexes are developed with high-rise, high-density buildings with distinctive configurations and clearly demarcated private boundaries. As the private construction of apartment complexes has increased, this internalisation and exclusiveness has intensified, particularly in terms of the connectivity between complexes and their surrounding urban context.

Apartment complexes are characterized as a single large parcel of land under joint ownership or control. As a large urban cell, apartment complexes equate to what Colquhoun (1969) calls a superblock. According to him, the controlling agencies—corporations, speculators, or local authority—create large pieces of land, in other words, a superblock, within the city. These superblocks and related emerging issues represent the disconnection between the urban tissue composed of individual dwellings and the superblocks that partially take over. Furthermore, the incongruity between the existing urban context and representation of the superblock break the existing continuity. Gauthier (2006) argues that rapid transformation and disruptive development resulted in fragmentary patterns and a plurality of urban configurations. Large-scale housing complexes have been

developed as a self-contained entity that contributes towards fragmenting urban contextual continuity, thus intensifying incongruity (Colquhoun, 1969).

History of Apartment Complex Proliferation in Korea

In the 1960s, traditional, detached housing dominated the housing market in Seoul; however, at the time, the construction of exclusive collective apartment buildings began. According to C. S. Park (2016), the boundary of the first apartment complex in Seoul, Mapo Apartment Complex (1962-1964) was demarcated by installing walls, and it was only approachable through the single main entrance. These attributes formed a completely different complex territory compared to the surrounding residential fabric of traditional houses. In the 1970s, the city underwent rapid urbanisation and densification. The construction of apartments intensified during this era, and by the early 1990s, this housing form dominated the urban landscape. This was aided in the 1980s by a strong political agenda that led to the creation of a large quantity of similar or identical apartment complexes. As the family structure shifted and less people lived in traditional extended families, instead living only with their nuclear families, housing demand increased, as did people's preference for apartment housing. These buildings were considered more convenient, as they included hot water and heating systems and provided community facilities, which appealed to the growing middle class (S. H. Lim, 1995; C. D. Kang et al., 1997; H. S. Chun, 2003; S. I. Jun, 2009). As more people began to prefer living in apartment complexes, construction companies began targeting upper-class families, intensifying the exclusivity of these buildings. In the 1990s, major construction companies launched branded apartment complexes that provided distinctive, upgraded features and suggested a prestige lifestyle through their exclusive marketing techniques. A high demand developed for high-quality facilities and safety measures in apartment complexes.

Several scholars suggested that the concept of apartment 'complexes' has segregated and fragmented urban social and physical life (K. M. Lee, 2002; C. S. Park, 2013; I. S. Park, 2013). While the term *apartment* refers to an individual building, *apartment complex* denotes a range of private infrastructure included in the sales price. I. S. Park (2013) contends that the rationale for the development of apartment complexes is the government's intention to ensure private development of urban infrastructure, which minimises public investment. As only residents use the internal community infrastructure of a complex, the 'collective privatisation of urban space' is intensifying (Seoul Institute, 2009: 297). S. I. Jun (2009) suggests that apartment complexes have been built so quickly and marketed primarily to the upper class because of the policies of apartment construction agencies, social status and conspicuous consumption of apartment residents, and changing domestic norms and values.

Evolving Exclusive Design of Apartment Complexes

Apartment complexes constructed earlier were developed based on the Clarence A. Perry's 'Neighborhood Unit Plan' that reinforce self-contained nature, including a school, communal facilities, and commercial programs within a single complex (Lawhon, 2009; J. E. Kim and M. J. Choi, 2012). The entire property of apartment complex was privately owned and no through traffic was allowed. The property was privately owned and no through traffic was allowed. The few points of entry and exit were only for residents, and physical barriers such as gates, walls, and/or fences marked the boundaries.

Today, expectations are increasing regarding amenities and quality-of-life services when purchasing property in an apartment complex. These amenities include access to green space, a high level of security and privacy, quality communal space, and various programs. Many complexes offer underground parking; many outdoor spaces for resting, exercising, or walking; playgrounds; and communal facilities for residents like elder welfare centres and/or childcare centres (D. H. Kim, 2003). Residents demand that apartment complexes provide multiple quality-of-life features, rather than simply being functional living spaces (G. S. Sung, 2011; Y. S. Rim & J. P. Choi, 2011). Beginning in the 1990s, construction companies have met these demands and attracted upper-class residents through prestigious marketing strategies. However, this external differentiation, which focuses on environmentally friendly design, higher security, and premium infrastructure, increases internal discrimination, leading to limited access, environmental inequality, and increasing incompatibility. However, this external differentiation that focuses on environmental friendly design, higher security, and premium infrastructure increases incompatibility within a neighbourhood environmental inequality and leading to limited access.

Since the 1990s the barriers used to differentiate the boundaries of apartment complexes have increased, and now incorporate exclusive landscaping and environmental designs along with closed-circuit video surveillance and vehicle-based security systems. Many researchers including Gelézeau (2008), note the growing sociospatial segregation that has occurred since the 1990s with the increase of gated residential developments. These gated communities strengthen residents' internal sense of belonging while relieving them of the need or obligation to

consider and connect to the surrounding environment and urban dwellers. These exclusive complexes tend to maximise separation between the classes due to intensifying capitalism and individualism and symbolise private interests such as being unapproachable to non-residents (L. J. Choi, B. Y. Shin and G. S. Oh, 2010). Marks of exclusion in gating includes gates, wall, fences, 'buffer zone' of grass and derelict lands, cul-de-sacs and adopting monitoring systems with employing security guards or CCTVs (Atkinson and Blandy, 2005). Modern apartment design in Korea represents this exclusive differentiation between, within, and outside the complex through physical demarcated boundaries and symbolic structures or specific apartment brand signage.

In this study, we examine the changes in apartment complex boundary design and degree of gated exclusiveness by comparing two regions, each with a concentration of apartment complexes built in different periods using different development methods. By tracing changes in the boundaries of apartment complexes, we could interpret the physical and social aspects of each complex, including openness, segregation, accessibility, and incompatibility, as well as the influence of public or private intervention on urban design.

Methods

Over the past 50 years, multiple development methods have influenced the construction of apartment complexes in Seoul. Of these, two of the most prominent are the Housing Site Development Project, which resulted in the construction of 'planned' apartment complexes, and the Housing Redevelopment Project, which promoted a more spontaneous process (Figure 1). Mok-dong was developed 'en bloc' in the 1980s under a public master plan, which enabled us to examine the adaption of boundary design over time. On the other hand, apartment complexes in Geumho-dong were gradually redeveloped over time (1980s to the present), allowing us to document changing trends.

The spatial territory of boundary includes urban and private space, namely borderland, centring on the physical demarcation line of the apartment complex parcel. For the purposes of our study, 'boundary design' includes boundary types, the physical condition of boundaries, access control, and condition of the surrounding pedestrian walkway and road. We investigated total of 28 complexes (14 complexes each) in two neighbourhoods—Mok-dong and Geoumho-dong— focusing on boundary design, configuration, and spatial qualities. Several field surveys were conducted and street-view[1] via internet was utilized to examine the apartment complex boundary conditions of the study area. Visual representations were executed through GIS and CAD.

Study Areas

Mok-dong: Housing Site Development Project

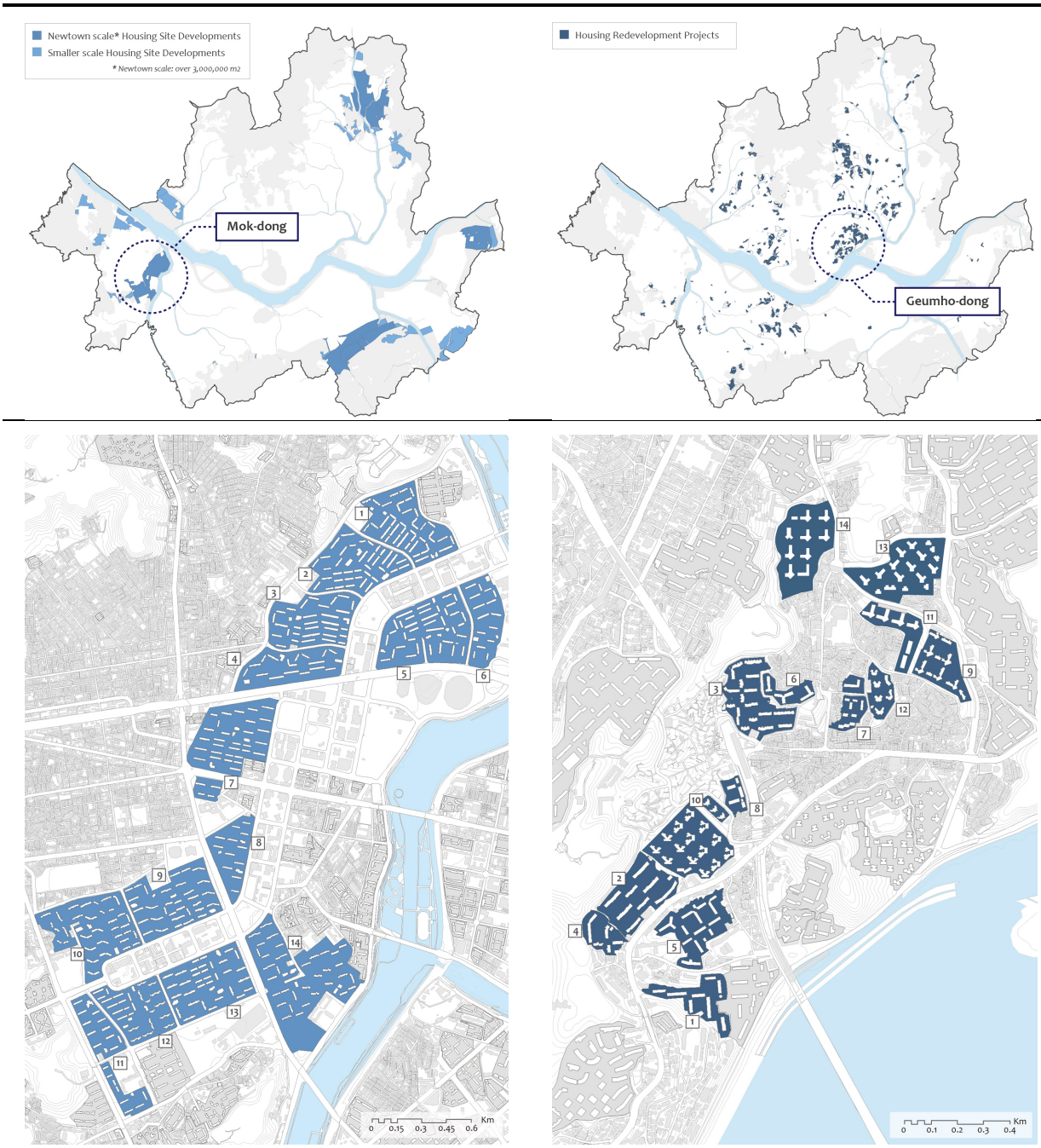
The Housing Site Development Promotion Act was passed in 1980 to resolve housing shortages in Seoul by aiming for constructing 5 million households (LH, 1988). The law allowed private companies to purchase vacant land at government rates (Sohn, 2003), enabling public development agencies to spearhead large-scale housing development projects in undeveloped greenfield land on the city outskirts. This eventually resulted in master-planned development with inner city 'Newtown-in-towns' and more central urban 'Newtowns'. The master plans provided a strategy for land use, road networks, common facilities, and infrastructure, and provided numerous sites on which to construct apartments (C. H. Kim, 1987). In most cases, these residential blocks were sold to the private companies that built the apartments (SMG, 1990). Mok-dong is one of these planned communities near Seoul's greenfield areas. It includes multiple apartment complexes constructed according to a single master plan. Mok-dong is a 'Newtown-in-town' community, and is a result of public sector development. The community consists of repetitive apartment complexes and is one of the city's largest homogenous morphological regions.

Geumho-dong: Housing Redevelopment Project

The Urban and Residential Renewal Act resulted in the formation of several Housing Redevelopment Projects to demolish squatter settlements (K. J. Kim et al., 2001). Over time, this project evolved into the overall renewal of substandard urban areas (K. J. Kim, 1998). In 1983, joint or partnership renewals began, making this method a privatised joint venture between landowner associations and private construction companies. Unplanned areas comprised of small houses and narrow alleys with few public amenities were cleared to build high-rise apartment complexes. Seoul's government devised a comprehensive citywide redevelopment plan to designate eligible renewal areas, enabling property owners to form associations providing collective land and hire a construction

company to lead redevelopment while ensuring a profit by exceeding the number of original units for sale (K. J. Kim, 1998).

As demand for housing increased and the amount of vacant land within city limits decreased in the 1990s and early 2000s, Housing Redevelopment Projects became the major supplier of housing. Unlike Housing Site Development Projects, which were built on the city outskirts and led to urban expansion, Housing Redevelopment Projects focused on transforming the inner city. Geumho-dong is one area that has been redeveloped. It is located close to the city centre on a hill adjacent to the Han River, and numerous apartment complexes have replaced the area's original spontaneously formed residences.



Housing Site Development Projects (above) and Mok-dong Area (below)

Housing Redevelopment Projects (above) and Geumho-dong Area (below)

Figure 1. Citywide Mapping of the Two Development Methods and the Two Study Areas

Analysing the Boundary Design of Apartment Complexes

Mokdong Apartment Complexes

Table 1. Boundary Design Condition of 14 Apartment Complexes in Mok-dong

14 Apartment Complexes in Mok-dong				M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	M13	M014
General	Built year			1985	1986	1986	1986	1986	1986	1986	1987	1987	1987	1988	1988	1987	1987
	Additions of boundary elements (barricade)			-	-	-	●	-	-	●	-	-	●	-	-	-	-
	Apartment brand (construction company)			(Seoul construction)	(Yuwon construction)	(Daewoo)	(Lotte)	(Samwhan)	(Hyundai)	(Sunjin engineering)	(Hong Architecture)	(Junglim Architecture)	(Space Architecture)	(Chunil Architecture)	(Southeast Asia Architecture)	(General Architecture)	(Seoul construction)
	Number of households			1882	1640	1588	1382	1848	1368	2550	1352	2030	2160	1595	1860	2280	3100
Boundary Type	T1	Wall		-	-	-	-	-	◐	-	-	-	-	-	-	-	-
	T2	Fence		◐	-	●	-	●	●	●	◐	●	●	●	●	●	●
	T3	Landscape		●	●	●	●	●	●	●	●	●	●	●	●	●	●
	T4	Topography		-	-	-	◐	◐	◐	◐	◐	◐	◐	◐	-	-	◐
	T5	Facility, amenity	public	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			private	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	T6	Symbolic structure		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Condition of Boundary	Height (m)			T2 1.5m T3 1.0m	T3 1.0m	T2 0.5m T3 1.0m	T3 1.0m	T3 0.5m	T1 3.5m T2 1.0m T3 1.0m	T2 1.0m T3 1.0m	T2 1.0m T3 1.0m	T2 1.0m T3 1.0m	T2 1.0m T3 1.0m	T3 1.0m	T2 1.0m T3 1.0m	T2 1.0m T3 1.0m	T2 1.5m T3 1.0m
	Length (m)			1900m	1800m	1600m	1600m	1800m	1500m	2100m	1300m	1800m	2100m	1200m	1600m	1700m	3200m
	Thickness (m) *average*			5.0m	5.0m	5.0m	5.0m	5.0m	5.0m	10.0m	10.0m	7.0m	7.0m	7.0m	5.0m	7.0m	7.0m
	Material			T2 metal T3 shrub	T3 shrub	T2 metal T3 shrub	T3 shrub	T3 shrub	T1 panel T2 metal T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub	T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub
	Layer (number of layers)			T2, T3 (2)	T3 (1)	T2, T3 (2)	T3 (1)	T3 (1)	T1,T2,T3 (3)	T2, T3 (2)	T2, T3 (2)	T2, T3 (2)	T2, T3 (2)	T3 (1)	T2, T3 (2)	T2, T3 (2)	T2, T3 (2)
Control of Access	Pedestrian		public	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			private	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Vehicle		public	●	●	●	◐	●	●	-	●	●	◐	●	●	●	●
			private	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Other surveillance		CCTV	43	312	22	7	12	7	13	28	85	96	10	94	6	25
			guards	84	66	74	56	80	60	100	50	102	68	37	64	103	128
			number of entrance	11	9	5	6	11	3	17	5	15	13	10	10	16	12
Surrounding Pedestrian and Road Condition	Pedestrian		sidewalk	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			landscape	◐	◐	◐	●	◐	◐	◐	●	●	●	◐	◐	●	●
	Vehicle		privatization	-	-	-	◐	-	-	●	-	-	◐	-	-	-	-

Despite that a different company constructed each apartment complex in Mok-dong, the comprehensive master plan overseeing the area's urban design has ensured continuity between the boundaries (Table 1). Except for Complex M06, which has a 3-m wall partially installed, the other 13 complexes we studied have no physical wall demarcating boundaries. Nine complexes intentionally installed elevated topography along a boundary to obstruct views into the apartments. Most of the complexes have a 1-m ironwork fence and shrubs 1 m high delineating the boundaries. These low boundaries are seamlessly connected with pedestrian sidewalks that are actively used by apartment residents and other pedestrians. In addition, numerous trees have been planted along the complex boundaries and adjacent sidewalks. As such, most pedestrians remain unaware of their purpose as a territorial demarcation, and they form a pleasant public greenway. Most of the complexes have an average of 10 entrance points, which are open to residents and the public. No gateways or branded structures mark these entrances and no operating systems obstruct outside vehicular traffic (Figure 3). However, as more households have come to possess multiple vehicles and public parking space has become limited, parking shortages have become an issue; consequently, complexes M04, M07, and M10 have installed barricades and placed placards forbidding the parking of outside vehicles (Figure 2).

Boundary condition maintain the original design

Additional boundary element (barricade) installed

Figure 2. Maintaining and changing boundary condition of Mok-dong complexes

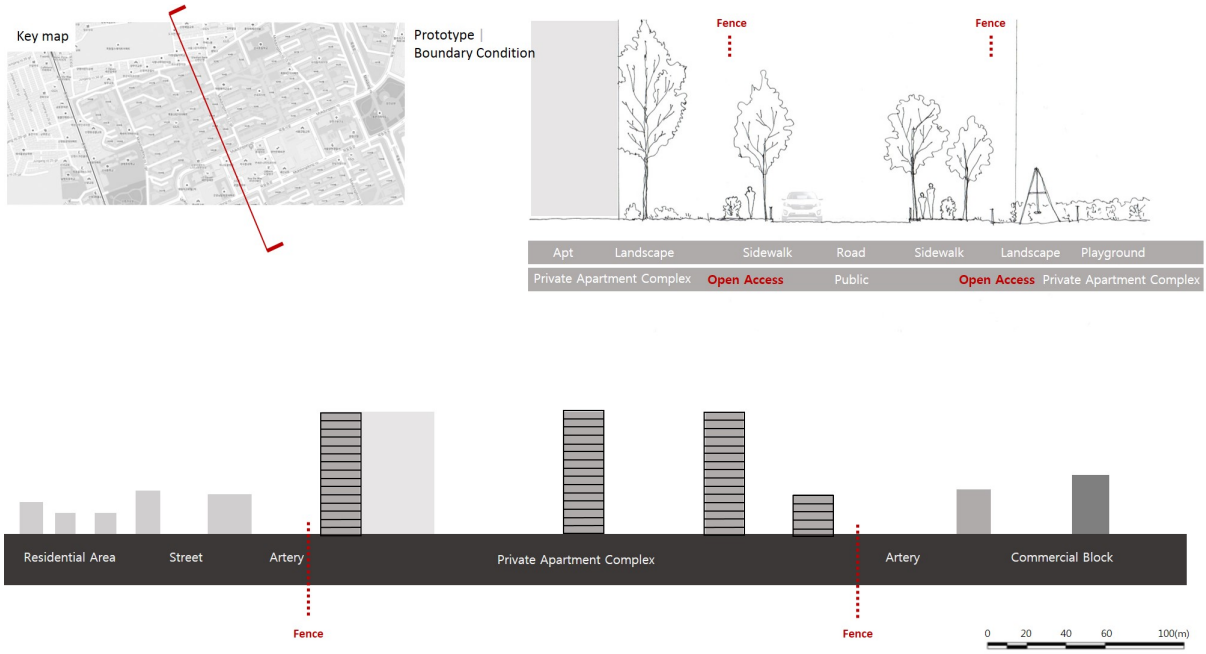


Figure 3. Diagrammatic section of apartment complex borderland and adjacent area in Mok-dong

Geumhodong Aparment Complexes

Table 2. Boundary Design Condition of 14 Apartment Complexes in Geumho-dong

14 Apartment Complexes in Geumho-dong			G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G014
General	Built year		1982	1986	1994	1997	1999	2005	2005	2007	2012	2012	2012	2012	2016	2018
	Additions of boundary elements (barricade)		-	●	●	●	●	-	●	●	●	●	●	●	●	●
	Apartment brand (construction company)		(Heights Construction)	Kukdong Construction)	We've (Doosan Enc.)	(Kukdong Construction)	Raemian (Samsung)	Hyu plus (Hanshin)	Prugio (DaewooE&C	Brownstone (Isu E&C)	Raemian (Samsung)	Raemian (Samsung)	XI (GS enc.)	XI (GS enc.)	Park hills (DaelimEnc.)	Park XI (GS enc.)
	Number of households		535	900	1267	583	1114	323	336	217	847	1511	461	403	1976	1137
Boundary Type	T1	Wall	●	●	●	●	-	-	●	●	-	●	-	●	-	●
	T2	Fence	●	●	●	●	●	●	●	-	●	●	●	●	●	●
	T3	Landscape	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	T4	Topography	●	●	●	-	●	●	●	●	●	●	●	●	●	◐
	T5	Facility, amenity – public	●	-	-	-	●	-	●	●	●	●	●	●	●	-
		Facility, amenity – private	●	●		●	●	●	●	●	●	●	●	●	●	-
	T6	Symbolic structure	-	-	-	-	-	-	●	●	●	●	●	●	●	●
Physical Condition of Boundary	Height (m)		T1 4.0m T2 1.0m T3 1.5m	T1 3.0m T2 1.0m T3 1.5m	T1 2.5m T2 2.0m T3 2.5m	T1 4.0m T2 1.0m T3 1.5m	T1 3.0m T2 2.0m T3 2.5m	T2 2.0m T3 2.5m	T2 1.0m T3 2.5m	T1 1.5m T3 1.5m	T1 5.0m T3 3.0m	T2 1.0m T3 0.5m	T2 3.0m T3 2.0m	T2 1.0m T3 2.0m	T1 3.0m T2 1.0m T3 1.5m	T1 3.5m T2 1.0m T3 2.0m
	Length (m)		1300m	918m	1200m	561m	1300m	708m	626m	455m	1200m	1100m	919m	622m	1500m	1000m
	Thickness (m) *average*		5.0m	2.0m	3.0m	2.0m	2.0m	5.0m	2.5m	5.0m	5m	1.0m	3.0m	5.0m	5.0m	3.0m
	Material		T1 concrete T2 metal T3 shrub	T1 concrete T2 metal T3 shrub	T1 brick T2 metal T3 shrub	T1 concrete T2 metal T3 shrub	T1 blocks T2 wood T3 shrub	T2 metal T3 shrub	T2 metal T3 shrub	T1 stone T3 shrub	T1 concrete T3 shrub	T2 metal T3 shrub	T2 wood T3 shrub	T2 metal T3 shrub	T1 concrete T2 metal T3 shrub	T1 panel T2 metal T3 shrub
	Layer (number of layers)		T1,T2,T3 (3)	T1,T2,T3 (3)	T1,T2,T3 (3)	T1,T2,T3 (3)	T1,T2,T3 (3)	T2,T3 (2)	T2,T3 (2)	T1,T3 (2)	T1,T3 (2)	T2,T3 (2)	T2, T3 (2)	T2, T3 (2)	T1,T2,T3 (3)	T1,T2, T3 (3)
Control of Access	Pedestrian	public	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
		private	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Vehicle	public	-	-	-	-	●	-	-	-	-	-	-	-	-	-
		private	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Other surveillance	CCTV	n/a	22	7	15	6	45	n/a	21	29	n/a	13	n/a	13	n/a
		guards	23	34	10	13	6	7	-	11	17	6	6	-	6	-
		number of entrance	1	1	2	2	2	4	4	2	2	1	2	4	2	2
Surrounding Pedestrian and Road Condition	Pedestrian	sidewalk	-	-	-	◐	-	◐	●	●	●	●	◐	●	◐	●
		landscape	-	-	-	-	-	-	-	●	-	◐	●	-	●	●
	Vehicle	privatization	●	●	●	●	-	●	●	●	●	●	●	●	●	●

In Geumho-dong, boundaries are delineated through combinations of materials including fencing, concrete retaining walls, soundproof walls, and brick walls (Table2). These boundaries surround each complex, preventing through traffic and forcing people to detour around the properties. Only residents of each apartment complex are allowed to access the entrances, and there is an average of two entrances for each of the 14 complexes we studied. There is a noticeable difference between the area's earlier apartment complexes, built in the 1990s and early 2000s, and buildings constructed later in the 2010s. The earlier complexes tend to be surrounded by high walls and intentionally high landscaping, while newer buildings mark boundaries with low fences or walls and tend to avoid tall vertical elements. These buildings deliberately place other functional

buffering elements along the peripheral boundaries. Public parks or commercial businesses can be public or semi-public, while other complexes deny entry through private communal buildings or parking towers (Figure 5).

Unlike the Mok-dong complexes, which are mostly open to public pedestrians and vehicles, 12 of the complexes in Geumho-dong prohibit public access. The privacy of these complexes is ensured by intentionally placing the entrance gates on a secondary road, requiring that residents detour from the main road. This creates an explicit privatisation of public roads, which are only used by residents from the apartment complexes they lead to. In order to further control access, recent complexes have installed vehicle control systems and erected aggrandized entrance gates, prominently displaying signs of luxury living, privacy, and exclusivity.

Private and public amenity along the boundary

Gateway of specific apartment brand

Figure 4. Different boundary conditions of Geumho-dong complexes

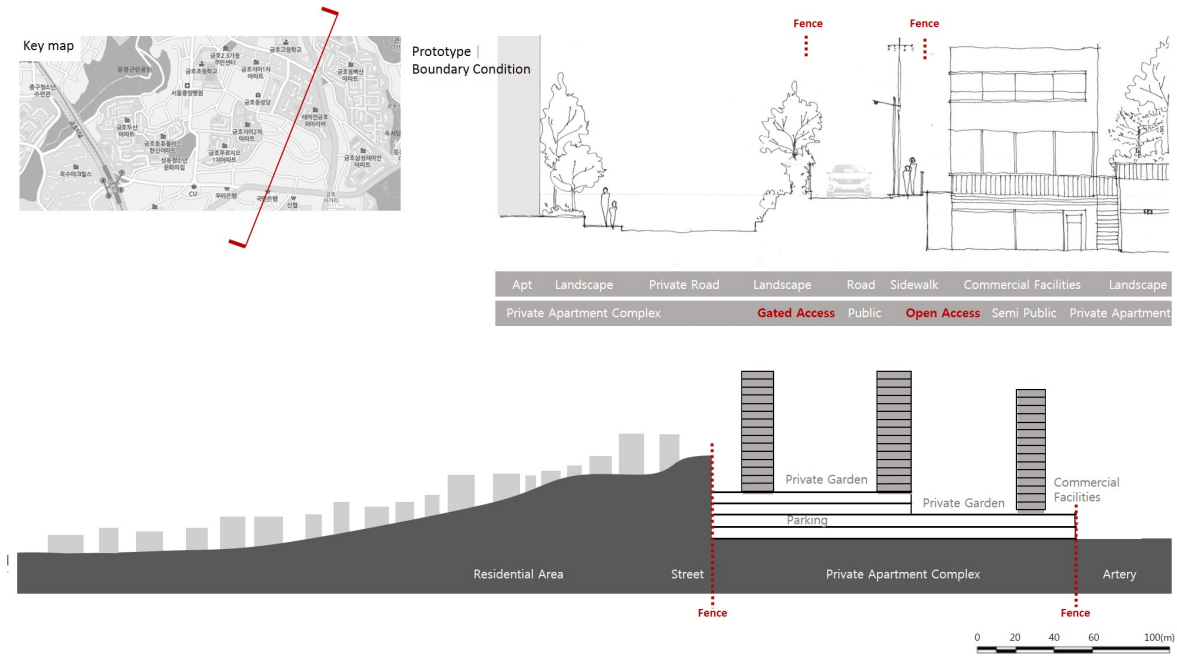


Figure 5. Diagrammatic section of apartment complex borderland and adjacent area in Geumho-dong

A comparison of the two neighbourhoods reveals that Mok-dong's master plan and unified urban design have allowed for open and connected boundaries. Low and minimum boundary elements and urban green space provide a sense of openness, consistency, and overall integrity between adjacent apartment complexes, public sidewalks, and roads. However, new elements to control pedestrian or vehicular passage are noticeable in some complexes, indicating a slow movement towards gating. On the other hand, the redevelopment plan and individual construction companies responsible for the apartment complexes in Geumho-dong reflect a more introverted configuration and self-containment. Over time, the 'apartment brand' has become more significant than the construction company, and specific brands are used as a marketing strategy to attract residents to a distinctive residential environment and luxurious lifestyle. As a result, branded apartments have dominated Geumho-dong's real estate since the 1990s. Each branded complex focuses more on enhancing its own internal infrastructure rather than considering its relation to the surrounding area. Boundaries are used to suggest exclusivity in a way that is not present in Mok-dong, through the layering of diverse boundary types, heights, and materials compressed in a relatively narrow width of borderland that generates a sense of fortification rather than blurring the division between private and public.

Discussion

Apartment complex have become a common residential type more or less transformed into enclosed, self-contained communities that include housing, an internal road network, open spaces, and communal facilities. As privately owned land, access to internal amenities is allowed only to residents, and signs of exclusion proliferate. Segregating the area is accomplished through security gates, building boundary fences that resemble ramparts, installing closed-circuit television for video surveillance, and implementing exclusive landscapes and environmental designs. Recent research shows that the many recently built apartment complexes have been part of a public agenda to provide an enhanced infrastructure and preferred public space through private developers. However, the design of these complexes lacks careful consideration of space in terms of harmony with the existing community and urban fabric (Park, 2013b; Gelézeau, 2007). At the same time, attention has grown on the increasingly exclusive and isolated features of gated housing in terms of physical and socioeconomic aspects (Park, 2013a). This has resulted in a strong distinction between the privacy of internal dwellings and outer public territory (Rowe, 2005).

Low (1 m) fences and shrubs and abundant trees are the primary boundary elements in Mok-dong, whereas in Geumho-dong, the borders are marked by high boundaries constructed with multiple materials. This reflects the development of Mok-dong complexes en bloc in the 1980s and slow movement of the complexes towards supplementing their boundaries with gating elements like barricades to block outside vehicles. On the other hand, the complexes in Geumho-dong, which were spontaneously built by different companies, highlight their gated nature through the layering of boundary elements, limiting entry points to one or two and to residents, using symbolic structures or gateways to signify the apartment 'brand', and controlling pedestrian and vehicle access.

The housing development methods applied differ between the two areas. Mok-dong adopted a Housing Site Project with a master plan that ensured consistency in terms of the boundaries, which were conceived as a public section. In contrast, Geumho-dong lacks an overall vision of the area, where Housing Redevelopment Projects incrementally converted spontaneous squatter settlements into apartment complexes as individual entities.

The use of boundaries in Mok-dong and Geumho-dong suggests that total physical barriers have increased over time. Our results also suggest that there is a growing differentiation and discrepancy in infrastructural resources between apartment complexes and the surrounding area, which promotes a sense of incompatibility and disconnects the two neighbouring spatial systems .

Moreover, gating and access restrictions have changed over the past decade, becoming progressively more intense. In the 1970s, boundaries were usually simply marked by a low wall or fence and by placing a safety guard. However, our findings in Geumho-dong reflect the work of Gelézeau (2008), who argues that the neo-liberal transformation of Korean housing construction since the mid-1990s has led to the emergence of 'gated community-style residential environments'. Borders have evolved from a simple fence to a complicated layering of various barriers, and access control has become excessively fortified. This has ushered in a steady decline in overall public spaces and increased the number of privatised, high-quality spaces for private complex residents. Because these communities are comprised of families with similar social statuses, the private enclaves become more homogeneous and sociospatial segregation intensifies, resulting in 'spatial stratification' and urban fragmentation.

Our findings show that Mok-dong is currently wrestling with the need to pay more attention to public infrastructure. For example, the lack of public parking among the surrounding neighbourhoods means that several complexes are adding gates to prohibit outside parking that causes internal parking shortage within the apartment complex. In Geumho-dong, there is a need for an overall strategy to harmoniously situate new apartment complexes within their surroundings and provide more connection, interaction, and community with the surrounding urban context.

Conclusion

Increasing privatisation of land and housing raises complicated spatial, physical, and social issues. According to Atkinson and Blandy (2005) attempts in expressing a mark of exclusion resulted in lack of permeability with in the surrounding context, however, the broader debate involves "freedom of access to the wider city, social inclusion and territorial justice." Banjeree (2001: 12) points out that the substitution of private for government participation has resulted in the 'commodification of urban space and public good' and a decline in the quality and supply of public spaces. This results in the extensive privatisation of public spaces and expansion of privately controlled spaces. This is generating socio-spatial differentiation, leading to discontinuity and fragmentation of urban spaces. Aggravating social polarisation further instigates a desire for a more homogeneous lifestyle and surrounding environment, which alleviates communal solidarity between different

social groups (Janoschka & Borsdorf, 2004). In this study, boundary design as one type of expression for demarcating gated exclusiveness has been explicitly taken to be investigated.

Since the 1990s, luxury high-rise apartment buildings and branded apartments have reflected the 'deregulation and neo-liberal logic structuring the Korean housing production system' (Gelézeau, 2008: 317). According to S. I. Jun (2009), branded apartments developed in the 2000s because of the increasing tendency to live in socioeconomically homogeneous communities. Many believe that the proliferation of apartment complexes is led by government housing policies aimed at supplying mass housing through private sector initiatives centred on the middle class and driven by market forces initiatives (S. H. Lim, 2005; Gelézeau, 2007; S. I. Jun, 2009; I. S. Park, 2013).

This type of living situation continues to proliferate, and the yearning to live in private, enclosed complexes does not seem likely to disappear. Land is limited, public infrastructure is insufficient, and the private sector dominates housing construction, meaning that private complexes will continue to be built. Urban issues surrounding such private enclaves are not only spatial and physical, but also most importantly social. As spatial and social polarisation intensifies along with the continual agglomeration of private enclaves, it is imperative to determine how to reconsider the isolating gated exclusiveness of apartment complexes in alternative ways to allow residents to connect while maintaining a certain degree of privacy. Since respecting the need of gated boundary for internal security and maintenance in response to rising urban crime issue cannot be equivalently overlooked (Breetzke, Landman and Cohn, 2014). To preserve the existing urban fabric, the public sector must propose a master development plan for residential areas that is not deconstructive or fragmentary, but integrated. For instance, complexes should provide well-connected passageways and various public or buffering spaces . A thicker borderline that is composed with various communal program, such as public bench, small open library or reading area, green wall and so on would be a positive proposition that not only faces but invites access along the complex boundary. Understanding the increasing exclusivity of gated communities and finding regional-based solutions for spatial and social disconnection is vital to recovering the fragmenting residential community in Seoul. In addition, efforts to understand the resident's preference, satisfaction, and mutual perception between the internal and external community of apartment complexes should be made for further residential regeneration and preserving the sense of neighbourhood community (Bekleyen and Yilmaz-ay, 2016).

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Endnotes

[1] "Naver Street View," Naver Map, accessed 10, April, 2018, https://map.naver.com

Image sources

Figure 1: Author generated image utilizing GIS
Figure 2: Naver Street View image modified by authors, https://map.naver.com (Accessed 10, April, 2018)
Figure 3: Author generated image and Naver Street View image modified by authors, https://map.naver.com (Accessed 10, April, 2018)
Figure 4: Naver Street View image modified by authors, https://map.naver.com (Accessed 10, April, 2018)
Figure 5: Author generated image and Naver Street View image modified by authors, https://map.naver.com (Accessed 10, April, 2018)