URBAN HOUSING REDEVELOPMENT:
AN ANALYSIS OF THE PERCEPTION OF VITALITY
IN APARTMENT NEIGHBORHOOD REDEVELOPMENT IN KOREA

by

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ABSTRACT

URBAN HOUSING REDEVELOPMENT:
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This study aims to explore residential preferences, satisfaction, and use patterns in

a set of case-studies of apartment neighborhoods in Korea. For this, the case-study

method is applied with combined research strategies to examine four cases of apartment

neighborhood redevelopment in Korea, namely Weolgok R, Gongdeok R, Jangan H, and

Yeoksam E apartment estates. This research employs Canter's place model for

organizing a data collection framework to understand the perception of vitality in Korean

apartment neighborhoods. The research approach focuses on three elements of Canter's

place model: physical attributes, activities, and meanings.

Exploring residents' perceptions of place vitality, this study reveals that the four

examples of Korean apartment redevelopment projects demonstrate an increase of

physical accessibility and exposure. However, although those four have the possibility to

be spatially integrated within their neighborhoods, the redevelopment results demonstrate enhancement of segregation from other neighborhoods nearby. In addition, places with vitality are perceived when places inside and outside the redeveloped estates are integrated and exposed, and when people frequent places. However, these perceptions show conflicts of enclosure and exposure and hierarchy of places inside and outside the estates.

Accordingly, creating places with vitality is associated with (a) considering integration and exposure of physical place conditions, (b) considering the link between people's daily experiences and these physical places, (c) balancing boundary conditions around redeveloped neighborhoods.

Differentiated, privatized, and semi-gated apartment-dominant context is the model of Korean apartment redevelopment. Findings in the four examples of Korean apartment redevelopment projects indicate that they have an integrated spatial configuration inside, yet generate segregation of these apartment neighborhoods from other neighborhoods. Since everyday life is important in and to place vitality, the current method of apartment-dominant neighborhoods needs reconsideration of, indeed promotion of, daily experiences and balance of boundary conflicts in urban housing redevelopment.

CHAPTER I

Introduction

Continuous Housing Redevelopment: Solution or Problem?

Urban redevelopment has become a worldwide phenomenon. In many countries, cities confront urban problems, and governments have begun restructuring projects to resolve these. While the beginning of urban restructuring focused on improving urban life quality in industrialized but lesser-planned areas, current urban redevelopments usually focus on developed areas of the post-war periods. In Europe, modern-based developed areas need to be maintained, restructured, and sometimes revitalized, more than thirty years after World War II (van Kempen, Dekker, Hall, & Tosic, 2005). In addition, these changes not only encompass local characteristics, but also follow global trends in technology, economics, politics, demography, socio-culture, and sustainability in the built environment (Turkington, van Kempen, & Wassenberg, 2004). However, the majority of urban redevelopment studies deal with the Western situation. Other areas in developing countries where redevelopment projects have been constructed in urban environments are recently receiving attention in urban and architectural studies.

Korea also has experienced large urban redevelopment, especially in apartment housing estates. Currently, apartment housing is the most popular residential type in

Korea. Fifty percent of housing stock in Korea comprises apartments. Furthermore, about 400,000 new apartment units are being built annually; this is 3.5% of existing housing stock. In 2005, the total number of apartment units was 6,962,689 and 415,511 new apartment units were constructed (6% of existing apartment units) ("국가통계포털 Korean Statistical Information Service," 2007). Moreover, existing apartment estates have been converted to new, denser, higher apartment buildings through redevelopment. Such redevelopment usually is considered an improvement in living conditions of residents in Korea. As an asset, increasing the property value of apartments might be the real purpose of redevelopment. Unlike much modern public apartment housing, apartments in Korea are not slums and are not a problem in the same way that public housing is viewed in a failure of modernism in housing in, for example, St. Louis, Chicago, and Paris, and elsewhere in the United States, France, and other countries. Apartments in Korea are owner-occupied units in multi-family and multi-story buildings while, in the US, apartments are often rental units. Multi-story condominiums in large cities in the US are similar to Korean apartments. Thus, continuous redevelopments to increase property value rather than improve housing quality cost much social and economic capital and induce a gentrification of residential areas, so that existing residents are sometimes forced to leave their homes and neighborhoods.

For example, the Jamsil apartment estates, first built in the 1970s in southern Seoul, have been redeveloped substantially from the mid- and late-1990s (when they already were some 30 years old). As these apartments aged and the land value increased, redevelopment sought to make these large apartment estates higher and denser. Apartment unit size has doubled, and apartment building height has increased fourfold.

Because the new Jamsil apartment estates are a development project for economic profit, there are more new units than there were old. This surplus is sold to buyers other than original residents and resulting profits are distributed to those original residents, thus offsetting the costs of improving their housing quality. However, the profit is lower than the cost of improving units. Residents wanting larger units, with better quality, should pay for the cost thereof. Some who cannot afford that cost are obliged to sell their units, because re-development permission does not need agreement by the full 100% of current residents. However, because unit prices increase substantially after securing permission for re-development, those who have to leave will have higher profits if they sell their units. Thus, owners of these apartment units could consider apartment redevelopment as one method to achieve economic profit from their housing assets.

Figure 1.1 represents phases of apartment estate development in Korea. Figure 1.1 comprises four phases from left to fight. The first left figure explains that a single-family (or semi-detached) housing neighborhood and an empty lot existed. The second left figure describes that those residential areas were developed and mid-rise and mid-dense apartment housing neighborhoods were constructed in the 1970s. The third left figure represents apartment redevelopment in the 1990s that the mid-rise and mid-dense apartment estates were demolished and higher and denser apartment estates were developed.

The question then arises as the fourth figure in Figure 1.1: What will happen after another 30 or 40 years? Will another higher and denser apartment structure be built? Or will there be an exodus from apartments to suburban, single, detached houses?

Is an apartment not a good housing type for sustainability? Or is the current arrangement of apartments not appropriate, so that owners continuously want to re-construct their apartments to achieve a better living environment by different arrangement of those structures?
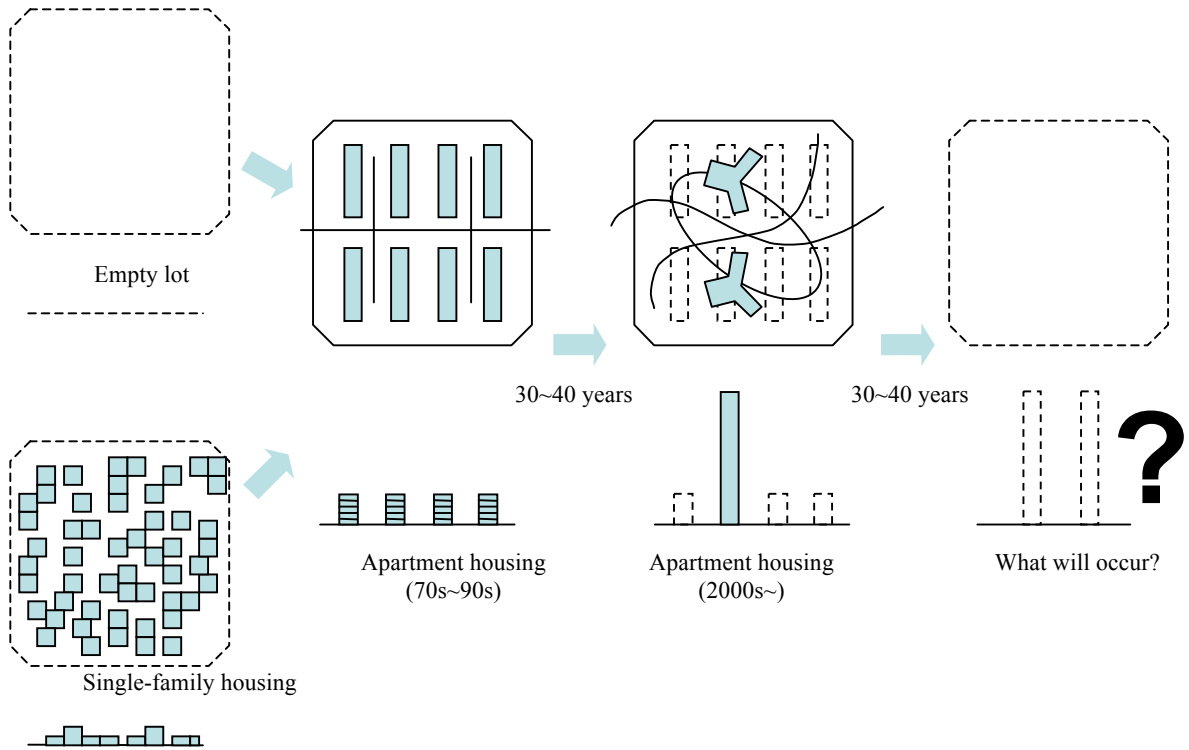
Figure 1.1. Development process of apartment neighborhood in Korea

In Korea, apartment estates have limitations of monotonous environments and continuous re-development with ever-increasing density. An apartment is typically chosen as the main housing type in the regulation of redevelopment, whether or not redevelopment can be planned in an area of single detached houses. Policy makers might think that residential development using single detached housing will not solve Korea's housing shortage. It is intuitively considered difficult to resolve housing shortages in an

area by building single detached housing rather than multi-family housing. In addition, apartment estates are being redeveloped in a relatively short time. The government of Seoul has lengthened, from 20 to 40 years, the period after which apartment estates will be eligible for redevelopment. This means that another redevelopment will eventually happen, and another apartment redevelopment will continue. Thus, researchers are investigating alternative approaches to neighborhood design. These alternative approaches include different design processes and alternative types of apartments with lower density.

Yet, single family housing induces urban sprawl, which then engenders other problems. This single detached (or attached) housing needs more land, and increases commuting distance. In the US, single family housing is the major housing type. According to the U.S. Census Bureau (2005), the percentage of single family housing (detached and attached) was 66% while multi-family housing (2 or more units) was 26% in 2005. These single family houses cover large areas, increase driving distances, and consume a large amount of natural resources, all a consequence of urban sprawl. In the urban sprawl of the United States, communities with higher density have been selected to apply a new development method, such as New Urbanism and Smart Growth.

People in different places seek balanced development with appropriate density to sustain neighborhood quality. Seeking alternative apartment neighborhoods and sustaining neighborhood quality should be important issues in Korea as well as in other countries.

Global Apartments

Apartments are one of the most common housing types, globally. According to Angel's analysis, there are four major types of residential buildings, although sizes of these buildings vary: a single detached house, a row house, a walk-up apartment and a high-rise apartment (Angel, 2000). Among these types of housing, the apartment is newer than other types of residential buildings, and apartments with similar modern shapes have been built in different cities of the world: Seoul, São Paulo, Moscow, Mumbai, etc.

Apartments are a global phenomenon. An apartment is a new type, compared to other housing types, but has shown cultural adaptation in the design of apartment units. In terms of dwelling, these units incorporate their cultural characteristics from residents' traditional living behaviors. As a housing type, apartments have supplied an appropriate number of units, and still play an important role in supply in housing markets. Thus, many countries have promoted construction of apartments to solve housing shortages, and, to increase profits, many developers choose to develop apartments on expensive land. Based on this world-wide phenomenon of apartment construction, studies have been made of whether people who live in similar, modern-looking apartments live the same way in different cities and different countries. In one study, apartment plans in Korea and Brazil are compared (Lara an Kim, 2010). According to this study, different living habits affect prioritization, organization and use of space in their plans within apartments that look similar from the outside. Thus, although apartments started locally in large

cities in Europe and the US, apartments have since become popular housing types globally from the modern movement to an important way of housing supply in the present.

Apartments are also being built as housing estates, creating neighborhoods. This aggregation of apartment buildings creates a community and neighborhood around these apartment housing estates in which people live together, sharing outside places. Thus, apartment housing estates can also have elements similar to a place where people live together and, additionally, can create their own characteristics of the sense of place. Although some projects for public apartment housing estates have resulted in failed developments, many developments for residential buildings still comprise multi-family apartment housing: New Town Development in Seoul, Korea; Hammerby-Sjostad in Stockholm, Sweden; Makuhari New City in Makuhari, Japan, etc.

Making an apartment housing estate seems to follow the approach of creating a neighborhood with these contemporary-looking buildings. The rules for making an apartment neighborhood once followed modernists' ideas, but then moved toward creating a sustainable place despite different cities and countries having different situations. Currently, environmental importance in the built environment might strengthen the common tendency of adaptation of sustainability for their cultures as their apartment units have done.

Redevelopment of Existing Places: Mimic or Re-Create a Place?

In Korea, current apartment developments have characteristics different from old apartment developments. Old developments were usually built in new areas, such as in southern Seoul, on the fringe of the city, and on the outskirts of other cities, but new apartment developments in Seoul are being planned on existing apartment estates as well as in existing residential areas within the city. Seoul's new apartment developments seek to improve the existing quality of urban life by sustaining the existing urban context. Existing apartment developments sometimes created urban residential problems, such as segregation between nearby neighborhoods and a lack of sustainability to maintain apartment estates. To solve such problems, government seeks to develop an approach to apartment housing development different from the former method. Currently, with the concept of Balanced Development in Seoul, the Seoul New Town Development has exchanged single detached housing and small blocks for newer and denser high-rise and super-block apartment estates. Because usually these apartment housing estates have been built in a large integrated block, existing urban contexts of small blocks are demolished, then re-developed on a new and/or large block. Although the idea of the Seoul New Town Development includes the connectivity of the existing urban context, apartment housing estates in the Seoul New Town Development still induce a disconnect between apartment estates and existing contexts, namely single housing and small blocks.

Issues of residential development have moved from social renewal to sustenance of everyday life. According to the study by Kallus and Law-Yone about the theories of neighborhood design, concepts of the neighborhood design (or planning) have moved from a "humanistic approach" to an "instrumental" and then to a "phenomenological approach" (Kallus & Law-Yone, 2000). The first and second approaches followed the

idea that neighborhood design could improve and/or renovate a place for human living, by using physical configurations. However, these approaches are based on physical determinants. Thus, since physical determinants have been refuted and denied, the third approach seeks to keep and continue everyday life in everyday places. This sustainability of everyday life becomes a main concern of the third phase of neighborhood design.

Currently, there are many redevelopment projects in existing residential areas in Seoul, e.g., the Seoul New Town Development. These redevelopment projects seek to sustain existing characteristics and everyday life in those places. Many cities in other countries also have planned (re)development of residential areas and have sought to find appropriate ways to (re)develop residential areas, such as the Urban Village movement in the United Kingdom, the Smart Growth movement in the USA, and the Hammerby-Sjostad project in Sweden.

Since Kallus and Law-Yone state that the current concept of neighborhood design is a "phenomenological approach", redevelopment of existing places needs to include sustaining what exists in those places. Following this concept of a "phenomenological approach", redevelopment of residential areas can include sustaining the urban context and adaptation of urban environmental change. To redevelop residential areas while considering everyday life, facets of a place might need to maintain continuity over time. Redevelopment does not necessarily mean recreating a place as a new, nice, but different place, nor does it mean mimicking a place to maintain what had been there. However, both these situations have occurred in Korea.

Accordingly, this study investigates redevelopment projects in Korea to determine whether current approaches are appropriate for redeveloping existing contexts and

containing everyday life, and to seek to find design implications for developing residential places eventually. This study focuses on what exists in typical urban housing redevelopment at a time when the first urban housing neighborhoods have been redeveloped in Seoul. Understanding what changes exists there, how residents perceive their newly redeveloped neighborhood and why this perception occurs in the Korean apartment neighborhood, is appropriate to determining a method appropriate for a future redevelopment. Since housing redevelopment continues through generations, it is a good time to evaluate current redevelopment results. Thus, this study explores how theories of neighborhood design have been developed, what urban housing is in Korea, how residents perceive urban housing redevelopment, and why this perception occurs in the Korean apartment neighborhood redevelopment.

Accordingly, Chapter 2 discusses that although theories of neighborhood design have experienced ebb and flow, neighborhood design comprises sharing and fundamental elements to make a place. From the garden city movement to the new urbanism, concepts of neighborhood designs are discussed. With those previous studies focusing on making approaches for making a place livable, it is discussed why vitality is important to revitalization there. In addition, literature review of theories of space and place provides understanding various approaches to define and analyze a place. Also, among those theories, Canter's place theory is adapted for a theoretical and methodological framework for this study.

Chapter 3 discusses how apartment neighborhoods have been constructed and developed in Korea. Comparing housing characteristics between general concepts and Korean contexts, I find that the apartments in Korea are the dominant housing type, and a

study of apartment estate redevelopment is currently important in Korea. Also, housing supply and demand in the Korean housing market is analyzed. According to the findings, housing markets in Korea have moved from the central-planned to the market-determined market.

Chapter 4 presents methodological strategies and tactics used to collect and analyze data in this study. This study follows a case study approach and use Canter's place theory for organizing a data collection framework to interpret urban characteristics, and to find empirical understanding of residential perception of Korean apartment neighborhood vitality. Regional maps, site plans, and surveys of cognitive maps are collected. In-depth interviews of residents are conducted with picture-sorting tasks and open-ended questions. These data collection approaches converge to analyze different characteristics of physical attributes, activity, and meaning in the built environment. Chapter 4 ends with the selection criteria of the four cases: Weolgok R, Gongdeok R, Jangan H, and Yeoksam E apartment estates.

Chapter 5 presents physical analyses of the four cases in this study. These analyses are not limited to only the cases, but include also their neighborhoods in the whole-neighborhood scale. Welgok R, Gongdeok R, Jangan H and Yeoksam E apartment blocks become more integrated after redevelopment. However, in Jangan and Yeoksam neighborhoods, spatial configuration changed significantly 1976-1987 then was maintained 1987-2007. Differently, Weolgok R and Gongdeok R neighborhood have maintained their spatial configuration 1976-2007. In addition, morphological changes in the four cases represents that the urban contexts after redevelopment become segregated

from neighboring contexts. Thus, residential blocks in the four cases are integrated inside and segregated from outside apartment estates.

Chapter 6 analyzes residents' perception in their apartment estates and neighborhoods. Analyzing spatial cognition and daily routes in collected surveys, that chapter investigates how residents perceive their neighborhoods, how residents explore their neighborhoods within their cognition of neighborhood and whether and how changes by redevelopment relate to residents' movements in their neighborhoods. Residents indicate that they perceive place vitality when they observe and encouter activities in streets, and that they experience ordinary daily events in daily destinations in their neighborhoods. In addition, residents' perception of spatial elements and their movements demonstrate two characteristics of place vitality: spatiality and frequent visiting.

Chapter 7 analyzes residents' responses in in-depth interviews and sorting tasks of places in apartment neighborhoods. That chapter investigates how residents perceive place vitality and why this perception occurs in the four apartment neighborhoods in residential narratives of apartment neighborhoods and redevelopments. Analyses of residents' interviews reveal that places with vitality have common elements among interviewees, namely characteristics of integrated and exposed places. Residents' experiences and observations relate to perception of place vitality in their apartment neighborhoods. However, residents demonstrate mutually-exclusive preferences that conflicts in making a place with vitality in an apartment estate, i.e., places exposed and enclosed simultaneously.

Chapter 8 summarizes and compares findings in the previous chapters. Logical comparison of findings addresses that place vitality is an accumulation of everyday life. That chapter argues that making places with strong vitality need to consider physical qualities of access and exposure, as well as the way in which these places with vitality have roles in people's daily lives.

Chapter 9 conclude that place vitality is a spatial reference to determine whether urban housing redevelopments include residents' daily lives and effective arrangements of spatial elements in those daily lives. In summation, this chapter proceeds to discussing reflection on current apartment estate redevelopment in Korea.

Accordingly, the main goal of this dissertation is to analyze perception of place vitality in apartment neighborhood redevelopments, in order to discuss what urban housing redevelopment should consider making a place with strong vitality. This dissertation's importance is to analyze current redeveloped neighborhoods and to find what revitalizes these neighborhoods, and to investigate current issues in urban housing redevelopment.

CHAPTER II

Rethinking Neighborhood Design

The concept of neighborhood is a constant concern in architectural and planning research as well as in practice. This concept has changed over time and sometimes has different meanings. On occasion, neighborhood means a social tie like the sense of community, and, on other occasions, it means arrangement of the physical environment in which people live. Although various and different meanings of the word exist, a neighborhood is basically made up of an accumulation of housing. The idea of neighborhood emerged from Ebenezer Howard's Garden City Movement (Kallus & Law-Yone, 1997; Mumford, 1965). In the late 19th Century when the Garden City Movement was proposed, the urban environment had been deteriorating because of a large increase in population, which placed high demands on housing, sewage, sanitation, etcetera. To resolve these emerging urban problems, Howard proposed a new development of a city that could have self-sufficient functions. Although this concept of the Garden City Movement has been refuted by some researchers (e.g., Jacobs, 1961) and the importance of neighborhood has been in "the ebb and flow" (Kallus & Law-Yone, 2000; K-B Kim, 2005), the concept of creating a place where people live can be considered as both a definition of what a neighborhood is and how a neighborhood is developed.

It is important to distinguish between neighborhood and neighborhood design. Although the definitions of neighborhood are various and different with reference to foci, such as social meaning, physical arrangement, etc., the concept of neighborhood can be defined as people's social bonding within a place. A neighborhood needs a physically bounded land, functions and supports, and people with social linkage (Kallus & Law-Yone, 2000). Thus, a neighborhood is what causes social binding within a certain physical environment. However, the idea of neighborhood design (or planning) focuses on the process of organizing and allocating components allowing a neighborhood to achieve certain purposes. In the early stages of the history of neighborhood design, that design was a solution for social development, such as Ebenezer Howard's Garden City Movement, or Clarence Perry's Neighborhood Unit. Nowadays, however, neighborhood design has become a tool to organize where people live. Simply put, neighborhood design is how to create a residential area in a certain place, how to divide land into lots, where to locate houses and streets, and what to install in each lot. All these elements are related to creating an area. In addition, studies of neighborhood design seek to improve residential areas. Neighborhood design seeks to create opportunities so that residents can have a sense of belonging to the area, and to improve efficiency so that resources can be distributed for those residents (Barton, 2000; Kallus & Law-Yone, 2000; K-B Kim, 2005). Thus, although neighborhood and neighborhood design are similar, neighborhood is a goal and neighborhood design is a tool to achieve that goal.

Neighborhood design therefore begins with the organization of local issues for residents: How large an area will be developed, how many people and/or families will live there, how many houses will be supplied, which functions will be selected, and

where will those functions be located in the area. These local requirements are tied to a

certain place and can differ from those in other areas. Even if some areas could have

similar features, each place has its own social, cultural, and economic characteristics.

Thus, with locally appropriate neighborhood design, each neighborhood can have its

unique characteristics and evoke its own sense of belonging.

However, the idea of neighborhood design consists of universal elements.

Neighborhood design deals with basic physical elements to organize a place where

residents can live. These physical elements include pedestrian streets, car circulation

roads, building lots, and green park spaces. In the same way that Laugier's "primitive hut"

consists of basic columns and a roof to make a house, these physical elements are

fundamental components needed to construct a residential neighborhood area. From the

Garden City Movement in the 1890s to the New Urbanism in the 1990s (Figure 2.1), each

idea of neighborhood design includes allocation of various functions in an area, such as

layout of streets, or shapes of blocks. Purposes and goals of those neighborhood designs

differ, but use similar components to achieve different configurations. So, neighborhood

design can be a universal idea to develop a place for residents in different areas.
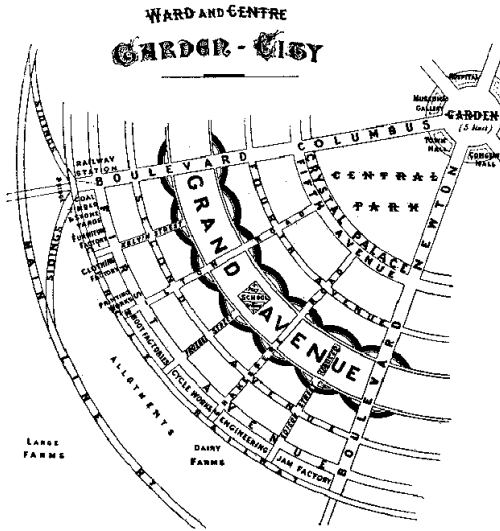
(1) Garden City
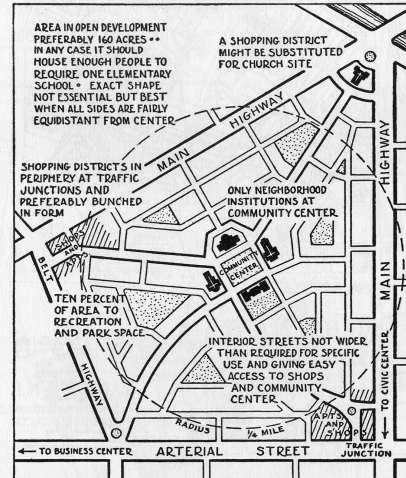
(2) Neighborhood Unit
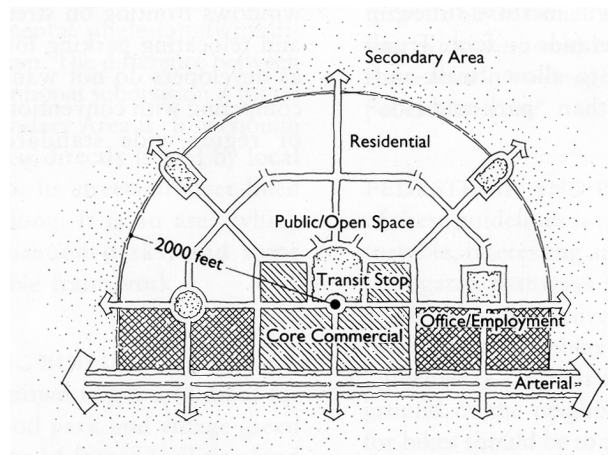
(3) New Urbanism

Figure 2.1. Main diagrams in the Garden City Movement, the Neighborhood Unit and the New Urbanism (Banerjee & Baer, 1984; Calthorpe, 1993; Larice & Macdonald, 2005)

The ebb and flow of neighborhood design has shown that design concepts reappear at regular intervals. The concept of the Garden City Movement was proposed in the 1890s, then, after 30 years, the Neighborhood Unit was introduced to develop residential areas in the 1920s. Then, in the 1950s, new residential areas were built with the concept of the Neighborhood Unit, and, another 30 years after that, in the 1990s, New

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Urbanism emerged with a new paradigm for development approaches. In addition, in the 1960s, researchers in sociology insisted that ideal physical neighborhood planning was unable to improve social illness in urban places, blaming this failure on modernists' ideas. In the 1980s, the neighborhood unit also was criticized, using a different description of neighborhood. According to Banerjee and Baer (1984), a neighborhood can be explained as a "mosaic of dwelling clusters" on grid patterns, rather than a center-oriented residential area within a boundary. Thus, although rules for developing neighborhoods have existed since before the Garden City Movement, the issues that emerge repetitively every generation (or 30 years) show that neighborhood design is still an important factor in developing residential areas as neighborhoods and both physical and spatial configurations are still the guiding components of neighborhood development.

Livable Place as an Accumulation of Everyday Life

This section investigates how to make a livable place. Relative to place theories, the basic characteristics of a place and the domains of theoretical frameworks are analyzed and organized to define a livable place. For place development methods, practical approaches can be categorized to analyze characteristics of each method to develop a place within place theories.

According to Groat's *Giving Place Meaning*, to achieve a meaningful place, three-dimensional experiences of place are articulated using the sense of place from Canter's and Relph's theories of place (Groat, 1995). As Groat explores the sense of place for a meaningful place for people, investigation of the sense of place can explain an

approach of improving the quality of place; this improvement might help create a livable

place. Additionally, because the relationship between geometry of space and sense of

space is an issue in studies about place (Sime, 1995), to investigate how to make a livable

place, it is necessary to review multi-disciplinary literatures drawing from formal aspects

as well as the social and cultural aspects in a place.

Canter's place model (Figure 2.2) consists of three elements - physical attributes,

activities, and meanings (concepts). In *the Psychology of Place* (Canter, 1977), the

relationship between activity, meaning, and physical attributes results in a place.

Accordingly, a place can be identified when these are known:

> "a. What behaviour is associated with, or it is anticipated will be housed in, a
>   given locus,
> b. What the physical parameters of that setting are, and
> c. the descriptions, or conception, which people hold of that behaviour in that
>   physical environment." (Canter, 1977:159)
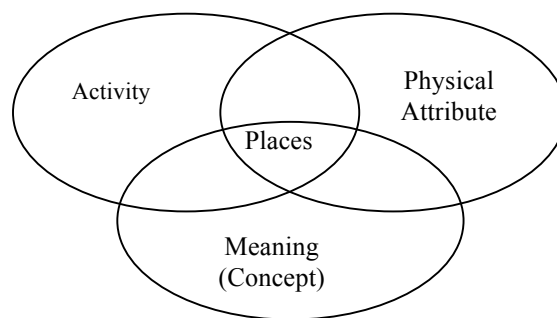
Figure 2.2. Canter's place model (Canter, 1977)

Accordingly, in Canter's place model, the activity represents people's behaviors

in a certain place, and the physical attribute is physical elements of the place. The

meaning (concept) is people's thought about behaviors and physical elements in the area.

Those three elements, therefore, are not individual characteristics in a place, but inter-related constituents to create a place. Using this relationship of three components in a place, Canter explains how this place model can be implied in an analysis of urban redevelopment. When urban redevelopment causes major changes in physical attributes and those changes can be identified, meanings in relation to those physical changes could be identified and people's behaviors tied to the physical changes and the meanings in the place could be identified (Canter 1977). As well as empirical studies of perceiving a place to formulate the theory of place, these succinct constitutes of Canter's place model facilitates and strengthens analysis and evaluation of the built environment. Since this succinct relationship is a framework to theorize a place in terms of what it is (physical attributes), how it is experienced (activity), and why it occurs (concept), using the relationship between three characteristics is useful to formulate theoretical and methodological approaches to analyze the built environment. However, this simple characteristic does not mean to directly imply design standards and guidelines in the built environment. Three characteristics and their relationship is a framework to include and categorize various elements in the built environment.

These three components can be also used as overall guidelines to vitalize a place with the sense of place (Montgomery, 1998). Montgomery uses the same three components to describe how vitality and urbanity are created in cities. Montgomery summarizes principles for making a city using Canter's place model (Table 2.1). Montgomery's method to propose these principles of vitality and urbanity in a place explains the possibility of using Canter's place model to analyze projects hoping to achieve place vitalization. However, Montgomery's study of "place for urbanity" has

limitations, in that its ideas are based on arguments and reviews of previous studies rather than on evidence of what currently imparts urbanity to a city.   Although Montgomery's study refers to some studies based on analytical evidence about vitality and urbanity, his principles are assumptions that need to be tested or observed in everyday lives.

Table 2.1. Principles for making a city (Montgomery, 1998)

	Place model		
	Activity	Image (meaning)	Form (Physical attributes)
Principles	1. Generating pedestrian flows and vitality 2. Seeding people attractors 3. Achieving a diversity of primary and secondary use 4. Developing a density of population 5. Varying opening hours and stimulation of the evening economy 6. Promoting street life and people-watching 7. Growing a fine-grained economy	8. Legibility 9. Imageability 10. Symbolism and memory 11. Psychological access 12. Receptivity 13. Knowledgeability	14. Achieving development intensity 15. Zoning for mixed use 16. Building for a fine grain 17. Adaptability of built stock 18. Scale 19. City blocks and permeability 20. Streets: contact, visibility and horizontal grain 21. The public realm 22. Movement 23. Green space and water space 24. Landmarks, visual stimulation and attention to detail 25. Architectural style as image

Everyday life encompasses ordinary practice and natural movement in a place. Everyday life is a part of the behaviors of a place and should be included so as to create a place (Sime, 1995). According to Sime's overviews of different approaches to create a place, everyday behavior and experience in relation to a place are sometimes detached from architectural design issues, while these activities are usually included in psychological and geographic arguments. In addition, Sime states that creating a place includes geometric and phenomenological components of a place and seeks to connect visual attributes and implicit facets, using the framework of Canter's and Relph's concept of the sense of place. Creating a place includes designing a physical space, generating activities and creating the sense of belonging in a place. Architectural design and research need to include everyday behaviors and experiences from and in a place as components for themselves. Everyday life already exists whether or not we choose to observe it.

Similarly, street life is a key component needed to vitalize a place and is a part of everyday life in an urban place. Jacobs' observations focus on street life and the way streets are organized around buildings and blocks to describe what improves vitality in a city (Jacobs, 1961). According to Jacobs' explanation, street life in an urban place shows that people do not always follow rules of behavior that planners and policy makers expected in an urban place. However, Jacobs' observations are based on a specific context of existing fine-grained streets and everyday life. A place that has different existing urban contexts might be able to create different patterns of activities. Although street life might vary in different places in relation to existing contexts and experience,

street life can be an explanatory index of the degree of vitality in a place and be an expression of everyday life outside in the streets.

Additionally, everyday life can recreate a place as well as be observed in a place. Sime and Jacobs explain that activities in everyday life are observed as representations of social and physical environments in a place. However, Michel de Certeau (1988) insists that everyday life as itself can reproduce a place using its components such as language. Certeau explicates that everyday practices are "ways of operating", such as "talking, reading, moving about, shopping, cooking, etc." According to Certeau's arguments, activities in everyday life can be categorized into the concepts of "strategy" and "tactic." He explains that a strategy is the intended plan for achieving a certain purpose and a tactic is a natural and independent occurrence in relation to time, rather than a plan (Certeau, 1988). Thus, Certeau states that everyday practices have tactical characteristics because everyday life is already tied to existing contexts rather than to a plan. Everyday life can be independent of a planned and intended physical place. Thus, these explanations of everyday life propose that it can be a positive re-creator of a place and representative of residents in existing contexts. With an analysis of everyday life in a place, the vitality of a place can be explained, and whether social and spatial changes in a redeveloping place are effective for place vitalization can be determined in relation to existing contexts.

This vitality is a significant element to measure a quality of place where people live. Lynch in his theory of good city form (1984), using five dimensions and two meta-criteria in a place, theorized how a place can be measured for performance of a city form or proposal. These five dimensions and two meta-criteria are vitality, sense, fit, access

and control, and efficiency and justice. Among seven elements, Lynch define that vitality is:

> "the degree to which the form of the settlement supports the vital functions, the biological requirements and capabilities of human beings – above all, how it protects the survival of the species. This is an anthropocentric criterion, although we may some day consider the way in which the environment supports the life of other species, even where that does not contribute to our own survival." (Lynch, 1984: 118)

Additionally, Lynch categorizes elements in the built environment under the vitality, which are sustenance, safety, consonance, benefit, and stability (Lynch, 1984: 129). According to Lynch's explanation, vitality is an essential element to sustain a place, and is an index to evaluate built environment in terms of environmental continuity. Lynch's explanations of vitality focus on human and biological community health and survival. Thus, for making and evaluating a good, sustainable place, vitality needs to be considered as a design element in the built environment.

Sternberg (2000) identifies integrative principles of urban design that include good form, legibility, vitality, and meaning. Reviewing classic literatures on urban design, Sternberg finds that authors concur that good urban design endeavors to integrate human experience into the built environment, rather than treating the built environment as a trading commodity. In particular, Sternberg states that vitality is an integrative principle in urban design, presenting Jacobs' argument (1961): a vibrant street life and fine-grained density of uses are essential to, and mutually supportive of, a good city (Sternberg, 2000). Additionally, "mixed use, fine grain, high density, and permeability" are considered as important source of vitality in the built environment (Sternberg, 2000: 272). Sternberg and Jacobs characterize energetic and animated behaviors in a vibrant

place as vitality in the built environment. While Lynch emphasizes that vitality is an essential requirement to health and safety for survival, Sternberg and Jacobs identify that vitality is an integrative principles to create a place.

Place attachment is another component used to determine whether a place is involved with residents' willingness to contribute to their place. In other word, place attachment is an element to make a livable place for residents in their neighborhood. Because place attachment is an interpretation of people's thoughts about a specific place, place attachment highlights that they are eager to be involved in the community where they live and/or work. In general, place attachment is considered a positive factor related to the eagerness of staying in a place, and this factor imparts to residents a sense of community (Hummon, 1992; Kim and Kaplan, 2004). According to Kim and Kaplan, a sense of community includes four subcomponents that support the relation of physical attributes in a place: community (or place) attachment, community identity, social interaction, and pedestrianism. Because previous studies usually focused on meanings and activities in communities to establish a sense of place, the authors investigated roles of physical attributes in the new urbanism's community, so as to effectively address design issues relative to sense of community. With the four domains of the sense of community, Kim and Kaplan state that the New Urbanism's community in Kentlands has better place attachment and sense of community than does the typical suburban community in Orchard Village. However, the Kim and Kaplan study has limitations of self-selection because the study's subjects are of those who choose to live in Kentlands so already have positive attachment and preference for the New Urbanism community.

Civic meaning is a domain and framework to follow for using place development to create vitality in an urban place. According to Groat's explanation, civic meaning includes three principles in urbanism: "place", "typology", and "design values"; "place" follows Canter's place model, and is an analytic structure to determine whether place has meaning for people; "typology" means that typology and context in a urban place need to be considered for design; "design values" have seven levels of environmental consciousness adapted from Maslow-Barrett's model (Figure 2.3) and guide the extent to which architects use these values in creating meaningful places (Groat, 2000). Groat states that achieving civic meaning produces processes of place development toward being meaningful for people in the built environment, although there is no sole way to declare a certain strategy of urban design to be the best. Because places contain different and various settings, Groat explains that the value of civic meaning is to consider complexity and significance of a place during design processes. Thus, civic meaning can be a domain to develop a livable place as well as a framework to design a meaningful place. Furthermore, Groat's seven levels of environmental consciousness can evaluate design projects in places. With the composite of Maslow's and Barrett's models, Groat explains the change between community and individual levels. Thus, Groat's model of environmental consciousness can explain each value of urban design in relation to an environmental scale from individual to social dimensions. In other words, each level can represent the progress of urban and neighborhood designs as well as the role of architects that Groat analyzes in relation to the consciousness to design a meaningful place.

Seven Levels Of Employee Consciousness	Seven Levels Of Organizational Consciousness	Seven Levels Of Environmental Consciousness	
Societal Service	Society	Societal Connectedness	7
Make a Difference	Community	Contextual Connectedness	6
Meaning	Organization	Internal Connectedness	5
Transformation	Transformation	Transformation	4
Self-Esteem	Self-Esteem	Goal-Oriented	3
Belonging	Belonging	Belonging	2
Security	Security	Health & Safety	1

Figure 2.3. Groat's seven levels of environmental consciousness

Moreover, neighborhood design can be evaluated using the seven levels of environmental consciousness. Because neighborhood design is a method to develop a place with meaning for residents, the values of neighborhood design relate to civic and environmental values. As Kallus and Law-Yone (1997) explain that each development of neighborhood design has different themes in relation to social situations, Groat's seven levels also can be associated with development of urban and neighborhood design. Thus, these levels can be a framework for determining neighborhood design for residential development.

Three Approaches to Revitalize Places

There have been several approaches to redevelop a place, following concepts which are City Beautiful, Urban Renewal, Smart Growth, etc. These approaches have tried to improve living quality in urban areas. Various ideas and theories have been proposed and some have been realized into built projects, in different locations and situations. According to Calthorpe's explanation, developments can be categorized into three approaches: new development, redevelopment and infill development in relation to the location of development projects (Calthorpe, 1993). Although Calthorpe's categories are intended to explain "Location Types" in relation to Transit-Oriented-Development (TOD), these divisions of developments can cover the scope of development approaches in urban places. Because physical developments are located in certain places, which have characteristics of location, methods to revitalize places can be categorized in relation to location types for both conventional and New Urbanism developments. In addition, because the concept of TOD seeks to develop a place corresponding to efficiency and vitalization from place development (Calthorpe, 1993), these types of place development can explain characteristics of place vitalization as development methods.

New Development

New development creates a new physical setting in empty lots. A new place with empty lots is usually in the fringe area of an existing city. Basically, Calthorpe insists that transit-oriented development should be a key issue of place vitalization to improve pedestrian movements and prevent urban sprawl problems (Calthorpe, 1993). In addition,

Calthorpe proposes connectivity between nearby neighborhoods and transitions designed

to increase local activities in the new developing places. Calthorpe's characteristics of

new development can be categorized within Canter's place model (Table 2.2). First, the

new development approach is to create a new urban place with connectivity to nearby

existing cities as physical attributes of the place model. Second, the new development

approach is to vitalize activities in a place. Third, establishing a meaningful place for

residents is in the category of the meanings of the place model.

Table 2.2. Characteristics of new development within Canter's place model

Place Model	Characteristics of New Development
Physical Attributes	- Creating a new context from an undeveloped area that will usually be an urban setting - Having relatively free choices to develop physical settings - Extending nearby existing urban contexts for growth of cities
Activities	- Promoting the connection of existing transportation and/or to extend nearby transportation - Serving pedestrian-oriented activities with transit connection and open space preservation - Planning sequential transit development following phases of project development
Meanings	- Avoiding urban sprawl that used to occur in new suburban areas - Improving or creating networks between old and new areas - Motivating positive impacts on local movement and gatherings

Redevelopment

With the redevelopment approach, a devastated or under-used place is able to be

converted to a different place that can have vitality and be well used. According to

Calthorpe's explanations, redevelopment projects are intended to change existing

physical structures to new and better physical and spatial configurations and to increase

vitality of an underused area (Calthorpe, 1993). In addition, Calthorpe explains that

redevelopment should be planned to preserve existing important contexts and to become

a positive component to improve existing conditions in neighborhoods around those

redevelopment places. Table 2.3 shows characteristics of the redevelopment approach

from Calthorpe's explanations within Canter's place model. First, as the physical

attributes of the place model, this approach is to situate new environmental settings in a

devastated or under-used place. Second, it is in the category of the activities of the place

model to regenerate a devastated or under-used place for improving vitality there. Third,

it is also in the category of meaning to convert a weak sense of place in an old place

toward better quality of the place meaning.

Table 2.3. Characteristics of redevelopment within Canter's place model

Place Model	Characteristics of Redevelopment
Physical Attributes	• Constructing new structures and blocks in the place where facilities and lots have been underused • Transforming old settings to new conditions that would be denser and/or adapted to new demands • Converting auto-oriented to mixed-use and transit-oriented settings
Activities	• Improving pedestrian movements • Adapting to variety of transit such as walking, cycling, using public transport, etc. • Integrating existing activities with newly created ones
Meanings	• Recreating a new sense of place in relation to economic and social changes over time • Preserving and integrating unique characteristics in and near the place and existing neighborhoods • Avoiding gentrification for existing residents

Infill Development

Infill development is intended to improve vitality of a place in existing places with developing mixed-use facilities that are housing, retail, and office, corresponding to surrounding contexts. Because there are existing neighborhoods around a place of infill development, this new infilling mixed-use facility can be a new civic center and an attractive place for neighborhoods. Thus, the concept of urban infill development is a development strategy with compact form, walkable neighborhood, transportation choice, housing choice, sense of place, open space protection and community collaboration (Grant, 2004; Seifel, 2003; Ye, Mandpe, & Meyer, 2005). These characteristics and Seifel's explanations of the trends of the urban infill development can be categorized within Canter's place model (Table 2.4). First, the infill development is a way to fill structures in empty lots surrounded by other places. Second, to connect movements of

activities is a main issue in the infill development. Third, the meaning of the infill

development is to improve existing sense of place in planning places as well as

neighboring areas.

Table 2.4. Characteristics of infill development within Canter's place model

Place Model	Characteristics of Infill Development
Physical Attributes	- Regenerating unused or underused places - Developing or redeveloping one structure or adjacent buildings with mixed-use - Converting an old structure to a new one adapted to changing needs - Increasing height or density of a building
Activities	- Creating and connecting vitality in the place for and to neighborhoods - Adapting to a variety of transit such as walking, cycling, using public transportation, etc. - Adapting to the flexibility of living and working in the same housing - Making mixed-use of residence, retail, office, etc.
Meanings	- Creating or increasing the sense of community - Preserving contexts of unique features in the place or building

However, urban infill housing is not always supported and/or appreciated. A

study of urban infill housing in New Zealand explains that local residents do not always

agree with the advantage of urban infill housing and the meaning of the new approach

depends on the socio-cultural backgrounds of local contexts. For example, those who

live in a traditional way think of advantages differently from those who live in a

nontraditional way (Vallance, Perkins, & Moore, 2005).

In Table 2.5, three approaches of place vitalization are summarized and compared.

Table 2.5. Comparisons of development approaches

Approach	New Development	Redevelopment	Infill-development
Physical Attributes	Creating	Replacing	Filling
Activities	Vitalizing	Regenerating	Connecting
Meanings	Establishing	Converting	Improving

According to this comparison of development approaches, revitalizing places is not only a physical development, but also an integrative approach to consider the quality of place elements. As each approaches has detailed methods in Table 2.2, 2.3, and 2.4, neighborhood design incorporates characteristics of development approaches.

Neighborhood as More than an Accumulation of Housing

Concepts of neighborhood design have been used as guidelines for building apartment estates in Korea. Many architects and planners investigate concepts such as Neighborhood Units and New Urbanism, and sometimes adapt them for their projects. According to Moudon's studies about urban design, there have been various concepts in the fields of urban design over time (Moudon, 1992). Moudon's methodological categories about urban design originally included 8 domains, but have added 3, making 11 domains: Urban history, Picturesque, Image, Environment-behavior, Place, Material culture, Typo-morphology, Space-morphology, Nature-ecology, Economic development,

and Regulatory framework. In these areas of urban design, a newer domain of inquiry becomes more complicated than the older. New, emerging concepts usually are combined with other ideas, then become a composite of theories. These combined theories show how situations in places become more complicated.

Neighborhood designs more related to residential settings also have been developed and improved corresponding to changes in environmental situations. Physical places where people live together are basic components in neighborhood designs. In addition, other elements are essential in designing places for residents. Thus, in this section, the history and emerging concepts of neighborhood design are investigated to analyze trends of neighborhood designs and important arguments in neighborhood design. This analysis of neighborhood design can contribute to finding important components for current situations.

Neighborhood themes have changed over time. A neighborhood is basically an accumulation of people's lives: sleeping, eating, walking, talking, working, etc. In these layers of people's lives, a neighborhood is more related to housing and residents in an area. Kallus and Law-Yone (1997) posit that a neighborhood is composed of a residential urban system and its service parts as a planning idea. As a planning idea, this composition of a neighborhood can explain how a neighborhood can be a basic entity in urban places. As long as people live together, the way that people gather in a place is a fascinating topic for professionals and researchers. However, important issues of neighborhood are not always the same from year to year. Kallus and Law-Yone (1997) find eight common neighborhood themes: management, healing, welfare, association, order, participation, identity, and meaning. These are represented by an ideal

neighborhood and are associated with persons and/or concepts: "An efficient scale for the management of urban resources (Ebenezer Howard's Garden City), a means for social reform and change in way of life (Lewis Mumford, Clarence Perry, Jane Jacobs), a means for provision of the quality of life (CIAM), a link in the continuum of human association (Team X), a component of order in the urban environment (Christopher Alexander), a framework for public participation in decision making (John Turner), ecological conformity between residents and their environment (Amos Rapoport), and a place with historic meaning for the social group (Léon Krier, Aldo Rossi, Andrés Duany and Elizabeth Plater-Zyberk)" (Kallus & Law-Yone, 1997, p. 111). In addition, Kallus and Law-Yone explain the ebb and flow of each theme, namely "functional, pragmatic, neo-humanistic, and essential phases." As a planning idea, these four phases in the concept of neighborhood show that the definitions of neighborhood are based on the approach to create an ideal neighborhood. These concepts of ideal neighborhoods are methods of creating a neighborhood, rather than characteristics explaining the meaning of a neighborhood. Because these explanations come from a planning perspective, Kallus' and Law-Yone's arguments of neighborhood themes are closely related to neighborhood design (or planning).

　　Neighborhood design is a process used to create a neighborhood. While definitions of neighborhood are various, depending on research areas, neighborhood design is positioned in planning and designing of residential areas. Neighborhood design includes how to make and divide streets and blocks, which types of buildings to build in a place, where to locate buildings, etc. Thus, neighborhood design can be defined as a

framework for designing a residential area with supporting activities and meanings in those places using Kallus' and Law-Yone's definition of neighborhood as a planning idea.

Additionally, concepts of neighborhood design have changed from creating physical arrangements to pursuing social networks. This change in focus corresponds to changes in neighborhood themes. In the beginning of neighborhood design, physical arrangement of an ideal neighborhood was considered and investigated among professionals and researchers, then important components of neighborhood design moved to social meanings and networks of people who stay and live in places. According to Kallus' and Law-Yone's arguments, neighborhood design can be categorized into three approaches: humanistic, instrumental, and phenomenological (Kallus & Law-Yone, 2000). With the humanistic approach, neighborhood design is intended to solve existing problems; these include lack of basic human needs to live, and social problems. Mumford and Cooley followed this humanistic approach to investigate "what is neighborhood and why it should be created" (Kallus & Law-Yone, 2000, p. 822). However, the instrumental approach deals with methods to develop neighborhoods rather than definitions and reasons for making a neighborhood in places (Kallus & Law-Yone, 2000). According to Kallus' and Law-Yone's arguments of the instrumental approach, the way to create a neighborhood with appropriate scale and process was a main question for Le Corbusier and Alexander. Additionally, Kallus and Law-Yone explain that the phenomenological approach cultivates cultural meanings in neighborhood design rather than determining what is a good or a bad neighborhood.

These concepts of neighborhood design can be plotted using Groat's seven levels of environmental consciousness (Figure 2.4). As the seven levels of environmental

consciousness follow steps from self-interest to common-interest in the environment

(Groat, 2000), concepts of neighborhood designs also can be categorized from self-

interest and common-interest in the neighborhood. Self-interest in the neighborhood can

mean neighborhood-oriented values, such as protecting residents' privacy, improving the

sewage system, and creating community-own interests. Common-interest in the

neighborhood can represent common-values related to other neighborhoods as well as to

its own neighborhood.

Seven Levels Of Environmental Consciousness

Previous Proposals Of Neighborhood Design

Level		Design
Societal Connectedness	7	
Contextual Connectedness	6	• *New Urbanism*
Internal Connectedness	5	• *Mosaic of Dwelling Cluster*
		• *Brasilia*
		• *Neighborhood Unit*
Transformation	4	• *Le Plan Voisin*
Goal-Oriented	3	
Belonging	2	• *Garden City*
Health & Safety	1	

Common-value

Neighborhood-oriented

Figure 2.4. Previous proposals of neighborhood design within seven levels of
environmental consciousness

The concept of neighborhood design began in the early 1900s by developing

healthy and safe neighborhoods to counter urban problems. Ebenezer Howard's 'Garden

City Idea' proposed a decentralized city with parks and gardens for residential areas,

connected by transportation to a central city; he developed neighborhoods at Letchworth and Welwyn in England with Raymond Unwin and Barry Parker, whom he hired (Larice & Macdonald, 2005). Although Mumford (1965) stated that Howard's schemes were valuable for their intentions and ambitions to solve industrialized urban problems, rather than physical configurations, the Garden City Idea could induce separation and escape from existing contexts to a new place of belonging. Thus, Howard's proposal can be characterized by self-contained schemes, which are based on a new belonging as well as on neighborhood health and safety.

This concept of making a self-contained place is developed through physical zoning and scale of a neighborhood. Clarence Perry's 'Neighborhood Unit' explains how a neighborhood should be planned and designed with zoning and scale of a neighborhood with spatial clustering of usages, population and schools (Banerjee & Baer, 1984; Perry, 1929). Centralized and pedestrian-oriented site-planning of the neighborhood unit is the concept of Clarence Stein and Henry Wright's 'Radburn New Community, New Jersey' (Banerjee & Baer, 1984). According to this concept of the neighborhood unit, separation from areas outside a neighborhood and self-contained usage can be characterized as making an internal network rather than connecting other neighborhoods. However, Larice and Macdonald (2005) state that Perry's Neighborhood Unit idea is still part of New Urbanism and the Smart Growth, although his Neighborhood Unit has been criticized for encouraging segregation and disconnection from other neighborhoods.

Social reform emerges with modernism in architectural and planning approaches. Le Corbusier criticized the existing traditional city and proposed an efficient model for a modern city (Le Corbusier, 1929). *Villa Contemporaine de 3 Millions d'habitants* (1922),

Le Plan Voisin (1925), and *La Ville Radieuse* (1932) were his proposals for this modern

city and these ideas affected 20th Century's architects and planners as an urban renewal

idea (Larice & Macdonald, 2005). For example, in *Villa Contemporaine de 3 Millions*

d'habitants, Le Corbusier proposed that a high-rise and highway city was appropriate for

a modern city in terms of the ideal city (Le Corbusier, 1929). In *Le Plan Voisin, a plan*

for Paris, a new approach for redevelopment of a modern city from the existing

traditional context in Paris was criticized by other researchers, but this scheme affects

redevelopment solutions for urban renewal from existing illness in a city (Larice &

Macdonald, 2005). In addition, his ideas for efficient residential development had been

widely adapted as a means to increase housing supply after World War II, for example in

public housing in the United States and apartment estates in Korea. Especially, Brasilia

by Niemeyer and Costa in the mid 1950s was an example of city planning adapted from

this efficient model. Frampton states that Brasilia is a variation of the international style

and has its own formalistic characteristics different from Le Corbusier's idea (Frampton,

1992). Frampton (1992) also notes that the whole plan of Brasilia follows principles of

La Ville Radieuse, which is a highway-oriented and zoning-planned city from the

modernists' ideas.

Jacobs (1961) observes that the actual behavior outside in a city is different from

what professionals intended by the physical reform. In a case study of LA neighborhoods,

Tridib Banerjee and William Baer (1984) found that physical reform without social

contexts is segregated from people's activities. Banerjee and Baer state that

democratization of the urban form by using a mosaic of dwelling clusters with grid

patterns is an achievable goal for revitalizing existing residential areas. Because these

grid-pattern neighborhoods have urban configurations different from the centralized

neighborhood unit, this grid-pattern might decrease segregation from the neighborhood

unit and increase accessibility for various usages in smaller neighborhoods. However, it

might be hard to generalize this analysis of neighborhoods in Los Angeles toward other

situations. Cities have their own spatial characteristics. LA's grid-pattern is not always

similar to other cities' spatial configurations.

Recently, New Urbanism is emerging as a solution for urban sprawl. Peter

Calthorpe (1993), Douglas Kelbaugh (1997), Andres Duany & Elizabeth Plater-Zyberk

(1992) propose "New Urbanism" with "Transit Oriented Development" and "Traditional

Neighborhood Development". One of New Urbanism's strengths is a detailed

explanation for actions of design. More than merely catchphrases and conceptual

schemes, New Urbanism includes detailed action approaches and explicit descriptions

about the arrangement of buildings in lots or blocks with codes to design and develop a

neighborhood. In addition, connectivity with other neighborhoods and harmony of

existing urban contexts are considered as important design components in New Urbanism.

However, although Kim and Kaplan (2004) find that these ideas of New Urbanism attract

people to live in a New Urbanism neighborhood, compared with a conventional suburban

neighborhood, design outcomes of New Urbanism sometimes create a form of social and

cultural segregation. Although New Urbanism's neighborhood design is intended to

achieve societal connectedness, this neighborhood could become another segregated

place for people of a particular status.

Developing principles for designing a place with vitality requires understanding

of the contextual characteristics of the place. Changes are a natural characteristic in the

built environment, like living creatures (Habraken, 1998). In his *The Structure of the Ordinary*, Habraken explains that the built environment has three orders: "Form (the physical order)", "Place (the territorial order)", and "Understanding (the cultural order)". According to Habraken's arguments, these orders are observed in relation to the structure of the built environment. Thus, these orders can be included and understood as design components in the built environment.

Habraken's first and second orders focus on physical settings. Basically, the three orders are perceived as the structure of the built environment. Between people and physical environments, these three orders are interwoven like Canter's three facets of place models. These two of Habraken's orders are similar to Canter's model of the built environment, but Habraken's orders give a more detailed physical setting with form and place. The "Place" in Habraken's orders is a concept of territory while the place in Canter's place model is more related to the sense of place. Thus, these orders can be used as physical guidelines of neighborhood design.

Habraken also explains the role of social aspects in the built environment in his cultural order, "Understanding." This cultural order is a social characteristic in the built environment. As Habraken states, this cultural order is based on a consensus of people who are related to this built environment, so this social meaning in the built environment can be considered as an existing component in this continuously changing environment. Thus, this cultural order can be included in design principles.

As Canter's place model is important in analyzing a place for finding the meanings of people who actually live in the place, Habraken's orders in the built environment are an efficient way to address the ordinary in a place where people live

daily. The importance of the ordinary in developing a place is not only to preserve

existing settings, but also to improve characteristics there. During development of urban

places, the ordinary in the built environment can be used as a guideline when changing a

neighborhood via design approaches. While Calthorpe seeks approaches of development,

Habraken analyzes how to preserve the built environment as a natural characteristic of

changes in development. Current approaches of neighborhood design can be summarized

as creating new urban settings although these explicit and implicit intentions for

development are to sustain existing characteristics in the built environment.

In addition, Chase, Crawford and Kaliski (2008) introduce the concept of

everyday urbanism as a way to reinterpret current built environment. As Habraken seek

to preserve the built environment using a way to follow natural changes, everyday

urbanism accepts current contexts in the built environment. Rather than creating new

settings in a place, the concept of everyday urbanism focuses on revealing the importance

of current values in our daily life that we sometimes consider as a natural occurrence.

Existing circumstances in the built environment are reconsidered as design values to

sustain and redevelop places. As Certeau (1988) indicates that everyday life is a

reflection of our daily life, as well as a positive actor to create daily occurrences,

everyday urbanism includes everyday lives in the built environment to develop a place

rather than ignore them.

To analyze a built environment relative to behaviors, Hillier and Hanson address a

configuration analysis of space. This theory is Space Syntax that spatial configuration

and socio-cultural characteristics are correlated relative to topological measurements in

the built environment (Hillier and Hanson, 1984). Measuring spatial depth and

configuration demonstrate correlation of people's movement in the built environment (Hillier et. al, 1993). As a quantitative method, syntactic analysis by Space Syntax reproduces valid values to analyze spatial characteristics in neighborhood design, and to compare results to other measurement in the built environment. For example, to analyze relationship between spatial characteristics and people's occupancy, Read (1997) demonstrates that the high occupancy in public areas in Dutch cities correlate with the high integration value by Space Syntax. In addition, Toker et. al (2005) explain characteristics of the suburbanization of a suburb in North Carolina 1989-2002, in their analysis using i) increase of global segregation in streets, ii) decrease of intelligibility, and iii) stabilized value of local integration.

Conclusion

This chapter starts with reviews of concepts of neighborhood design from the garden city movement to the new urbanism. Although theories of neighborhood design have experienced ebb and flow, neighborhood design comprises sharing and fundamental elements to make a place. In reviewing previous studies focusing on approaches for making a place livable, it is discussed that vitality in a place is important for revitalizing a place because vitality is essential and integrated elements to create the built environment in relation to people's daily lives. In addition, literature review of theories of space and place provides understanding various approaches to define and analyze a place.

CHAPTER III

From Adopted to Dominant Housing Type – the Apartment in Korea

In Korea, apartment housing comprises the majority of housing types. Fifty

percent of housing stock consists of apartments; about 400,000 new apartment units (3.5%

of existing housing stock) are being constructed annually ("국가통계포털 Korean

Statistical Information Service," 2007). In addition, new, denser and higher apartment

buildings have been built through redevelopment of existing apartment estates, to

improve residents' living conditions. However, these apartments in Korea are not slums

and are not problematic unlike much public housing or apartment complexes in some

parts of the United States, France, and other countries. How have housing development

models in Korea changed over time to be in these current conditions? Reviewing

literatures relative to housing characteristics and Korean housing contexts, this chapter

investigates changes and contexts in Korean housing development.

Now, at time of this writing (2010), the Korean apartment is on the wave of

redevelopment. After the Asian financial crisis in the late 1990s in Korea, the

government needed to promote the economy. To promote the building of apartments, the

government eased some regulations that restricted housing construction and re-

development. Before the crisis, the pre-sale price of new apartment housing had been

government controlled. So, first, government ceased the policy of controlled pre-sale

price for new apartments. Starting in rural areas then progressing to Seoul, this cessation

caused new apartment housing prices to be determined by the housing market. Second,

the government accepted proposals for denser redevelopment of existing apartment

complexes. As an example, some areas increased their Floor-Area Ratio (FAR) from 1.5

to 3.0. Thus, many new redevelopments of apartment complexes were planned and

constructed, to generate profits. This continued until the government restricted denser

redevelopments in early 2007 because the housing market then was very active and prices

increasingly escalating in those development areas.

Therefore, the change in the housing market can explain the change in housing,

especially apartments, in Korea. Using the housing data of supply and demand as the

basis of analysis, changes in the housing market are analyzed and, using economic factors,

the characteristics of apartments in Korea are reviewed in this chapter.

Housing Modernization in Korea as Compact Development

The early 20th Century was the heyday of modernization. Like other countries,

this happened in various fields in Korea: art, architecture, literature, politics, etc.

However, during the Japanese occupation from 1910 to 1945, many modernizations in

Korea focused on benefiting the colonial regime. Ahn's study on train stations during the

Japanese occupation explains that modern buildings were part of colonial regulation

(안창모 Ahn, 2000). Kang also explains that early modern multi-family housing in

Korea was for Japanese, not Koreans (강상훈 Kang, 2004). Thus, modernization in

Korea in the early 20th Century did not directly benefit the general public and the nation.

Modernization in Korea was achieved in a shorter time than in many other

countries. After the Korean War (1950 to 1953), nothing remained in Korea except its

people. The postwar recovery period in the 1950s was politically and economically

unstable. In the 1960s, the Korean government started five-year economic development

plans. These plans focused on compact and selected developments: heavy-industries and

exports. Finally, Gross National Income – GNI – per capita increased from US$60 to

US$18,000 in 50 years, thus boosting Korea's ranking to 13th in Gross Domestic Product

– GDP – purchasing power parity in 2006 (*World Factbook*, 2007).

However, this compact development brought some problems. These economic

plans sought to achieve economic growth rather than welfare or balance. Because

policies focused on specific industries to develop the economic status of Korea, the

compact economic development sometimes distorted markets in Korea (Gelézeau, 2007).

Thus, currently, especially after the Asian financial crisis in the late 1990s, government

policies have tried to create economic and social balance in Korea.

The beginning of the development of apartment-type housing in Korea is a period

of modernization of housing that, in Korea, began with construction of apartment estates.

In the mid-1950s, after the Korean War, the housing shortage was one of the most severe

problems in Korea. During the war, many people lost their homes and moved elsewhere,

where they had no family and relationship. Thus, the Korean government chose

apartments to create housing supply, and apartment estates were planned, designed, and

constructed with support of the government. Clarence Perry's neighborhood unit was

chosen as the theoretical and practical framework for the development of apartments (강부성 Kang et al., 1999). Clarence Perry's neighborhood design is a physical planning model that includes a definition of neighborhood size, zoning of land use, and segregation of vehicle and pedestrian movements (Banerjee and Baer, 1984; Perry, 1929). With this framework of the neighborhood unit, apartments were developed as complexes in the new southern areas of Seoul in the 1970s and 1980s. Then, in the 1980s and 1990s, huge new apartment towns were developed around Seoul. Despite all this construction, another huge apartment city is being planned in and near Seoul.

The popularity of and preference for apartments explains the continuous, extensive supply of apartments for residential buildings. The percentage of apartment units in residential buildings increased from 1% in 1975 to 50% in 2005. Since the 1960s, apartments have been constructed and subsequently have become the most dominant type of housing in Seoul and in Korea generally. According to Census data (Figure 3.1) ("국가통계포털 Korean Statistical Information Service," 2007), the number of apartments has increased dramatically with economic growth in Korea since the 1970s. This increase of apartment units has also contributed to housing supply to resolve the Korean housing shortage. Finally, the proportion of apartments among housing types is more than 50% in Korea, and, with the increase of apartments, the number of housing units became larger than the number of households according to the ratio of housing units per household, which reaches over 100%. Thus, clearly, apartments have become the most popular – dominant and noticeable – type of housing in Korea.

Proportion of Housing Type (2005)

Trend of Housing Type
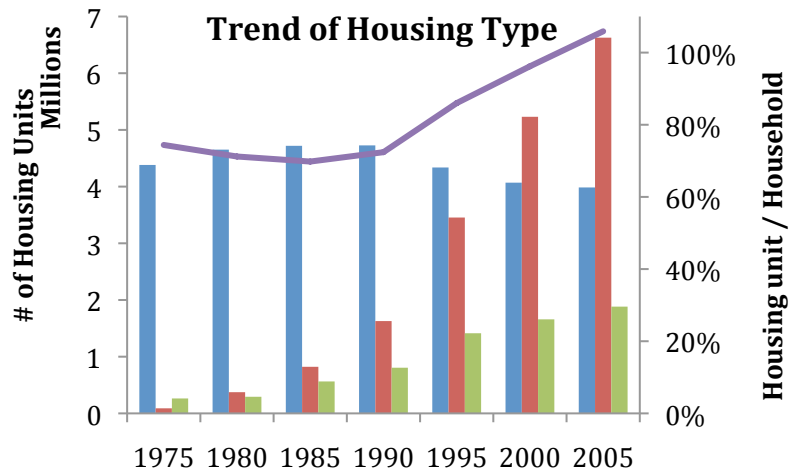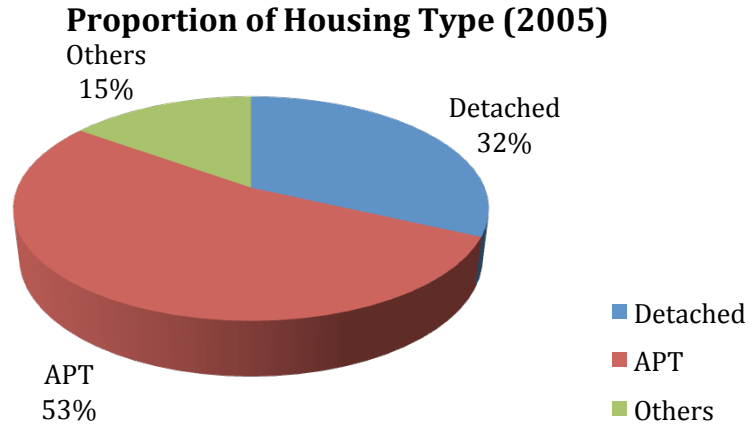
Figure 3.1. Korean housing trends[1]

From A Central-Planned To A Market-Determined Housing Development Model

Apartment development in Korea follows five steps: emergence of apartments, expansion of apartments, new district developments in large cities, new town (city)

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[1] Data from www.kosis.kr ("국가통계포털 Korean Statistical Information Service," 2007).

developments near large cities, and redevelopment of apartments in cities (강부성 Kang et al., 1999; 최재필 Choi, 조형규 Cho, 박인수 Park, & 박영섭 Park, 2004). According to the explanation by Kang et al. (1999), apartment construction began in 1962 when the Mapo apartment estate was built in Seoul. Although some public apartments were built before the Mapo construction, they were few and not a popular phenomenon at that time (이보라 Lee, 이해경 Lee, & 손세관 Sohn, 2005). In the beginning of apartment estate construction, apartments were not attractive for people, but, when the constructions were expanded to the southern areas in Seoul, apartments became popular for people who wanted to own housing in the 1970s and 1980s (강부성 Kang et al., 1999). In the 1980s and 1990s, new towns, the size of small cities, were developed through the construction of apartment complexes around Seoul such as Gwacheon, Pyeongchon, Bundang and Ilsan (강부성 Kang et al., 1999). More recently, redevelopment of older apartment complexes such as Jamsil started in Seoul (최재필 Choi, 조형규 Cho, 박인수 Park, & 박영섭 Park, 2004).

[Phase 1: 1960~70s]

Mapo Apartment Estate
1962
(http://www.donga.com/photo/ne
ws/200211/200211270313.jpg)

[Phase 2: 1970~80s]

Banpo Apartment Estate
(http://imgnews.naver.com/imag
e/008/2004/12/07/200412051544
1752636_1.jpg)

[Phase 3: 1980~90s]

Sanbon New Town
(http://news.donga.com/IMAGE/
2010/06/01/28765543.2.jpg)

[Phase 4: 1990~1998]

Daechi and Dogok
apartment estates
(http://ojsfile.ohmynews.com/do
wn/images/1/staright_350644_1[
596454].jpg)

[Phase 5: 1998~]

Banpo apartment estates
(http://img.blog.yahoo.co.kr/ybi/
1/38/48/jinjin5386/folder/14/img
_14_10_0?1253673618.jpg)

Figure 3.1. Phases of apartment development in Seoul, Korea

Apartment development is analyzed from two different viewpoints: necessary and unavoidable *versus* compulsory and forced results. The necessary and unavoidable choice of apartments in Korea represents a housing choice that was selected as an efficient way to solve housing shortages (Gelézeau, 2007). However, the popularity of apartments in Korea is not always considered as an appropriate approach or the best development plan to supply housing units. The other perspective, the compulsory and forced view, on the popularity and preference for apartments in Korea is that the housing market was distorted by the government, which made apartments the most profitable housing type in Korea (Gelézeau, 2007). The French researcher Gelézeau (2007) concludes that the housing situation of apartments in Korea is a product of autocratic policies. According to Gelézeau's arguments, during the 1970s and 1980s political powers distorted the housing market, creating financial benefits for construction consortia to create apartment estates and for people to buy apartment units, thus causing apartments to become the most profitable type of housing. Consequently, people wanted to live in and buy apartments rather than detached houses or other types of housing (Gelézeau, 2007). Thus, according to Gelézeau's argument, choices of housing type that are dominantly apartment housing have been limited in Korea since housing policies have promoted construction of apartments over creating better housing in Korea. Thus, newly-constructed apartments can appeal to people who want to live in a new, convenient, and clean abode. Gelézeau's new alternative analysis of the housing history in Seoul and Korea has provided reason to reconsider what are appropriate approaches and types of housing development in Korea.

Alternately, popular modernism can explain this phenomenon: the popularity of and preference for apartment housing. Popular modernism is a social and architectural phenomenon in which modern features become an ordinary aspect of a culture's own characteristics (Lara, 2008). In Korea, apartments started with western ideas about modern multi-family apartment housing, then have been modified and developed as social and economic situations have changed (강부성 Kang et al., 1999). Choi's study about contemporary apartments in Korea explains the characteristics of spatial configuration of units in terms of dwelling with Space Syntax and Visual Access and Exposure (Choi, 1988). According to Choi's study, spatial configuration of units in Korean apartments maintains traditional organization while using contemporary materials and building shapes (Choi, 1988). In an apartment unit, a large center space - living room and dining/kitchen area - is visually connected and is surrounded by other private rooms such as bedrooms and bathrooms. This centered spatial arrangement comes from the *madang* (courtyard) and the *maru* (living area) of traditional urban housing in Korea (Choi, 1988). In other words, Korean cultural traditions affect the physical configuration of Korean apartments although they originated from western culture. Moreover, according to Lara and Kim's study comparing Brazilian and Korean apartments, each apartment has its own cultural characteristics although they look similar (Lara and Kim, 2010). Each unit has been transformed by unique social and cultural changes.

Accordingly, an apartment unit has economic, political, and cultural adaptations. Although an apartment originated from the modern housing idea in western culture, an apartment unit is a domestic place where a family lives. Although apartments in Korea

were built following western and modern ideas to supply large amounts of housing, they eventually became particularly-Korean apartments after cultural and social adaptation.

In addition to various perspectives on the popularity of apartments in Korea, alternative types of housing in Seoul and Korea are studied and experimented with in Korea (강경호 Kang, 2004; 이정형 Lee, 전영훈 Jeon, & 김진욱 Kim, 2006). Kang's study (2004) about urban block housing explains applied methods and potentialities of alternative multi-family apartment housing, although this study has little empirical data about his alternative type of urban block housing in Korea. In addition to the study of this application of alternative housing type such as urban block housing, other approaches to apartment housing development are experimented with in the Seoul New Town Developments (이병담 Lee, 2004; 이상헌 Lee, 2004; 정양희 Jeong, 2004).

Compared with other goods and services, however, housing is related to economic and social issues as well as to design and construction issues. Concepts of neighborhood design sometimes are based on normative concepts with weak consideration of economic factors in housing. In other words, housing is beyond a simple design product in terms of the housing economic perspective. Someone buys housing, someone else sells it, like other goods and services. However, housing is much more expensive, larger, and more necessary than other goods and services. Thus, since housing is practical, not ideal, a designer needs to understand its implicit and underlying characteristics as well as its explicit and physical characteristics.

With an understanding of housing characteristics in the Korean context, changes in housing development models in Korea are reviewed. First, general housing characteristics are compared with Korea's housing characteristics. Second, housing

demand and supply factors are analyzed within the Korean context. Third, changes in

Korean housing development models are categorized and analyzed in relation to Korean

housing characteristics.

Housing Characteristics in the Korean Context

Housing is different from other goods and services. As summarized by

O'Sullivan's *Urban Economics* (2003), housing has its own characteristics compared

with other goods and services; it is heterogeneous, fixed in location, durable, expensive,

involves large moving costs, and is a social necessity. In addition to these general

characteristics, housing has been adapted to local contextual characteristics. Lara and

Kim's study (2010) shows that Brazilian and Korean apartment units follow the particular

cultural characteristics of their respective countries. Lara and Kim find that these

apartment units (built with similar materials, having similar shape, and originating from

similar concepts of modernism) have been adapted to their cultural contexts from

traditional living behaviors. In addition, Thomas and Hwang (2003) explain that the

USA and Korea have similar problems in balancing redevelopment and social equity as

well as providing low-income housing. According to Thomas and Hwang, although these

countries have experienced different processes in housing development, they still have

similar housing needs.

The six general housing characteristics are explained and compared with Korean

apartment housing characteristics.

Heterogeneous

Housing is heterogeneous. Physical components differ. Locations differ. Because of these differences, it is hard to substitute one house for another. Thus, residents can experience different features in their housing.

In Korea, more than 50% of existing housing stock is apartment housing type, which is relatively homogenous compared to single-family detached housing. An apartment is a building type with vertical unit accumulation. These vertical units usually have similar spatial configuration. In addition, a purchase price and a rental price can be measured for the same unit (Hwang et al., 2006). Usually, in the United States, renter-occupied housing, often an apartment, is different from owner-occupied housing, such as a condominium. However, in Korea, the concept of rental housing is different from that in the US. Rental apartments in Korea are usually built for those in the low- or at least lower-income group, and are intended to remain as permanent rental housing. However, in Korea, both rental and owner-occupied housing are apartments and the physical shape of both types of housing are similar, unlike such distinction as there often is, in the US, between apartments and condominiums.

Fixed in Location

Housing is fixed in a certain location. Because of this immobility, site characteristics affect housing characteristics although these characteristics are not directly related to housing. Neighborhood quality is as important as housing quality in defining housing characteristics. In a neighborhood, activities of daily life are usually shared with neighbors, such as public school zones and community activities. In addition, each house

can be categorized by its submarkets. These submarkets of location and neighborhood

quality are hard to separate from the housing characteristics.

In Korea, preference of location is slightly different from the common preferences

when people choose housing. Hur and Kwak (1997) state that a close location to a

general hospital is a negative feature in Korea, different from the common preference

while proximity to a good school zone is positive, similar to the common preference.

According to Hur and Kwak's observation, people seem to dislike that there are

mortuaries in the hospital and traffic jams associated with the hospital.

Durable

Once housing is built, it exists for many years until it is demolished. New

housing supply is relatively small. Thus, most housing supply comes from existing

housing stock. In addition, existing housing supply is from property owners while new

housing is supplied by builders and/or developers.

In Korea, although housing is durable, people tend to redevelop their housing to

take capital gains in relation to economic growth. Corresponding to rapid economic

growth in Korea, land value has increased dramatically. With redevelopment of existing

housing and construction of higher and denser housing, residents can have capital gains

from economic growth. Thus, in decisions to buy housing, the age of housing is usually

considered less important than the possibility of redevelopment. Although housing is old

and needs to be maintained, redevelopment can generate more profit. In addition, new

housing supply of apartment units is still large: about 400,000 per year (3.5% of the

existing housing stock, 6% of existing apartment units in 2005) ("국가통계포털 Korean

Statistical Information Service," 2007). Although the ratio of housing unit per household is currently more than 100% ("국가통계포털 Korean Statistical Information Service," 2007), each local area can have different conditions (e.g., ratio might be less than 100%).

Expensive

Housing price is much more than a household's annual income. To buy a house, people need to establish financial plans as well as to save, and to manage their incomes. In addition, after buying a house, its value increases (or decreases) relative to the housing market. Thus, buying a house can be considered a way to accumulate assets.

In Korea, housing is usually thought of as an investment rather than as a physical house. Households usually take eight years to buy a housing unit (국토연구원 Korea Research Institute for Human Settlement, 2006). Because of the long period needed to buy a housing unit, people usually prefer housing with better value, to housing with better physical condition. In addition, housing price in Korea is convexly related to the number of rooms, while, in some other nations, price often is concavely related to the number of rooms (Hur & Kwak, 1997).

Additionally, in Korea, there is a unique housing rental system called Chonsei (or Jeonse). Chonsei is a two-year contract with a deposit of usually 30%~50% of the housing price (Hwang et al., 2006). In this Chonsei system, the owner earns the interest on the deposit. After two years, the owner of the housing unit will return the deposit to the renter who will want to move out. If the renter wants to continue the contract, the owner and the renter will renew the Chonsei contract. The deposit in this Chonsei system is a much larger amount than that in the monthly rental system. To move to another, in

the monthly rental system, renters usually need rent, but, in this Chonsei system, renters need about half the housing price. Thus, housing in Korea is expensive to renters as well.

Large Moving Costs

Housing involves high transaction costs, which include searching costs, legal and administration costs, adjustment costs, and financing costs. These transaction costs are different for owners and renters. Thus, residents need large amounts for the moving costs as well as the housing price

In Korea, because of the Chonsei system, renters require more moving costs than renters in the monthly rental system. Searching and administration costs are based on the Chonsei price, which is about half the housing price. Thus, these costs are larger than those in the monthly rental system. In addition, sometimes, the owner has trouble returning this deposit to the renter. To move to another, the renter needs the deposit. Thus, the renter could use a legal service to recover the deposit, and this process could increase moving costs. This Chonsei system affects housing characteristics of expense as well as the difficulty to move out of housing.

Social Necessity

Housing is a basic need for people, so housing consumption is considered relatively price inelastic (less than one) (Pozdena, 1988). In other words, it is hard to easily decrease or increase housing consumption in relation to housing price.

In Korea, apartment units are usually sold before construction is completed, and until 1998 the prices of these pre-sales were controlled by government. Starting again in

2007, the control of the pre-sale price returned to stabilize housing prices. In addition,

taxation of expensive housing and restrictions on housing transactions are currently

enhanced to stabilize housing prices and to prevent housing price bubbles (K-H Kim,

2004). However, these policies have usually focused on ownership of an apartment unit

and supply of new housing units, but have hardly included various rental housing and

low-income housing for those who cannot afford to buy a house (Cho, 1997; Ha, 2002; J-

H Kim, 2000). The government seeks to stabilize housing prices for the middle class

who will be able to afford to buy a house, but relatively less consideration is given to

support low-income families.

Therefore, Korean housing characteristics are determined by apartment housing

type and ownership-oriented policies. In addition, these local and unique features also

affect Korean housing supply and demand. In the following section, factors in the

Korean housing supply and demand are analyzed to find changes in the Korean housing

development models.

Housing Demand Factors

What affects housing demand can be categorized into demographic factors,

economic factors, and social and community preference. First, demographic factors

relate to the size of and age distribution among the population. Headship rate is also an

important factor affecting housing demand because it represents the rate of household

formation. In Korea, household size is decreasing yet housing unit size is increasing

(Baer & Koo, 1994). In the 1960s and 70s with the five-year economic development

plans, an increase in internal migration - from rural to urban - was the main factor

causing an increase in housing demand (Baer & Koo, 1994). Currently, the baby-boom generation born after the Korean War is aging. Most housing is owned by this older generation. Thus, it is difficult for young families to be able to buy a housing unit and to find affordable housing where they want to live. The young generation seeking affordable housing is a new factor affecting housing demand in Korea.

Second, economic factors comprise a household's wealth. The wealth of a household rather than the annual income of the household is a determining factor for housing demands (Pozdena, 1988). According to Pozdena's explanation, buying a house is a way to accumulate household assets so that households tend to purchase a house based on their wealth. However, in Korea, the government legislates that housing opportunities have been determined through the lottery process due to the housing shortage. Usually, the pre-sale price is lower than the market price. Thus, households selected through this lottery system to buy a house can earn profit.

Third, social and community preferences such as racial and income-level issues, education (public school-zone), etc. are also important factors affecting housing demand. In Korea, education is also a dominant factor determining where people want to live. People prefer better school zones and, in these areas, housing prices are usually high. In addition, people sometimes protest government plans to build public rental apartment complexes near existing middle-class apartment complexes.

Figure 3.3 shows the ratio of housing units per households according to Gross National Income per capita in Korea. While incomes dropped dramatically in 1998 due to the economic crisis, they steadily have increased since then, bringing the housing ratio to 100 %. This means that the supply and the demand of housing become balanced.

People's willingness to buy houses might decrease, and housing unit surplus might start to appear in the housing market.
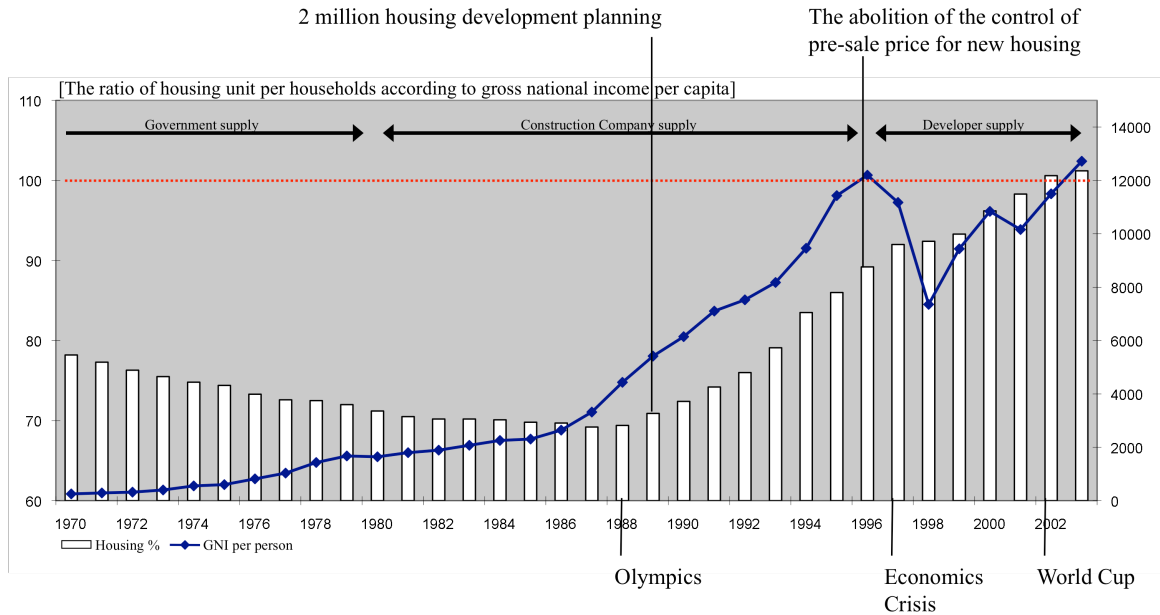
Figure 3.3. Ratio of housing units per household according to Gross National Income per capita in Korea[2] (통계정보시스템 Korea Statistical Information System, 2005)

When the ratio of housing units per households is greater than 100%, developers need more strategies to entice people to choose their particular apartment over any other. Thus, suppliers should specify unit plans different from other unit plans. This affects architects controlled by developers; architects should change unit design and the housing. Although at first a decrease occurred in new housing supply after the financial crisis, housing market consumers could choose what they would buy, since the number of housing units was greater than the number of households.

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[2] Data from *Korean Statistical Information System* (통계정보시스템 Korea Statistical Information System, 2005).

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Housing Supply Factors

Existing housing is the main source of housing supply because housing is durable and new housing construction needs lead time. In the short run, housing supply is price inelastic. However, in the long run, housing supply becomes price elastic. In addition, because new housing supply is a relatively small amount, the filtering process is one of the major housing suppliers from existing housing stock. Filtering is the process of housing trickling-down and households moving-up (O'Sullivan, 2003). Thus, the filtering process could be considered a method to improve housing quality. However, the results of the filtering process do not always have a good effect on households and neighborhoods (Galster & Rothenberg, 1991; Smith-Heimer, 1990).

Housing industries also affect housing supply. Housing industries are usually local and small-sized companies (Dowall, 1992). However, these conditions can differ in different countries and housing markets. According to Dowall's analyses (1992), central planning countries have a small number of large construction companies while countries with market systems show a large number of small and local construction companies.

With local housing regulations, housing supply can be controlled. According to Landis' analyses of growth management (2006), local regulations sometimes constrain housing supply. Landis also explains that specific approaches to growth management were effective in some of California's regions. Some local regulations within contextual characteristics could be effective in controlling housing supply.

In Korea, important factors influencing housing supply such as housing construction also have been related to changes in housing policy and market condition. At the beginning of housing construction during the housing shortage, filtering process

was expected in the housing market (Baer & Koo, 1994). However, according to Baer and Koo's analyses, this filtering process was ineffective for low-income families. In the 1970s and 1980s, the growth management (the greenbelt) policy restricted Seoul's natural expansion (Jun & Hur, 2001; Lee, 1999). Currently, the ratio of housing unit per household is more than 100% ("국가통계포털 Korean Statistical Information Service," 2007).

Figure 3.4 shows a dramatic drop in housing supply that occurred due to the Asian financial crisis in Korea, which started in 1997. Because a time gap exists between construction and housing supply ready for occupancy, there was a shortage of new housing supply. Because new developers tried to increase their projects, more suppliers emerged in the housing market. Therefore, competition among developers increased, compared to the pre-crisis situation.
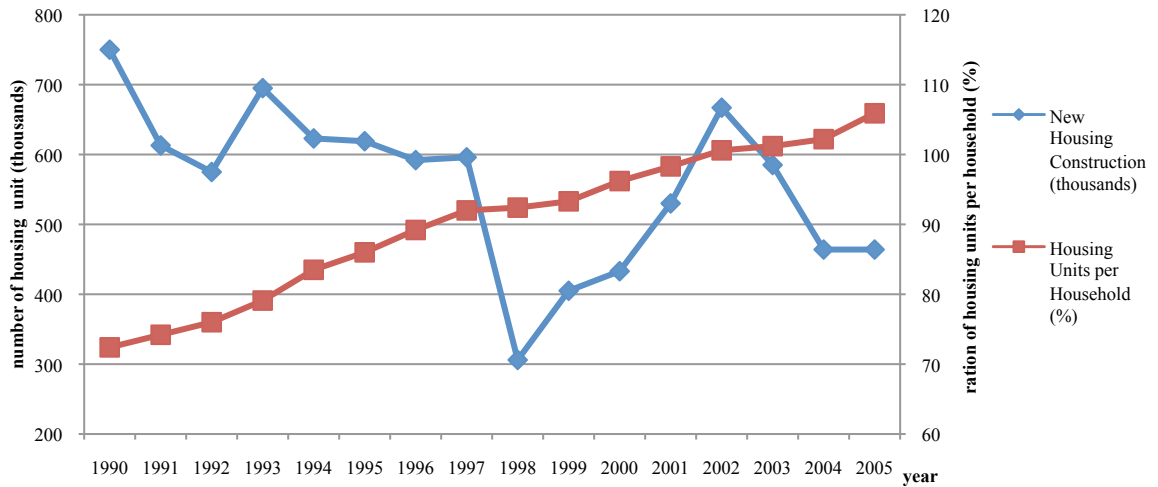
Figure 3.4. Changes in housing supply and ratio of housing units per household
("국가통계포털 Korean Statistical Information Service," 2007)

In addition, various and specialized suppliers are emerging in the housing market (김현아 Kim, 백성준 Baik, & 김우영 Kim, 2004). Figure 3.5 explains changes in the structure of housing industries before and after the crisis. Before the crisis, large construction companies in Korea usually handled housing development projects. However, as can be seen in Figure 3.5, industries became more specialized. After the crisis, many construction companies had entered bankruptcy. Construction companies reduced the number of their own development projects and focused on construction projects to avoid development-project risks. Moreover, since government strengthened regulations for agricultural land, construction and development companies had difficulty finding land for development. Furthermore, to finance their bank loans, construction companies had to bring their debt-rate into line with government-legislated ratios. At that time, these construction companies sold their own properties and sought to avoid any risk, to survive. Thus, the housing market has become competitive and factors influencing success in housing development have become more complicated since construction projects have rarely increased as much as specialized professionals have emerged in the housing development fields.
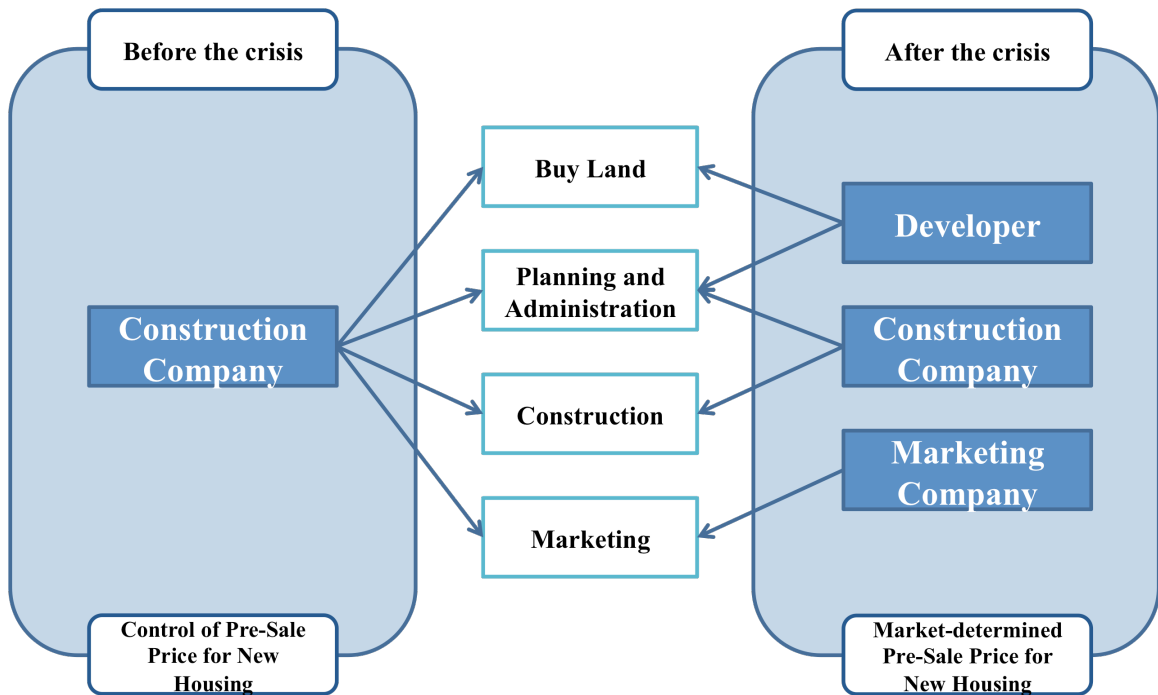
Figure 3.5. Changes in housing industry before and after the Korean economic crisis
(김현아 Kim, 백성준 Baik, & 김우영 Kim, 2004)[3]

The housing market now includes a variety of suppliers. There were increasing

opportunities and a corresponding increase in competition in the housing market after the

Asian financial crisis in Korea. However, opportunities were created by a shortage in the

short run. In that short run, the effect of an increased housing supply would be invisible.

If demand for new housing is still high, it makes sense that new development will be

encouraged in the market. Thus, the housing market becomes more competitive.

Housing supply becomes determined by conditions in the housing market rather than by

Korean government planning. In the long run, this tentative shortage can turn to housing

surplus due to a continuous supply of new development of apartment estates.

Housing development in Korea, therefore, can be categorized into three phases:

government-oriented, private supplier-oriented, and buyer-oriented developments.

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[3] Figure 3.5 from 김현아 Kim et.al. (2004), as translated and redrawn by me.

Phase 1: Government-oriented development

In the government-oriented development phase, housing development focused on resolving the housing shortage and improving living conditions of the squatter settlements that came from the Korean War and from internal, rural to urban migration. With government financial support, residents were expected to improve their housing by themselves (K-J Kim, 1998). According to Kim's explanation, these residents were too poor to improve their houses by themselves and the financial support was insufficient. Thus, the government received economic aid from the United States Agency for International Development – USAID. However, the USAID approach was different from people's needs in Korea, where people wanted to improve their economic status rather than their living conditions (K-J Kim, 1998). In the 1960s and 1970s, corresponding to the five-year economic development plans, apartment estates began to be constructed as the main housing type (강부성 Kang et al., 1999). Still, usually, these apartment complexes were constructed by the government. Thus, these government-oriented housing developments needed large financial resources.

Phase 2: Private supplier-oriented development

In the 1980s and 1990s, construction companies played marketing- and development- roles as well as construction roles, in the housing development process. To resolve government's insufficient financing, "Hapdong (partnership) redevelopment" between construction companies and residents was promoted (K-J Kim, 1998). However, there was still the housing shortage, and housing prices increased dramatically in the late

1980s. Thus, the two-million housing unit developments were planned and constructed as new town developments near and within the boundary of Seoul in the 1990s, namely Bundang, Ilsan, Jungdong, Sanbon, and Pyeongchon (Jun & Hur, 2001). According to Jun and Hur's explanation, this huge supply of housing units had good and bad effects on the housing situation; it relieved the housing shortage and stabilized the housing price, but increased commuting costs.

With government's support, because of this private supplier-oriented housing development, housing industries in Korea were dominated by some large construction companies of Korean *Chaebols* (business conglomerates).

Phase 3: Buyer-oriented development

Housing development is moving toward being determined by market conditions. After the Asian financial crisis in the late 1990s in Korea, housing supply dramatically decreased (Figure 3.4). The Korean government promoted housing construction by easing regulations on housing development, such as promotion of apartment redevelopment and increasing Floor Area Ratio – FAR. Unlike that construction companies played roles in marketing, development, and construction during the construction company-oriented phase, these construction companies avoid development risk and only focus on constructing apartment estates (김현아 Kim et al., 2004). Thus, various and specialized suppliers appear and the housing market becomes more competitive (김현아 Kim et al., 2004). In addition, balanced development such as the Seoul New Town Development emerges as a new concept of redevelopment by government (이종상 Lee, 2006).

Thus, in this phase of buyer-oriented housing development, housing development can be determined by conditions of the housing situation in Korea. However, government still controls the housing market by land control and by tax.

In Korea, changes in housing development models can be summarized as movement from the central-planned to the market-determined development model, as in Figure 3.6. In the central-planned development, overcoming the housing shortage was the most important issue. Policy focused on increasing housing supply. However, this model induced some negative effects such as insufficient low-income and rental housing. Housing development tends to become determined by market conditions. People's preference seems to have an immediate effect on housing design.

Central-planned   Market-determined

Government   **Company**   **Buyer**
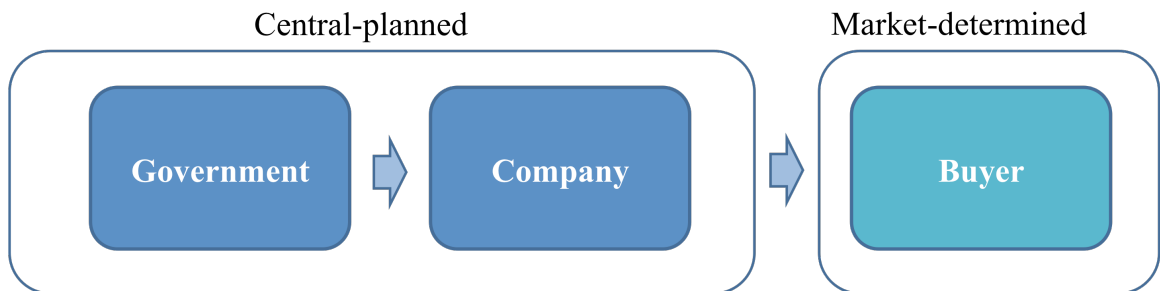
Figure 3.6. Change in housing development models in Korea

With market-determined pre-sale prices, developers can invest more into their housing projects to differentiate projects from others. Developers can predict they will earn more profit than before, because the pre-sale price still increases. Thus, they will encourage development of innovative housing design to win in the competitive market. Unless the price of sources for housing supply increases, profit can support the cost arising from the challenges of the housing design. This continuous increase of price

supposes that supply might still be an important issue in the housing market of Seoul, but not elsewhere in Korea. Although the ratio of housing units per household is more than 100% in the statistical data, housing supply might still be insufficient to meet demand in some areas. According to Kim et al.'s investigation of changes in pre-sale price for new housing after 1999, in 1998 regulation of price control was abolished and Seoul prices have increased more than in other cities in Korea (김현아 Kim et al., 2004). Under the circumstance of housing shortage, housing prices tend to increase in Korea. In addition, after the Asian financial crisis in Korea, government planned ways to overcome the crisis and set up policies to boost the housing market.

This continuous increase of price can come from an unbalanced quality of residential areas in Seoul. If people want to move into a limited number of better places, the price will increase, which can affect average prices in Seoul. For example, the government of Seoul plans projects to balance the quality of residential areas in Seoul. One of these projects is the Seoul New Town Development that began in the early 21st Century. This new town development differs from former new town developments around Seoul during the 1980s and 1990s. This development has two main goals: i) balancing the development of each area in Seoul, and ii) seeking alternative housing types to replace existing apartment as a housing type such as urban block housing.

This apartment redevelopment focuses on the demand-side aspect of the housing market and the redevelopment of existing residential areas. Housing pre-sale price is determined by the market, and the ratio of housing units per household becomes more than 100%. Since the housing market turns to the demand-dominant circumstance in Korea, creating a better apartment unit becomes an important issue in terms of

differentiation of housing design from the designs of competitive companies. In addition, old apartment estates and under-developed residential areas have been redeveloped to obtain profits with denser development and to balance quality *vis-a-vis* other preferred areas. In Seoul, in particular, there were more than 500 housing redevelopment projects as of August 2006 (주택재건축정비사업 추진현황 – 서울특별시 Housing Redevelopment Projects Current Phases – Seoul, 2006). The total area of these projects is about 11km^2, almost 2% of the Seoul area.

The Korean government's role moves from control of, to support for, the housing condition. This (re)development focuses on improving residential quality rather than on increasing the number of housing units. Balance Development is a new emerging development concept in Korea. As previous reviews of Korean apartment development have noted, housing development models in Korea have focused on building apartment estates for the middle class. This limited housing choice, apartment housing, can decrease the existing characteristics of variety in Korea. In addition, as a basic need and as a social necessity, housing development to improve low-income housing conditions should be considered seriously.

CHAPTER IV

Research Questions and Methodology

Research Questions

This research focuses on factors influencing architecture at the block scale.

Components in a block coexist as functional formation in the block. The individual

structure and the city are continuously being re-configured, and architectural concerns are

not to be limited to immediate surroundings. Accordingly, as my research progresses, I

explore the role of architecture in one's daily challenges to continuously manage life in a

city, by expanding architectural concepts of individual structures – i.e., space, function

and time - to the complexities of urban and architectural theories – i.e., place, event and

sustainability.

The main research topic is urban housing redevelopment - apartment housing

estates - including neighborhood design and vitality in those residential places. To add

value to existing previous research on economic and social concerns in urban housing

redevelopment, design issues pertinent to architectural and urban design comprise one

research topic on urban housing redevelopment in Korea. Residential areas in Korea

have experienced continuous cycles of redevelopment. From the garden city movement to new urbanism, various theories of neighborhood redevelopment have been proposed to create more vibrant living areas. Applying these concepts, a large number of residential areas in Korea have been redeveloped into taller and denser apartment estates.

Design issues in neighborhood design have moved toward achieving and/or creating everyday life on streets and plazas in neighborhoods, explicitly or implicitly, for example by creating walkable streets and public transportation in the new urbanism.   In Korea, housing markets have moved from the central-controlled to the market-determined condition. This current market-determined condition draws attention and interest to a study about residents' preferences in apartment housing neighborhoods.

However, rarely studied has been whether these continuous urban housing redevelopments are correlated to residential preferences. Many design studies propose normative concepts for redeveloping a place. While those design studies usually are based on professionals' experiences, neighborhood design and its components need to be compared with residents' experience in terms of vitality in a place from the residents' viewpoints. Residents, who actually live in the neighborhoods, are actual users in the places professionals design and construct.

This research explores appropriate design approaches of apartment housing estate redevelopment, based on empirical investigation. Developing arguments from data collection and analysis, this research investigates the current Korean situation and interprets its characteristics and compares it to what has been discussed by architects and researchers.

This study investigates:

Whether the way apartment neighborhoods are redeveloped correlates to revitalizing their places in Korean apartment redevelopment?

Whether the way apartment neighborhoods are redeveloped reflects residents' preferences?

For investigating these research questions, three descriptive questions are articulated thus:

What has changed in Korean apartment redevelopment?

How do residents perceive place vitality in their neighborhoods?

Why does this perception occur in Korean apartment redevelopment?

These subordinate questions are investigated to unveil characteristics of Korean urban housing redevelopment and to discern pros and cons of the current methods of Korean apartment redevelopment. Finding pertinent answers can address an approach of neighborhood design for place revitalization of multi-family apartment housing. This research explores Korean urban housing redevelopment by investigating values of apartment estate housing redevelopment and finding alternatives to Korean urban housing redevelopment.

Research Design

This research employs the case-study strategy. Groat and Wang define case-study strategy as "an empirical inquiry that investigates a phenomenon or setting" (GROAT & WANG, 2002). Yin explains that the case-study method is suitable for contemporary

issues "when the boundaries between phenomenon and context are not clearly evident", and research questions of how and why are articulated for a study (Yin, 1994). Thus, the case-study approach is an appropriate method for investigation of Korean apartment redevelopment such as currently occurring in existing residential areas. Also, in the context of Korean apartment redevelopment, this study of people's everyday lives seeks to learn people's perceptions based on the environmental settings. Such settings and the characteristics of Korean apartments are main themes for understanding how these neighborhood designs are perceived and why these perceptions occur in their neighborhoods.

In addition, organization of this study follows the "linear-analytic" typology of a case-study: "problem identification, literature review, methods, results, discussion, and conclusion" (Groat & Wang, 2002; Yin, 1994). Additionally, Groat and Wang state that this "linear-analytic" process is a conventional model for dissertation work. The linear-analytic process allows this research to include interpretation of findings as well as findings from results.

This research uses Canter's place model for organizing data collection framework to interpret urban characteristics and to find empirical evidence for understanding the perception of vitality in Korean apartment neighborhoods. The research approach focuses on three elements of Canter's place model: physical attributes, activities, and meanings. As a built environment, Korean apartment redevelopment comprises three elements in Canter's place model. To triangulate this research of a place in the Korean apartment, each element in Canter's place model can be used to support interpretation of the perception of vitality in these neighborhoods. In the framework of Canter's place theory,

data of physical attributes, activities and meaning in Korean apartment redevelopment are

collected and analyzed (Table 4.1).

Table 4.1. Research strategy and data collection approaches

Research Strategy	Data Collection Approaches	
Case Study	Physical attributes	Document of site plan drawings from public archives Document of maps from public archives
		Syntactical and morphological maps generated and drawn from collected drawings and maps
	Activity	Sorting task of photographs about places in each apartment estate by residents
		Tracing maps of people's movements from cognitive maps drawn by residents Observation of people's movements and activities
	Meaning	Cognitive maps drawn by residents
		In-depth interview of residents

Physical Attributes:

Physical analyses in Korean apartment redevelopments are based on data

excerpted from public archives. Site plan drawings are collected from local municipal

offices, and include street, block and building layouts of the apartment estates. Plans are

re-drawn by Computer Aided Design – CAD. In addition, 1967, 1976, 1987, 1996, 2001

and 2007 maps of each neighborhood are collected from the National Geographic

Information Institute in Korea. As a result, 108 maps – 66 numeric maps (CAD drawings)

and 42 scanned maps – are collected. These maps indicate circumstances in 1976, 1987,

1996 and 2001 (before redevelopment) and 2007 (after redevelopment). Maps of 1967 in

each neighborhood are not included in the analysis since those maps indicate pre-

development conditions similar to 1976 maps.

For analyzing these physical attributes, syntactical and morphological approaches are adapted. A syntactical approach is a method to analyze space based upon space syntax theory. Space Syntax is a spatial and socio-cultural theory that spatial configuration and user's behaviors are correlated in the built environment in relation to spatial and visual connectivity. Hillier and Hanson (1984) find that topological measurement of spatial configuration correlates to user behavior and movement in the built environment. Accordingly, studies of urban contexts and people's movements reveal that more people are observed in highly integrated areas more than in segregated areas (e.g. Hillier et al., 1993; Read, 1997). A morphological approach is a method to investigate historical and chronological changes in the built environment. Moudon (1997) states that a morphological analysis provides concrete results for analyzing and managing changes in urban contexts, i.e., buildings, parks, streets, blocks and monuments in urban environments. According to this morphological analysis, specific changes in urban environments can be highlighted.

For these syntactical and morphological analyses, axial line maps, visual field maps and building pattern maps are generated using these collected site plans and maps. An axial line map is a spatial analysis map comprised of axial lines to represent spatial configuration in the built environment. Hillier and Hanson (1984) use axial lines to represent longest lines of access and sight in a certain area. An axial line map comprises a set of axial lines and represents spatial connectivity between each line and all other lines in areas. A visual field map is a spatial analysis map consisting of spatial grids that divide space in a certain area. Based on a divided grid, an element in the grid has a visual connectivity to other elements in the grid. A visual field map describes spatial

configuration based on visual connectivity between each grid element and all other grid elements.

A building-pattern map is a morphological map comprising black and white patterns. In a building pattern map, black-color areas are open spaces and white-color areas are buildings and built structures on site. To analyze existing urban settings, block layouts and building layouts are separately drawn and analyzed, focusing on morphological changes in each neighborhood. Comparing changes in these black-white patterns, changes in urban elements can be analyzed.

Analyses of axial line maps and visual field maps indicate spatial configuration, and building-pattern maps show morphological changes of buildings and blocks from 1976 to 2007. Via these maps, relationships between streets, blocks and buildings are analyzed and explained as spatial configuration and socio-culture contexts in the neighborhoods.

Data collection approaches for physical attributes are summarized as follows:

- Drawn layouts of physical attributes in each apartment estate and each neighborhood from collected plans and photos (collected plans and photos)

- Generated and drawn syntactical and morphological maps from collected drawings and maps (axial line maps, visual field maps, and building pattern maps)

This research strategy for the physical attributes uses a comparative analysis of representative characteristics in neighborhood designs and computer-based spatial analyses of plans in neighborhood designs. Configurational analyses of physical layouts such as streets, blocks and buildings are conducted. By these strategies, physical

attributes in urban housing redevelopment are analyzed relative to socio-culture characteristics. In particular, this study seeks to find the relationship between physical characteristics and residents' behaviors and perceptions in Korean apartment neighborhood redevelopments.

Activity:

Activities are observed and surveyed in selected Korean apartment neighborhoods. Tracing people's movement/s in the survey, observation of activities in these neighborhoods and a photograph-sorting task are data collection approaches for the activity. For observation of activities, two research methods are applied. First, activities in each neighborhood are surveyed with a cognitive map. When residents draw a cognitive map of their neighborhood, they are asked to add their daily route on the cognitive map. Residential daily routes are traced on the neighborhood map and are compared with what residents write marking reasons and locations of places with vitality, and their explanations of apartment neighborhoods. In relation to places with vitality in the cognitive maps, residential daily routes are analyzed. Since residential daily routes are mapped over and over on the same neighborhood map, this daily route map indicates to what extent there is crowding in/on each neighborhood. Observing this crowding on the map, I compare residential daily movement with places that residents indicate on their cognitive maps.

Second, during the interview, residential activities in their neighborhoods are asked via a sorting task, i.e., a composite survey consisting of asking for respondents' own views and observing respondents' activities of grouping and categorizing variables.

Canter, Brown and Groat (1985) state that a multiple-sorting procedure has strength in analyzing a respondent's perception of a certain circumstance and is likely to produce a reliable response when concrete physical elements are examined. Groat and Wang (2002) explain that the sorting task is a data collection approach in correlational research. This sorting task as a data collection approach uses existing photos, checks responses, and includes interviews. Thus, a sorting task is appropriate for collecting residents' responses of neighborhood design in Korean apartment neighborhood redevelopment.

For this research, 20 pictures of places are taken in three categories: essential areas (five places), transition areas (five places), and additional areas (ten places) in each selected apartment estate. Residents are asked to rank photos, from most vibrant place to least vibrant and from most desirable place to least desirable in terms of their own views. Then they are asked to categorize their photos again, name each group, and explain their reasons for their categorizing and naming those groups. This grouping and naming procedure is conducted repeatedly until residents exhaust their alternatives.

Third, based on findings from the daily route map and the interview, I explore each neighborhood on weekdays and weekends to verify what I have found via observation of residential activities. As a natural observation, places in each apartment estate are sequentially observed and recorded with pictures and notes. This observation starts at the street approaching the apartment estate, and moves through the main gate. Comparing places in each apartment estate with findings, I return to the main gate.

Thus, data collection approaches for activity are:
- Residential daily route (daily route mapping)

- Residential sorting task (interviews and sorting tables)

- Observation of activities in these neighborhoods (photo and observation)

This strategy uses a comparative and verbal analysis of activities and perception of residents. Observation is a comparative analysis of activities. Based on spatial analysis using space syntax and residential daily routes, activities in the apartment neighborhood are compared. The sorting task is a visual and verbal analysis of residents' perceptions of their lives in their neighborhood.

Meaning:

For meaning, data collection approaches consist of a survey of cognitive maps and in-depth and open-ended interviews. Residents draw cognitive maps and interviews are with residents in Korean apartment neighborhoods.

Cognitive maps are collected by a form of survey (see Appendix A). This survey package consists of description of this research, respondents' basic data form, a cognitive map of their neighborhood, and a question about whether they want to meet for an in-depth interview. For respondents' basic data, residents are asked their age, gender, whether they lived in the same neighborhood before redevelopment, and how many years they have lived in their neighborhood. For cognitive maps, residents are asked to sketch a map of their neighborhood including their house, major places and vibrant places and to draw their typical-day route in their neighborhood.

For residents who agree to a meeting for interview, semi-structured interviews are conducted. Before asking semi-structured questions, I ask them to complete the sorting task. After this sorting task, residents are asked to explain;

their cognitive maps,

places marked as vital,

their routes in a typical day,

what they think the boundary of their neighborhood is,

what is different from their old neighborhood,

what is better or worse compared to their old neighborhood, and

which places make them choose to live in their new neighborhood.

Data collection approaches for meaning are summarized as follows:

- Cognitive maps drawn by residents (cognitive map)

- Residential sorting task (sorting task and interview)

- In-depth and open-ended interviews with residents in Korean apartment neighborhood redevelopment (interviews)

With these data collection approaches, this strategy for the meaning uses a verbal analysis of residents' perceptions and a comparative analysis of cognitive maps drawn by residents and their interviews. In addition, articles in public and professional media and statistical data in the Korean census are reviewed and this review supports a synthesis of arguments from data collection results.

Data collection is organized within Canter's place model. One data collection approach is paired with another, mutually-supportive approach. Mainly, pairs of data collection approaches are syntactical and morphological analysis + daily route, sorting task + interview, regional map with apartment estate site plan + cognitive map. These paired approaches for analyzing each characteristic in the Korean apartment neighborhood can be used to triangulate results from collecting and analyzing pertinent data.

First, in the area of physical attributes and activity, axial line maps and visual field maps from the space syntax theory are compared with trace of residential daily routes. Since integration values in axial line and visual field maps are correlated to people's movements, residential movements in the Korean apartment neighborhood can support data analysis by space syntax. Second, results from the sorting task are compared with interviews. Open-ended interviews with residents not only explain why they rank and sort those places in particular ways, but also explain their thoughts about each place in the Korean apartment neighborhood. Third, cognitive maps from the survey of residents are compared to physical characteristics from site plan drawings. Comparing cognitive images with residential neighborhood maps including site plan drawings of each apartment estate can explain residents' perceptions of their neighborhoods. While cognitive maps shows what residents perceive and how they represent such perception, comparison between the numeric site plan and the cognitive map reproduces non-scaled images to numeric-scaled maps, which can verify the extent of their neighborhood boundaries. However, other approaches from each pair also support analysis of each pair in overlapped areas of the place model. A place consists not only of three elements, but

also interrelations between each element. Even if paired analysis can strengthen

argument in each area, other data support these analyses in Korean apartment

neighborhoods.   Figure 4.1 shows these relationships between pairs of approaches and

characteristics in the place model.

Space Syntactical & Morphological Analysis
Regional Map with Site Plan

Syntactical & Morphological
Analysis
+
Daily Route

Physical
Attributes

Regional Map with Site Plan
+
Cognitive Map

Activity

Meaning

Sorting Task
Daily Route

Cognitive Map
Interview

Sorting Task
+
Interview
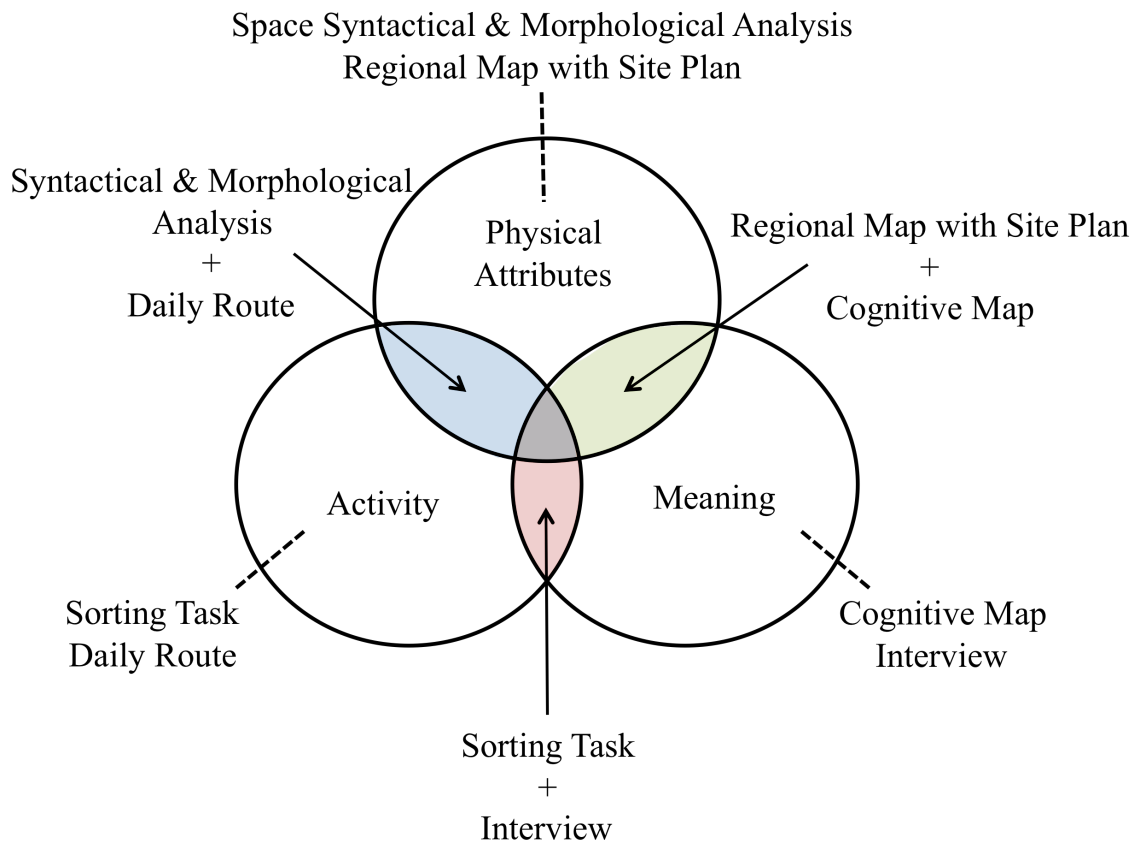
Figure 4.1. Research design using Canter's place model

This study of vitality in the Korean apartment redevelopment aims to discern how

place vitality is perceived and why such perception occurs. Using the place model, data

collection approaches converge to analyze different characteristics of physical attributes,

activity, and meaning in the built environment. To analyze Korean apartment

neighborhood redevelopment, four apartment neighborhoods are chosen.

Cases: *Weolgok R*, *Gongdeok R*, *Jangan H*, and *Yeoksam E* apartment estates

Apartment neighborhoods are selected based on a list of apartment redevelopment projects. This list has been collected from the report by the Ministry of Land, Transport, and Maritime Affairs in Korea[1] and media news for announcing new apartment projects by R114[2] in Korea. Selection criteria for choose representative examples in the apartment estates are: (1) location – Seoul and one project for one Gu (a regional municipal area), (2) the number of units – 1500~2000 and 500~1000, (3) year – recently developed and more than three years after residents lived there (between 2001 and 2006), and (4) original context – single or apartment housing neighborhood.

Four apartment estates are analyzed as urban housing redevelopment in Korea: *Weolgok R*, *Gongdeok R*, *Jangan H*, and *Yeoksam E* apartment estates (see Appendix B). While *Weolgok R* and *Gongdeok R* redevelopment projects are apartment estates from single- or semi-detached housing, *Jangan H* and *Yeoksam E* redevelopment projects are apartment estate redevelopments from old apartment estates. In addition, *Weolgok R* and *Jangan H* apartment estates have a large number of housing units: 1,372 and 2,182 respectively. *Gongdeok R* and *Yeoksam E* apartment estates have a relatively smaller number of housing units: 597 and 840 respectively.

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[1] "주택재건축정비사업 추진현황(서울특별시)" – trans. "Current Status of Housing Redevelopment Projects", 건설교통부(현재 국토해양부) 주거환경팀, Ministry of Land, Transport, and Maritime Affairs, http://www.mltm.go.kr/USR/BORD0201/m_42/DTL.jsp?id=IN0106_B&mode=view&idx=2833 1

[2] 부동산 114, http://www.r114.co.kr

I have collected site plans, aerial photos, and regional maps of each apartment redevelopment neighborhood (see Appendix B). Regional maps include 1967, 1976, 1987, 1996, 2001 and 2009 in the four residential neighborhoods. In total, 108 regional maps – 66 numeric maps (CAD drawings) and 42 scanned maps – are collected. These regional maps were bought at National Geographic Information Institute in Korea (http://www.ngi.go.kr). Site plans of the four apartment estates were bought at the regional municipal offices. Additional figures were collected from web-based public media and construction company websites, which were R114 (http://www.r114.co.kr), Dr APT (http://www.drapt.co.kr), and Samsung Construction Co. (http://www.raemian.co.kr). Aerial photos were from Google Map image (http://maps.google.com) and National Geographic Information Institute in Korea (http://www.ngi.go.kr/). For more detailed data of site plans and regional circumstances, numeric maps were collected from National Geographic Information Institute in Korea.

The survey followed mail-based sampling and snowball sampling approaches. The entire apartment units received the survey package containing a survey sheet and a return envelope. The snowball sampling approach helped this study to collect significant numbers of surveys. People who know residents in the four apartment estates – apartment resident community, mothers' community, etc. – circulated surveys to residents and collected residential responses. Yet again, these people recommended other residents to conduct and collect survey packages. As a result, a total of 240 surveys were collected and, among these collected surveys, 162 surveys directly related to the four cases for this study: 47 of 54 surveys for *Weolgok R* apartment estate, 25 of 54 surveys

for *Gongdeok R* apartment estate, 55 of 62 surveys for *Jangan H* apartment estate and 35 of 70 *Yeoksam E* apartment estate. Data excluded contain insufficient components.

Interviews followed the choice-based sampling approach. This research included interviews with residents who chose to participate in this interview process. Open-ended and semi-structured interviews needed residents' cooperation. Nine interviews were conducted: three from Weolgok R apartment estate, one from Gongdeok R apartment estate, two from Jangan H apartment estate, and three from Yeoksam E apartment estate. Each interview lasted approximately two hours. To begin, interviewees were asked to sort twenty pictures of places in their apartment estate. Then, in-depth interviews were conducted, including reasons for sorting tasks and residential thoughts on their apartment estate. Since those who chose participation were eager to deliver their thoughts, this approach allowed me to collect detailed description about their neighborhoods.

This research design is challenging in that it needs considerable time and effort for data collection for analysis of three characteristics in a place. In addition to the researcher's efforts, residents' participation is crucial to research success. How to hold residents' attentions and how to ensure survey participation and interviews are important factors for successful study. Also, protecting residents' privacy in these apartment neighborhoods is an important element during this research. Before starting data collection, I needed to explain these research activities to the community and obtain authorization to perform these data collection activities. To meet these challenges, I sought to match or exceed quality standards during my field study.

CHAPTER V

What Has Changed in Korean Apartment Neighborhood Redevelopments:

Analyzing Physical Attributes

Apartment neighborhood redevelopment is commonly observed around

residential areas, and frequently announced in daily news and magazines in Korea. Since

apartment housing is a dominant housing type,[1] it has been a naturally-selected housing

type in urban housing redevelopment projects. Although a neighborhood was originally

single-family housing or apartment housing neighborhoods, apartment housing is being

constructed there. Various residential areas are being redeveloped as apartment

neighborhoods in Korea.

This chapter analyzes residential blocks in four apartment neighborhood

redevelopments. The main question in this chapter are what kind of characteristics four

apartment estates have and what has changed by urban housing redevelopment. As

presented in the previous chapter, the four cases in this study - Weolgok R, Gongdeok R,

Jangan H, and Yeoksam E apartment estates - represent urban housing redevelopments.

These cases are categorized according to original contexts of residential areas – single-

family housing and apartment housing neighborhood, and the number of housing units –

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[1] The ratio of apartment housing in the Korean housing market is more than 53% as of
2007 ("국가통계포털 Korean Statistical Information Service," 2007)

500 to 1000 and 1500 to 2000 units. Weolgok R and Gongdeok R apartment estates are redeveloped from single family housing to apartment estates, and Jangan H and Yeoksam E apartment estates are redeveloped from old apartment estates to new apartment estates.

I seek to analyze physical changes in these four apartment estates. In all, 108 maps (66 numeric maps (CAD drawings) and 42 scanned maps) have been collected. This chapter investigates physical characteristics in the four apartment estates. Syntactic changes and morphological changes in the physical characteristics are analyzed. Changes from 1976 to 2007 are chronologically investigated, and physical changes before and after redevelopment are analyzed.

Thus, this chapter seeks to discern changes by redevelopment in urban housing redevelopment. This chapter's main purpose is to analyze changes in buildings, streets, and blocks of the four apartment neighborhood redevelopments.

Four Cases: Weolgok R, Gongdek R, Jagnan H, and Yeoksam E Apartment Estates

Weolgok R **apartment estate**

Weolgok R apartment estate is located in Haweolgok-dong Seongbuk-gu, Seoul, in northern part of Seoul. This apartment estate was built in July 2006. In this apartment estate are 26 apartment buildings. Housing units number 1,372 and comprise 378 of 850 sq f = 79 m^2 (net area 635 sq f = 59 m^2) area type, 796 of 1,152 sq f = 107 m^2 (net area 904 sq f = 84 m^2), and 198 of 1,539 sq f = 143 m2 (net area 1,227 sq f = 114 m^2). Site area is 15 acres (60,868 m^2) and density is 91 unit/acre (225 unit/ha). FAR (floor area

ratio) is 2.399 (= 239.85 %) and the building-to-land ratio is 17 %. Maximum height of

apartment buildings is 20-floore and lowest is 10-floor height.

Figure 5.1. Bird's eye view of Weolgok R apartment estate (www.raemian.co.kr)

Figure 5.2. Aerial photo of Weolgok (Left: before redevelopment, 2000, www.ngii.go.kr;
Right: after redevelopment, 2009, www.google.com)
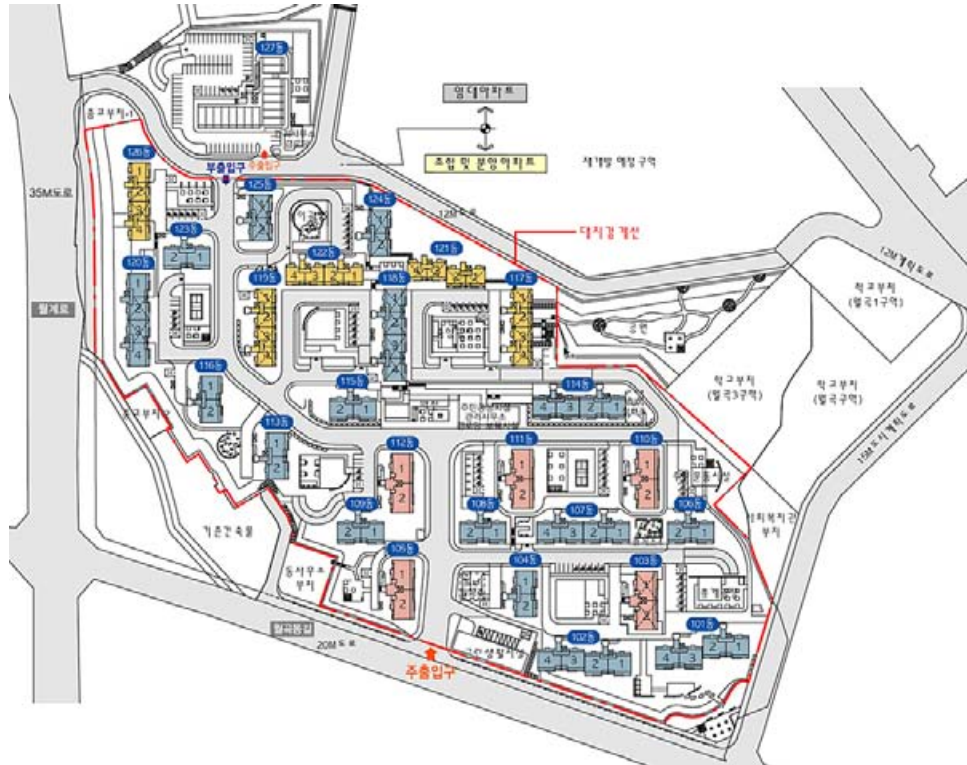
Figure 5.3. Site plan of Weolgok R apartment estate – 1 (www.raemian.co.kr)
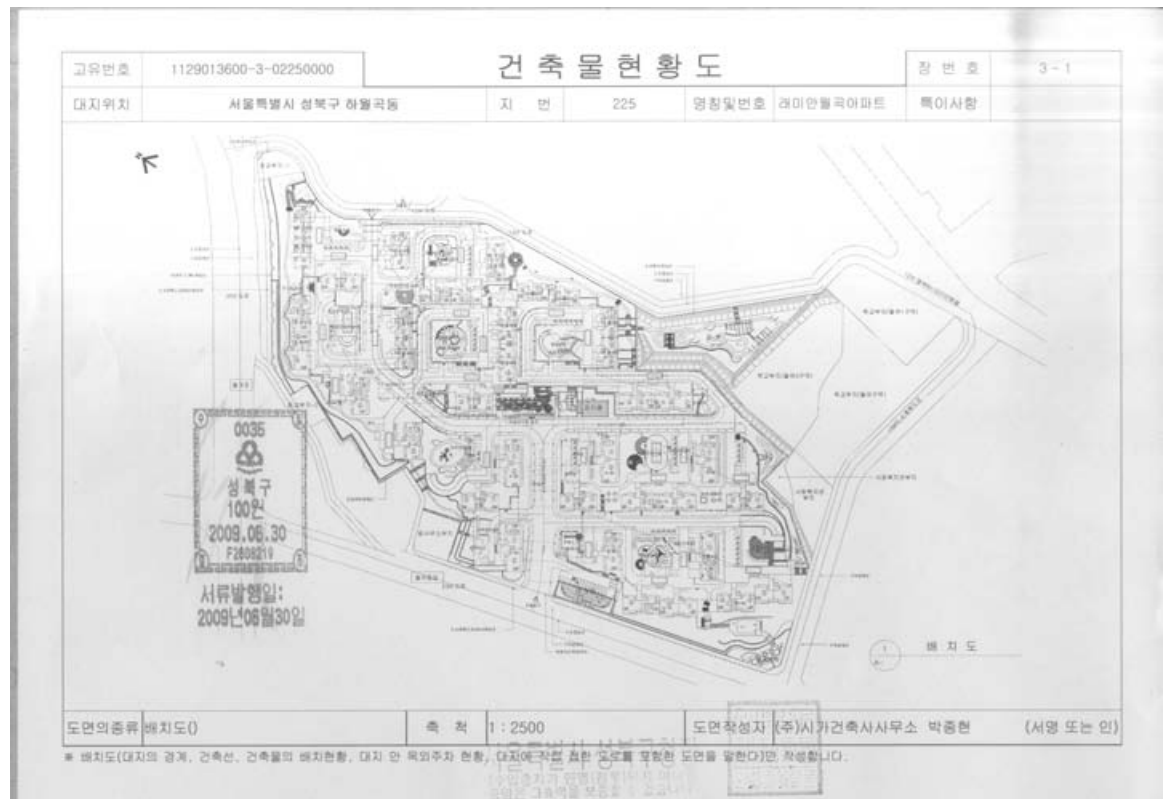
Figure 5.4. Site plan of Weolgok R apartment estate – 2 (Seongbuk Gucheong)

In February 11, 2011, housing prices of apartment housing units are as shown below.

Table 5.1. Housing price of Weolgok R aparment estate (US$1 = 1000 KRW)

Housing Unit Type (sq f)	Mean of housing price (US$)	Mean of housing price (KRW)	Mean of Jeonse price (US$)	Mean of Jeonse price (KRW)
850	352,500	352,500,000	190,000	190,000,000
1152	495,000	495,000,000	222,500	222,500,000
1539	665,000	665,000,000	272,500	272,500,000

Note: Jeonse is a two-year contract with a deposit of usually 30%~50% of the housing price
(Hwang et al., 2006)

Gongdeok R apartment estate

Gongdeok R apartment estate is located in Gongdeok-dong Mapo-gu, Seoul, which is in western part of Seoul. This apartment estate was built in November 2005. In this apartment estate are 12 apartment buildings. Housing units number 597 and comprise 315 of 882 sq f = 82 m^2 (net area 635 sq f = 59 m^2) area type, 174 of 1,198 sq f = 102 m^2 (net area 904 sq f = 84 m^2), and 108 of 1,485 sq f = 138 m^2 (net area 1,205 sq f = 112 m^2). Site area is 7.6 acres (30,711 m^2) and density is 79 unit/acre (194 unit/ha). FAR (floor area ratio) is 1.99 (= 199.25 %) and the building-to-land ratio is 16 %. Maximum height of apartment buildings is 20-floors and lowest is 8-floor height.

Figure 5.5. Bird's eye view of Gongdeok R apartment estate (www.raemian.co.kr)

Figure 5.6. Aerial photo of Gongdeok (Left: before redevelopment, 1981, www.ngii.go.kr;
Right: after redevelopment, 2009, www.google.com)
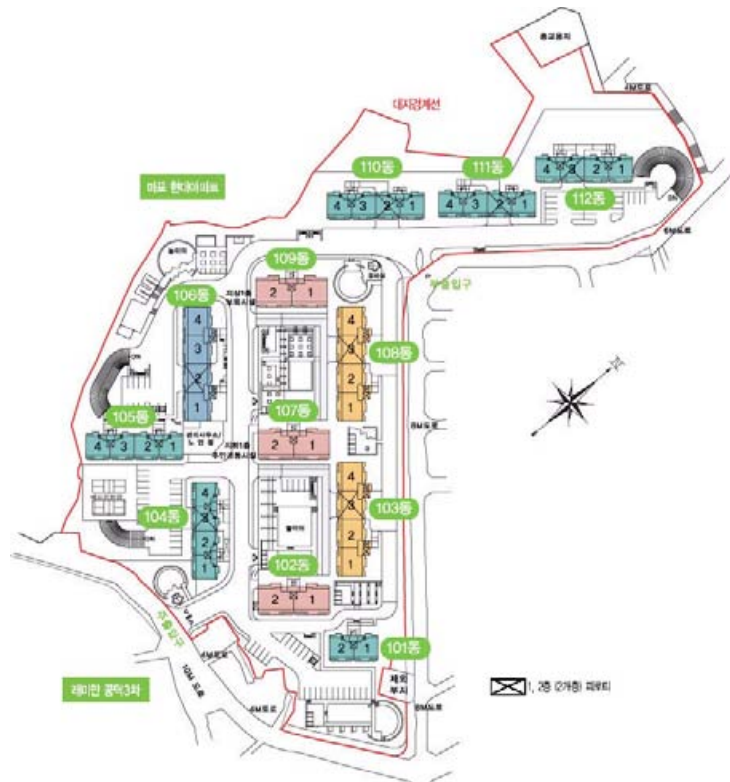
Figure 5.7. Site plan of Gongdeok R apartment estate – 1 (www.raemian.co.kr)

Figure 5.8. Site plan of Gongdeok R apartment estate – 2 (Mapo Gucheong)

In February 11, 2011, housing prices of apartment housing units are as shown below.

Table 5.2. Housing price of Gongdeok R aparment estate (US$ 1 = 1000 KRW)

Housing Unit Type (sq f)	Mean of housing price (US$)	Mean of housing price (KRW)	Mean of Jeonse price (US$)	Mean of Jeonse price (KRW)
882	450,000	450,000,000	270,000	270,000,000
1198	660,000	660,000,000	335,000	335,000,000
1485	900,000	900,000,000	400,000	400,000,000

Note: Jeonse is a two-year contract with a deposit of usually 30%~50% of the housing price
(Hwang et al., 2006)

Jangan H **apartment estate**

Jangan H apartment estate is located in Jangan-dong Dongdaemun-gu, Seoul, which is in eastern part of Seoul. This apartment estate was built in October 2003. In this apartment estate are 22 apartment buildings. Housing units number 2,182 and comprise 223 of 775 sq f = 72 m^2 (net area 635 sq f = 59 m^2) area type, 288 of 818 sq f = 76 m2 (net area 635 sq f = 59 m^2), 1,096 of 1,130 sq f = 105 m^2 (net area 904 sq f = 84 m2), 115 of 1,485 sq f = 138 m^2 (net area 1,205 sq f = 112 m^2), and 115 of 1,776 sq f = 165 m^2 (net area 1,431 sq f = 133 m^2). Site area is 20 acres (81,130 m^2) and density is 109 unit/acre (269 unit/ha). FAR (floor area ratio) is 3.08 (= 308 %) and the building-to-land ratio is 21 %. Maximum height of apartment buildings is 28-floors and lowest is 12-floor height.

Figure 5.9. Bird's eye view of Jangan H apartment estate (www.drapt.co.kr)

Figure 5.10. Aerial photo of Jangan (Left: before redevelopment, 1981, www.ngii.go.kr; Center: on redevelopment, 2000, www.ngii.go.kr; Right: after redevelopment, 2009, www.google.com)

평형	Type	m²(평형)	일반분양	조합분양
50평형	A1	168,320(50,916)	64	51
42평형	A	142,008(42,957)	96	364
32평형	B1	108,027(32,678)	6	109
32평형	B	107,625(32,556)	40	941
23평형	C	76,187(23,046)	2	110
23평형	C1	76,623(23,178)	6	170
22평형	C2	75,081(22,712)	46	177

Figure 5.11. Site plan of Jangan H apartment estate – 1 (www.drapt.co.kr)
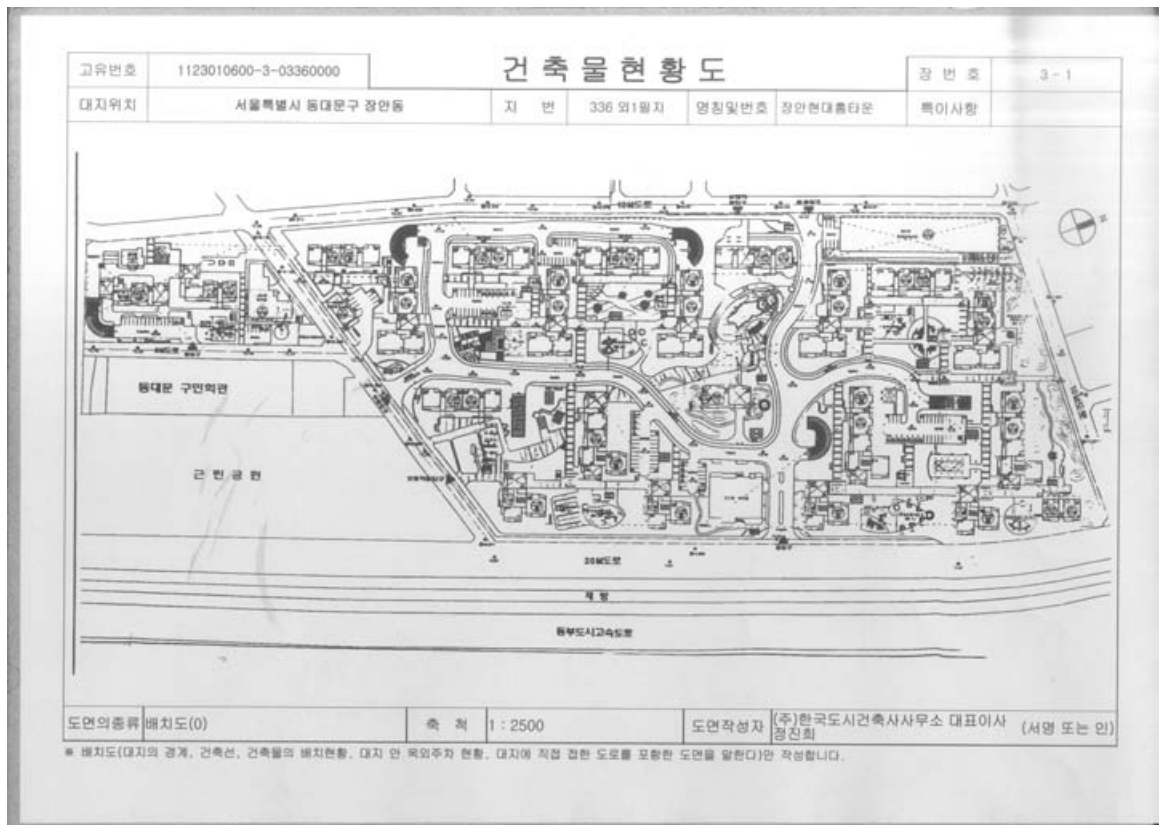
Figure 5.12. Site plan of Jangan H apartment estate – 2 (Dongdaemun Gucheong)

In February 11, 2011, housing prices of apartment housing units are as shown below.

Table 5.3. Housing price of Jangan H aparment estate (US$ 1 = 1000 KRW)

Housing Unit Type (sq f)	Mean of housing price (US$)	Mean of housing price (KRW)	Mean of Jeonse price (US$)	Mean of Jeonse price (KRW)
775	332,500	332,500,000	182,500	182,500,000
818	337,500	660,000,000	182,500	182,500,000
1130	450,000	900,000,000	225,000	225,000,000
1485	630,000	630,000,000	225,000	225,000,000
1776	740,000	740,000,000	295,000	295,000,000

Note: Jeonse is a two-year contract with a deposit of usually 30%~50% of the housing price
(Hwang et al., 2006)

Yeoksam E apartment estate

Yeoksam E apartment estate is located in Jangan-dong Yeoksam-dong Gangnam-gu, Seoul, which is in southern part of Seoul. This apartment estate was built in December 2005. In this apartment estate are 12 apartment buildings. Housing units number 840 and comprises 513 of 850 sq f = 79 m^2 (net area 635 sq f = 59 m^2) area type, and 327 of 1,130 sq f = 105 m^2 (net area 904 sq f = 84 m^2). Site area is 6.7 acres (27,110 m2) and density is 125 unit/acre (310 unit/ha). FAR (floor area ratio) is 2.75 (= 275 %) and the building-to-land ratio is 19 %. Maximum height of apartment buildings is 25-floors and lowest is 15-floor height.

Figure 5.13. Perspective of Yeoksam E apartment estate (www.drapt.co.kr)

Figure 5.14. Aerial photo of Yeoksam (Left: before redevelopment, 2000,
www.ngii.go.kr; Right: after redevelopment, 2009, www.google.com)

Figure 5.15. Site Plan of Yeoksam E apartment estate – 1 (www.drapt.co.kr)
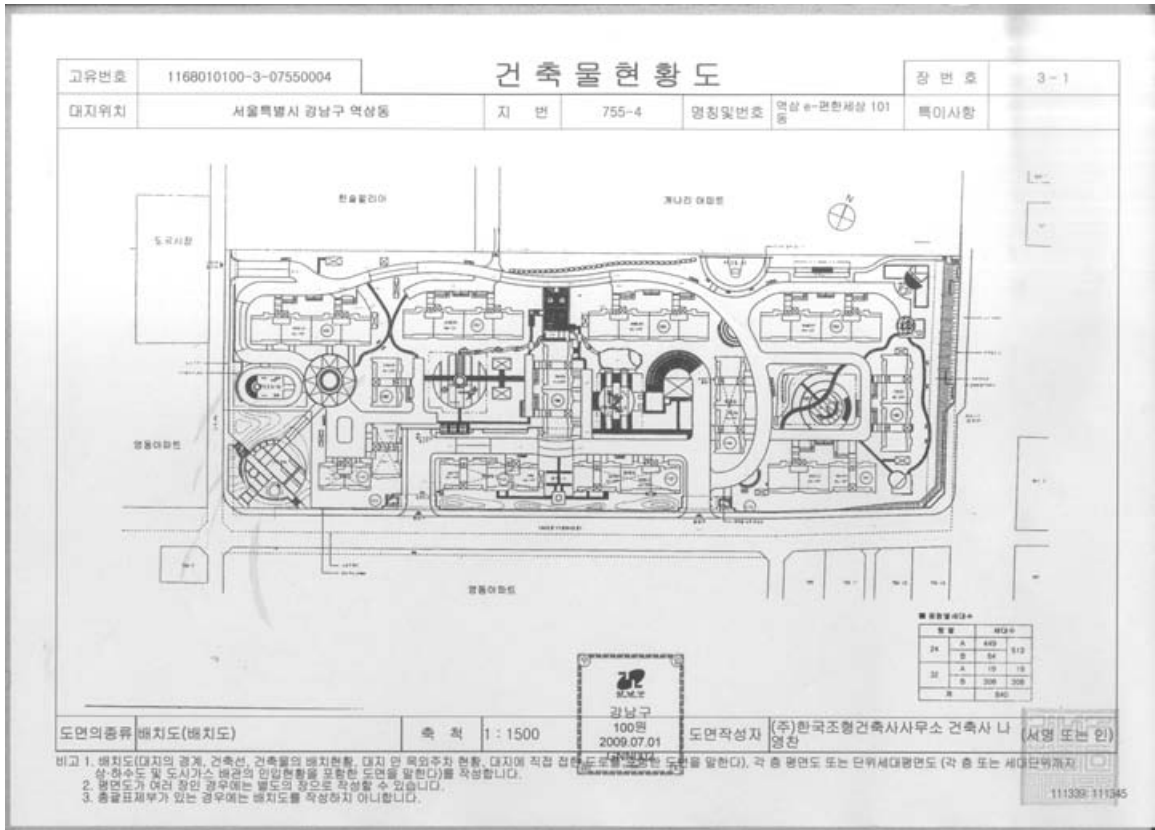
Figure 5.16. Site Plan of Yeoksam E apartment estate – 2 (Gangnam Gucheong)

In February 11, 2011, housing prices of apartment housing units are as shown below.

Table 5.4. Housing price of Yeoksam E aparment estate (US$ 1 = 1000 KRW)

Housing Unit Type (sq f)	Mean of housing price (US$)	Mean of housing price (KRW)	Mean of Jeonse price (US$)	Mean of Jeonse price (KRW)
850	680,000	680,000,000	415,000	415,000,000
1130	1,020,000	1,020,000,000	535,000	535,000,000

Note: Jeonse is a two-year contract with a deposit of usually 30%~50% of the housing price
(Hwang et al., 2006)

Integrated Block: Analyzing Syntactic Changes

Four neighborhoods that include each apartment estate are analyzed in the whole-neighborhood scale (the regional scale). Axial line maps have been drawn based on map collection of each neighborhood from the National Geographic Information Institution. For analyzing axial line maps and visual field maps, I use Depthmap, i.e., a computer-based analysis program developed by University College of London. Using Depthmap, I analyze 1976, 1987, 1996, and 2007 axial line maps of each neighborhood, namely Weolgok, Gongdeok, Jangan, and Yeoksam. In addition, I analyze visual integration of building arrangement before and after redevelopment in each neighborhood, using visibility graph analysis in Depthmap. Comparing the before and the after of each redevelopment, I seek to find which physical elements have changed in each neighborhood.

Syntactic analysis based upon the space syntax theory demonstrates a topological measurement of spatial relationship within a certain boundary. This topological measurement enables researchers to explain how spatial elements are spatially organized in terms of topological relationship, rather than physical dimensional distance, by tracing changes in syntactic values. Through the use of Depthmap computer-based analysis program, quantitative values are generated, but I also focus on qualitative changes of graphs and maps. Sixteen axial line maps and eight visual field maps are generated and analyzed: the 16 axial line maps are of four neighborhoods at four times, namely Weolgok, Gongdeok, Jangan, and Yeoksam in 1976, 1987, 1996, and 2007; the 8 visual field maps are of these four neighborhoods in 2001 and 2007.

The scope of neighborhood for analyzing changes in neighborhoods is determined based on distance from boundaries of each apartment estate. Using the concept of 450 yards (400 meters) in *Shaping Neighbourhoods* (Barton et al, 2003: 201), I include areas within 450 yards (400 meters) of boundaries of each neighborhood for neighborhood maps. Including investigation of changes in each neighborhood from 1976 to 2007 and between before and after redevelopment, I seek to determine what has changed in each neighborhood as well as each apartment estate.

1976　　　　　　　　　　　　　　1987

1996　　　　　　　　　　　　　　2007

Segregation　　　　　　　　　　　Integration
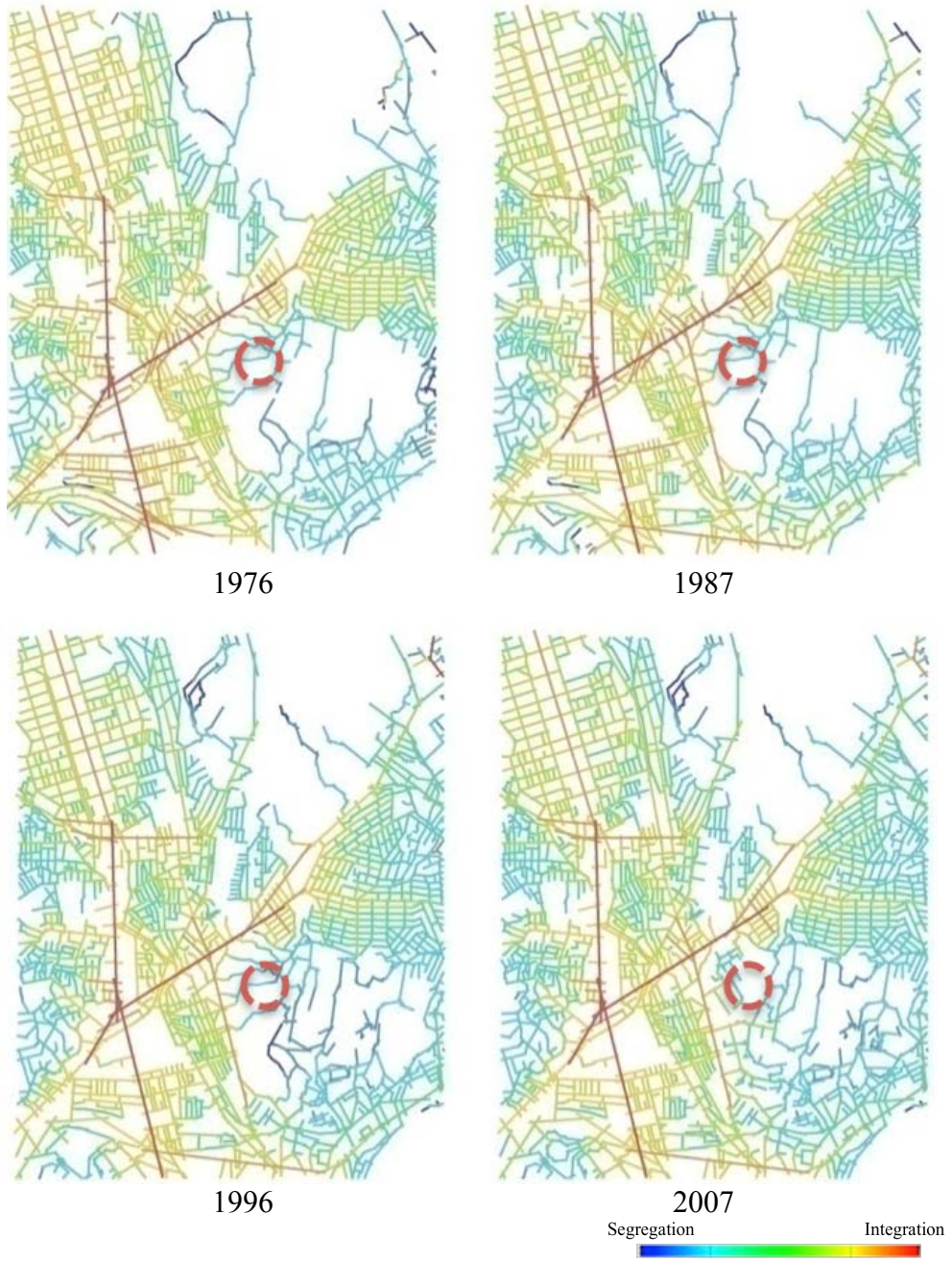
Figure 5.17. Changes in axial line maps of Weolgok neighborhood

1976   1987

1996   2007

Segregation   Integration

Figure 5.18. Changes in axial line maps of Gongdeok neighborhood

According to Figures 5.17 and 5.18, Weolgok and Gongdeok neighborhoods

historically demonstrate that spatial configuration has not significantly changed from its

syntactic contexts established before 1976. From single detached housing to apartment housing between 1996 and 2007, Weolgok and Gongdeok neighborhoods maintain their spatial configuration in terms of axial line analysis.

However, Table 5.5 and 5.6 describe statistically significant changes in integration values. Since *p*-values in the tables represent statistical significance of changes in each period, *p*-values show that each period experienced statistically significant changes in Weolgok and Gongdeok neighborhoods. In particular, after redevelopments, Weolgok neighborhood has changed more significantly than Gongdeok neighborhood. In 2007 after redevlopment, mean integration value in Weolgok neighborhood changed by 71%, but mean integration values in Gongdeok neighborhood changed by 5%.

Table 5.5. Changes in integration values in axial line maps of Weolgok neighborhood

Weolgok	1976	1987	1996	2007
Mean Integration	0.822471	0.946889	0.963161	1.64751
Change	-	15.13%	1.72%	71.05%
p-value	-	0.000*	0.027*	0.000*

(* statistically significant within the confidence level of 0.95)

Table 5.6. Changes in integration values in axial line maps of Gongdeok neighborhood

Gongdeok	1976	1987	1996	2007
Mean Integration	0.760532	0.975823	1.01047	1.06141
Change	-	28.31%	3.55%	5.04%
p-value	-	0.000*	0.000*	0.000*

(* statistically significant within the confidence level of 0.95)

While the axial line patterns seem similar from 1976 to 2007, integration values become higher at the same time. Weolgok and Gongdeok areas have become more integrated from 1976 to 2007 maintaining their spatial patterns in terms of axial lines.

1976

1987

1996

2007

Segregation   Integration
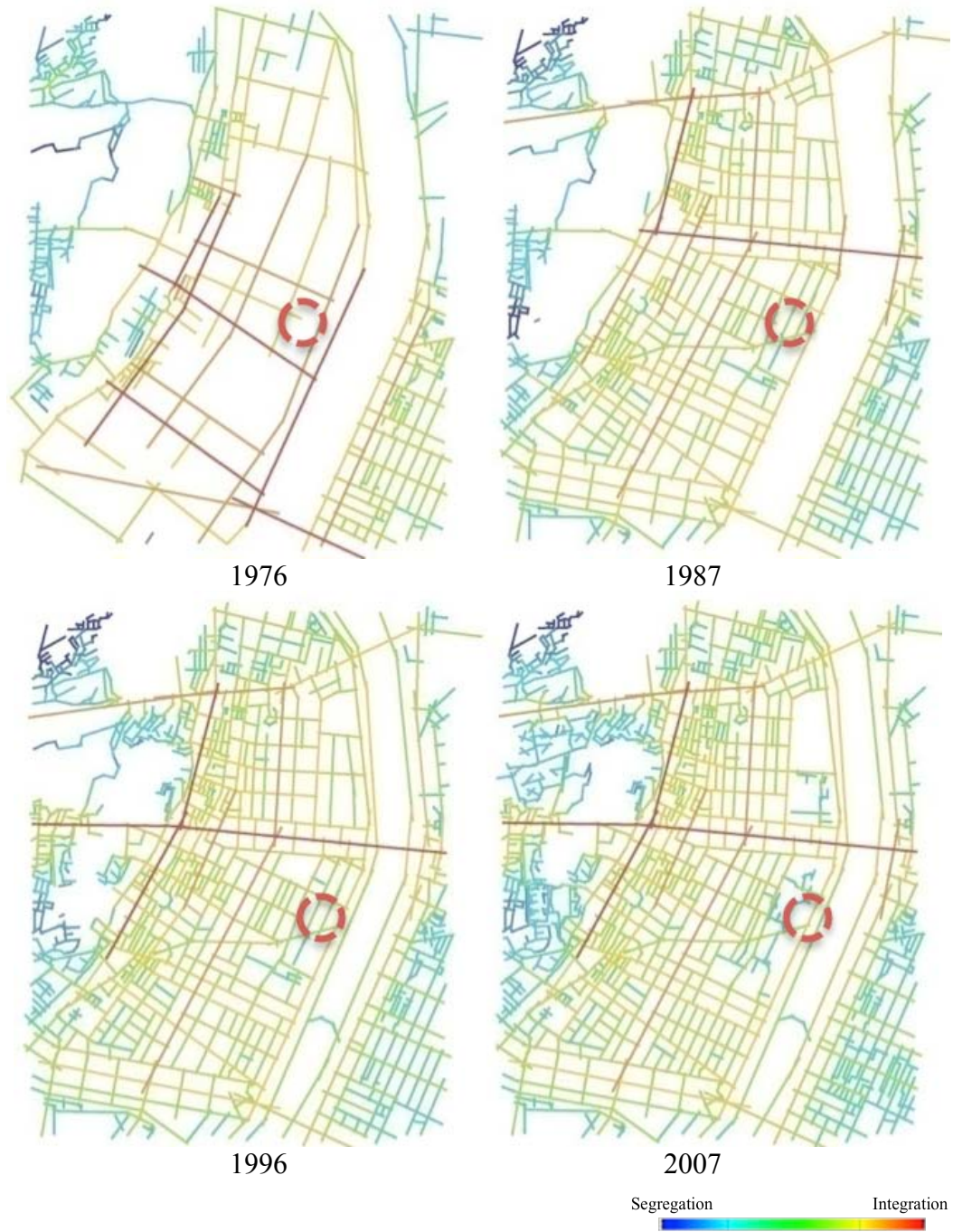
Figure 5.19. Changes in axial line maps of Jangan neighborhood

Figure 5.20. Changes in axial line maps of Yeoksam neighborhood

Chronologically, Jangan and Yeoksam neighborhoods demonstrate in Figures

5.19 and 5.20 that these neighborhoods have significantly changed between 1976 and

1987. From old apartment to new apartment housing between 1996 and 2007, Jangan

and Yeoksam neighborhoods maintain their spatial configuration in terms of axial

analysis.

Table 5.7 and 5.8 also supports that changes between 1976 and 1987 are more

significant than changes between 1987 and 1996 and between 1996 and 2007 in Jangan

and Yeoksam neighborhoods. In Table 5.7, p-values between 1976 and 1987 and

between 1996 and 2007 are within the confidence level of 0.95. In Table 5.8, p-values

between 1976 and 1987 are also within the confidence level of 0.95. Change from 1996

to 2007 in Jangan neighborhood and changes from 1987 and 1996 are not significantly

different.

Table 5.7. Changes in integration values in axial line maps of Jangan neighborhood

Jangan	1976	1987	1996	2007
Mean Integration	0.752033	0.956943	1.09867	1.10685
Change	-	27.25%	14.81%	0.74%
p-value	-	0.000*	0.000*	0.528

(* statistically significant within the confidence level of 0.95)

Table 5.8. Changes in integration values in axial line maps of Yeoksam neighborhood

Yeoksam	1976	1987	1996	2007
Mean Integration	0.926378	1.64276	1.63239	1.61385
Change	-	77.33%	-0.63%	-1.14%
p-value	-	0.000*	0.679	0.454

(* statistically significant within the confidence level of 0.95)

After redevelopment, similar to the axial line patterns, Jangan and Yeoksam

neighborhoods maintain their spatial configurations. Changes before and after

redevelopment at the level of neighborhood are not statistically significant.

Before redevelopment (2001)　　　　[Weolgok]　　　After redevelopment (2007)
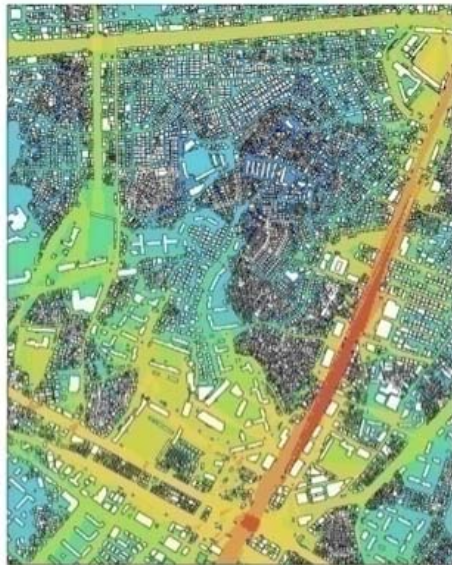
Before redevelopment (2001)　　　　[Gongdeok]　　　After redevelopment (2007)

Segregation　　　　　　　　　　Integration

Figure 5.21. Changes in visual field maps of Weolgok and Gongdeok neighborhoods

Before redevelopment (2001)*   [Jangan]   After redevelopment (2007)
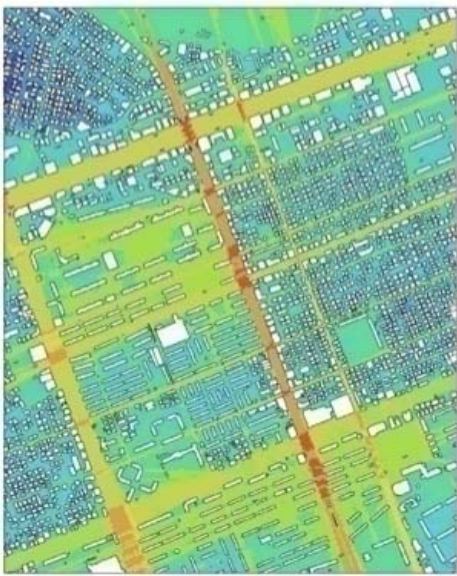
Before redevelopment (2001)   [Yeoksam]   After redevelopment (2007)

Segregation   Integration

Figure 5.22. Changes in visual field maps of Jangan and Yeoksam neighborhoods

(Note *: the map of Jangan neighborhood before redevelopment is generated based on the Jangan
neighborhood map in 2001 adding the map of the old Jangan apartment estate in 1997)

Before and after redevelopment, overall analysis of visual field maps

demonstrates that major streets are highly integrated (Figures 5.21 and 5.22). Similar to

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findings in axial line maps, major streets have not significantly changed after redevelopment. The wide and integrated streets in these four neighborhoods maintain their topological values after redevelopment. These spatial configurations indicate that apartment redevelopments correlate weakly to overall changes in the whole-neighborhood scale.

In Table 5.9 and 5.10, Weolgok, Gongdeok and Jangan neighborhoods include statistically significant changes between before and after redevelopment. Yeoksam neighborhood before and after redevelopment is not significantly changed within the confidence level of 0.95. Although Janagn neighborhood includes statistically significant changes, it is indicated that Weolgok and Gongdeok neighborhoods, 14.1% and 2.2%, are more changed than Jangan and Yeoksam neighborhoods, 0.5% and -0.01%.

Table 5.9. Changes in integration values in visual field maps of Weolgok and Gongdeok neighborhoods

	Mean integration before redevelopment	Mean integration after redevelopment	Change	*p*-value
Weolgok	3.71045	4.23317	14.09%	0.000*
Gongdeok	2.94025	3.0062	2.24%	0.000*

(* statistically significant within the confidence level of 0.95)

Table 5.10. Changes in integration values in visual field maps of Jangan and Yeoksam neighborhoods

	Mean integration before redevelopment	Mean integration after redevelopment	Change	*p*-value
Jangan	6.08762	6.1175	0.49%	0.004*
Yeoksam	5.56825	5.56358	-0.08%	0.552

(* statistically significant within the confidence level of 0.95)

In Weolgok and Gongdeok neighborhoods, high integration values in axial line maps have been maintained from 1976 to 2007. This maintenance of highly integrated axial lines explains that these neighborhoods were urbanized before apartment estates construction. Before 1976, Weolgok and Gongdeok neighborhoods were residential blocks and included urban characteristics.

Jangan and Yeoksam neighborhoods, however, have development processes different from those in Weolgok and Gongdeok neighborhoods. In Jangan and Yeoksam neighborhoods, high integration values in axial line maps have been maintained from 1987 to 2007, and the highly integrated axial lines changed significantly from 1976 to 1987. Thus, Jangan and Yeoksam neighborhood were newly developed areas by construction of apartment estates.

However, after redevelopments, the four apartment estates included more integrated spaces than they did before redevelopment. Comparing apartment blocks before and after redevelopment, green areas decrease, and yellow areas increase and widen in Figure 5.23, 5.24, 5.25 and 5.26. After redevelopment, each block / each apartment estate includes more integrated spaces.

Before redevelopment (2001)   After redevelopment (2007)

Before redevelopment (2001)   After redevelopment (2007)

Segregation   Integration
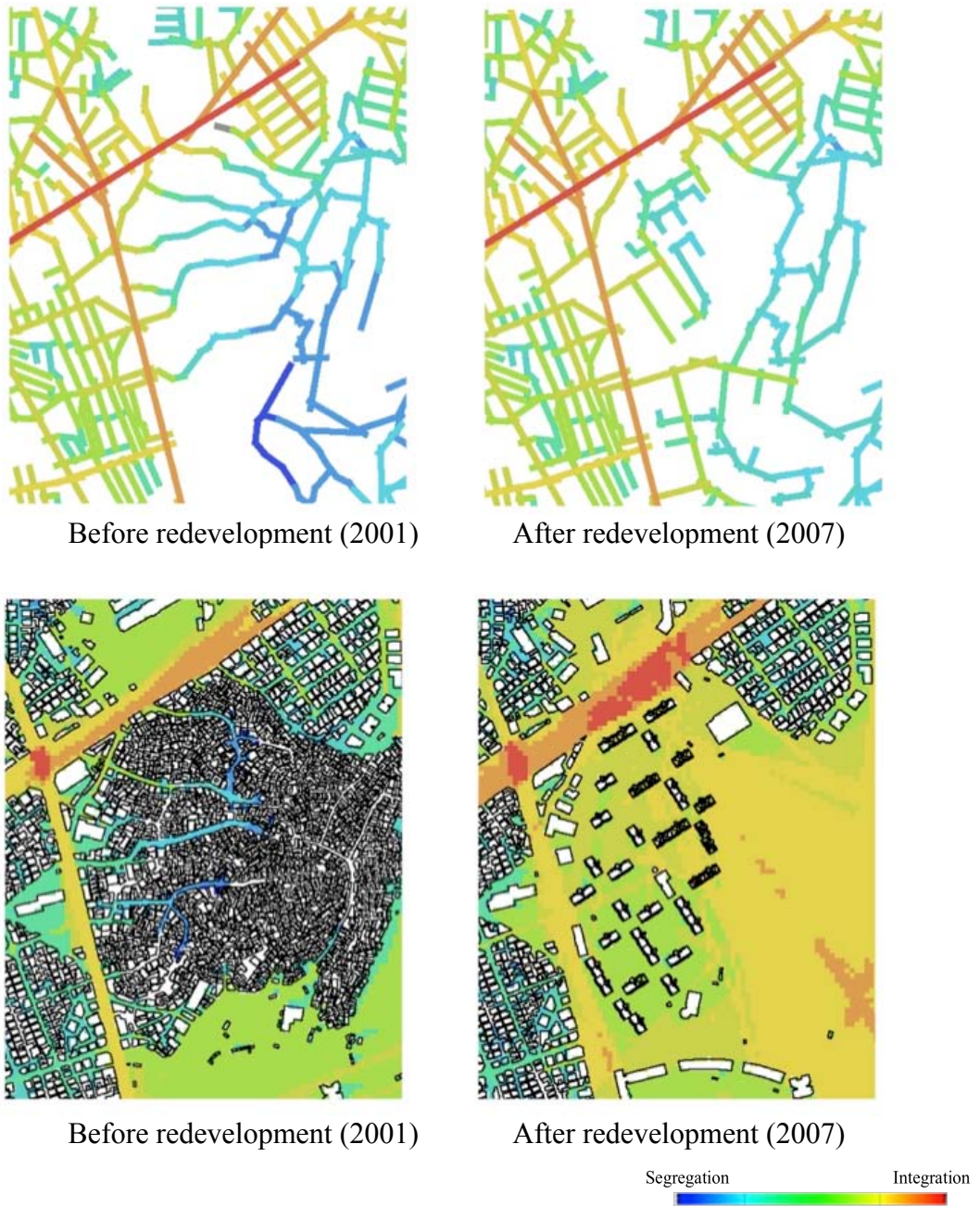
Figure 5.23. Before and after changes in Weolgok R apartment redevelopment

Before redevelopment (2001)   After redevelopment (2007)

Before redevelopment (2001)   After redevelopment (2007)

Segregation   Integration

Figure 5.24. Before and after changes in Gongdeok R apartment redevelopment

After redevelopment, Weolgok R and Gongdeok R apartment estates contain more integrated space. In the top of Figure 5.23, as the axial line map after redevelopment has fewer blue axial lines, Weolgok R apartment estates become more

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integrated (mean integration value increases from 1.00 to 1.11). After redevelopment, the

visual field map in the bottom of Figure 5.23 (shows more yellow areas and fewer blue

areas than before redevelopment [mean integration values increases from 4.08 to 5.32])

also supports that space in Weolgok R apartment estates becomes more integrated. These

changes are similarly observed in Gongdeok R apartment redevelopment. Increases in

mean integration values in the axial line map and the visual field map in Figure 5.24 are

observed: from 1.02 to 1.04 and from 2.79 to 3.13. While changes of colors in axial line

maps are insignificant in the top of Figure 5.24, changes in the visual field maps at the

bottom of Figure 5.24 demonstrate that, after redevelopment, this apartment estate

includes more green and yellow (fewer blue) areas. Thus, after redevelopment, Weolgok

R and Gongdeok R apartment estates show that their residential blocks are more visually

exposed to other, neighboring areas.

Table 5.11. Changes in integration values in Weolgok R apartment neighborhood

Weolgok	Mean integration before redevelopment	Mean integration after redevelopment	Change	p-value
Axial line map	1.00052	1.10698	10.64%	0.000*
Visual field map	4.07716	5.32171	30.52%	0.000*

(* statistically significant within the confidence level of 0.95)

Table 5.12. Changes in integration values in Gongdeok R apartment neighborhood

Gongdeok	Mean integration before redevelopment	Mean integration after redevelopment	Change	p-value
Axial line map	1.02075	1.03827	1.72%	0.041*
Visual field map	2.78818	3.1342	12.41%	0.000*

(* statistically significant within the confidence level of 0.95)

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Table 5.11 and 5.12 show that changes in integration values in Figure 5.23 and 5.24 of Weolgok R and Gongdeok R apartment neighborhood support changes in visual field maps in those figures. While neighborhood maps from Figure 5.17 to 5.22 include 450-yard areas from the boundaries of each apartment estate, magnified areas in Figure 5.23 and 5.24 represent each apartment estate and neighboring areas. Based on these magnified maps, integration values are selected and changes of integration values are calculated in Table 5.11 and 5.12. Within the confidence level of 0.95, changes in Weolgok R and Gongdeok R apartments differ statistically in axial line maps and visual field maps. Weolgok R apartment estate include more integrated areas, increased by 10.64% (p-value is 0.000) and Gongdeok R apartment estates also include more integrated areas, increased by 12.4% (p-value is 0.000). These p-values supports statistical increase of mean integration values before and after redevelopment.

Before redevelopment (2001)　　　After redevelopment (2007)

Before redevelopment (2001)　　　After redevelopment (2007)

Segregation　　　Integration
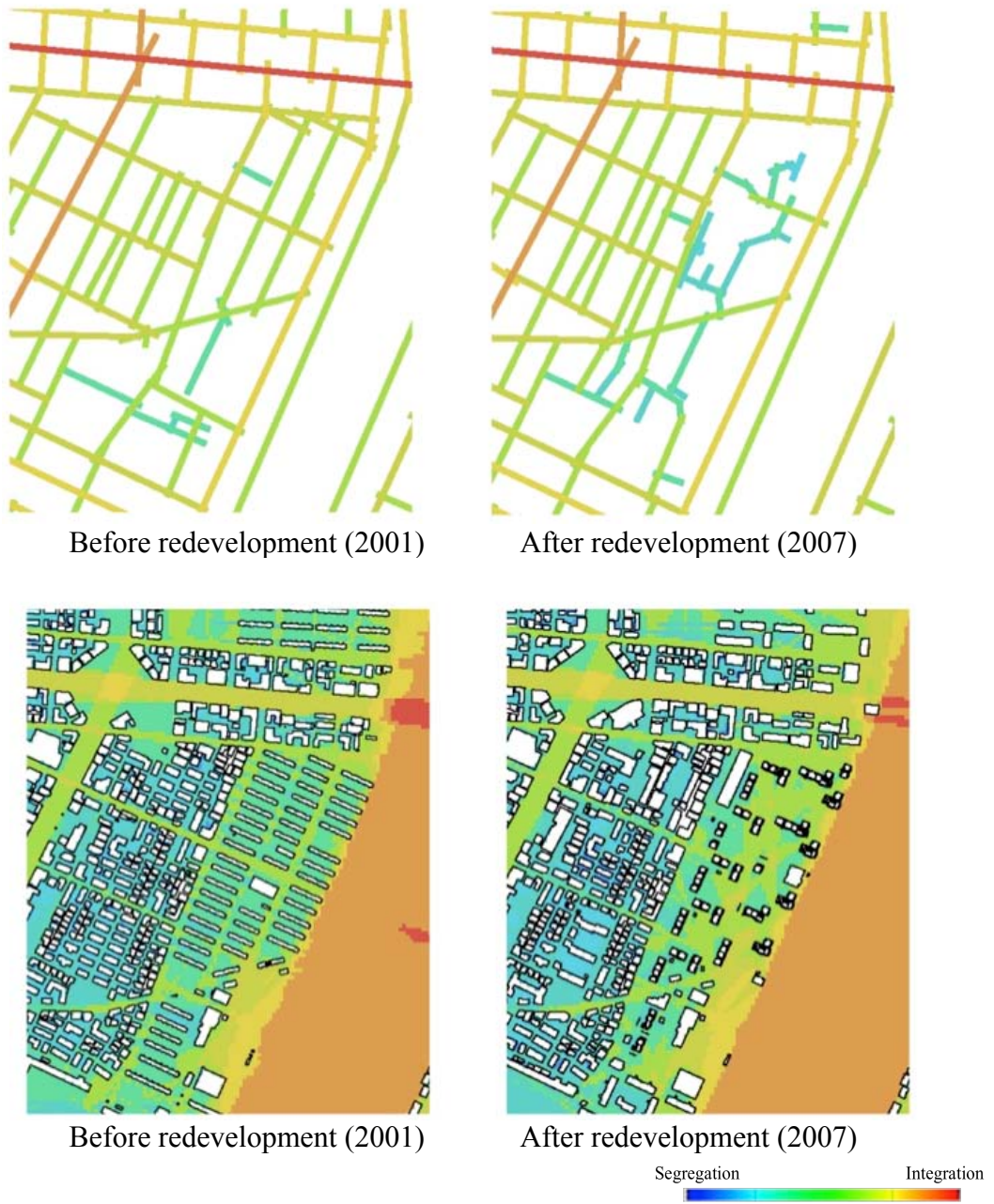
Figure 5.25. Before and after changes in Jangan H apartment redevelopment

Before redevelopment (2001)　　　　After redevelopment (2007)

Before redevelopment (2001)　　　　After redevelopment (2007)

Segregation　　　　　　　Integration

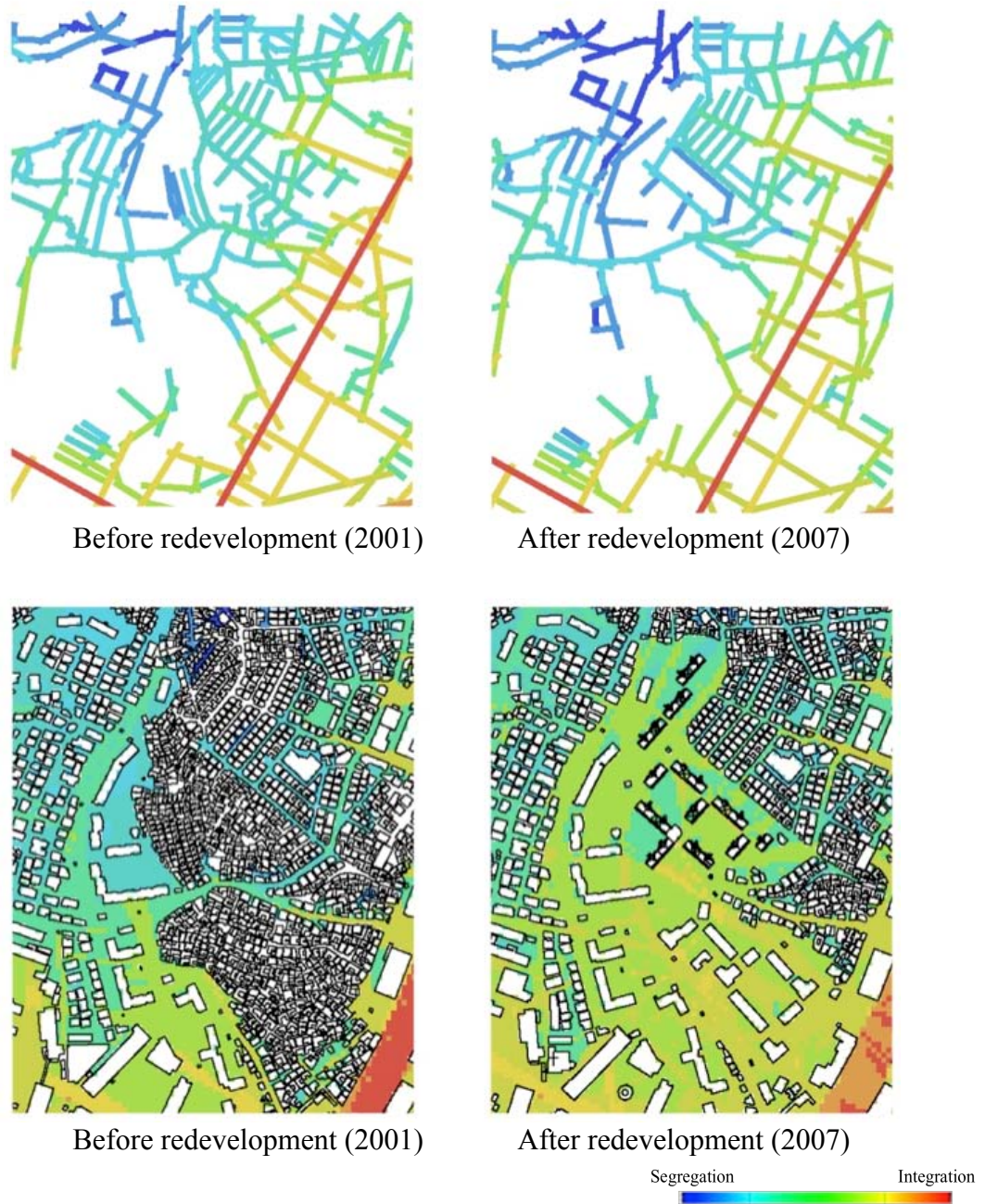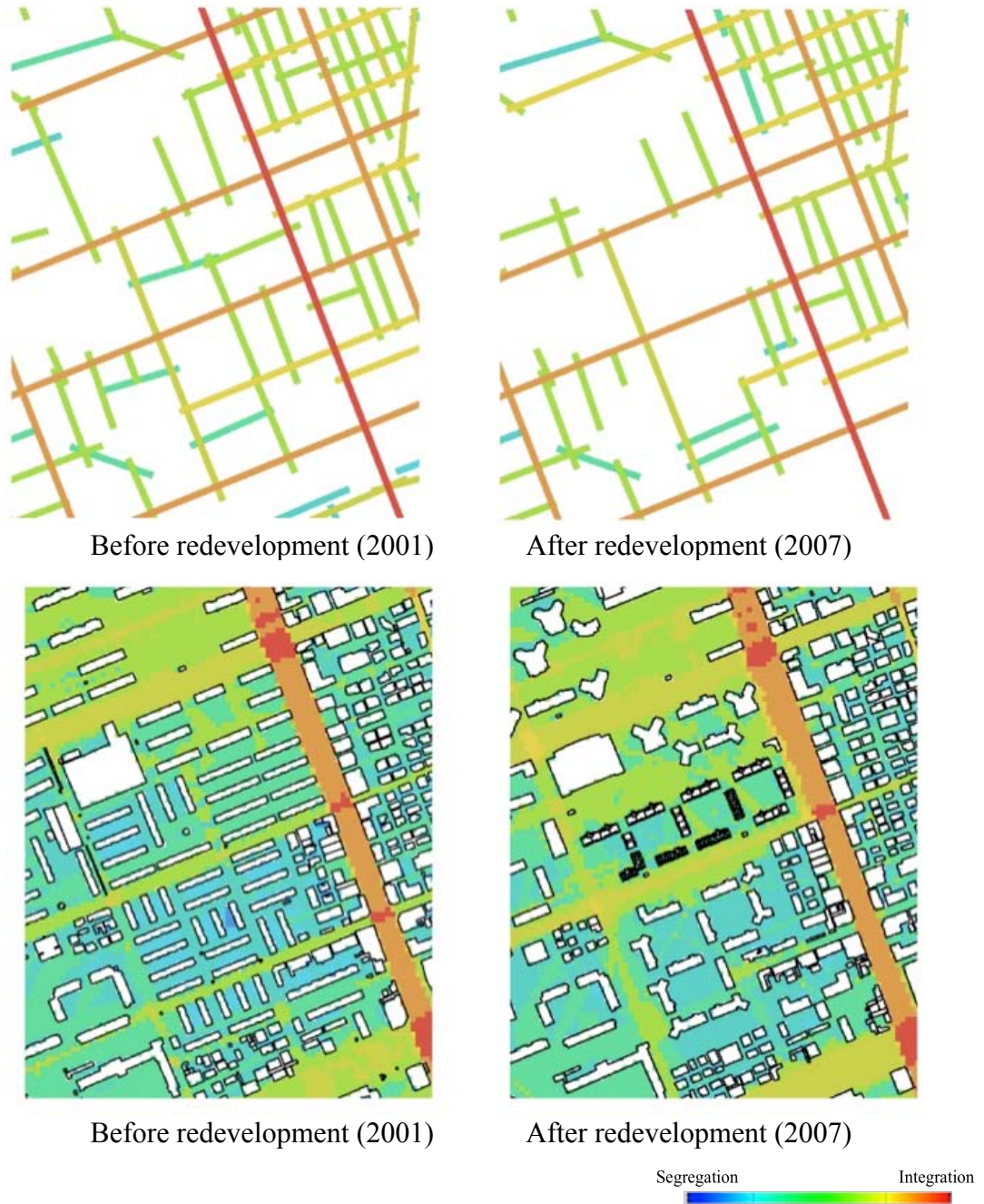Figure 5.26. Before and after changes in Yeoksam E apartment redevelopment

After redevelopment, Jangan H apartment estate contains more segregated areas.

At the top of Figure 5.25, as the axial line map after redevelopment shows more blue

axial lines, mean integration values decrease from 1.36 to 1.30. At the bottom of Figure

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5.25, however, the visual field map after redevelopment includes more and wider green areas (fewer blue areas) than before redevelopment. Mean integration values in the visual field maps of Jangan H apartment estate increase from 6.90 to 6.97. Areas in Jangan H apartment estates become more visually integrated, but streets in Jangan H apartment estates become less accessible.

After redevelopment, Yeoksam E apartment estate includes more integrated areas (green areas rather than blue) and less segregated areas (fewer blue areas) in the visual field map at the bottom of Figure 5.26. Mean integration value in the visual field map of Yeoksam E apartment estate increases from 5.74 to 5.86. While inside areas in Yeoksam E apartment estate in the visual field map after redevelopment at the bottom of Figure 5.26 are slightly less changed, unlike the other cases, areas on the boundary of Yeoksam E apartment estates include increased, wider, more integrated area (wider green area from narrow green area). However, mean integration value in the axial line maps has not changed after redevelopment at the top of Figure 5.26. Within the confidence level of 0.95, since p-value of comparison between before and after redevelopment is 0.716, Yeoksam apartment estate maintains its topological configuration.

In Table 5.13 and 5.14, changes in mean integration values support changes in axial line maps and visual field maps in Jangan H and Yeoksam E apartment estate. Jangan H apartment has become less accessible and more visual exposed. Decrease of mean integration values in the axial line map of Jangan H apartment estate is -4.37% and is statistically significant within the confidence level of 0.95 since p-value is 0.000. Increase of mean integration values in the visual field map of Jangan H apartment is 1.09% and is statistically significant with the confidence level of 0.95 since p-value is 0.000.

Change in mean integration values in the axial line map of Yeoksam E apartment estate is

-0.46% and is not statistically significant within the confidence level of 0.95 since p-

value is 0.716. Increase of mean integration in the visual field map of Yeoksam E

apartment estate is statistically significant within the confidence level of 0.95 since *p*-

value is 0.000.

Table 5.13. Changes in integration values in Jangan H apartment neighborhood

Jangan	Mean integration before redevelopment	Mean integration after redevelopment	Change	p-value
Axial line map	1.35817	1.29882	-4.37%	0.000*
Visual field map	6.89635	6.97122	1.09%	0.000*

(* statistically significant within the confidence level of 0.95)

Table 5.14. Changes in integration values in Yeoksam E apartment neighborhood

Yeoksam	Mean integration before redevelopment	Mean integration after redevelopment	Change	p-value
Axial line map	1.98448	1.97543	-0.46%	0.716
Visual field map	5.73932	5.85668	2.04%	0.000*

(* statistically significant within the confidence level of 0.95)

After redevelopment, Jangan H apartment estate includes less accessible areas and

Yeoksam E apartment estate maintains its accessibility in terms of the axial line analysis.

However, Jangan H and Yeoksam E apartment estates become more visually exposed and

integrated areas in terms of the visibility graph analysis.

Weolgok R, Gongdeok R, Jangan H and Yeoksam E apartment estates become

more visually integrated areas. Visual field maps in these four apartment estates become

less blue, which means that these four blocks have higher integration values. However,

Jangan H and Yeoksam E apartment estates become similar or less accessible areas while

Weolgok R and Gongdeok R apartment estate become more accessible and integrated areas in relation to the axial line maps.

Segregated Context: Analyzing Morphological Changes

Analysis of morphological changes in the four cases demonstrates changes in the contexts before and after redevelopments. In the previous section, the syntactic analysis of each block in these four apartment estates demonstrates that each block becomes visually integrated inside each neighborhood. The contexts of the four cases are divided into two categories: old and existing urban context, and new and developing urban context. Regardless of location, the years are significant factors to be correlated to changes in these contextual characteristics. Shapes of apartment building arrangement become different from other blocks.

Moudon (Moudon, 1997) states that, using morphological analysis, urban changes are analyzed and managed with concrete and specific results in urban elements. These urban elements are buildings, parks, streets, blocks and monuments, and are used for morphological analysis. Thus, employing morphological analysis, this study can find descriptive and pervasive changes in urban housing redevelopment.

To analyze morphological changes, pattern maps in the four neighborhoods are used. Using maps drawn with black-color areas in open spaces and white-color areas in buildings and built structure on site, I focus on the analysis of changes in occupied and unoccupied spaces. Calculating ratios of occupied area to unoccupied area, this method seeks morphological changes in the four apartment redevelopments. Two series of

pattern maps are drawn: one from 1976 to 1996, the other from 2001 and 2007. Pattern

maps in 1976, 1987 and 1996 are redrawn based on scanned maps obtained from original

maps in the National Geographic Information Institute – NGII – in Korea. From NGII

CAD numeric maps, pattern maps in 2001 and 2007 are generated. Thus, it is

inappropriate to directly compare scanned maps to numeric maps in terms of occupied

ratio, because the precision level of pattern maps in 1976, 1987 and 1996 differs from

that of pattern maps in 2001 and 2007. The former demonstrate chronological changes in

the four cases, and the latter describe changes by redevelopment in the four cases. From

1976 to 1996, trends of changes in pattern maps are compared and occupied ratios are

measured. Before and after redevelopment (2001 and 2007), pattern maps demonstrate

how urban context changes, and quantitative values of changes in urban occupied

patterns.
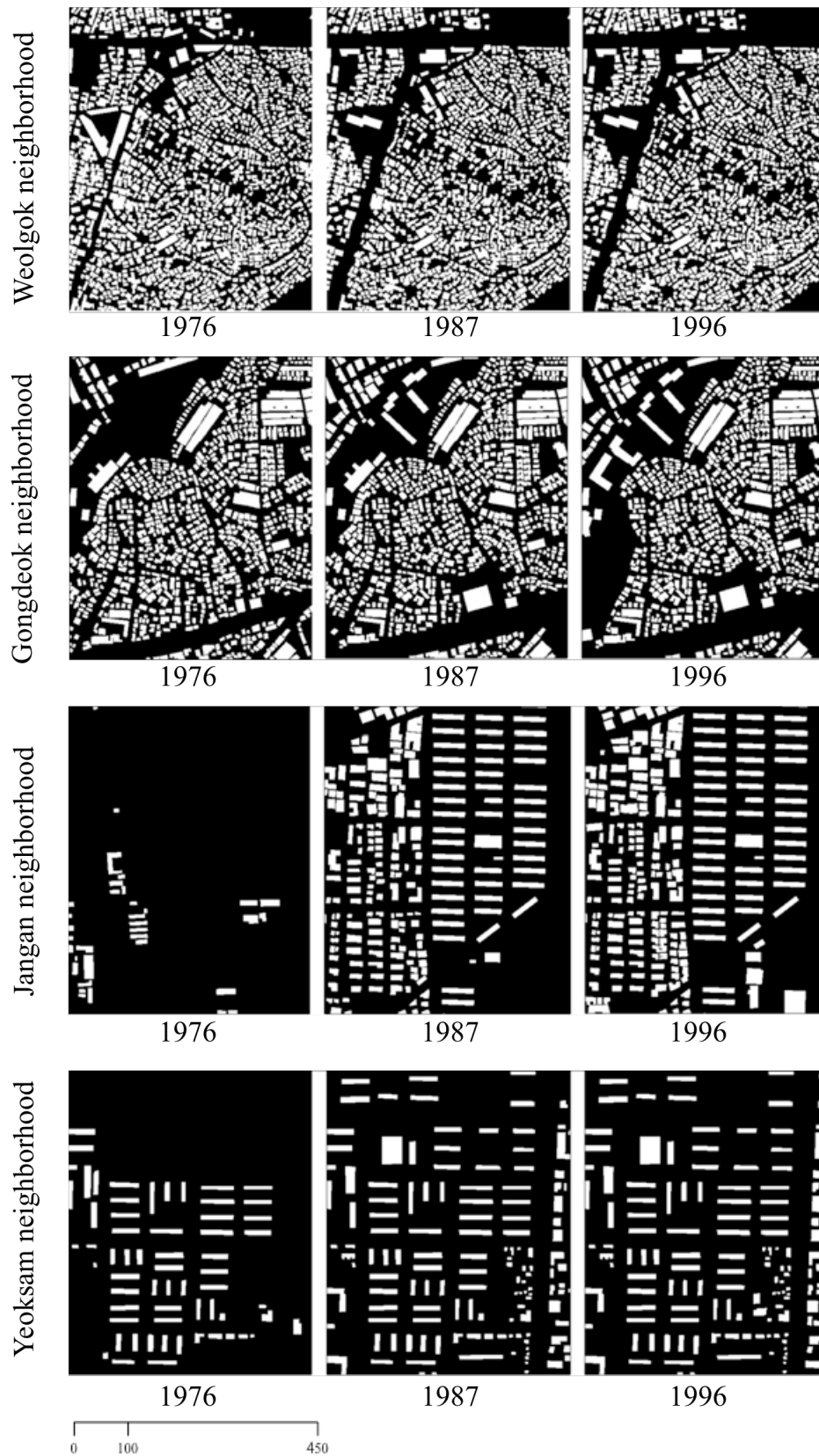
Figure 5.27. Changes in pattern maps from 1976 to 1996

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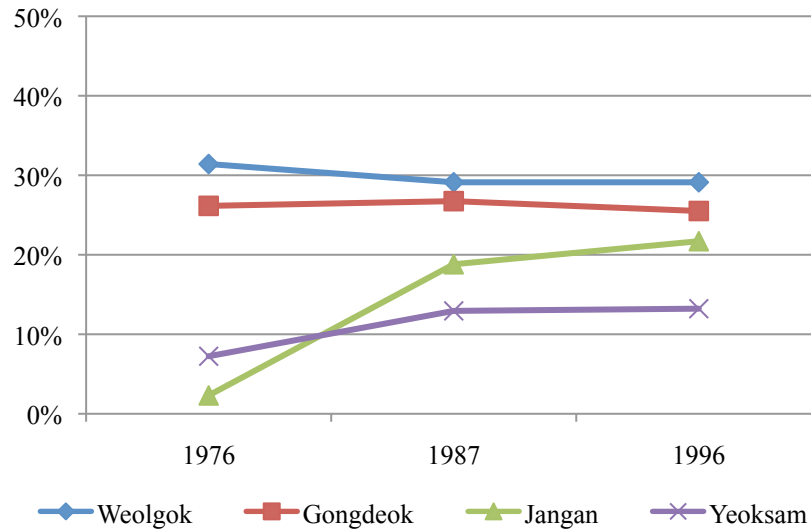
Figure 5.28. Changes in occupied ratio from 1976 to 1996

From 1976 to 1996, Weolgok and Gongdeok neighborhoods maintained their occupied ratio around 30% and 25% (Figure 5.28). Before apartment construction, Weolgok and Gongdeok neighborhoods kept their single and semi-detached residential contexts (Figure 5.27). However, this morphological change in Weolgok and Gongdeok neighborhoods differs from changes in Jangan and Yeoksam neighborhoods. From 1976 to 1987, occupied ratios in Jangan and Yeoksam neighborhoods dramatically increased from 2% to 19% and from 7% to 13% (Figure 5.28). From 1987 to 1996, Jangan and Yeoksam neighborhoods maintained their occupied ratio around 20% and 13% (Figure 5.28). As urban elements and apartment estates developed in the 1970s and 1980s, Jangan and Yeoksam neighborhoods included more built environment and occupied land (Figure 5.27).

Before   (Weolgok)   After

Before   (Gongdeok)   After

0   100   450
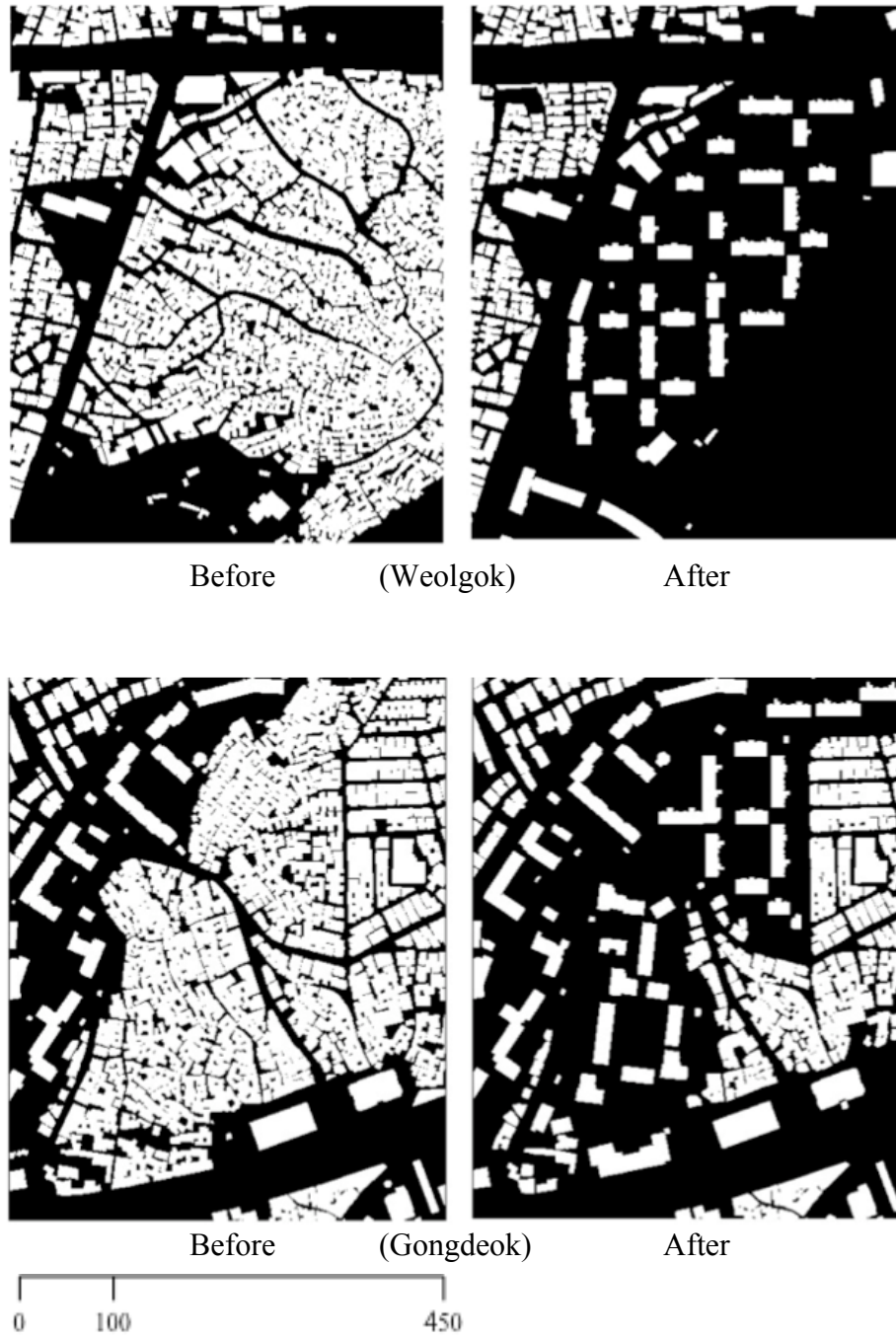
Figure 5.29. Changes in pattern maps before and after redevelopment (Weolgok and Gongdeok neighborhoods)

Before (Jangan) After

Before (Yeoksam) After

0	100	450
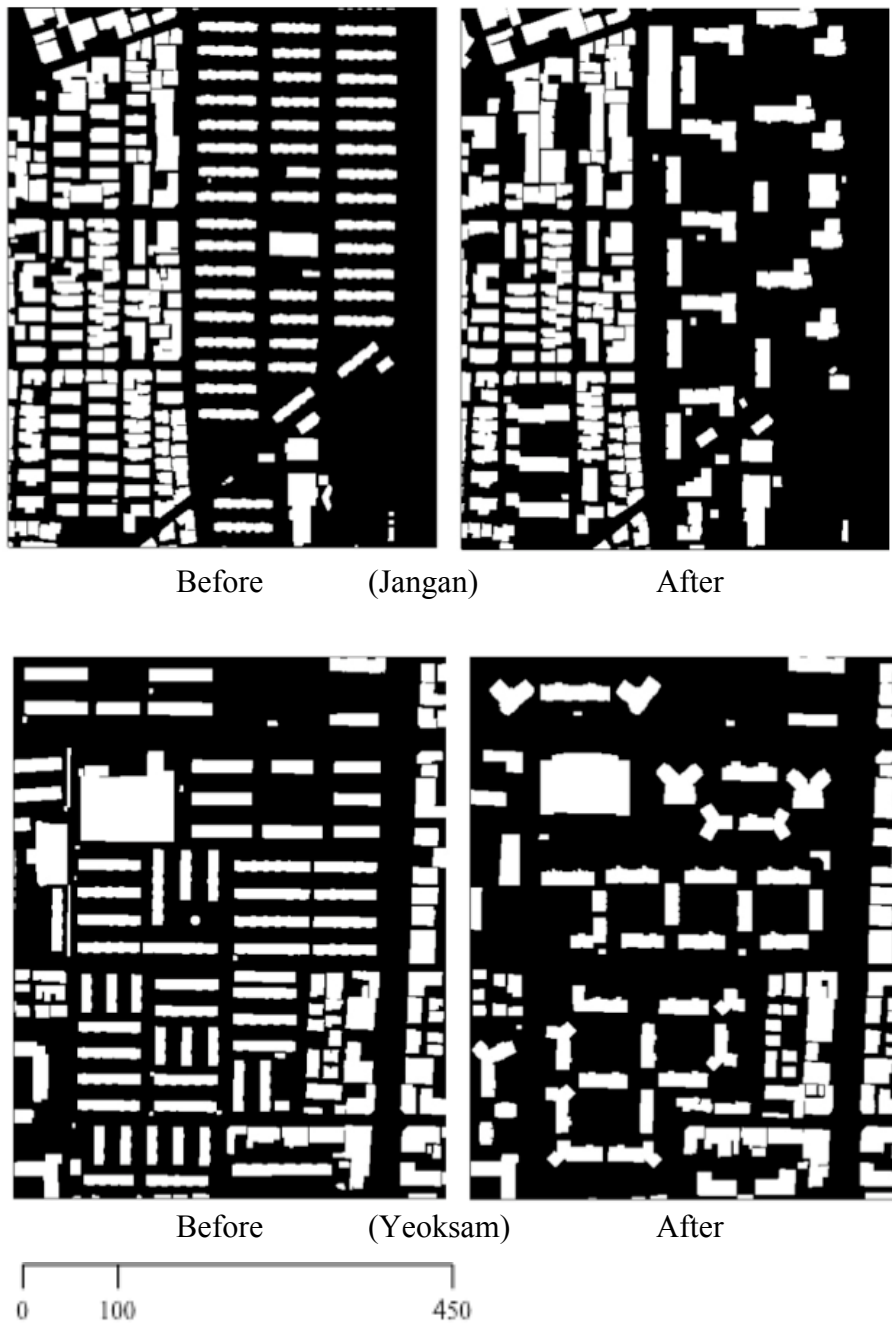
Figure 5.30. Changes in pattern maps before and after redevelopment (Jangan and Yeoksam neighborhoods)
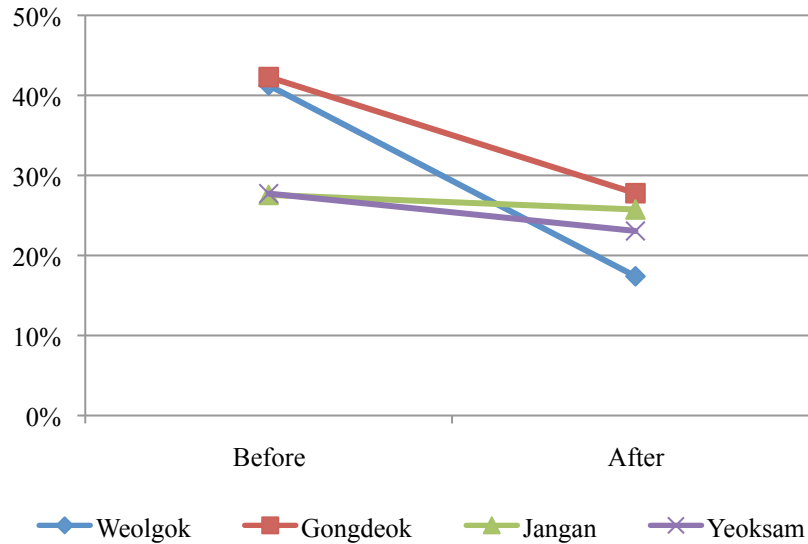
Figure 5.31. Changes in occupied ratio before and after redevelopment

Figure 5.31 demonstrates that, after redevelopment, occupied ratios in Weolgok and Gongdeok neighborhoods significantly decreased from 41% to 17% and from 42% to 28% respectively. Despite redevelopment, Jangan and Yeoksam neighborhoods maintained their occupied ratio at around 26% (from 27% to 26%) and 25% (from 28% to 23%).

After redevelopment, more and wider black-areas are located in the four apartment estate blocks. Occupied patterns become different from block shapes, and occupied ratios become somewhat similar between 17% and 28%.

According to comparison of Weolgok neighborhood patterns before and after redevelopment (Figures 5.29 and 5.30), changes in patterns explain that Weolgok neighborhood has included more open space. As Weolgok neighborhood is characterized as an area with single-detached building, small streets and small blocks are distributed in, and formulated to, a neighborhood. After redevelopment, excluding Weolgok R

apartment estate, the pattern maintained its characteristics of a single-, detached- and small-building-occupied neighborhood. However, Weolgok R apartment estate becomes an iconic and differentiated place. The residential block of Weolgok R apartment estate includes widely open and less occupied space. This pattern inside Weolgok R apartment estate differs from the pattern outside Weolgok R apartment estate. Before redevelopment, streets followed open space in Weolgok neighborhood. However, after redevelopment, streets and open space separate, and spatial patterns after redevelopment demonstrate that Weolgok R apartment estate is independent of urban context pattern in this neighborhood. And regarding apartment buildings, the context has changed from an intensive to an independent and scattered arrangement.

In Gongdeok neighborhood, the building arrangement similarly follows changes in Weolgok neighborhood. Occupied ratio has significantly decreased in Gongdeok neighborhood from 42% to 28%. Increased size of open space and decreased number of buildings are found by comparing occupied patterns before and after redevelopment. From existing (old) single, detached buildings to apartment buildings, Gongdeok neighborhood becomes less occupied. Streets and blocks also become less related to each other. Wider open (black) patterns are observed, and open patterns are less related to boundaries of building arrangement. Block shapes of these apartment estates that include apartment buildings, open space, streets and other buildings, are relatively less noticeable than block shapes of nearby, single-, detached building areas. It is observed in these pattern changes that the building arrangements in these apartment estates are independent from block shapes and connection between streets and buildings.

In Jangan neighborhood, changes in patterns are different from changes in Weolgok and Jangan neighborhoods. Although Jangan H apartment estate after redevelopment includes wider open spaces and demonstrates slightly-occupied ratio decrease, Jangan neighborhood maintains apartment contexts and occupied ratio at around 26%. Before redevelopment, open spaces in this neighborhood were similarly distributed around apartment buildings. After redevelopment, open spaces enlarge and are surrounded by apartment buildings. Thus, apartment buildings after redevelopment also become more independent from the context outside Jangan H apartment estate. Streets after redevelopment are hardly found in occupied patterns. Before redevelopment, Jangan apartment neighborhoods demonstrated simple relationship between open space and street network. Black areas were open space and streets in this neighborhood. However, after redevelopment, apartment buildings have been built in less relation to streets, and boundaries of blocks are less related to shapes of open spaces in black and white patterns.

Comparison of patterns in Yeoksam neighborhood before and after redevelopment demonstrates that changes in patterns are similar to changes in Jangan neighborhood: similar occupied ratio and larger open spaces surrounded by apartment buildings. Jangan and Yeoksam apartment estates are similarly redeveloped from old to new apartment estate. Because nearby residential blocks in Yeoksam neighborhood are more apartment-dominant than are blocks in Jangan neighborhood, streets and blocks in this Yeoksam neighborhood are reminiscent of their original shapes.

Therefore, after redevelopment, contexts of four apartment estates are segregated from neighboring contexts by those apartment estates. From single-, detached housing to

apartment housing, morphological changes are more significant than changes from old to new apartment housing. These neighborhoods have been differentiated after apartment redevelopment and include more, and larger, open spaces. From old to new apartment housing, morphological changes focus on re-arrangement of open space and buildings. These neighborhoods have included more consolidated, larger open spaces.

Regardless of size of apartment estates, small or large number of housing units, contexts in the four apartment estates similarly consist of larger apartment building, concentrated open spaces, and disconnected block shapes.

Block *versus* Context: Urban Neighborhood *versus* Gated Neighborhood

In terms of connection types to neighboring areas, a neighborhood can be categorized into two types: urban and gated. An urban neighborhood is not divided by physical boundaries. A gated neighborhood is separated from other areas by physical boundaries. Weolgok R, Gongdeok R, Jangan H and Yeoksam E apartment neighborhoods have experienced changes in their relationship to neighboring areas. The shape of their residential blocks and the contexts of their urban elements have transformed after redevelopment.

According to syntactic and morphological analysis in the previous sections, their neighborhood situation after redevelopment has conflict between visually integrated blocks and segregated context: exposed to others *versus* divided from others. These apartment neighborhoods have more integrated areas, and, being compared to nearby blocks, these four blocks of apartment estate neighborhoods become independent from

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their original contexts. So, what do these findings mean? Looking at these changes in

axial line maps, visual field maps and morphological patterns, I seek to find the meaning

of these findings at a broader scale. While I focus on finding changes in four

neighborhood redevelopments in the previous section, this section deals with the

relationship between these findings and their neighborhoods. In Table 5.1, these findings

in syntactic and morphological changes in four apartment neighborhood redevelopments

are not only physical changes of building arrangement in their neighborhoods, but also

are relationships between their blocks and contexts around their neighborhoods.

Although the findings of physical changes in the four neighborhood redevelopments also

have their own characteristics, there are commonly-shared characteristics representative

of current trends in apartment neighborhood redevelopments in Korea.

Table 5.15 demonstrates that original context is a significant factor to determine

how much housing redevelopment affects residential contexts rather than the size of

housing unit numbers in an apartment estate. Places in Weolgok and Gongdeok

neighborhoods were originally based on small blocks for single detached buildings.

Small blocks and single detached buildings also surrounded these neighborhoods. After

redevelopment, small blocks were demolished and a large block included its new

apartment buildings. Decreasing occupied area with fewer apartment buildings than

single-, detached housing, each apartment estate block has more open spaces, and these

are visually integrated to other areas. Due to this visual integration, it seems that people

easily can access their apartment estate. However, contexts in Jangan and Yeoksam

neighborhoods were apartment-dominant housing and large blocks for its apartment

estate. Throughout redevelopment, physical shapes of blocks and contexts have been

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maintained. Their old apartment buildings were demolished and new apartment housing

was built on the same residential blocks. Thus, their changes are related to rearrangement

of apartment buildings. While their occupied ratios do not significantly change, visual

integration patterns in their apartment estates demonstrate more integrated areas in their

blocks due to rearrangement of new apartment buildings. Although physical patterns of

boundary blocks and occupied patterns maintain their shapes, spatial configurations in

their apartment estates demonstrate more visually integrated areas by redevelopment.

Table 5.15 Comparison of syntactic and morphological changes after redevelopment

Cases	Single detached to apartment housing	Old apartment to new apartment housing
Large apartment estate	Weolgok neighborhood • Axial: mean integration change 10.64% (1.00052→1.10698) • Visual: mean integration change 30.52% (4.07716→5.32171) • Occupied ratio change -58% (41.3% → 17.4%)	Jangan neighborhood • Axial: mean integration change 4.37% (1.35817→1.29882) • Visual: mean integration change 1.09% (6.89635→6.97122) • Occupied ratio change -7% (27.6% → 25.7%)
Small apartment estate	Gongdeok neighborhood • Axial: mean integration change 1.72% (1.02075→1.03827) • Visual: mean integration change: 12.41% (2.78818→3.1342) • Occupied ratio change -35% (42.3% → 27.8%)	Yeoksam neighborhood • Axial: mean integration change 0.46% (1.98448→1.97543)* • Visual: mean integration change 2.04% (5.73932→5.85668) • Occupied ratio change -17% (27.7% → 23.1%)

Apartment redevelopment gives residential blocks more, wider and consolidated

open space. Blocks in four apartment neighborhood redevelopments become more

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visually integrated from other spaces. In blocks, housing lots are congregated and become a large block and a new urban setting after redevelopment, especially for Weolgok and Gongdeok neighborhoods. While Jangan and Yeoksam apartment neighborhoods are originally based on large blocks, Weolgok and Gongdeok apartment neighborhoods were single detached building areas. Looking at open spaces in each neighborhood, whether originally based on large or small blocks, new apartment estates have included larger open spaces than did old, single-, detached buildings and old apartment estates.

Thus, syntactic and morphological changes support that those residential blocks are visually accessible, but these block differ from others in relation to urban contexts. Then, how do physical changes in apartment buildings and places relate to these syntactic and morphological changes in residential blocks?

Between old and new apartment estates, physical elements in apartment buildings and places in their apartment estates are compared. In Figure 5.32, new apartment estates – Jangan H and Yeoksam E apartment estates are compared to an old apartment estate. Before Jangan and Yeoksam apartment redevelopment, pictures in the first column of Figure 5.32 represent their original apartment circumstance. Although pictures in the first column of Figure 5.32 are taken in another old apartment estate in Seoul, this apartment estate was built in a similar period and by the government, like old Jangan and Yeoksam apartment estates. Because those apartment estates had been similarly built (강부성 Kang et al., 1999), pictures in Figure 5.32 are able to describe preliminary characteristics of apartment estates before redevelopment.
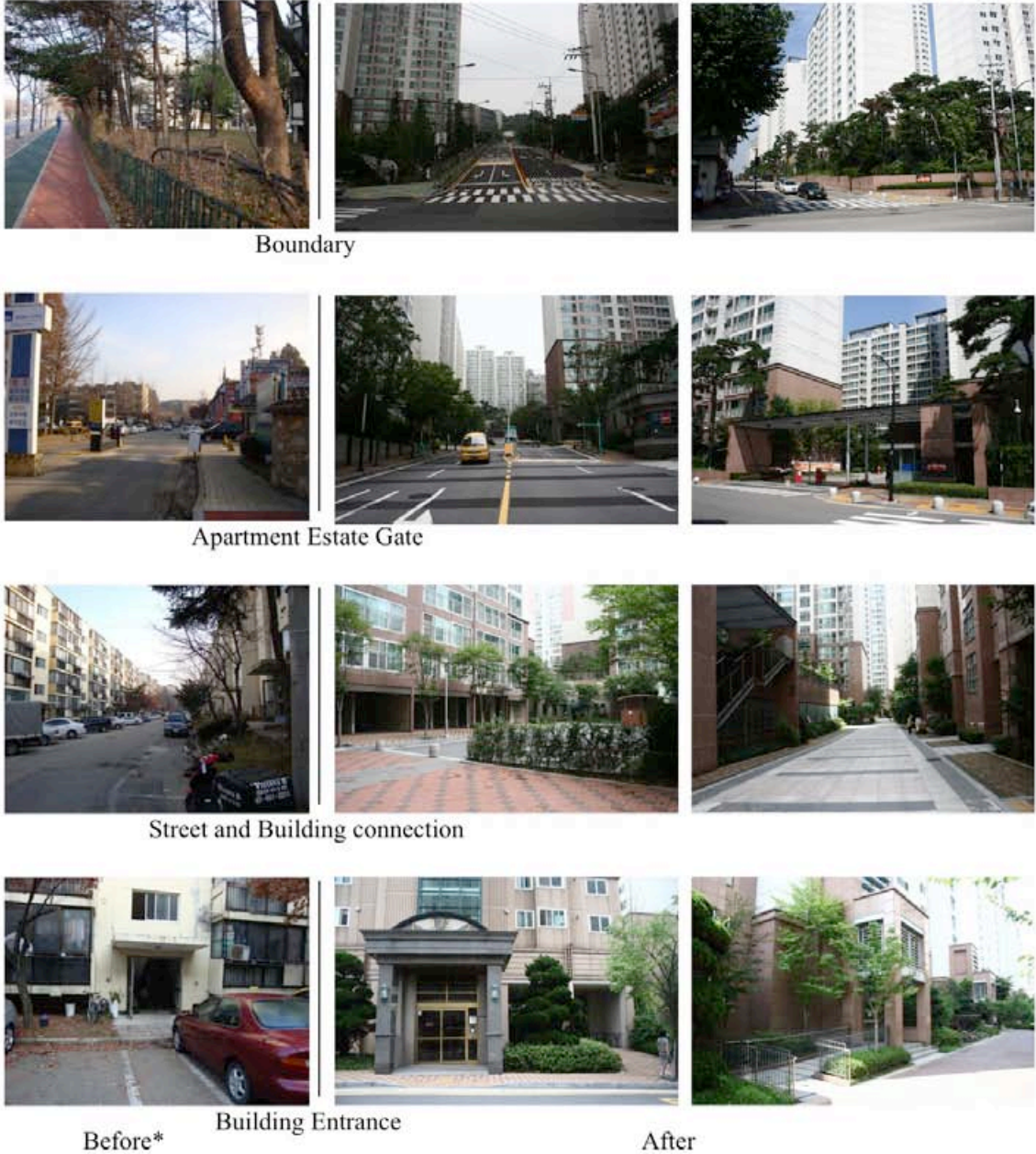
Figure 5.32. Comparison of old and new apartment estates

First, boundaries of apartment estates are similar. In old and new apartment

estates, walls and trees create boundaries divided between inside and outside apartment

estates in the part of "boundary" in Figure 5.32. Pedestrians on the boundaries are not

connected to inside apartment estates, and people are able to access apartment estates via

connecting places, either open spaces without walls or gates of apartment estates. Second, apartment estate gates become more private. In Figure 5.32, the left photo of "apartment estate gate" demonstrates that the gate of this apartment estate is open access to the apartment estate. However, in the right photos of "apartment estate gate," the gates in apartment estates include a guard space. While, before redevelopment, apartment gates did not prevent people from entering places inside apartment estates, apartment gates after redevelopment began entry control. Third, street- and building- connecting points include more enclosed areas. In an old apartment estate, streets are parallel to apartment buildings. After redevelopment, apartment buildings are arranged to include more enclosed areas. These enclosed areas enable connecting places to be a plaza, a gathering place, or a playground. Fourth, building gates include more security devices and buffer space. In an old apartment estate, apartment entrances have no security device and connect directly to streets. Anyone could access apartment buildings. After redevelopment, an access code or key is necessary to enter the apartment building/s and entrances have buffer space between street and apartment lobby/ies. In other words, these changes from boundaries to building entrances demonstrate that Korean apartment redevelopment tends to create gated neighborhoods.

However, blocks for apartment estates have potential to be more connected to the public and to become commonly shared places for urban neighborhoods. Open space that consists of streets, parking lots, and playgrounds, are open to the public. Anyone is allowed to approach these areas while cars are controlled at the gate. Comparison in Figure 5.32 shows changes in connecting places from old to new apartment housing. As these changes in visual field maps demonstrate the decrease of segregated areas by

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redevelopment, areas in apartment estates are easily noticeable and integrated to the public.

However, contexts around these apartment estates become segregated between apartment estates and surrounding residential areas. Urban contexts in surrounding residential areas near by four apartment estates maintain their original characteristics after redevelopment. Unlike changes in the four apartment estates, surrounding urban context after redevelopment consists of continuous characteristics in these residential neighborhoods similar to before redevelopment: apartment residential areas still are apartment housing contexts and single, detached housing areas still are single, detached housing contexts. However, four apartment estates are differentiated from other areas since apartment building arrangements, street networks, and open spaces in each apartment estate differ from other area and original characteristics before redevelopment. While apartment buildings were arranged following shapes of blocks and streets in each apartment estate before redevelopment, apartment building arrangements after redevelopment are independent from their context of blocks and streets in their apartment neighborhoods. Larger and more concentrated open spaces after redevelopment are visually more exposed to streets than are linear and parallel open spaces before redevelopment. The four apartment estates have wider and more concentrated open spaces as well as spatially integrated. Findings from changes in various maps indicate that these redevelopments created, or sought to create, new neighborhoods. Sustaining and continuing these original neighborhoods was hardly sought.

Neighborhoods in urban settings are hardly separated from their existing urban characteristics. An urban neighborhood is part of the urban environment, and connected to other neighborhoods in these urban settings. As an urban element, a neighborhood is normally woven into existing context, then coexists with other elements of an urban place. This differs from a gated neighborhood. The latter – a gated neighborhood – is a place and community that people who do not belong to that community are not allowed to enter freely and/or reside in. Figures 5.29 and 5.30 show that areas across the street from the apartment estate comprise single detached residential and commercial buildings. There are two contexts: apartment estates and single detached buildings. These apartment estates are divided by boundaries (Figure 5.32).

According to findings on the changes in the four apartment redevelopments, there is increasing visual exposure to other blocks. These four apartment estates have potential to be integrated into other neighborhoods, to be safer places, and to offer easy access to the apartment blocks. After redevelopment, these four housing neighborhoods have the possibility to be urban neighborhoods.   However - as per my previous contention that changes in four housing redevelopments enhance differentiation of each apartment estate from other neighborhoods - their blocks are differentiated from other blocks and existing contexts. Visually integrated neighborhoods tend to be divided from other neighborhoods. This division seems to represent gated neighborhoods. Residents who live in this new apartment estate mention that their apartment neighborhoods need to be protected from public and/or non-resident access (of course excepting friends, family and other invitees) and that their places be kept safe for their children. The following

chapters present an argument as to why visually integrated blocks seem to be gated

neighborhoods, based on in-depth interviews with residents.

Therefore, changes in blocks and contexts before and after redevelopment

demonstrate the dichotomy between an urban- and a gated- neighborhood. These

analyses suggest that redevelopment in these four neighborhoods seems geared to the

establishment of gated neighborhoods.

Conclusion

This chapter investigates physical changes in the four cases of apartment

neighborhood redevelopment. Investigating what kind of characteristics the four

apartment estates have and what has changed by urban housing redevelopment, I seek to

locate and identify characteristics in apartment neighborhood redevelopments.

Summary of findings in this chapter:

- After redevelopment, areas in Weolgok R, Gongdeok R, Jangan H, and Yeoksam

  E apartment estates are easily noticeable and integrated to the public, but contexts

  around these apartment estates become segregated between apartment estates and

  surrounding residential areas; it is conflicts between visually integrated blocks

  and segregated context: exposed to others *versus* divided from others.

  (1) The four apartment estates become more visually integrated areas than

  they were before redevelopment.

(2) The four apartment estates include more, wider and consolidated open

spaces than they did before redevelopment.

(3) Apartment redevelopment gives residential blocks more, wider and

consolidated open space.

(4) These physical contexts in the four apartment estates are segregated

from nearby, neighboring contexts by those apartment estates since

apartment building arrangements, street networks, and open spaces in each

apartment estate differ from other areas after redevelopment and original

characteristics before redevelopment.

(5) Changes correlate weakly to the size of apartment estates, small or

large number of housing units.

- However, after redvelopment, Jangan H and Yeoksma E become similar or less

  accessible areas than they did before redevelopment while Weolgok R, Gongdeok

  R apartment estates become more accessible areas.

- Original context is a significant factor to determine how much housing

  redevelopment affects residential contexts rather than the size of housing unit

  numbers in an apartment estate.

In conclusion, in this chapter, physical changes in residential blocks and contexts

before and after redevelopment confront the dichotomy of being an integrated

neighborhood with other nearby areas or being a separated neighborhood from other

areas and original contexts in an urban environment. While Weolgok R, Gongdeok R, Jangan H, and Yeoksam E apartment estates have potential to be integrated with other neighborhoods, to be safer places, and to offer easy access to apartment blocks, changes by redevelopment enhance differentiation of each apartment estate from other neighborhoods. These changes suggest that redevelopment in these four neighborhoods seems geared to the establishment of gated neighborhoods in an urban context as Jangan H and Yeoksam E apartment estates become similar or less accessible than they did before redevelopment.

However, the question remains how and whether residents recognize this differentiation in relation to other neighboring areas. For example, since physical boundaries that are fences at the boundaries of apartment estates are not a new characteristic in an apartment estate in Figure 5.32 (before and after redevelopment), apartment estates seem to have been and to be not easily accessible from outside areas. Via fences in Figure 5.32 (before and after redevelopment), segregation from outside areas is not only the post-redevelopment situation, but is also found in the old apartment neighborhood. However, this fence-segregation differs from segregated contexts in new apartment estates after redevelopment. While fence- segregation was a physical boundary between similar apartment estates, post-redeveloped segregated context induces differentiation from other neighborhoods. This contextual difference may cause people to determine which parts of their neighborhood belong to the apartment estate and which are different from the old neighborhood. Thus, in the following chapter, I continue to argue how residents perceive their apartment neighborhood in this new urban setting.

CHAPTER VI

How Residents Perceive Place Vitality in their Apartment Neighborhoods:

Analyzing Residential Movements

This chapter analyzes residential movements in four apartment neighborhood redevelopments. Main questions in this chapter are how residents perceive their neighborhoods, how residents explore their neighborhoods within their cognition of neighborhood, and whether and how changes by redevelopment are related to residents' movement in their neighborhood. I seek to compare physical changes and residential cognition in these four apartment estates. In addition to axial line maps, visual field maps and occupied pattern maps that are generated from the collected 108 maps (66 numeric maps (CAD drawings) and 42 scanned maps) referenced in the previous chapter, 240 surveys have been collected and analyzed in this chapter. Residential cognitions of each apartment neighborhood are investigated. Spatial cognition and activity observation are analyzed.

Thus, this chapter seeks to discern the relationship between spatial cognition and residents' movements in urban housing redevelopment, and between urban elements and places with vitality. As a result in this chapter, residents' movements in the four

apartment neighborhood redevelopments are analyzed in relation to residents' cognition of their apartment neighborhood.

Spatialized Street: Analyzing Spatial Cognition

In this section, I analyze spatial cognition in residents' apartment neighborhoods based on analyses of residents' cognitive maps. Cognitive elements in this survey are analyzed to discern how residents perceive their neighborhoods. In addition to physical analyses of map sources in the previous section, this section focuses on analyses of survey data that includes residents' perceptions of physical characteristics in these four neighborhoods. These analyses focus on correlation between physical characteristics and cognitive elements, specifically how physical characteristics in neighborhoods are correlated to cognitive elements in the survey. By discussing the relationship between residents' perceptions and physical changes, I develop arguments relative to the results of these physical changes in these redevelopments. Also, I seek to investigate significant elements in cognitive maps to represent residents' perceptions of neighborhoods.

Drawing a cognitive map is the main question in survey of residents. This survey asked residents in the four apartment neighborhoods about gender, age, living duration, and living condition before redevelopment. Residents' cognitive maps are instructed by the following questions: (1) Sketch a map of your neighborhood (2) Mark places with vitality in your neighborhood, and write their names and why they are places with vitality to you (3) Draw your route in a typical day with another color. Since Residents are given these three instructions from the survey, their cognitive maps are responses of only these

three instructions. When residents drew their neighborhood maps, they did not have any

other instruction to draw. A sample of survey package is attached in the Appendix A to

this dissertation.

Gender

Male
23%

Female
77%

- ■ Male
- ■ Female

Age

40~49
33% 50~ 6%

N/A
1%

20~29
2%

30~39
59%

- ■ 20~29
- ■ 30~39
- ■ 40~49
- ■ 50~
- ■ N/A

Year

10~ 16%   N/A 1%

0~3 48%

4~9 36%

- ■ 0~3
- ■ 4~9
- ■ 10~
- ■ N/A

Redevelopment

Yes 19%

No 81%

- ■ Yes
- ■ No
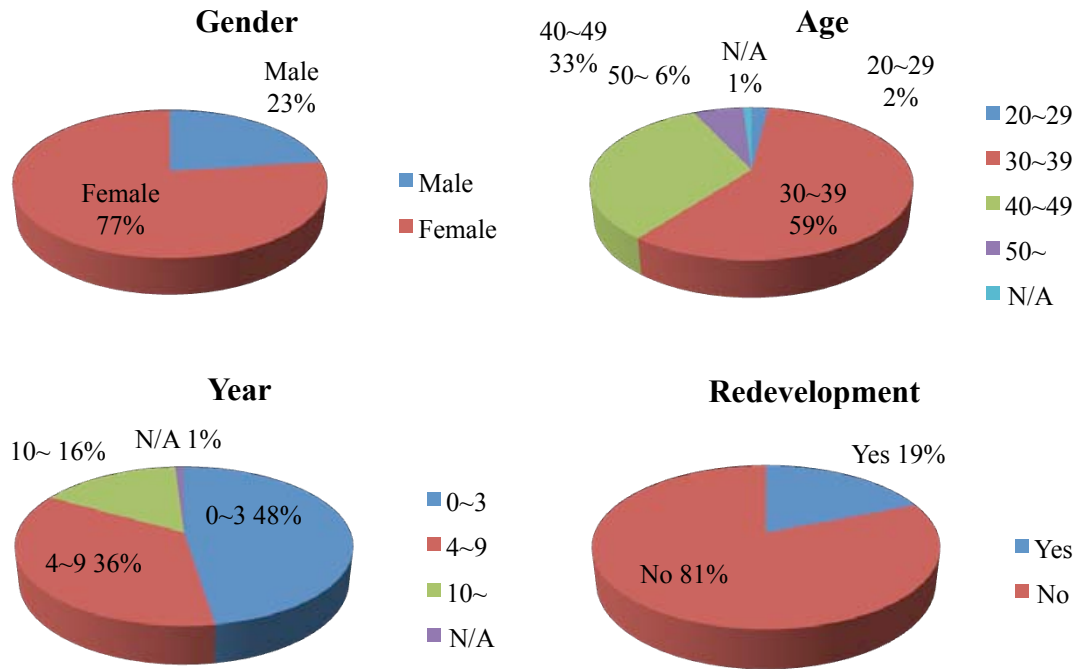
Figure 6.1. Survey demography

In total, 162 surveys were collected. Among them, 47 cognitive maps are of

Weolgok R apartment neighborhood, 25 Gongdeok R apartment neighborhood, 55

Jangan H apartment neighborhood, and 35 Yeoksam E apartment neighborhood. As per

Figure 6.1, females in their 30s, less than four years resident there, new residents, are

dominant responders in the survey collection. I analyze two main aspects in the survey:

spatial cognition and daily route. Table 6.1 summarizes survey demography of Weolgok

R, Gongdeok R, Jangan H and Yeoksam E apartment estates. Each survey includes

gender (female or male), age (20s, 30s, 40s, 50s~), how many years resident there (0~3, 4~9, 10~) and whether resident prior to redevelopment.

Table 6.1. Survey demography of Weolgok R, Gongdeok R, Jangan H and Yeoksam E apartment estates

Cases	Single detached, to apartment, housing	Old apartment, to new apartment, housing

Large apartment estate	Weolgok R apartment: N=47
	
	• Gender: M=21% (10), F=79% (37)
	• Age:
	  20s=0% (0), 30s=74% (35), 40s=19% (9), 50~=6% (3)
	• Year:
	  0~3=83% (39), 4~9=9% (4), 10~=6% (3), N/A=2% (1)
	• Redevelopment: Yes=6% (3), No=94% (44)
		Jangan H apartment: N=55
		
		• Gender: M=25% (14), F=75% (41)
		• Age:
		  20s=4% (2), 30s=49% (27), 40s=40% (22), 50~=7% (4)
		• Year:
		  0~3=20% (11), 4~9=62% (34), 10~=18% (10)
		• Redevelopment: Yes=22% (12), No=78% (43)

Small apartment estate	Gongdeok R apartment: N=25
	
	• Gender: M=12% (3), F=88% (22)
	• Age:
	  20s=0% (0), 30s=84% (21), 40s=12% (3), 50~=4% (1)
	
	• Year:
	  0~3=32% (8), 4~9=40% (10), 10~=28% (7)
	• Redevelopment: Yes=24% (6), No=76% (19)
		Yeoksam E apartment: N=35
		
		• Gender: M=29% (10), F=71% (25)
		• Age:
		  20s=3% (1), 30s=34% (12), 40s=57% (20), 50~=3% (1), N/A=3% (1)
		• Year:
		  0~3=54% (19), 4~9=29% (10), 10~=17% (6)
		• Redevelopment: Yes=26% (9), No=74% (26)

Residents recognize that their apartment neighborhood is one single area. They draw a box and name for expressing their apartment estate. In Table 6.2, a total 73% of responses are cognitive maps on which each resident draws a box and his or her apartment estate name. In these cognitive maps, residents draw more detailed

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arrangements of outside their apartment estates. The top cognitive map in Figure 6.2 is

an example of box drawing and a name for representing their neighborhoods; the bottom

cognitive map is an example of drawing apartment buildings for representing their

neighborhoods.

Table 6.2. Ratio of box drawing and name for representing an apartment estate

Cases	Weolgok R	Gongdeok R	Jangan H	Yeoksam E	Total
Box-and-name	28	22	39	30	119
Cognitive maps	47	25	55	35	162
Ratio	60 %	88 %	71 %	86 %	73 %

[An example of box drawing and name]
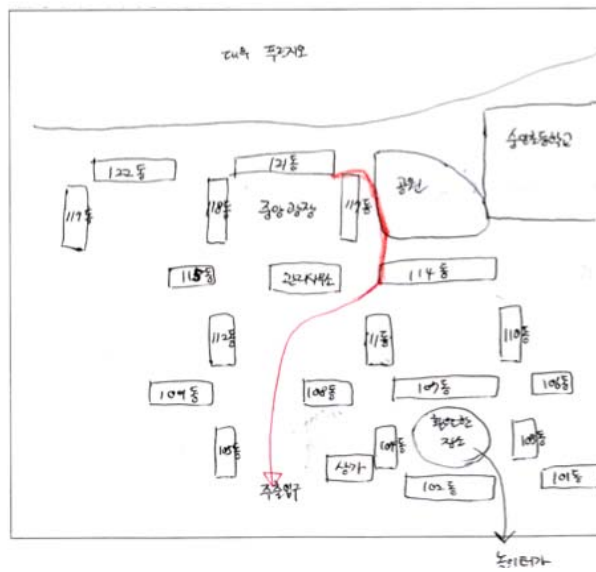
[An example of drawing apartment buildings]

Figure 6.2. Comparison of two examples of representing an apartment estate

Residents recognize that streets around their apartment neighborhoods contain spatial place, which means that these streets are place rather than merely transportation link. They draw a double line without street names for expressing streets. A total of 96%

of responses follow this finding of spatial expression. While streets can be expressed as a place as well as a network, most drawings of streets in cognitive maps demonstrate that streets have width, activities, and areas. In the four apartment neighborhoods, this double-line drawing for representing a street is similarly observed. More than 94% of cognitive maps include these double-line drawings of streets, as per Table 6.3. In these streets, residents draw their routes, activities and major places in their neighborhoods. These streets in residents' cognitive maps indicate that a street represents a place for daily activities rather than merely a connecting element to other places. In Figure 6.3, the top cognitive map shows a two-line drawing of representing a street; the bottom cognitive map is an example of drawing a network.

Table 6.3. Ratio of drawing a spatial area for representing a street

Cases	Weolgok R	Gongdeok R	Jangan H	Yeoksam E	Total
Two-line and spatial street	46	25	52	33	152
Cognitive maps	47	25	55	35	162
Ratio	98 %	100 %	95 %	94 %	96 %

[An example of drawing two lines and space]

[An example of drawing a network]

Figure 6.3. Comparison of two examples of representing a street

In the four apartment neighborhoods, a majority of cognitive maps comprise a box and a name, and spatialized streets. Boxes represent buildings and boundaries of certain zones, and double lines represent streets. Figure 6.4 is an example of cognitive map analysis. In this cognitive map, elements represent places with vitality, directions, apartment estate (box and name), spatialized streets, and residents' daily routes. Kaplan and Kaplan state that a cognitive map includes cumulative knowledge and continuous perceptions of a physical place as well as various information (Kaplan & Kaplan, 1983). They explain that, although cognitive mapping is not only a spatial representation, elements on a cognitive map are spatial components that have relational characteristics. Analyses of information and elements on collected cognitive maps are able to reveal commonly-shared values and residents' perceptions in the four neighborhoods.

According to Figure 6.4, spatial information on collected cognitive maps portrays that residents perceive their apartment neighborhoods to be a single place rather than a composite of urban elements including buildings, streets, plazas and blocks. Spatial relationship between their apartment estates and other neighboring places represent that residents' experiences related to what is located around their apartment estates. In Golledge's *Wayfinding behavior* (1999), cognitive mapping is chosen as a representation of people's acknowledgements of spatial experience. Streets in a cognitive map, therefore, are spatial elements in residents' acknowledgements of their places. Such cognitive mapping effectively demonstrates that residents perceive a street as an urban element in their daily lives.
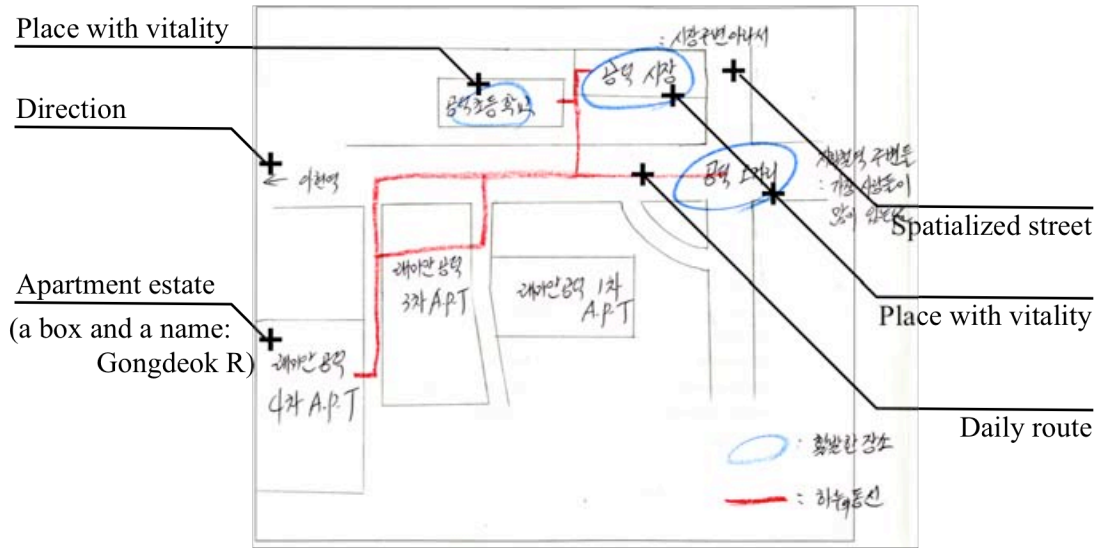
Figure 6.4. An example of cognitive map analysis

Additionally, on their cognitive maps, residents wrote place names and drew boundaries indicating what major components are included in their neighborhoods. Responding to questions to draw their neighborhoods, residents wrote several names that represent landmarks in their neighborhoods: apartment estate names, local markets and schools. Lynch explains that spatial identity and structure are formal elements to reflect place image (Lynch, 1960, 1984). In residents' cognitive maps of the four cases, landmarks as spatial identities are typical and ordinary places in their neighborhoods, which are possible to exist in other neighborhoods. Spatial elements put into these cognitive maps seem closely related to ordinary elements in current residents' behavioral patterns and in Korean residents' neighborhoods. Among these place names, residents marked some place names in the subset of place names as a response to places with vitality, as requested by survey questions regarding residents' cognitive maps. Places with vitality are a subset of these place identities and seem related to their daily behaviors.

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Therefore, residents' perceptions have two types of perceiving processes. First, residents perceive that their apartment neighborhood is one area. A box and a name represent an apartment neighborhood. Many explanations focus on places outside an apartment neighborhood. Second, residents perceive that a street is a spatial area. Double lines are drawn to represent a street. To residents, streets in their neighborhoods are not a network where they navigate their movements; rather they are connecting places where they experience their daily lives in their neighborhoods.

Ordinary Event: Analyzing Daily Routes

This section focuses on analyzing residents' daily routes on cognitive maps. Residents mark places with vitality located within their daily routes. On their cognitive maps, they draw their daily routes. Analyzing daily routes, I seek to investigate three aspects in residents' cognitive maps. First: residents' cognitive scales. These cognitive scales mean how far residents perceive their neighborhoods. Second: daily route maps are generated and compared to spatial characteristics. I superimposed residents' routes over one another's. Route maps are generated on the geographical maps of the four neighborhoods. Using Syntax 2D, I compare path count to integration values in the four neighborhoods. Third: superimposing places with vitality on their neighborhood maps, I generated a map of place with vitality. With this map, the most-frequently-marked place to the least- marked-place are sorted and compared. Relationship of locations between apartment estates and places with vitality is an important element of analysis.

For distance perceptions, according to Table 6.4, 450 yards (400 meters) west-east and 550 yards (500 meters) north-south are the most frequently measured values in residents' cognitive maps. And 450 by 550 yards (400 by 500 meters) is chosen as a perception distance in the four apartment neighborhoods for this study.

Table 6.4. Measurement of perceptions distances

Cases		Weolgok R	Gongdeok R	Jangan H	Yeoksam E
West to East (yards)	Mean	564	736	643	844
	Most frequent	446	392	675	456
North to South (yards)	Mean	700	716	1079	920
	Most frequent	565	528	1039	547

Using perceptions distance, daily routes and spatial integration are compared. By Syntax2D space syntax computer program developed by the University of Michigan, path counts are measured and spatial integrations are calculated. By statistical correlation analysis, coefficients between path count and integration are analyzed in the four apartment neighborhoods. According to the results of variables between path count and spatial integration, where more path counts are measured, more integrated areas exist. They have positive relationships between path count and spatial integration. All coefficients in the four apartment neighborhoods are statistically significant. Statistically, t values are 10.093 in Weolgok R apartment neighborhood, 16.728 in Gongdeok R apartment neighborhood, 13.517 in Jangan H apartment neighborhood and 18.194 in Yeoksam E apartment neighborhood. The following four figure groups demonstrate relationship between daily route and spatial integration in each apartment neighborhood.
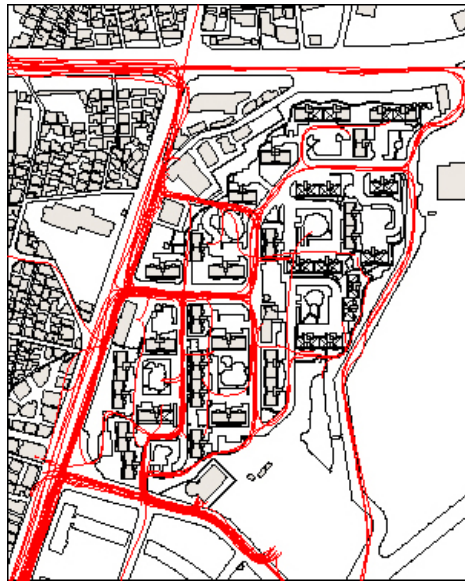
Daily route   Integration
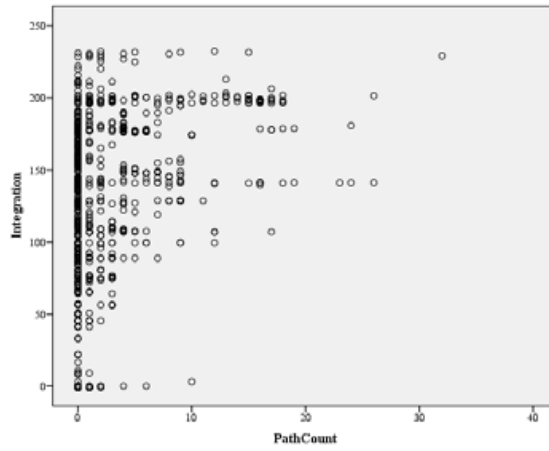
Comparison

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	118.538	2.164		54.782	.000
	PathCount	4.307	.427	.309	10.093	.000

a. Dependent Variable: Integration

Figure 6.5. Relationship between daily route and spatial integration in Weolgok R
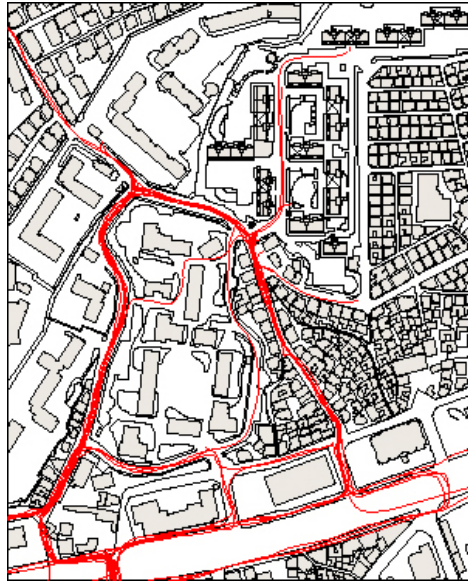
Daily route   Integration
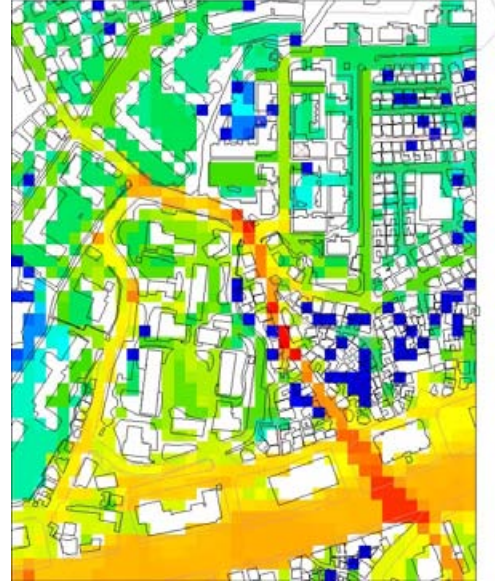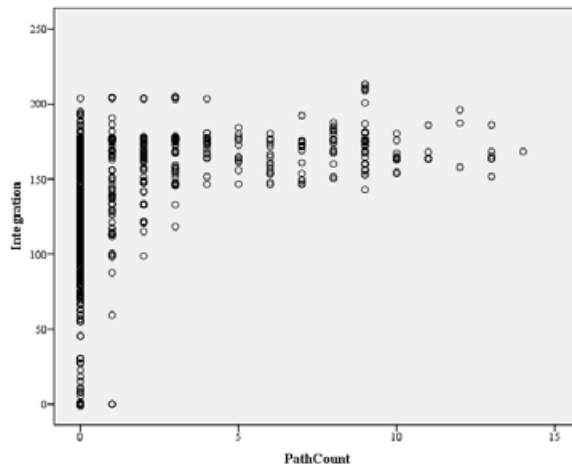
Comparison

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	112.299	1.366		82.223	.000
	PathCount	8.074	.483	.427	16.728	.000

a. Dependent Variable: Integration

Figure 6.6. Relationship between daily route and spatial integration in Gongdeok R

Daily route   Integration

Comparison

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	156.678	1.762		88.923	.000
	PathCount	4.534	.335	.370	13.517	.000

a. Dependent Variable: Integration

Figure 6.7. Relationship between daily route and spatial integration in Jangan H

Daily route	Integration

Comparison

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	147.219	1.952		75.405	.000
	PathCount	7.932	.436	.477	18.194	.000

a. Dependent Variable: Integration

Figure 6.8. Relationship between daily route and spatial integration in Yeoksam E

Places including many daily routes are places with vitality in Figures 6.5, 6.6, 6.7 and 6.8. According to their daily routes, residents tend to express similar spatial routes to go to destination locales, such as grocery shops, retail shops, local market etcetera. The more residents frequently pass through their daily routes, the more people can be observed in those places where red lines are generated on neighborhood maps. As positive relationship between daily routes and spatial integration is statistically determined, residents' more-frequent navigation targets show as the more accessible spatial characteristics.

Residents perceive places where activities exist, as places with vitality. These resident-identified places with vitality are retail stores and local markets in their neighborhoods and are what they mostly select as places with vitality. In Weolgok R and Jangan H apartment neighborhoods, the majority of residents select retail shops in front of apartment estates. In Gongdeok R apartment neighborhood, residents mark a local market as a place with vitality. In Yeoksam E apartment neighborhood, a large grocery market is selected. However, according to locations of places with vitality in their cognitive maps, residents tend to consider that places outside apartment estates include vitality in their neighborhoods. In Gongdeok R, Jangan H and Yeoksam E, the top-five most frequently selected places as a place with vitality are outside their apartment estates. Inside apartment estates, places marked by residents are usually children's playgrounds and exercise courts, and these are also visiting destinations rather than places passed through. Thus, places with vitality selected by residents are where they visit with intention.

Thus, places with vitality are related to (1) Path: where they pass (2) Destination: where they visit. The following four figure groups demonstrate comparisons of location and frequency of selection of place with vitality in the four case-neighborhoods.
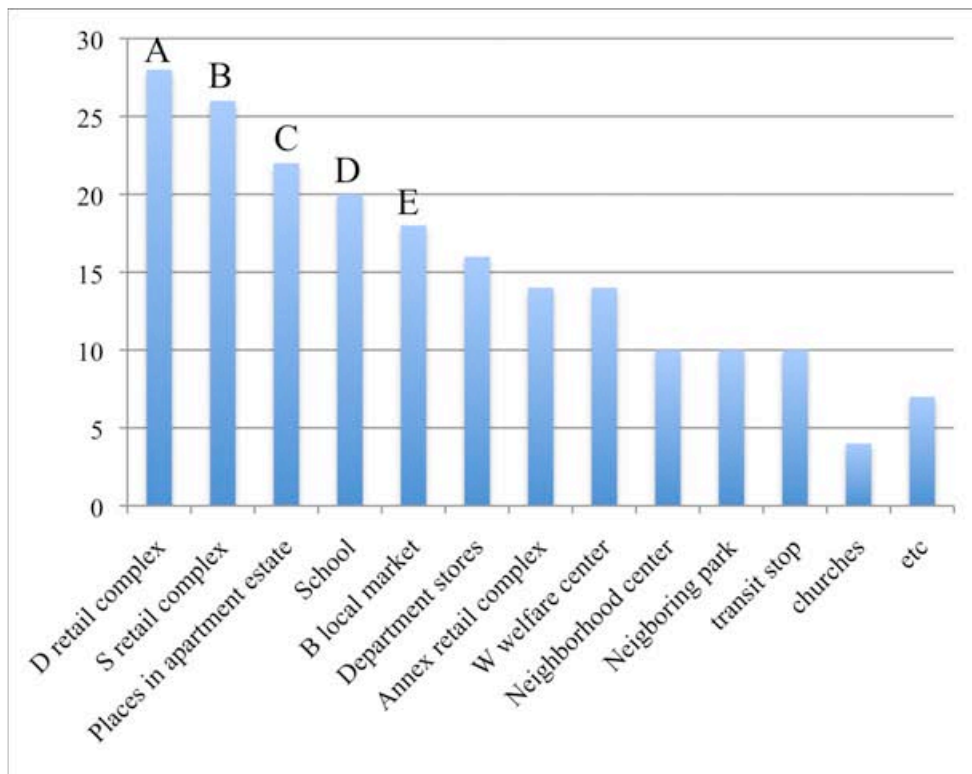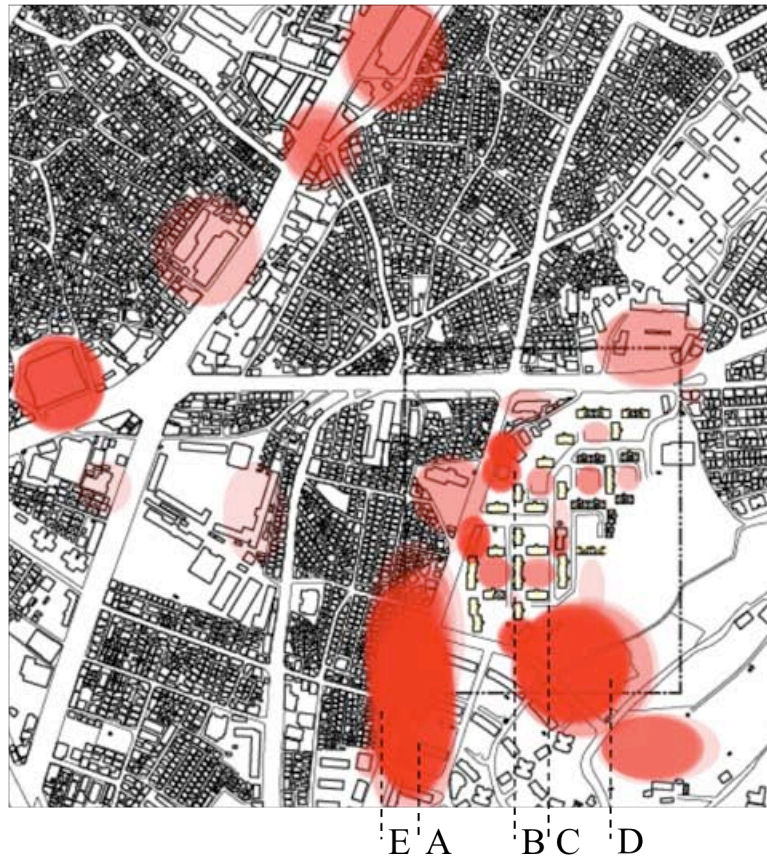
Figure 6.9. Comparison of location and frequency of vibrant places in Weolgok R
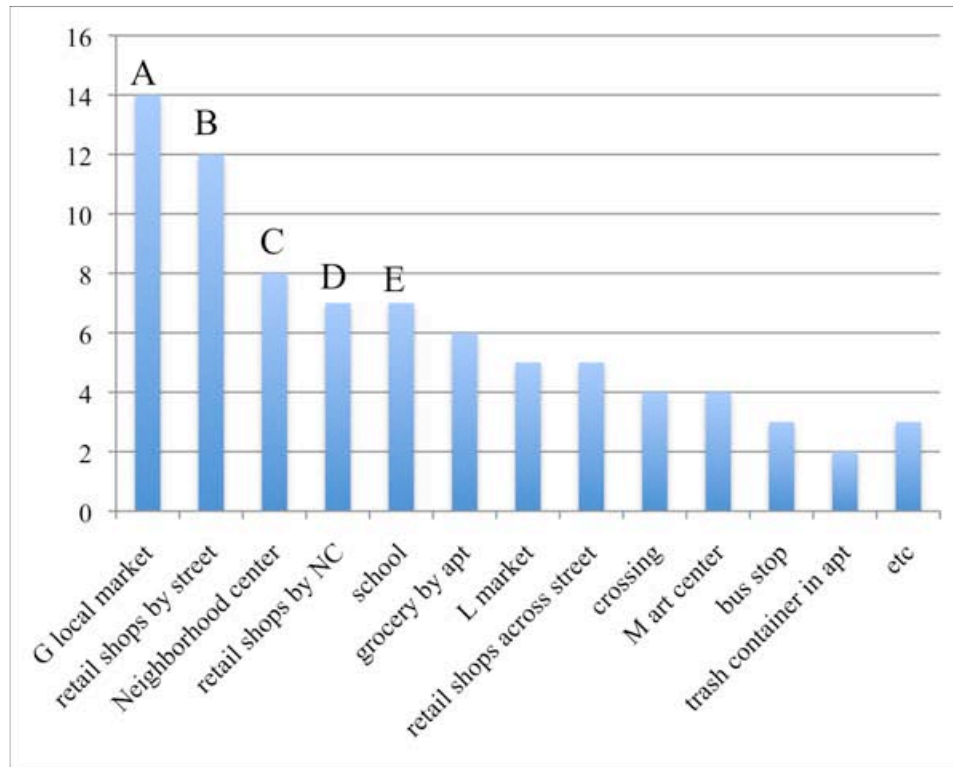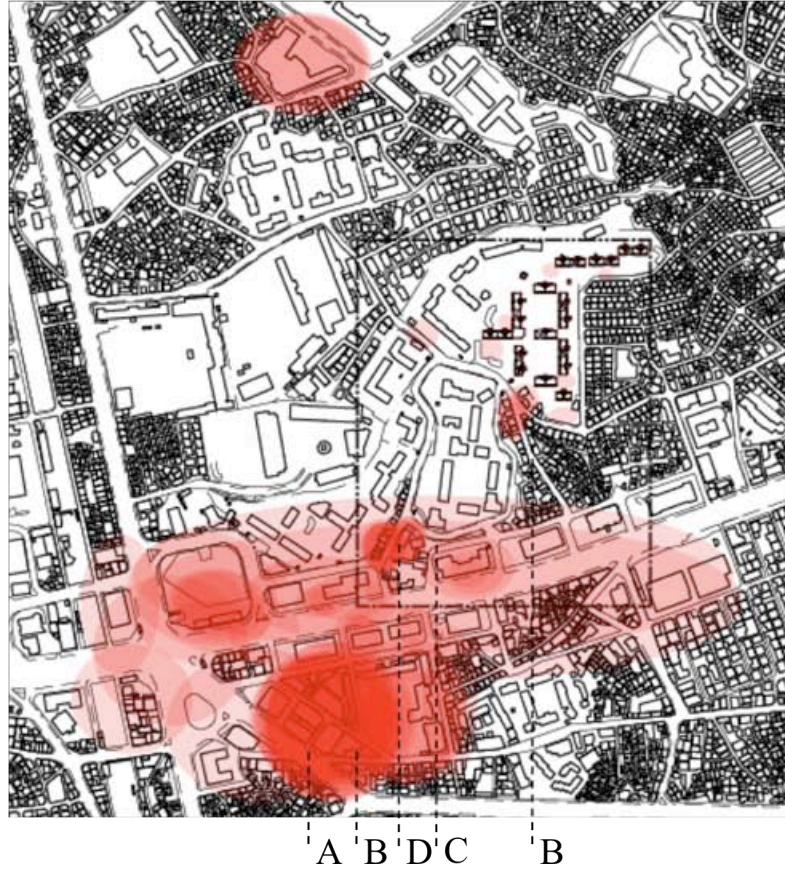
Figure 6.10. Comparison of location and frequency of vibrant places in Gongdeok R
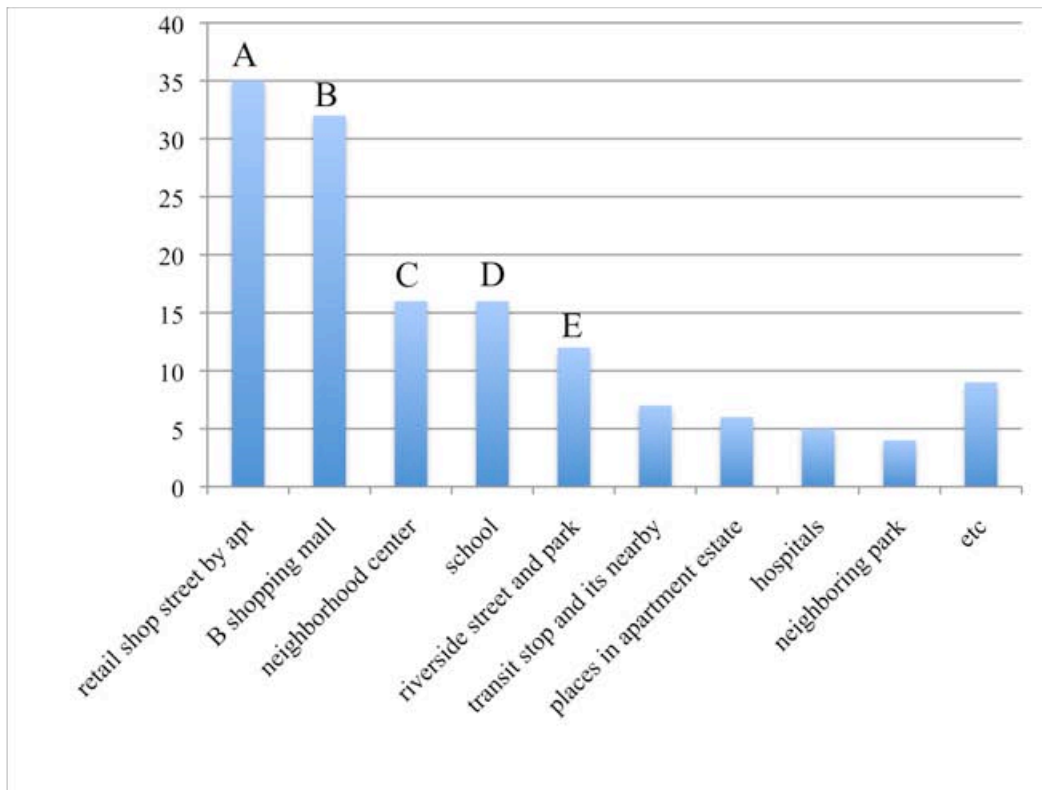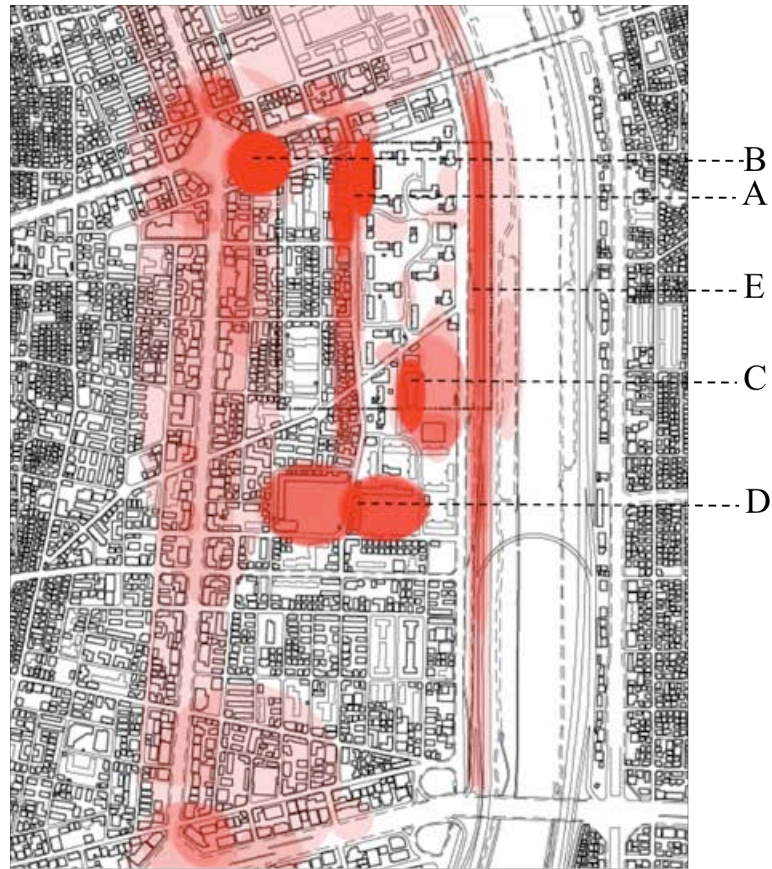
Figure 6.11. Comparison of location and frequency of vibrant places in Jangan H

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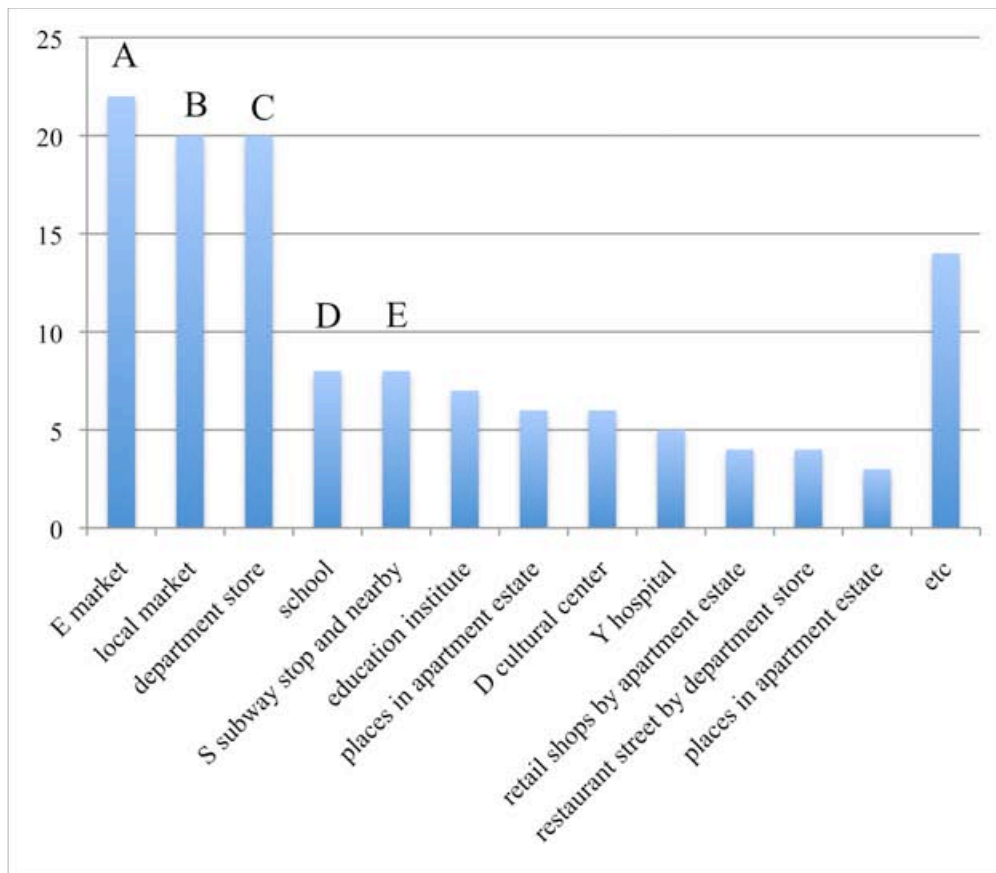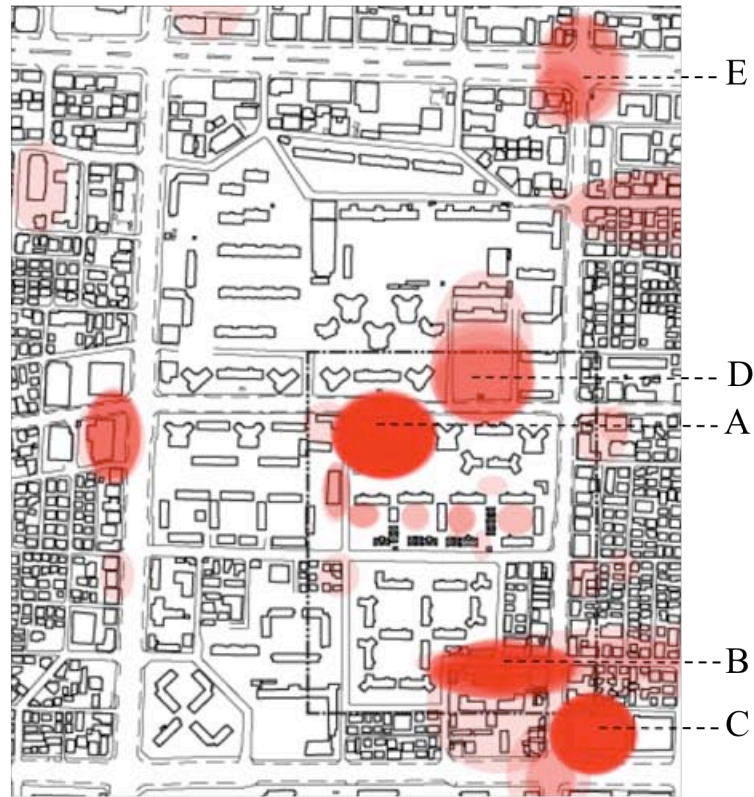
Figure 6.12. Comparison of location and frequency of vibrant places in Yeoksam E

Street Activity and Place Event: Spatiality and Frequent Visiting

Spatialized streets are characteristics of residents' perceptions of the spatial structure in the four apartment neighborhoods. The street seems to be more a place containing activities, than a network path connecting one place to another. Residents perceive places with vitality to be the edges of, and/or outside residents' blocks, rather than places inside their apartment estate blocks. Furthermore, this street spatialization indicates that a place that includes crowded paths of people's movements (integrated paths) is perceived as places with vitality.

Destinations for residents' daily livings are also characteristics of residents' perception of places with vitality and daily routes in the four apartment neighborhoods. Residents' daily routes demonstrate that their daily lives include movements from one to another destination for their daily living such as grocery shopping, banking services, etc. Residents' movement is a composition of daily life's ordinary events. Thus, ordinary visits and routes demonstrate that frequent visiting at a place causes this place to acquire significance to the residents.

In terms of residents' perceptions of their spatial elements and movements, place vitality has two characteristics: spatiality and frequent visiting. Spatiality is a spatial representation and simultaneous experience. Frequent visiting is a discrete event and asynchronous experience. As residents perceive that a street is part of spatial structure in their neighborhoods, place vitality to residents is a circumstance that many people and activities exist in a place simultaneously. In terms of the time frame, spatiality happens

at the same time and place. The spatialzied place normally demonstrates a picturesque

circumstance in a place. However, a place with vitality is not only a moment picture, but

also is described as a continuous experience. A place with vitality can be perceived when

residents continuously visit it. As residents' navigations of their neighborhoods generate

place vitality, an accumulation of this sequential experience also generates place vitality.

As daily routes follow the stream of residents' movements in relation to accessibility and

daily-life destinations, residents remember place vitality as an experience of how often

residents pass through and visit urban elements in their neighborhoods.

Therefore, place vitality is perceived as street activity and place event. Street

activity is observed vitality. At the same time, spatiality in a certain place represents

place vitality, which is visual perception in a physical circumstance. In addition,

memorized experiences in a certain place also provide residents with perceptions of place

vitality in certain places that are ordinary destinations in their daily lives. Perceived and

memorized vitalities are two types of vitalities in the built environment.

Conclusion

This chapter analyzes residential perception of Weolgok R, Gongdeok R, Jangan

H, and Yeoksam E apartment neighborhoods. Residents' cognitive maps including their

daily routes and marking places with vitality in their neighborhoods were asked on the

survey form and 162 surveys are analyzed in total. How residents perceive their

neighborhoods, how residents explore their neighborhoods within their cognition of

neighborhood and whether and how changes by redevelopment are related to residents'

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movement in their neighborhood, are main questions in this chapter. Representations in residents' neighborhoods are generalized relative to residents' navigation patterns in apartment neighborhoods.

Findings in this chapter are summarized:

- In Weolgok R, Gongdeok R, Jangan H, and Yeoksam E apartment estates, residents divide their neighborhood into an apartment estate as one place and outside apartment estate as other spatial components.

  (1) Residents recognize that their apartment neighborhood is one single area rather than a composite of urban elements including apartment buildings, streets, plazas and blocks.

  (2) Residents recognize that streets around their apartment neighborhoods contain spatial place, which means that these streets are place not merely transportation link.

- Residents' perception of vitality in a place relates to visually integrated places and destinations in their daily life.

  (1) Since positive relationship between daily routes and spatial integration is statistically determined, residents' more-frequent routes are related to the more accessible spatial characteristics.

  (2) Retail shops and local markets which residents identify as a place with vitality are places with activity and destinations of daily life.

In conclusion, in this chapter, residents perceive place vitality when they perceive activities in streets and they experience ordinary daily events in daily destinations in the

four apartment estates. In addition, according to residents' perceptions of their spatial

elements and movements in the four neighborhoods, place vitality has two characteristics:

spatiality and frequent visiting. Spatialized streets and destinations for daily livings are

characteristics of residents' perception of places with vitality and daily routes in the four

apartment neighborhoods.

CHAPTER VII

Why Perception of Vitality Occurs in

Korean Apartment Neighborhood Redevelopment:

Analyzing Residential Perceptions

This chapter investigates residential meanings of vitality in the four apartment neighborhoods. Analyses of residents' responses are based on in-depth interviews and sorting tasks. These investigations enable the interpretation of perception of place vitality to include detailed narrative of residential meanings on the grounds of findings in analyses of residential blocks and movements (see Chapter 5 and 6). I seek to discern how residents perceive place vitality and why this perception occurs in the four apartment neighborhoods. This investigation reveals residential perceptions of place vitality in the Korean apartment neighborhood.

In-depth interviews were conducted with a total of nine residents in the four apartment estates: three in Weolgok R apartment estate, one in Gongdeok R apartment estate, two in Jangan H apartment estate and three in Yeoksam E apartment estate. To enhance interview validation, the in-depth interview includes semi-structured question-and-answer mode, a sorting task of pictures in each apartment estate, and open-ended interviews. These various activities help contain and maintain interview quality and enable me to triangulate interviewee perceptions of their neighborhoods in relation to

place vitality, and their reasons for such perceptions. Thus, this chapter focuses on

residential answers on semi-structured and open-ended questions and explanations about

how and why residents draw cognitive maps regarding their experiences and in the

apartment-housing context.

Table 7.1. Interviewees (Note: 'Redevelop' means if an interviewee lived there before redevelopment; 'Street' means how an interviewee drew streets in their cognitive map – spatial or linking; 'Apartment' means how an interview drew their apartment estate – one box and name or apartment buildings)

Interview	Neighborhood	Gender	Age	Year	Redevelop	Street	Apartment
Interviewee#1	Weolgok	Male	61	3	No	Spatial	Box
Interviewee#2	Weolgok	Female	38	3	No	Spatial	Box
Interviewee#3	Weolgok	Female	30s	N/A	N/A	N/A	N/A
Interviewee#4	Gongdeok	Male	34	0.5	No	Spatial	Apartment
Interviewee#5	Jangan	Female	23	23	No	Spatial	Apartment
Interviewee#6	Jangan	Male	37	3	No	Spatial	Box
Interviewee#7	Yeoksam	Male	32	20	No	Spatial	Apartment
Interviewee#8	Yeoksam	Female	29	2	No	Spatial	Apartment
Interviewee#9	Yeoksam	Male	50	0.5	No	Spatial	Box

According to the procedure of sorting task and interview in the appendix, each

interview process consisted of sorting task and open-ended questions. Nine interviewees

conducted sorting tasks of 20 places, answered questions, and explained what they think

about their apartment neighborhood. Interviews usually began with residential

description of their apartment neighborhood. Residents usually started with what he or

she wants in his or her apartment estate. Since residential participation of these

interviews followed the choice-based selection, all were eager to participate in the

interview activity. They were pleased with the opportunity. Before interviews started,

residents were asked to sort 20 pictures of places in their apartment estate. Continuing

their multiple sorting tasks, residents sometimes explained reasons to choose pictures and

what their thoughts are/were about those places. After multiple sorting tasks by residents,

we commenced open-ended conversations about their apartment estate and

redevelopment.
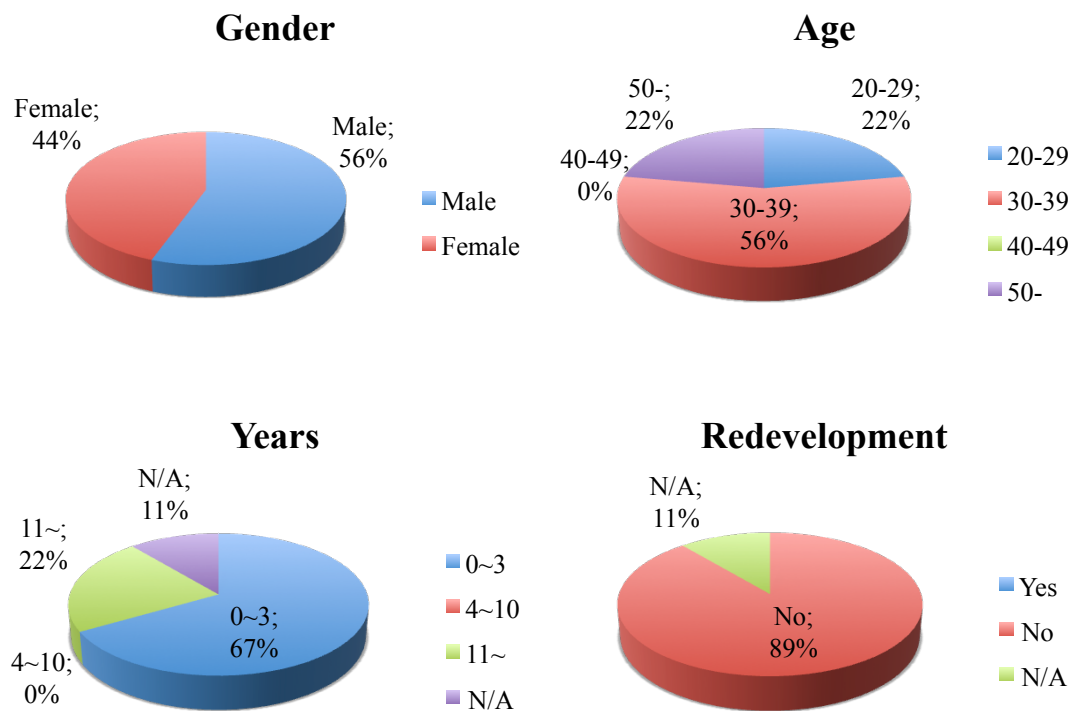
Figure 7.1. Interview demography

Demography of nine interviewees is described in Figure 7.1. Like the

demography of the survey in Chapter 6, detailed description of interviewees demonstrates

that female, 30 year-old, less than four years living there, and new residents are the

majority of interviewees. Each interview lasts approximately two hours. An interview

comprises research consent description, sorting task, explanation of survey, semi-

structured questions and open-ended conversation. Each process is not divided by each

activity; interviews were in continuous, open-ended mode to let residents feel

comfortable and eager to state their perceptions of their neighborhood.

Desirable Items and Vibrant Places

Sorting tasks during in-depth interviews are intended to investigate which places

residents regard as vibrant, and how residents perceive places as vibrant in and to their

apartment estates. Through residential behaviors and responses of perception of places in

the apartment estates, the residential sorting tasks activity also enhances in-depth

interview in terms of quality and evidence about residential perceptions of place vitality.

For the sorting task in this study, 20 places in each apartment estate are shown as pictures.

Residents were asked to sort these pictures, i.e., by grouping and ranking. Residents

grouped the 20 pictures via their own criteria and ranked the pictures for desirable places

and vibrant places within those criteria. Among those residents' responses of the sorting

task, ranking behaviors are investigated as a main issue to analyze residents' perceptions

of vitality in their apartment neighborhoods. Based on interviewees' ranking results,

tables are generated and analyzed to reveal the relationship between residents and places

in their apartment neighborhood.

In addition, results of these sorting tasks are analyzed using the multidimensional

scaling. Two multidimensional scale - MDS - plots are generated in relation to

interviewees and places in the apartment estate. MDS plots demonstrate dissimilarity

distances of each subject: interviewees and places. Also, individuals were asked about their reasons for grouping and ranking pictures, and these results were analyzed.

To choose 20 places in each apartment estate, a standard to identify elements in the apartment estate was needed. For example, Lynch demonstrates that landmark, path, edge, node and district are elements in a city (Lynch, 1960). According to Lynch's statement, landmark is "physical reference points," path is "channels along which the observer customarily moves," edge is "boundaries between two areas," node is "points of intense activities," and district is "a medium-to-large part of a city." If these elements are put in a simple way, there can be fundamental components, namely elements and transition.

Figure 7.2 shows the relationship of elements and transitions as a basic unit in the built environment. This simple relationship was used as the basis for the selection of "places" for this study.
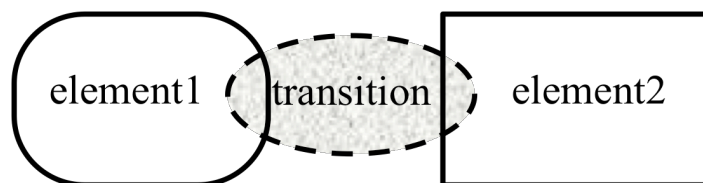
Figure 7.2. Composing elements in the built environment

Regarding this relationship of composing elements in the built environment, as in Figure 7.2, places in the apartment estate are categorized into three groups: essential elements, transitions, additional elements. The first-mentioned two groups – essential elements and transitions – are main components to make an apartment estate and the last-mentioned group – additional elements – is a supplement component to enrich spatial

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characteristics. In one district of an apartment estate, three categories can be described in terms of Lynch's five elements. Essential elements are "landmark" – i.e., including apartment buildings and a community center – and "path" – i.e., including walkways and streets. Transitions are "node" and "edge" that represent transition area and connecting areas – i.e., gates at an apartment estate, entrances at an apartment building, entrances at underground parking lots and plazas connecting streets to entrances at an apartment building. Additional elements are "landmark" that additional area and items characterize.
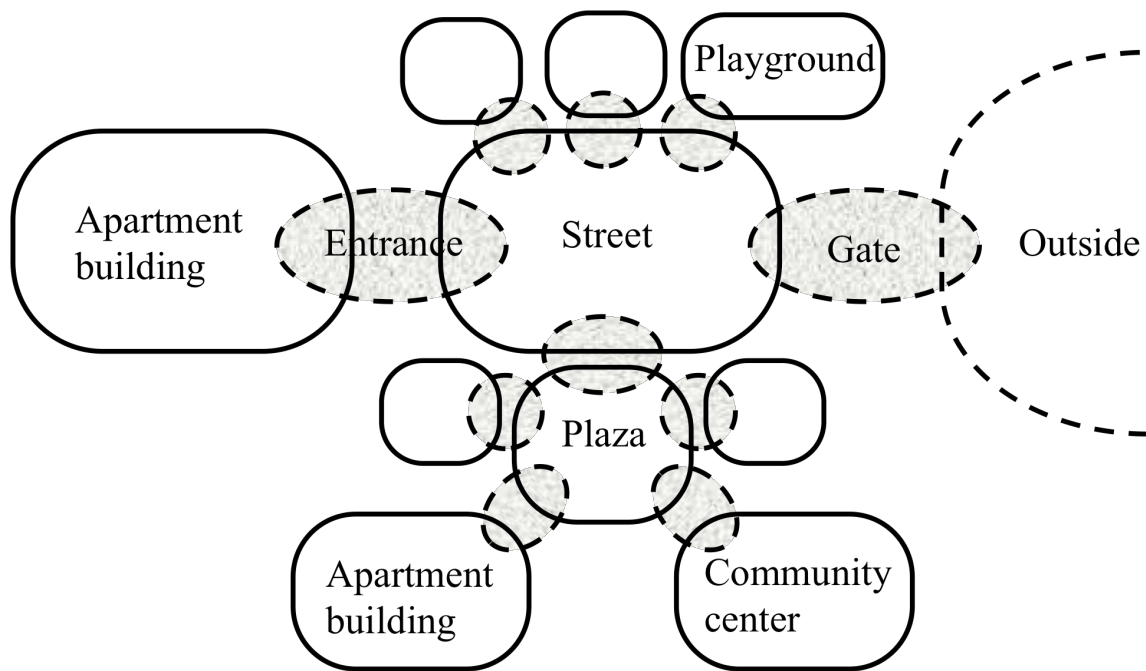
Figure 7.3. Diagram of apartment estate composition

Places are represented by pictures, randomly numbered. Table 7.2 shows twenty pictures in three categories with assigned numbers. These twenty places in the four apartment estates are shown in the Appendix B to this dissertation.

Residents were asked first to rank places that they considered to be vibrant then desirable. After residents sorted 20 pictures from the most vibrant place to the least, then the most desirable to the least, open-ended interview began including asking why resident ranked these places in terms of vibrant and desirable places in their apartment neighborhoods.

Table 7.2. Twenty places in three categories

Essential area (street) – five places	Transition area (connecting place) – five places	Additional area (item) – ten places
(1) Road approaching the apartment estate (3) Primary road in the apartment estate (6) Pilotis – space supported by columns under an apartment building (16) Secondary road in the apartment estate (19) Linking street and/or stair	(2) Main gate at the apartment estate (4) Sub-gate at the apartment estate (5) Entrance to an apartment building (10) Entrance to underground parking lots (20) Ground parking lot and/or plaza	(7) Bicycle storage (8) Children's playground (9) Facility management and community center (11) Central park in the apartment estate (12) Pocket park in the apartment estate (13) Walking path (14) Daycare and/or preschool (15) Waste and recycle container (17) Exercise place (18) Nearby park

As per Appendix C to this dissertation and Table 7.4, nine interviewees' rankings of vibrant place, "(1) Road approaching the apartment estate," "(11) Central park in the apartment estate," "(2) Main gate at the apartment estate," "(8) Children's playground," and "(9) Facility management and community center" are respectively selected as the top five rankings of vibrant places. It is assumed that each rank is one point for each place.

Then, each place comes to have a certain point value and places with lower points are selected as vibrant places.

Table 7.3. Top-five-ranked places for a vibrant place in general

Place	(1) Road approaching the apartment estate	(11) Central park in the apartment estate	(2) Main gate at the apartment estate	(8) Children playground	(9) Facility management and community center
Category	Essential area	Additional area	Transition area	Additional area	Additional area

Table 7.4. Point values for a vibrant place in general
(Note: (#) means the number of places in Table 7.2)

Rank	1	2	3	4	5	6	7	8	9	10
Place #	(1)	(11)	(2)	(8)	(9)	(17)	(18)	(4)	(10)	(20)
Point value	45	50	53	54	58	86	87	88	90	99
Rank	11	12	13	14	15	16	17	18	19	20
Place #	(12)	(14)	(3)	(5)	(13)	(15)	(7)	(16)	(6)	(19)
Point value	100	101	106	110	113	118	121	129	138	144

In a different way, residents' rankings at each neighborhood are analyzed. Narrowing this analysis of places into top-five-ranked places, I count the frequency of places shown in the top-five-ranked vibrant places in each resident's responses. Three residents in Weolgok R apartment estate more frequently select "(3) Primary road in the apartment estate," "(9) Facility management and community center," "(13) Walking path," "(12) Pocket park in the apartment estate," and "(8) Children's playground." A resident

in Gongdeok R apartment estate picks "(11) Central park in the apartment estate," "(5) Entrance to an apartment building," "(1) Road approaching the apartment estate," "(2) Main gate at the apartment estate," and "(3) Primary road in the apartment estate," in that order. Two residents in Jangan H apartment estate put "(18) Nearby park" as a vibrant place in their top-five-ranked vibrant place. Then, in their top-ten-ranked vibrant place, "(12) Pocket park in the apartment estate," "(9) Facility management an community center," "(4) Sub-gate at the apartment estate," "(1) Road approaching the apartment estate," and "(14) Daycare and/or preschool" are included following "(18) Nearby park." Three residents in Yeoksam E apartment estate select "(4) Sub-gate at the apartment estate," "(20) Ground parking lot and/or plaza," "(1) Road approaching the apartment estate," "(2) Main gate at the apartment estate," and "(8) Children's playground."

Table 7.5. Top-five-ranked vibrant places in each apartment estate
(Note: (#) means the number of places in Table 7.2)

Apartment estate	Essential area	Transition area	Additional area
Weolgok R	(3)	-	(9), (13), (12), (8)
Gongdeok R	(1), (3)	(5), (2)	(11)
Jangan H	(1)	(4)	(18), (12), (9), (14)
Yeoksam E	(1)	(4), (20), (2)	(8)

Residents' ranking and selection for vibrant places include all three categories: essential area, transition area, and additional area. Although the frequencies of the three categories vary by apartment neighborhoods, one or more places in each category are selected as a vibrant place.

However, according to the desirable places in their apartment estate at Appendix D to this dissertation, additional areas are dominantly selected as a more desirable place.

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"(12) Pocket park in the apartment estate," "(9) Facility management and community center," "(8) Children's playground," "(13) Walking path," and "(17) Exercise place" are lower ranked (more desirable) places by nine interviewees. Similarly, it is assumed that one rank is one point for each place. After summing points, places with lower points are selected as more desirable places. These five places are in the category of the additional area (item) in Table 7.6.

Table 7.6. Top-five-ranked places for a desirable place in general

Place	(12) Pocket park in the apartment estate	(9) Facility management and community center	(8) Children's playground	(13) Walking path	(17) Exercise place
Category	Additional area	Additional area	Additional area	Additional area	Additional area

Table 7.7. Point values for a desirable place in general
(Note: (#) means the number of places in Table 7.2)

Rank	1	2	3	4	5	6	7	8	9	10
Place #	(12)	(9)	(8)	(13)	(17)	(11)	(14)	(6)	(16)	(18)
Point value	37	61	67	68	73	80	85	91	95	96
Rank	11	12	13	14	15	16	17	18	19	20
Place #	(1)	(5)	(19)	(4)	(3)	(10)	(2)	(15)	(7)	(20)
Point value	103	104	105	108	111	111	114	116	129	136

Then, the frequencies of places shown in the top-five-ranked desirable places are counted. Three residents in Weolgok R apartment estates put "(11) Central park in the apartment estate," "(13) Walking path," and "(12) Pocket park in the apartment estate" as

more desirable places. A resident in Gongdeok R apartment estate selects "(16)

Secondary road in the apartment estate," "(11) Central park in the apartment estate," "(12)

Pocket park in the apartment estate," "(5) Entrance to underground parking lots," and

"(13) Walking path" in the lower ranking (more desirable places). Two residents in

Jangan H apartment estate pick "(18) Nearby park" as a desirable place in their top-five-

ranked desirable place. Then, in their top-ten-ranked desirable places, "(12) Pocket park

in the apartment estate," "(9) Facility management and community center," "(14)

Daycare and/or preschool," "(17) Exercise place," and "(2) Main gate at the apartment

estate." including "(18) Nearby park." Three residents in Yeoksam E apartment estate

select "(12) Pocket park in the apartment estate," "(8) Children playground," "(9) Facility

management and community center," and "(16) Secondary road in the apartment estate"

in their top-ten-ranked desirable places.

Table 7.8. Top-five-ranked desirable places in each apartment estate
(Note: (#) means the number of places in Table 7.2)

Apartment estate	Essential area	Transition area	Additional area
Weolgok R	-	-	(11), (13), (12)
Gongdeok R	(16)	-	(11), (12), (15), (13)
Jangan H	-	(2)	(18), (12), (9), (14), (17)
Yeoksam E	(16)	-	(12), (8), (9)

However, this 1-dimensional analysis of ranking pattern shows limited

information of residents' perception of places in their apartment neighborhoods. While

more vibrant places by residents are found in the three categories, more desirable places

are dominantly in the category of additional area (item). This finding indicates that

residents' responses of vibrant and desirable places seem to have their own tendencies to

represent characteristics of vibrant and desirable places. Thus, I choose a multidimensional scale method to investigate these ranking patterns, to find characteristics of residents' perceptions of vibrant and desirable places.

Via the multidimensional scale (MDS), I analyze interviewees and compare similarity of interviewee responses. Using dissimilarity distance in the statistical analysis, I analyze residential responses of vibrant places and desirable places. According to the MDS of vibrant places, similar patterns exist among interviewees. Close location between interviewees represents that interviewees' responses have commonly-shared elements about vibrant places. In addition, neighborhood contexts – whether apartment estates are redeveloped from single family or old apartment housing or whether the number of housing units is small or larger – rarely relate to location between interviewees except regarding Yeoksam E apartment estate. While three interviewees in Yeoksam E apartment estate are closely located in the top of Figure 7.4 (Figure 7.4.a), the other two groups include interviewees in Weolgok R, Gongdeok R and Jangan H apartment estates. While these two groups share similar responses between interviewees, these common characteristics rarely relate to a specific apartment neighborhood such as Weolgok R, Gongdeok R, or Jangan H apartment estate.
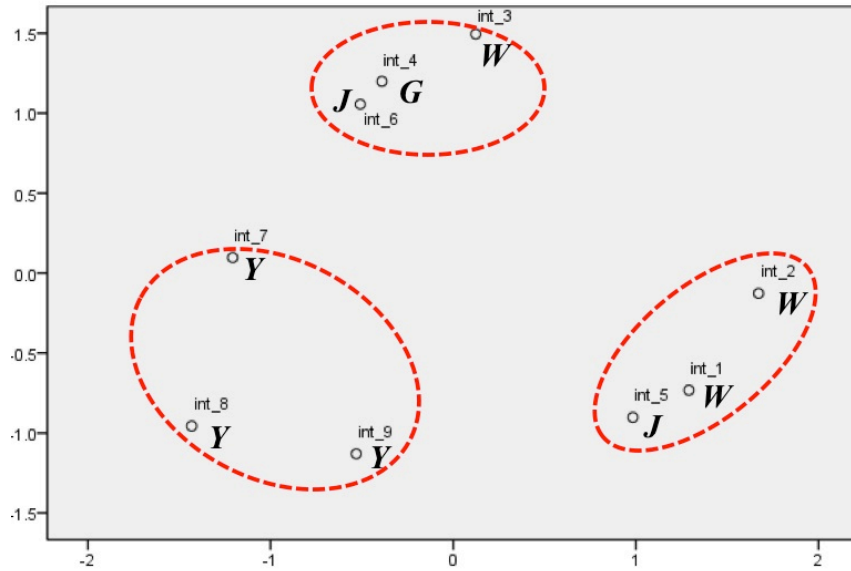
Figure 7.4.a. [Vibrant place]
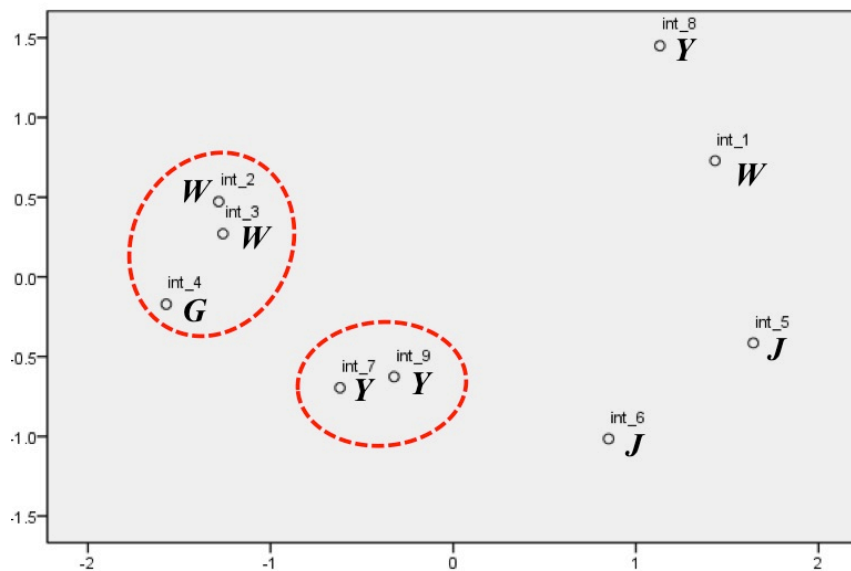
Figure 7.4.b. [Desirable place]

int_#: interviewee_number (#)
W: Weolgok R apartment resident   G: Gongdeok R apartment resident
J: Jangan H apartment resident   Y: Yeoksam E apartment resident
X-Y axis: Euclidean distance

Figure 7.4. Multidimensional scales of interviewees

However, residential responses of desirable places demonstrate weak similarity

between interviewees. In the bottom of Figure 7.4 (Figure 7.4.b), the location pattern

represents that interviewees seem to have different choice relative to interviewee preference. Although interviewees 2, 3 and 4 show similar patterns and interviewee 7 and 9 form another group, interviewees 1, 5, 6, and 8 are distantly distributed in the MDS; this means that these interviewees' responses are dissimilar from others'. In addition, the MDS of desirable-place responses shows that weak relationships between interviewees in relation to neighborhood contexts; this means that residential responses of desirable places in their apartment estates are independent of small or large apartment estates, and redevelopment from single-, detached housing to apartment housing, or from old to new apartment housing.

The MDS of places demonstrates that vibrant places seem to have clear criteria to be described in rank order than have the desirable places. To compare similarity of place rankings, locations of places in the MDS show dissimilarity distance between places in relation to vibrant places and desirable places by residential rankings. First, vibrant places in the MDS are divided into two parts: upper and bottom in the top of Figure 7.5 (Figure 7.5.a). Comparing this top of Figure 7.5 (Figure 7.5.a) to residential rankings of places, I note that right-to-left follows ranking increase from low-to-high ranking score, which means that places in the right side are more vibrant, and places in the left side are less vibrant, relative to residential ranking scores of places. At the upper side of the top of Figure 7.5 (Figure 7.5.a) are essential and transition areas, which are at the same side. Essential and transition areas have a linear order from more vibrant to less vibrant places, not grouping at a certain point. In other words, essential and transition areas in the order from more vibrant to less vibrant places in the top of Figure 7.5 (Figure 7.5.a) are pic1,

pic2, pic4, pic20, pic10, pic3, pic5, pic16, pic6, and pic19. Pic1~pic20 represent picture

numbers that are respectively (1) ~ (20) places in an apartment estate in Table 7.2.
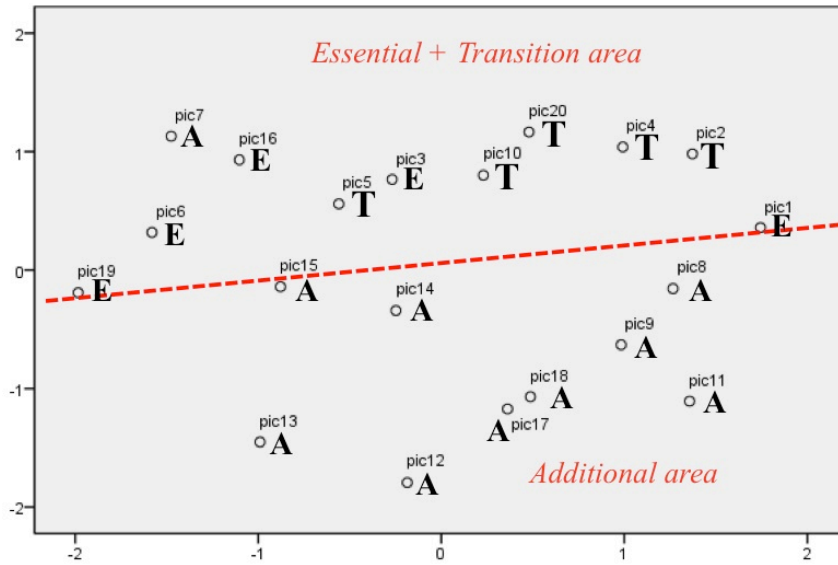
Figure 7.5.a. [Vibrant place]
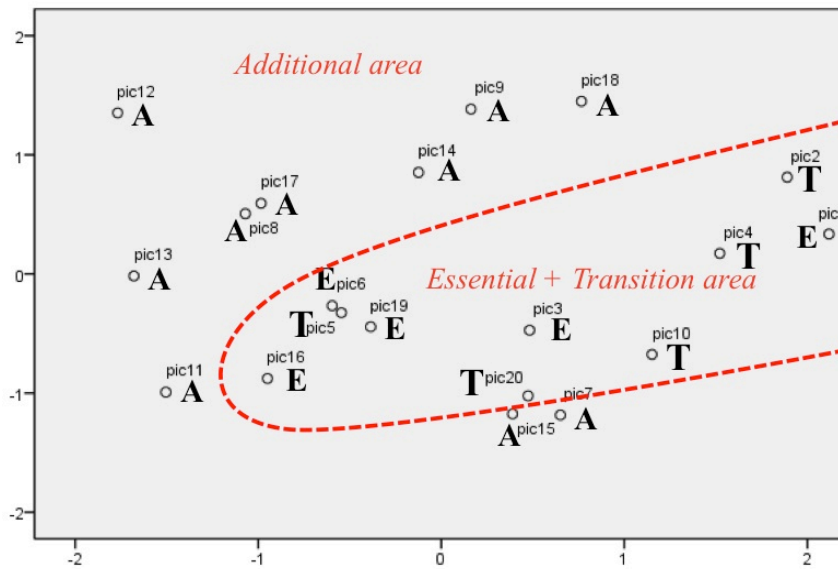
Figure 7.5.b. [Desirable place]

pic#: picture number(#), (#) place in apartment estates
E: Essential area   T: Transition area   A: Additional area
X-Y axis: Euclidean distance

Figure 7.5. Multidimensional scale of places

Relative to desirable places by residential ranking, additional places seem to have lower ranks (more desirable) than do essential and transition places. Comparing the bottom of Figure 7.5 (Figure 7.5.b) to residential rankings of desirable places, I note that left-to-right in this figure follow ranking increase from low-to-high ranking score, which means that places in the left side are more desirable and places in the right side are less desirable. Additional areas are closely located at the side of more desirable place (left side of the MDS of desirable places). Essential and transition areas seem to be less desirable.

Desirable places selected at the lower rank (more desirable) are specific items that enable their apartment estate to be characterized and valuable, which are categorized in additional elements. According to findings from the MDS of interviewees relative to desirable place, these desirable places differ among interviewees. According to the findings of the MDS of desirable places, residential ranking trends of choosing desirable places incorporate what makes their apartment estates special and differentiated.

Vibrant places at the lower rank tend to include spatial elements that are commonly shared notions and places in their apartment estates, which are transitional and essential elements. According to the findings of the MDS of interviewees relative to vibrant places, residential ranking patterns of places demonstrate that their perceptions have similar characteristics and shared values of vibrant places. These vibrant places contain essential and transitional areas, namely spatial and fundamental components to build an apartment estate.

Therefore, residents tend to choose similar elements for vibrant places. These similar elements are usually spatial. However, residential choices about desirable places tend to follow specific items in their apartment neighborhoods.

Gated Block and Public Street

This section explores in-depth interviews in the four apartment estates. In addition to the analysis of sorting task in the previous session, interview analysis seeks to investigate reasons about vibrant places, about desirable places, and about groupings. Open-ended interviews also enable residents to mention other issues in their apartment estates. During these open-ended interviews, residents also explained their cognitive maps in the survey. Residential cognitive map descriptions help me to retrieve important meanings of residential perceptions of places with vitality and their neighborhoods.

A question why residents rank places from the most vibrant to the least vibrant places in their apartment estate was the main topic for the interview. Residents explained that the most important criterion is/was how many people were observed. This majority of explanation is related to activities in a place. Interviewees 1, 4, 5 and 6 said that a vibrant place is where they frequently visit and where more people pass through than at other places. Interviewee 7 specified this circumstance of more people in a place as a time frame of vitality in a place which depends on how many people are observed at a glance. Interviewees 8 and 9 simply replied it is a place where many people exist. Interviewee 2 said that a place where people stay for more time can be considered as a

vibrant place. Interviewee 6 added to his explanation of more people that there is frequent vehicle traffic in a vibrant place.

In addition, some residents specified local markets, children's after-school institutes, nearby riverbank, as vibrant place/s. Residential responses related to a destination of their daily lives such as grocery shopping, children's school and jogging. Interviewee 5 said that it is where people use it often, such as tennis court and nearby riverbank. Interviewee 3 described a vibrant place as a playground and other places where more children feel safe to gather with friends. A playground and other places of interviewee 3 were also included as daily places in daily life. These places were part of children's daily lives. While interviewees 1 and 4 did not specify exact names of places where people frequently visit, their explanations included meanings of destinations as well as paths.

About a place with vitality, one part of residential explanation focused on how many people they see in a certain period. The other part of residential explanation relates to a destination frequently visited in a typical day. These two points of a vibrant place in relation to activities in a place are spatiality and frequent visiting, as found in Chapter 6 *vide* analysis of residential cognitive maps.

Residents also described what physical characteristics of a place with vitality are. They explained that physical characteristics of vibrant places are connecting places to outside the apartment estate and retail shops, such as apartment estate gates. Interviewees 5 and 8 described physical characteristics with an example of gates between inside and outside the apartment estate. In relation to the physical characteristics of apartment estate gates, interviewee 4 specified these physical elements with a

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complicated composition of spatial elements. Thus, residents sought to describe that characteristics of apartment estate gates that interconnect and are a composite of spatial elements are physical characteristics of a vibrant place in their apartment estates. Additionally, interviewee 7 explained that places that are essential to make an apartment estate are vibrant places, and that these vibrant places are closely adjacent to apartment buildings.

Summarizing residential explanations, I note that residential commonly-shared criteria of vibrant places incorporate essential and transition elements in their apartment estates. While patterns in the multidimensional scale of vibrant places in the previous section in this chapter demonstrate that residents distinguished essential and transition areas from additional items in their apartment estates, their oral explanations of vibrant places, focusing on essential and transition areas, supports that vibrant places are more related to essential and transition areas than are additional items in the apartment estates.

However, two of nine interviewees responded that physical characteristics of a vibrant place were difficult to distinguish from other places in their apartment estates. Some residents added physical elements to reasons, only responding to the question of what physical attributes one can specify as a vibrant place. It is possible that residential perception of place vitality might have weak relationship to physical elements.

In addition, residents explained meanings of a vibrant place. Residents' explanations of feeling safe (interviewee 2), convenient to access (interviewee 5) and evoking noise (interviewee 8) show that a vibrant place is not always a resident-preferred place although interviewee 4 said that vibrant places are what residents like in the

apartment estate. However, residents spent relatively little time to explain the meaning of, rather than the activity and the physical characteristics of, vibrant places.

After residents' explanations of their perception of vibrant places, I asked why they rank places from the most desirable to the least desirable place in their apartment estate. Residents' explanations of desirable places in their apartment estate followed what residents' current status was and what were the most important values in their current lives. Female residents who have children (interviewees 2 and 3) said that a desirable place could be ranked by security. A place safe for their children could be put at a higher rank.   They additionally commented that the apartment main gate and the main street in their apartment estate were inappropriate for children and that they are concerned about children's safety relative to auto traffic. Some residents explained that convenient use is an important criterion to determine a place's desirability. Interviewees 1, 4, 5, 6 and 8 described that, relative to their daily lives, more convenient places appealed to them as being more desirable in their apartment estates. Interviewee 2 said that green spaces are the most desirable, since these cause her to feel like resting; interviewee 7 said that places making him comfortable are higher ranked than places without meaning to him; interviewee 9 said he was proud of desirable places in his apartment estate and that green space which gave him a resting place and were easy to use and access, were desirable.

The majority of residential explanation focused on meanings to themselves of desirable places in the apartment estates. While activities and physical attributes specified vibrant place, a desirable place was described with meaning. Residents tended to explain their own experiences and preferences; these explanations related to

characteristics that made their apartment estate special and different from other

neighborhoods. Residents' thoughts about their apartment estates differed from each

other and depended on current life circumstances of each.

Residents' grouping patterns of places represent their personal interest in their

neighborhoods. Grouping behaviors of places in their apartment estates demonstrate that

residential perceptions of places in the apartment estate were limited to a few categories.

Safety, convenience and personal preferences are dominant categories residents chose for

grouping places in their apartment estate. While these grouping categories are applicable

to all housing types, their reasons for these groupings related to a source of pride in the

apartment estate. Interviewees 2 and 3 emphasized that living in apartment housing made

them feel better. They are proud of their apartment estates because they live in apartment

housing and are satisfied with better security devices than exist in other, nearby

apartment estates. Interviewees 7 and 8 also emphasized that places they are familiar

with and are helpful to them were categorized in advance. In particular, interviewee 8

added it to her grouping behavior that safety issues in green space and apartment building

entrance are involved in unexposed spatial structure. Similarly, residents' explanations

are involved in their ordinary lives and private concerns. Personal and private concerns

are important for them to perceive their apartment estates.

When they were asked to explain their drawing of the cognitive map, residents

described what their neighborhood consisted of, including their apartment estates. They

described what retail and local shops exist nearby. Residential narrative of their

neighborhood related to convenience of use and access to places near their apartment

estates, such as riverbanks, retail shops and schools. As findings from surveys in Chapter

6 revealed that residents perceive their apartment estates as one place, residents during interview also focused on the relationship between their apartment estates and nearby places. They said that they live in an apartment estate rather than in one unit in an apartment building in the apartment estate. They seemed to have strong sense of belonging to their apartment estates.

Interviewees 5 and 8 explained redevelopment changes in the apartment neighborhood. Although these two interviewees answered that they did not live in their apartment estate before redevelopment, they could explain how the neighborhood looked before redevelopment, because they previously had lived nearby. They similarly explained that their neighborhood after redevelopment became brighter than the old neighborhoods had been before redevelopment. After redevelopment, since they were able to observe more people, they said that they were eager to approach and use places in and nearby the apartment estate, such as riverbanks, retail shops, etc.

Young female residents stated they were concerned about safety issues inside and outside the apartment estate. These interviewees stated that their new apartment estate by redevelopment allowed them to feel safer and to have more convenient living. What residents want to change in their apartment estate also relates to safety and convenience. Interviewees 7 and 8 stated that they avoided nearby residential neighborhoods that were still old and underdeveloped and they expected that those neighborhoods would be redeveloped soon. Interviewees 2 and 3 said they wanted more exposed and open space rather than green and tree spaces in their apartment estate; while green and tree spaces looked good and offered them a restful setting, strangers - i.e., those who might not be apartment estate residents - gathered and made them feel unsafe.

Residents' statements clearly distinguish between places inside and outside apartment estates. As daily routes and residential cognitive maps in the survey were analyzed in Chapter 6, residential perceptions of their neighborhoods focused on the relationship between their apartment estates and nearby places more than on places in their apartment estates when they explained their neighborhoods. Although the four cases of apartment estates have main gates to control vehicle access to inside the apartment estates, people who are not residents in the apartment estate are able to enter the apartment estate and explore there. Unlike gate control in a gated community, any person is able to approach the entrance of an apartment building, although a vehicle that does not belong to and/or is unrelated to residents is not allowed to enter.

In addition, streets that were originally public access to the place are included in the apartment estate. Residents are concerned about safety and convenience in the streets and considered these streets part of their properties. Streets outside the apartment estates were mentioned as places related to activities and spatial components for residential neighborhoods. In addition, residents explain that increasing security in their apartment blocks represents better maintenance in their apartment estate. Residents considered the whole apartment estate their property and sought to keep property values high by emphasizing differences from other neighborhoods. Thus, privatized places and streets in residential blocks generate distinction between vitalities outside and inside apartment estates.

Experienced and Observed Vitality

Two ways of perceiving place vitality are found between residential memory of vitality and observation of vitality. On one hand, residents state that destination places where they frequently visit are places with vitality. According to marks on cognitive maps and in-depth interviews, residents select destinations in their daily lives. It is in frequent visiting that residents perceive vitality in their destinations. On the other hand, analysis of residential daily routes and sorting tasks demonstrate that connecting places where many people stay and pass through have vitality. Also, how many people are observed in a place is a significant factor to choose a place with vitality, according to the in-depth interview. This place comprises space where many people can stay and work at that moment, and this space is simultaneously exposed to other space where observers see many people.

The naturalistic observation approach was conducted for observing people's movements in the four apartment estates and verifying findings from analyses of physical changes, surveys and in-depth interviews. Following Lynch's observation method (Lynch, 1960), I explored the four apartment neighborhoods. Lynch verified interviewee's responses by exploring and observing cities (Lynch, 1960). This method includes challenges to be reliable and objective during observation. As Lynch demonstrated usefulness in comparing observation results with other evidence, I use this observation method to compare with what I have found in collected data and interviews, rather than to address evidences only from this observation.

Exploring places inside and outside the apartment estates on weekdays and weekends, I compared findings from the analyses, to what happened at the places. First, it is true that main gates at apartment estates are busy. Many people and cars pass through and stop. The composition of the main gate, the main street, the gate control room, waiting cars and pedestrians, makes this place perceived as crowded. As well as busy, there are frequent stops at the retail shop in front of main gates to apartment estates. In addition, when I explored Jangan H apartment estate on a weekday, a market was being held on the main street. People gathered and made the main street a spatial place where various activities were held. However, it is hard to say that it was easy to observe many people in the apartment estate on a typical day. A few people stay at playgrounds and resting areas for a long time. It was hard to see people in other places. People walked all around places in the apartment estate rather than stayed at a certain place. As main gates are traffic bottlenecks, a connecting place enables a spatial element to be connected to another. This configuration allows connecting places to include more traffic flow than other elements intended for people to stay. However, residents tended to mark places they experienced by themselves in cognitive maps, rather than places where they saw many people stay. Before people's movement patterns were observed in apartment neighborhoods, it was expected that residents might mention and put entrances and gates in higher rank of vibrant places and might mark entrances and gates as most vibrant places. Instead, residents marked where they visited: going to work, shop, exercise, etc.

Analyses of in-depth interviews demonstrate that the number of people to be observed is a significant element for residents to determine how vibrant a place is. Residents mentioned they considered that a place where they perceive more people was

more vibrant. Although they marked where they visited as a vibrant place, residents said during interviews that gates and the main street are vibrant places in the apartment estate due to the number of people there.

Thus, these two ways of perceiving place vitality are related to the formation process of perception of vitality: experience and observation. First, residents perceive vitality in places where they frequently visit. This perception comes from residents' remembered experiences. Second, residents mention vitality in places where many people gather. Residents observe vitality in places where people's movements are connected and which include many people and various activities.

Between Privatization and Community

Analyses of residents' in-depth interviews identify residents' preferences and perceptions of apartment estate living. Residents prefer segregation of their apartment neighborhoods as opposed to sharing places in their apartment estate with others who are not related to the apartment estate. Residents differentiate between inside and outside their apartment estates, and want to prevent others from entering and passing through their apartment estates. In addition, residents feel safe and a sense of belonging when places are vitalized. Residents favor vibrant places exposed to other places and people rather than calm places enclosed from other places and people. However, residents want these vibrant, exposed places to belong to their apartment estates.

Residents' preferences conflicts in making a place with vitality in an apartment estate: places exposed and enclosed at the same time. According to analyses of changes

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in the four cases, spatial conflicts are discovered. While the blocks of the apartment

estates become more integrated, the contexts of the apartment estates become more

segregated from the outside. While places in new redeveloped apartment estates are

visually exposed, these places are hardly accessible from outside, and physical

characteristics of these places in those redeveloped apartment estates are rarely connected

to original physical elements that existed before redevelopment, and to nearby residential

contexts before and after redevelopment. Residents expect their apartment estates to

differ from other neighborhoods. Residents' desire for specialized items in apartment

estates that differentiate their apartment estates from other residential neighborhoods,

induces user conflicts of places. Residents prefer exposed places to hidden walking paths

in the apartment estates, but would like to keep places in the apartment estates from

others who do not live there. Residents seek to avoid public access and want privacy in

places on apartment estates.

Apartment neighborhood redevelopment

[Privatization]   [Community]
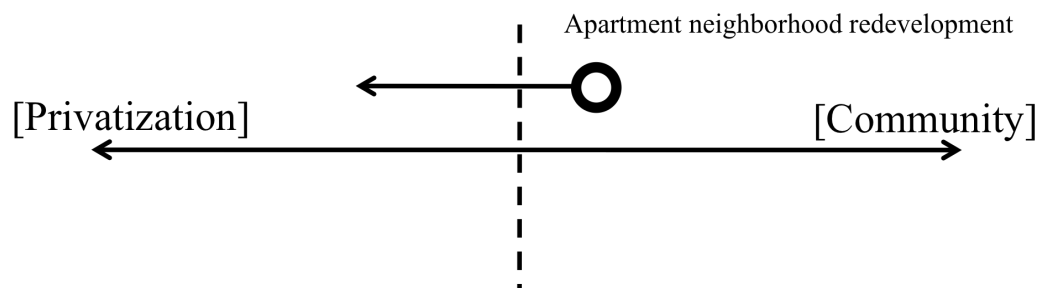
Figure 7.6. Position movement of urban housing redevelopment

Thus, apartment neighborhood redevelopment in the four cases makes an

apartment estate a privatized neighborhood. These urban housing redevelopments

engender conflicts between privatization and community in an urban environment. In

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Korea, while apartment estates were originally developed as urban residential neighborhoods, apartment estates are currently redeveloped as gated private neighborhoods.

Conclusion

This chapter investigates residential responses in in-depth interviews and sorting task, to find meanings of vitality in the four apartment neighborhoods. How residents perceive place vitality and why this perception occurs in the four apartment neighborhoods are main concerns in this chapter. Based on residents' detailed narrative of places with vitality by residents, this chapter reveals residential perceptions of place vitality in Korean apartment neighborhoods. Regarding apartment-housing context in Korea, interviews accompanied by various activities enable analyses of perception of place vitality to include valid evidence in the four neighborhoods as well as in urban housing redevelopment.

Findings in this chapter are summarized:

- Interviewees' criteria to choose places with vitality are similar among themselves and are related to spatial characteristics of areas in the apartment estates, such as main gates and streets that are essential to make an apartment estate.

- Interviewees' criteria to choose desirable places are different among themselves and depend on their own values. These values are related to characteristics of the apartment estates that differentiate them from other neighborhoods, such as pocket parks and walking paths.

- Interviewees' patterns of grouping places represent their personal interest in their apartment neighborhoods.

- Ways of perceiving place vitality depend on interviewees' memory of vitality and interviewees' observation of vitality, in other words, experience and observation. One part of interviewees' explanation relates to a destination frequently visited in a typical day; the other part focused on how many people they see in a certain period.

- Perceptions of places with vitality include feeling safe, convenient to access and evoking noise, which are not always an interviewee-preferred place.

Thus, places with vitality have shared common elements between interviewees, which are characteristics of integration and exposure. This perception is related to interviewees' experience and observation in their apartment neighborhoods.

Interviewees' preferences in their apartment neighborhood are also found in this chapter.

- Interviewees prefer segregation of their apartment neighborhoods to sharing places in their apartment estate with others who are not related to the apartment estate.

    (1) Interviewees demonstrate strong sense of belonging to their apartment estates.

    (2) Interviewees expressed their positive preference of apartment neighborhood living and redevelopment.

(3) Interviewees divide the area of their neighborhood into inside and outside their apartment estates,

(4) Interviewees want to prevent others from entering and passing through their apartment estates.

- Interviewees favor vibrant places that are exposed to other places and people rather than calm places enclosed from other places and people.

- However, interviewees want to possess these vibrant, exposed places as integral parts of their apartment estates.

In conclusion, interviewees' preferences conflict in creating a place with vitality in an apartment estate – i.e., places are exposed yet enclosed at the same time. As interviewees perceive their apartment estate as one place rather than a neighborhood comprising streets and buildings, interviewees describes that in their perception the four apartment estates have been a privatized, semi-gated neighborhood rather than a part of residential areas in a region. Interviewees' narrative of their daily destination and privatized places in their neighborhoods indicates distinction between places with vitality inside and outside apartment estates. These urban housing redevelopments engender conflicts between privatization and community in an urban environment.

CHAPTER VIII

Theorizing Place Vitality: Everyday Life, Architecture and Urbanism

Residents' perceptions of place vitality demonstrate sharing of values with other characteristics of residents' neighborhoods. Since place vitality perceptions relate to daily lives and movements in the built environment, this chapter seeks to theorize place vitality relative to residents' perceptions. For theorizing place vitality, findings in the previous chapters are summarized and compared. Interpreting these findings for understanding perceptions of place vitality in Korean apartment neighborhood redevelopment, this chapter seeks a design approach to create places with vitality in urban housing redevelopment.

Summary of Findings on Place Vitality and Redevelopment

This study explores residents' preference, satisfaction and user patterns for a set of case-studies of apartment neighborhoods in Korea. Research Questions are: How do residents perceive place vitality in their neighborhoods?; and Why does this perception occur in Korean apartment redevelopments? This is a case-study approach to four instances, namely Weolgok R, Gongdeok R, Jangan H and Yeoksam E apartment estates.

In total, 108 maps of the four apartment estates and their neighborhoods were collected and analyzed to find physical characteristics and changes occasioned by redevelopment. Analyzing physical changes in the four apartment neighborhoods, I sought what characteristics those four apartment estates have and what has changed by urban housing redevelopment. Furthermore, 162 surveys from residents in the four apartment estates were collected. From residents' responses in the surveys, I sought to discern how residents perceive their neighborhoods, how they explore their neighborhoods within their cognition of neighborhood, and whether and how changes by redevelopment relate to residents' movements in their neighborhoods. Towards this, nine in-depth interviews were conducted. Residents' narratives of their apartment estates and redevelopment were germane to my analysis of how residents perceive place vitality, and why this perception occurs in the four neighborhoods.

Accordingly, findings in the previous chapters are summarized

- *In the whole-neighborhood scale, the development characteristics of Weolgok and Gongdeok neighborhoods differ from those of Jangan and Yeoksam neighborhoods; the characteristics are (1) from single, detached housing to apartment housing or from old to new apartment housing, (2) already developed areas or relatively newly developed areas, and (3) maintaining building context or changing building context.*
- *However, after redevelopment, Weolgok, Gongdeok, Jangan, and Yeoksam neighborhoods include similar spatial characteristics.*

- *Physical changes in residential blocks and contexts before and after redevelopment confront the dichotomy of being a neighborhood integrated with other nearby areas, or being a neighborhood separated from other areas and away from original contexts before redevelopment there.*

- *In Weolgok, Gongdeok, Jangan, and Yeoksam apartment estates, residents divide areas in their neighborhoods into an apartment estate as one place and outside the apartment estate as other spatial components.*

- *Residents' perceptions of vitality in a place relates to visually integrated places and destinations in their daily lives.*

- *Residents perceive place vitality when they perceive high-use activities in streets, and when they experience frequently- visited daily destinations in the four apartment estates.*

- *Residents' criteria to choose places with vitality are similar between themselves and relate to spatial characteristics of areas in the apartment estates, such as main gates and streets essential to make an apartment estate.*

- *Ways of perceiving place vitality are residents' memories of vitality and their observations of vitality. Both relate to the formation process of perception of vitality, i.e., experience and observation. One part of residents' explanations related to a destination frequently visited in a typical day; the other part of residents' explanations focused on how many people they see in a certain period.*

- *Perceptions of places with vitality are associated with feeling safe, convenient to access and evoking noise, which are not always a resident-preferred place.*

- *Residents share perceptions of common elements when identifying places with vitality. These characteristics relate to location in integrated and exposed places of their apartment estates. This perception is involved in residents' experiences and observations in their apartment neighborhoods.*

- *Residents' preferences for making a place with vitality in an apartment estate indicate conflicts between places exposed and enclosed at the same time.*

Two trends are found in Korean apartment neighborhood redevelopments. One is redevelopment from single detached housing to apartment housing. The other is redevelopment from old- to new- apartment housing. In changes by redevelopment, differences between original contexts that were single, detached housing or old apartment housing are more significant factors than are differences between numbers of housing units that were small or large residential neighborhoods. In the trend from single detached housing to apartment housing, since originally those neighborhoods were divided by small residential blocks for single detached housing, apartment redevelopments built on a large, congregated block manifest significant changes in residential blocks. Since those neighborhoods in the trend from old- to new- apartment housing were relatively new, and developed on large residential blocks, apartment contexts had been established and apartment redevelopments had modified old apartment buildings and locale, rather than making a new building site.

After redevelopment, however, apartment neighborhoods include similar and common characteristics of apartment housing, despite two previously-mentioned trends in urban development. Residents' perceptions of their current apartment neighborhoods after redevelopment are similar narratives of apartment housing life. These similar experiences in urban redeveloped neighborhoods enable this study to generalize residents' perceptions of vitality in their neighborhoods. Based on findings and analyses, these in-depth discussions of place vitality are able to represent contemporary phenomena in urban housing redevelopment.

Residents, Daily Life and Place Vitality

Residents of the urban redeveloped neighborhood conduct their daily lives in neighborhoods that have experienced physical changes. According to changes in the four apartment neighborhoods, physical changes in residential blocks demonstrate that residents' neighborhoods come to include more integrated blocks and more segregated contexts. Residential blocks become visually integrated and include possibly being easily accessible to these residential blocks and being integrated into other neighborhoods. However, changes in residential blocks also are being differentiated from other blocks and old contexts. Residential blocks are being developed as gated neighborhoods although these changes include the possibility to be more integrated in an urban environment and context in a city.

Residents' daily behaviors in the neighborhood are represented as being in spatialized streets and ordinary events. As a spatial structure of the residential block,

residents perceive that streets are places where they conduct their daily lives rather than merely transportation links from one place to another. In addition, residents' movements in the residential block are a composition of ordinary events for their daily lives. So, in residents' neighborhoods, place vitality has two characteristics of spatiality and frequent use relative to residents' movements. Spatiality represents that characteristics of a place with vitality include space where people conduct their daily lives and people perceive being exposed and accessible. Spatialized streets and frequent use are representative elements of vitality in residents' blocks.

Perception of places with vitality in the four apartment estates demonstrates commonly shared elements about place vitality, especially, according to residents' interviews. Residents mark places of their daily destinations - such as local groceries and nearby parks - as vibrant places. They point out where many people are observed and where they frequently visit. In other words, these places are where residents find many people at a moment, and where residents visit in continuous time. Also, residents' perceptions of vibrant place demonstrates enhancement of privatization in places of their apartment neighborhoods. Residents explain that improvements of privacy and of safety by redevelopment (or by new apartment housing) enable them more easily to access and explore places. In addition, in their apartment estate they want to exclude from their streets and plazas others who do not live there although almost anyone is able to access that estate. Residents' perceptions show conflict between public access and privacy in their neighborhoods.

These findings support that place vitality is an accumulation of everyday life. As everyday life encompasses ordinary practice and natural movement in the built

environment - as per Chapter 2, an accumulation of everyday life enables a place to incorporate people's activities and movements. These activities and movements are vitality in a place in residents' visions and memories. Thus, since many various activities, and continuous occurrences in daily lives, are key elements by which residents perceive vitality in a place, place vitality closely correlates to everyday life.

Design considered for everyday life in architecture and urban environment is able to sustain place vitality. A place and a building for a momentous event as well as for an ordinary day are also important. A special event is able to make vitality in a place, but this vitality is temporary rather than sustainable in a place. This built environment would be a momentous place and building for a special moment. However, people live mostly in this general place where their daily lives exist. When architects and planners create a built circumstance suitable for daily lives, this built environment and people's everyday lives align with each other, and this relationship enables a place and a building to sustain their roles in the built environment.

Creating Places with Vitality in Urban Housing Redevelopment

According to residents' perceptions of place vitality in the four apartment estates, characteristics of places with vitality in the four apartment estates include following elements. First, physical attributes of places with vitality are integration and exposure of a place. Second, people's movements indicate that frequent uses, and everyday activities and destinations, enable places to contain vitality. Third, people's perceptions of places with vitality are based on experience and observation. According to their perceptions,

people primarily acknowledge places with vitality outside apartment estates. Then, as secondary perception of places with vitality, people point out places inside apartment estates. In addition, residents' perceptions show conflicts in making a place with vitality - i.e., to be exposed and accessible, yet to be enclosed and privatized.

Four apartment neighborhoods after redevelopment become similar apartment neighborhoods between themselves, although their characteristics before redevelopment were different, and are differentiated from nearby neighborhoods. Changes in the four apartment neighborhoods demonstrate the boundary conflict of integration between inside places and segregation between inside and outside contexts. These apartment neighborhood redevelopments improve quality of inside places in an apartment estate but do not enhance the relationship between inside and outside places around an apartment estate.

These changes by redevelopment and residents' perceptions of place vitality have close relationship in the apartment neighborhoods. In Table 8.1, findings that have close relationship between apartment redevelopments and residents' perceptions of place vitality are summarized to establish design guidelines to create place vitality in apartment neighborhood redevelopments. Findings that relate are associated with concepts of integration, segregation, conflict between enclosure and exposure, and hierarchy of primacy and secondary perceptions. However, physical changes by redevelopment are more significantly related to changes inside apartment estates rather than changes of nearby neighborhoods.

Table 8.1. Findings between physical changes and perceptions of place vitality in apartment neighborhood redevelopments

Change in characteristics by redevelopments	Perceptions of place vitality by redevelopment	Element
• Redevelopments make inside places integrated	• Residents perceive place vitality in integrated places	integration
• Redevelopments make contexts of places segregated	• Residents divide places between inside and outside places	segregation
• Apartment estates after redevelopment enhance exposure of inside places	• Residents demonstrate conflicts of spatial preference that are enclosed and exposed	enclosure and exposure
• Majority of frequent visits are located outside apartment estates	• Residents primarily focus on outside daily destinations as a place with vitality	primary and secondary

Transforming these concepts to appropriate approaches in neighborhood design can be an approach for creating places with vitality in urban housing redevelopment. The concepts are 'integration, segregation, conflict between enclosure and exposure, and hierarchy of primacy and secondary perceptions.' Accordingly, in creating a place with vitality, designer/s and planner/s should consider a hierarchy of places in apartment neighborhoods. That hierarchy depends on residents' perceptions of place vitality. Given residents' replies that places with vitality are dominantly located outside apartment estates, how the development relates to outside attractors should be considered. Findings in chapters 6 and 7 indicate that characteristics of place vitality outside apartment estates are integration and exposure in physical attributes, and daily destinations of residents' daily lives. For outside places in apartment neighborhood redevelopment, a design approach requires balancing and distributing everyday destinations closely adjacent to an apartment neighborhood. These places also need to be easily accessible and visible in

terms of integration and exposure. Reducing obstacles to observing and approaching places enables them to attract attention and frequent use outside apartment estates.

Inside places in apartment neighborhood redevelopment need to be exposed and integrated, too. Similar to characteristics of outside places with vitality, physical characteristics of inside places with vitality are associated with integration and exposure. Also, these are daily destinations exposed and noticeable in residents' apartment estates.

However, these inside places need consideration of how boundaries are managed to protect residents' privacy. Boundaries in apartment estates are the connection between inside and outside places. Since residents expressed contradictory attitudes about places with vitality, desiring characteristics of both exposure and enclosure, a design approach needs to consider this conflict. For redeveloping a neighborhood to include places with vitality, a way to resolve or at least diminish conflicts between integrated areas and segregated contexts, and between exposed areas and enclosed areas, needs to be found. Although areas by redevelopment have strong possibility to include elements of place vitality, such areas can be enclosed and segregated from others only for residents in redeveloped neighborhoods. However, residents in the four cases in this study also mention that places with vitality are those that are exposed and enclosed, so managing those conflicts is needed for revitalization of a place.

Three approaches seem possible, namely i) keeping a current design approach to make an apartment estate, ii) enhancing boundaries between inside and outside places, and iii) dividing boundaries to fine-graining blocks for apartment estates. The foundation for these approaches is clarification of spatial roles around apartment estates - i.e., privatized-control and public-access. The three hypothetical approaches are compared in

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Table 8.2. Each method has its own characteristics and a future study will need to examine which approaches contribute to create place vitality in urban housing redevelopment.

Table 8.2. Three hypothetical approaches relative to boundary conditions in apartment neighborhood redevelopments

Approach	Keep boundary conditions	Enhance boundary division	Divide boundaries to fine-graining blocks
Strength	• Maintain accustomed approaches	• Achieve full gate-control to apartment estates	• Increase accessibility and exposure
Weakness	• Neglect spatial conflicts in current approaches	• Divide places between inside and outside	• Need individual control methods for divided blocks
Opportunity	• Decrease costs to examine new methods	• Develop inside places only for residents	• Transform apartment estates to residential blocks
Threat	• Enhance segregation between inside and outside	• Segregate inside places from outside	• Increase security control costs

Therefore, spatial accessibility and daily destinations make a place with vitality in an urban environment. In addition, in urban housing redevelopment, creating a place with vitality sometimes encounters boundary conflict pertinent to residents' ownership and public accessibility. Since residents perceive place vitality through experience and observation, design approaches can include creating experiences as well as changing physical conditions. Changing physical attributes in urban housing redevelopment necessitates making places to include visually integrated and easily accessible space. Creating experiences means making momentary and continuous experiences in a neighborhood that are parts of people's daily lives, and which enable people to frequent this place. Additionally, physical changes and daily experiences need to be balanced and

distributed around urban housing redevelopment rather than independent elements for creating place vitality.

Conclusion

Investigating place vitality suggests an appropriate strategy for redeveloping urban blocks as indices and measurements. Making places with strong vitality needs consideration of physical qualities of access and exposure as well as of ways in which these places with vitality play a role in people's daily lives. Sometimes, making places with strong vitality encounters conflicts related to people's personal preferences. As this study reveals, residents in the four apartment estates are eager to possess exposed and integrated and easily accessible areas in their own apartment estates.

- Places with vitality have spatial characteristics of integrated space, and spatial exposure to people's activities, are places with easy access, and high frequency of use.

- By redevelopment, although including above characteristics of place vitality - i.e., essential, integrated, exposed, accessible, frequent uses, Weolgok R, Gongdeok R, Jangan H, and Yeokam E apartment neighborhoods confront segregation through enclosure of their neighborhoods from other nearby places.

For designing a neighborhood having places with strong vitality, spatial conditions and activity attractions need to be considered. Spatial integration and exposure are needed for spatial conditions, and daily destinations need be associated with

activity attractions in a neighborhood. Additionally, as creating a place with vitality

sometimes confronts a boundary conflict of residents' ownership and public accessibility,

a way to manage these conflicts needs appropriate approaches to deal with inside and

outside places relative to place hierarchy in apartment neighborhoods. In addition to

these physical concerns in apartment neighborhood redevelopment, design approaches

need to comprise creating experiences as well as changing physical conditions, because

residents' perceive place vitality through experience and observation. Thus, creating

places with vitality in urban housing redevelopment comprises (1) changing physical

attributes for integration and exposure (2) creating daily experiences (3) attracting daily

experiences in physical changes.

CHAPTER IX

Conclusions: Place Vitality in Korean Housing Redevelopment

This chapter concludes an analysis of the perception of vitality in urban housing redevelopment. Reviewing the research findings, this chapter discusses place vitality in everyday life. As concluding commentary, this chapter elaborates lessons derived from this examination of place vitality that could be pertinent to Korean apartment development.

This study's start with the question of what vitality means in revitalization. Reviewing emerging issues that include the history of neighborhood and urban development, theories of place and space, and recently-developed methodologies to analyze spaces and places in urban contexts, its research objective is to find an appropriate approach to the redevelopment of urban housing neighborhoods. Contributing to current debates on the importance of everyday life in the built environment, and clarifying the meaning of place vitality, this study sought to identify implications for neighborhood design and redevelopment. The investigation, also ranging over various interdisciplinary issues of urban and architectural theories and methods, enables me to analyze complicated contexts of our everyday lives and to synthesize appropriate design approaches for our daily places.

Exploring residents' perceptions of place vitality, this study reveals that

(1) The four examples of Korean apartment redevelopment projects include increases of physical accessibility and exposure. However, although the four apartment redevelopments have the possibility to be spatially integrated within these neighborhoods, the results of redevelopment demonstrate the enhancement of segregation from other neighborhoods nearby;

(2) Places with vitality are perceived when places inside and outside redeveloped apartment estates are integrated and exposed, and when people frequent places. However, these perceptions show conflicts of enclosure and exposure and place hierarchy inside and outside apartment estates;

(3) Accordingly, creating places with vitality is associated with

 (a) considering integration and exposure of physical conditions,

 (b) considering the link between residents' daily experiences and these physical places,

 (c) balancing boundary conditions around the redeveloped neighborhoods.

Place Vitality in Everyday Life

Results of this study indicate the importance of daily life spaces for creating places with vitality in an urban area. Accordingly, place vitality is associated with people's daily lives and effective arrangement of spatial elements for those daily lives.

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This effective arrangement has been found to include the spatial characteristic of integration and exposure, which means easy accessibility to daily destinations and routes in the redeveloped neighborhoods. However, place vitality within the apartment neighborhoods demonstrates conflicting interests: people want a place to be exposed and, at the same time, to be enclosed. These conflicting interests occur since people discriminated places with vitality between inside and outside their apartment estates. While places with vitality outside apartment estates need physical elements of integration and exposure and daily destinations, places inside apartment estates need to be enclosed as well as include characteristics of places with vitality. Although physical characteristics of places with vitality inside and outside apartment estates are similar relative to integration and exposure, people distinguished locations between inside and outside apartment estates in terms of their sense of belongings. To create places with vitality in apartment neighborhoods there need to be a hierarchy of daily-use places inside and outside apartment estates. In addition, daily-use places should be planned / designed around an apartment neighborhood that are spatially integrated and exposed.

Place vitality is an essential element in making an apartment neighborhood, i.e. an approach of neighborhood design, which seeks to create opportunities for residents to have a sense of belonging to the area, and to improve efficiency of resource distribution for those residents (Barton, 2000; Kallus & Law-Yone, 2000; K-B Kim, 2005). The Chapter 2 review suggests that neighborhood design is a process of organizing and allocating components in a neighborhood for achieving certain purposes. Thus, creating an apartment estate is the design of a residential neighborhood rather than method of a housing supply or apartment building construction. Investigating place vitality reveals

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that these daily environments relate significantly to people's lives. Since residents in this study suggest that more vitality in a place means that people will visit it more often, and feel safer, with the variable of vitality needs to be included in apartment neighborhood design. Accordingly, a design approach for places with vitality in an apartment neighborhood creates opportunities for spatial elements in an apartment estate to be well-used and included as parts of people's daily lives.

Place vitality that becomes a part of everyday life can be a universal element as well as a local issue. While this study began with an investigation of four local apartment estates, findings in this study apply to place vitality in other areas in other cities. In contemporary revitalization, because everyday life in urbanized places are often similar across different locations, findings in this investigation may very well be universal rather than region specific. Since many projects and theories in urban redevelopment include revitalization as a major theme, it is suggested that place vitality is a universal element in the built environment. Lynch's definition of vitality comprises sustenance, safety, consonance, benefit, and stability (Lynch, 1984). Accordingly, vitality in a place is an essential requirement to health and safety for survival. However, universality of place vitality may be based on the importance of place within residents' everyday life in the urban neighborhood, as was the case in this study. This universality of place vitality needs to be verified in future research.

Discussions on the Four Cases

Apartment neighborhood redevelopments of the four cases are revealed as new development focusing on creating a new physical context, rather than enhancing or improving a current (or old) place. Characteristics of the original contexts of the four cases are hardly found in new redeveloped apartment estates and these new settings of apartment estates in the four cases differ from other nearby neighborhoods (see Chapter 5). Results from the four cases of apartment estates in this study indicate that they become semi-gated neighborhoods whose better physical conditions are only for residents. In other words, the four apartment estate redevelopments are a result of creating a new place rather than continuing and preserving their original and nearby contexts. These apartment redevelopments enhance the division between the four estates and other neighborhoods nearby. Thus, occurrences in the four redevelopments are making a new physical development rather than sustaining their contexts and lives there.

In the four cases, Weolgok R, Gongdeok R, Jangan H and Yeoksam E apartment estates, redevelopment enables these estates to have integrated spatial configuration inside yet increased separation from other outside neighborhoods. This differentiated, privatized, and semi-gated apartment-dominant context is the model of Korean apartment redevelopment. A case study of the four apartment neighborhood redevelopments in this study does not cover all characteristics in apartment redevelopment in Korea. However, since selection criteria tended to cover various types of apartment redevelopments, this study's findings may well represent current occurrences in the Korean context.

Korean apartment neighborhood redevelopment seems to focus on improvement of physical configuration, as did the four estates in this study. This current approach of apartment redevelopment is to make a new neighborhood rather than to continue and preserve original characteristics of a neighborhood. According to Chapter 3, Korea's housing supply is now determined by the market condition. Since the housing market is maturing, making only a new and fancy apartment estate is losing its market attraction. Now seems an appropriate time to establish a new model of urban housing redevelopment in Korea. Since apartment estates of the 1970s have been redeveloped, there likely is a new period of redevelopment coming soon. The model of housing redevelopment for those who have lived, now live and will live there, needs to be established for creating vibrant residents' areas.

Residents' organizations and construction companies in charge of residents' redevelopments in Korea have said that they sought to sustain their neighborhoods and to preserve their cultures. However, as indicated in this study's results, the current approach to redevelopment of apartment-dominant neighborhoods tends to neglect old and existing contexts. To sustain environmental and social contexts, the current method of apartment-dominant neighborhoods needs reconsideration.

Suggestions for Designing an Apartment Neighborhood

This study identifies a boundary conflict that should be balanced – enabling residents to perceive safety inside their neighborhoods but not diminishing access to places outside the development that are essential to everyday life. Accordingly,

designing an apartment neighborhood as a redevelopment project should include a way to manage spatial relationship between new places inside the apartment estate and existing places outside the apartment estate. While designing an apartment estate in a new empty area also needs to balance boundary conditions, designing an apartment estate in an existing residential area needs to manage existing outside spaces along with creating inside places. This study proposes three steps how to manage boundaries of a given area for redeveloping a residential neighborhood.

First, design of an apartment estate should include retail shops close to the boundaries of the apartment estate. Such daily destinations are needed along with the boundaries of the apartment neighborhood. The boundaries also should have open areas to connect inside place to those daily destinations. Primary places with vitality - i.e., retail shops and grocery shops - would be accessible through the boundaries.

Second, as well as making destinations of activities, designing streets and connecting places should be carefully considered relative to people's movements. As people perceive a street as a spatial area for their activities (as per Chapter 6), a street and a connecting area should be designed as a spatial area for people's activities, close and easily accessible to outside retail- and grocery- shops. For example, parking lots only for stopping adjacent to outside shops should be required at connecting places between those shops and the main gate. This could avoid a traffic jam at or near the main gate if parking lots only for stopping adjacent to the outside retail shops are close to that gate. As well as considering pedestrian movements, considering vehicle movements could increase uses of those places.

Third, these apartment buildings would be built on fine-grained blocks and those entire blocks would be divided by public spaces. Since an apartment estate including public spaces could not be fenced physically and legally, apartment buildings on fine-grained blocks would be integrated into other urban areas. If and when the next redevelopment occurs, an apartment building would be redeveloped continuing its existing context, rather than being a wholly new apartment estate. For this proposal, government should promote its role in management of the public places. While a private agent belonging to the apartment estate would manage the fenced residential block, government should take care of the unfenced and fine-grained blocks.

These policy recommendations represent three elements in the place vitality: integration and exposure; link between daily experiences and the integrated, exposed places; and boundary conditions there.

Limitations and Future Research

This study examines the design of the four projects of apartment neighborhood redevelopment in Seoul, Korea. While this study provides detailed analysis of neighborhood design in the apartment redevelopment, limitations of this study need to be considered. First, cases and residents in this study could not represent all cases of apartment redevelopment projects in Korea, and all residents there. While this study carefully selected its cases, four cases are too few to represent all redeveloped neighborhoods. Findings might differ in other development types. And residents in the survey and the interview are not necessarily representative of all residents' perceptions.

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In particular, although nine interviews in this study provided informative descriptions, more interviews might enrich analyses of residents' perceptions.

Second, results in this study could not be applicable to all other cases in urban housing redevelopment due to the representation limitations. Cases in this study were in the 2000s, between 500- to 2000- apartment housing units, one case per regional area in Seoul. Other types of housing redevelopment could demonstrate different results. For example, a project for low-income housing might differ from this study's cases of middle-income apartment housing.

Third, this study does not reveal political and social contexts in urban redevelopment. Urban redevelopment could stir controversy, depending on political and social aspects. Policies to promote or restrict redevelopment could follow political visions. The beginning of redevelopment - i.e., decision of redevelopment or not - could not be determined by design issues in urban redevelopment. While results in this study could improve the design approach of neighborhood design in apartment redevelopment, the design proposal does not necessarily mean to promote urban redevelopment for revitalizing places. In addition, redevelopment policies could differ between central- and local- governments. Political views in these bodies might conflict and give rise to differing wishes regarding neighborhood redevelopment.

In future research, due to limitation of representation in this dissertation, a study would be needed to explore more cases. Future studies analyzing more cases could reveal applicability of findings in this study. More cases not only would mean a larger number of redevelopment projects, but also would mean various regions and types of urban housing redevelopment. This study proposed that place vitality could be universal

in an urban area, but this application of the concept of place vitality needs verification. Analyzing more cases of urban redevelopment projects could determine whether the theory of place vitality in this study can be generalized in an urban area.

In addition, future studies will examine proposed methods to manage boundaries of apartment neighborhoods. As proposed in Chapter 8, three approaches can be examined in future studies as a design approach for creating an apartment estate with place vitality: 1) to keep current boundary condition; 2) to enhance boundary division; and 3) to divide boundaries into fine-grained blocks. Each of these should be explored to examine their effects on spatial connectivity and the extent to which these changes can maintain or enhance perceptions of accessibility to external destinations in the neighborhood, while protecting residents' perceptions of safety within that neighborhood.

APPENDICES

Appendix A

Survey Package

Survey (page 1)

Hello. I'm Youngchul Kim, a Ph.D. Candidate in Architecture at the University of Michigan, USA. I'm studying neighborhood design. Would you mind participating in this survey about the place where you live? This survey is a part of my study on neighborhood design of apartment estate redevelopment. This study seeks to find residents' understanding of neighborhood design from apartment redevelopment. This survey will help research to understand your neighborhood. There are rare risks to the respondents because this interview does not collect identifying information except gender and age. If you agree to participate in the interview, you will only be asked your name, address, and contact information.

This survey is entirely voluntary. You may choose to not participate, or if you do participate, you may choose to skip any question that you do not want to answer. You may stop the survey at any time. The survey should take only about 10 minutes of your time.

The study is entirely anonymous. Please do not put your name, address or any other identifying information during drawing and interview. The information collected here will be used only for research purposes at the University of Michigan. Notes during the survey and the interview will be destroyed after the data has been entered into a computer.

Should you have further questions, please do not hesitate to contact the professor supervising this research: Fernando Lara, Assistant Professor, Architecture Program, Taubman College of Architecture & Urban Planning, The University of Michigan, 2000 Bonisteel Boulevard, Ann Arbor, Michigan 48109-2069; email: ferlara@umich.edu; Phone: 734-763-4584, Fax: 734-763-2322.

Should you have questions regarding your rights as a research participant, please contact the Behavioral Sciences Institutional Review Board, 540 E. Liberty Street, Suite 202, Ann Arbor, MI 48104-2210, (734) 936-0933, email: irbhsbs@umich.edu.

Thank you very much.

Youngchul Kim. Spring 2009

설문지 (1 페이지)

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Behavioral Sciences Institutional Review Board, 540 E. Liberty Street, Suite 202, Ann Arbor, MI 48104-2210, (734) 936-0933, email: irbhsbs@umich.edu.

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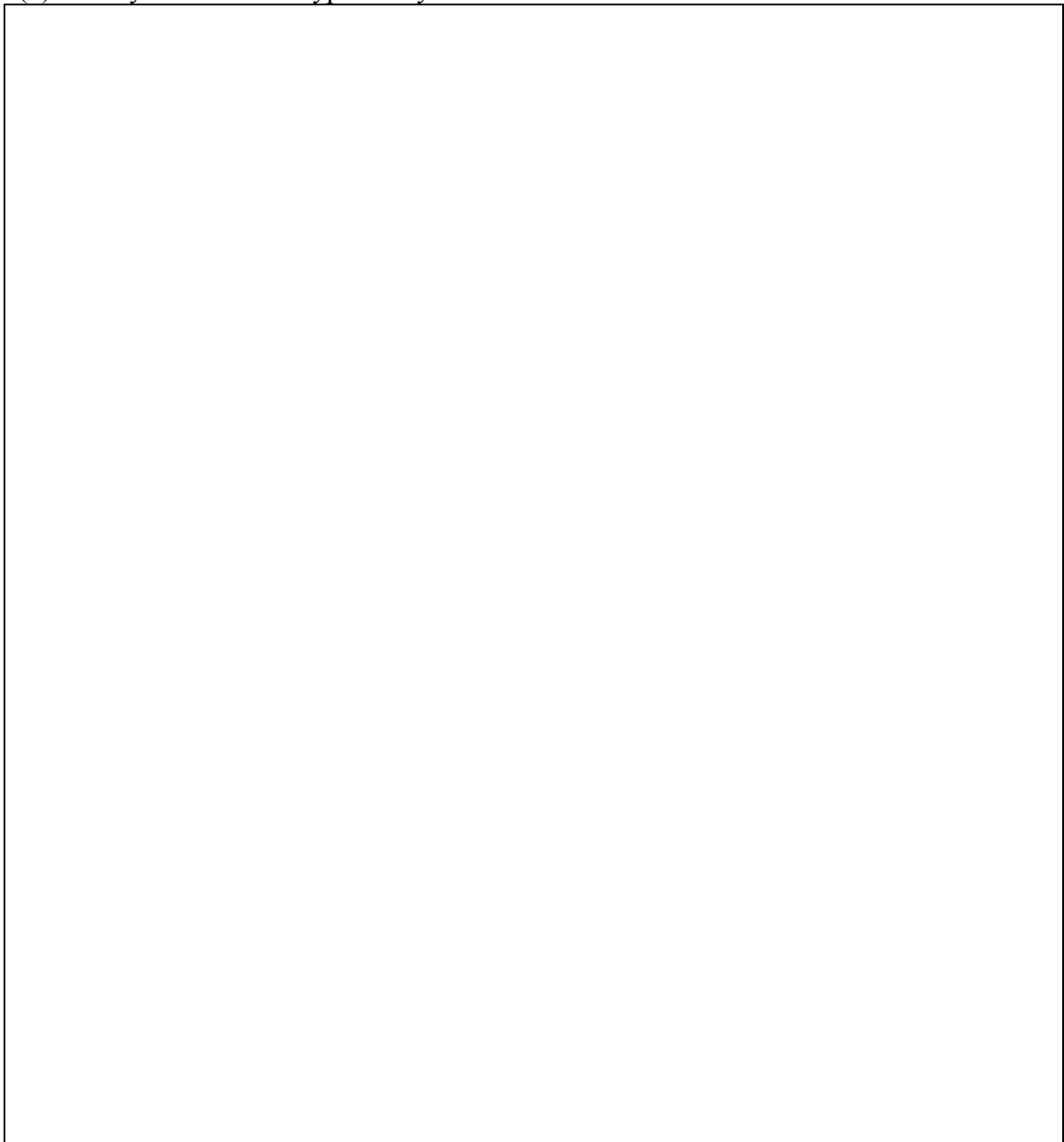
2009년 봄 김영철.

Survey (page 2)

Male / Famle	M / F	Age	
How many years have you lived in this neighborhood?	( ) years	Did you live here before apartment redevelopment?	Yes No

(1) Sketch a map of your neighborhood.
(2) Mark places with vitality in your neighborhood, and write their names and why they are places with vitality to you.
(3) Draw your route in a typical day with another color.

남자 / 여자	남 / 여	나이 (만)	
이 동네에 사신지 얼마나 되셨습니까?	( ) 년	아파트 재건축/재개발 이전에도 이곳에 사셨습니까?	Yes No

(1) 당신의 동네 지도를 그려주십시오.
(2) 동네 지도위에 동네에서 활발한 장소들을 표시하고, 명칭과 이유를
적어주십시오.
(3) 동네 지도위에 당신의 일반적인 하루의 동선을 다른 색으로 그려주십시오.

Survey (page 3)

This study is searching for volunteers.

Volunteers will take photos of their neighborhood and participate in an interview about the survey and conversation of data from survey and photos. This interview has three steps: 1st – I will give a volunteer a camera and explain the process, 2nd – the volunteer will return the camera, and 3rd – interview. If you want to participate in this interview, please, write your name, address, and contact information as below. When this survey is ready to be conducted, I will contact you.

Name: _____

Address: _____

Contact Info (phone number, email): _____

Your participation will improve design quality of apartment estates and housing redevelopment in Korea. After you participate in this interview, you will receive a gift card.

I appreciate your participation.

Spring 2009

Youngchul Kim, Ph.D. Candidate.

A. Alfred Taubman College of Architecture and Urban Planning

The University of Michigan

설문지 (3 페이지)

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총 3번 만나며, 1번째 사진기 전달과 설명, 2번째 사진기 제출, 3번째 인터뷰

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연구자가 연락을 드릴 예정입니다.

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주소: _____

연락처 (전화번호, 이메일): _____

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상품권을 드릴 예정입니다.

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Youngchul Kim, Ph.D. Candidate

A. Alfred Taubman College of Architecture and Urban Planning

The University of Michigan

Procedure of Sorting Task and Interview

I. Sorting Task

    1. Would you mind if I record this conversation?

    2. Could you please sort these photos using your own categories?

    3. Could you please sort these photos using a different category?

    4. Could you please rank these photos from the most desirable place to the least?

    5. Could you please rank these photos from the most vibrant place to the least?

II. Open-ended Interview

    1. Would you mind if I record this conversation?

    2. Could you please explain your maps of your neighborhood?

    3. Would you mind telling me your age?

    4. Which type of housing tenure choice do you live?

    5. How long have you lived in this neighborhood?

    6. Did you live in this neighborhood before the redevelopment?

    7. What is your daily route in this neighborhood?

    8. What do you consider important in this neighborhood?

    9. Would you tell me about changes in this neighborhood based on your experience?

What are changes in this neighborhood? What is different from the old neighborhood?

What is better than the old neighborhood? What is worse than the old neighborhood?

What would you change in this neighborhood based on your experience?

인터뷰 방법

I. Sorting Task

1. 인터뷰를 녹음해도 괜찮겠습니까?

2. 이 사진들을 당신의 기준들로 분류해주시겠습니까?

3. 이 사진들을 또 다른 기준으로 분류해주시겠습니까?

4. 이 사진들을 가장 바람직한 장소부터 최하까지 등수를 적어주시겠습니까?

5. 이 사진들을 가장 활발한 장소부터 최하까지 등수를 적어주시겠습니까?

II. Open-ended Interview

1. 인터뷰를 녹음해도 괜찮겠습니까?

2. 당신이 그린 동네 지도를 설명해주시겠습니까?

3. 나이에 대해서 말씀해 주실 수 있겠습니까?

4. 어떤 형태의 집(자가, 전세, 월세)에 살고 계십니까?

5. 이 동네에 살고 계신지는 얼마나 되었습니까?

6. 재건축재개발 전부터 이 동네에 살고 계셨습니까?

7. 동네에서 평소 이동하는 경로는 어떻게 됩니까?

8. 동네에서 무엇이 중요하다고 생각하십니까?

9. 동네의 변화에 대해서 말씀해 주실 수 있습니까? 경험에 따르면 이 동네는 무엇이 변했고, 무엇이 달라졌고, 무엇이 좋아졌고, 무엇이 나빠졌습니까? 그리고 무엇을 바꾸고 싶습니까?

Appendix B

Twenty Places in the Four Cases

Weolgok R apartment estate

(1) Road approaching the apartment estate

(2) Main gate at the apartment estate

(3) Primary road in the apartment estate

(4) Sub-gate at the apartment estate

(5) Entrance to an apartment building

(6) Pilotis – space supported by columns under an apartment building

(7) Bicycle storage

(8) Children playground

(9) Facility management and community center

(10) Entrance to underground parking lots

(11) Central Park in the apartment estate

(12) Pocket park in the apartment estate

(13) Walking path

(14) Daycare and/or preschool

(15) Waste and recycle container

(16) Secondary road in the apartment estate

(17) Exercise place

(18) Nearby park

(19) Linking street and/or stair

(20) Ground parking lot and/or plaza

Gongdeok R apartment estate

(1) Road approaching the apartment estate

(2) Main gate at the apartment estate

(3) Primary road in the apartment estate

(4) Sub-gate at the apartment estate

(5) Entrance to an apartment building

(6) Pilotis – space supported by columns under an apartment building

(7) Bicycle storage

(8) Children playground

(9) Facility management and community center

(10) Entrance to underground parking lots

(11) Central Park in the apartment estate

(12) Pocket park in the apartment estate

(13) Walking path

(14) Daycare and/or preschool

(15) Waste and recycle container

(16) Secondary road in the apartment estate

(17) Exercise place

(18) Nearby park

(19) Linking street and/or stair

(20) Ground parking lot and/or plaza

Jangan H apartment estate

(1) Road approaching the apartment estate

(2) Main gate at the apartment estate

(3) Primary road in the apartment estate

(4) Sub-gate at the apartment estate

(5) Entrance to an apartment building

(6) Pilotis – space supported by columns under an apartment building

(7) Bicycle storage

(8) Children playground

(9) Facility management and community center

(10) Entrance to underground parking lots

(11) Central Park in the apartment estate

(12) Pocket park in the apartment estate

(13) Walking path

(14) Daycare and/or preschool

(15) Waste and recycle container

(16) Secondary road in the apartment estate

(17) Exercise place

(18) Nearby park

(19) Linking street and/or stair

(20) Ground parking lot and/or plaza

Yeoksam E apartment estate

(1) Road approaching the apartment estate

(2) Main gate at the apartment estate

(3) Primary road in the apartment estate

(4) Sub-gate at the apartment estate

(5) Entrance to an apartment building

(6) Pilotis – space supported by columns under an apartment building

(7) Bicycle storage

(8) Children playground

(9) Facility management and community center

(10) Entrance to underground parking lots

(11) Central Park in the apartment estate

(12) Pocket park in the apartment estate

(13) Walking path

(14) Daycare and/or preschool

(15) Waste and recycle container

(16) Secondary road in the apartment estate

(17) Exercise place

(18) Nearby park

(19) Linking street and/or stair

(20) Ground parking lot and/or plaza

Appendix C

Dissimilarity Index (Interviewees and places) and Sorting Task

Interviewees

Vibrant places - Proximity Matrix

	Euclidean Distance								
	int_1	int_2	int_3	int_4	int_5	int_6	int_7	int_8	int_9
int_1	.000	28.496	35.749	32.909	24.207	33.257	33.437	32.558	32.496
int_2	28.496	.000	32.218	30.903	25.140	35.693	40.939	42.356	32.373
int_3	35.749	32.218	.000	29.479	35.525	26.646	29.530	37.041	33.734
int_4	32.909	30.903	29.479	.000	33.000	27.148	28.513	32.140	34.569
int_5	24.207	25.140	35.525	33.000	.000	31.718	34.467	35.355	20.736
int_6	33.257	35.693	26.646	27.148	31.718	.000	28.036	32.249	31.528
int_7	33.437	40.939	29.530	28.513	34.467	28.036	.000	19.131	25.100
int_8	32.558	42.356	37.041	32.140	35.355	32.249	19.131	.000	28.496
int_9	32.496	32.373	33.734	34.569	20.736	31.528	25.100	28.496	.000

Desirable places - Proximity Matrix

	Euclidean Distance								
	int_1	int_2	int_3	int_4	int_5	int_6	int_7	int_8	int_9
int_1	.000	37.443	37.336	40.571	34.583	33.106	38.910	33.317	36.028
int_2	37.443	.000	18.868	24.900	41.881	36.551	31.401	36.249	28.284
int_3	37.336	18.868	.000	27.423	42.708	35.749	26.344	39.900	27.459
int_4	40.571	24.900	27.423	.000	41.569	37.868	34.205	40.669	25.179
int_5	34.583	41.881	42.708	41.569	.000	27.313	34.612	33.317	32.062
int_6	33.106	36.551	35.749	37.868	27.313	.000	33.615	38.523	27.495
int_7	38.910	31.401	26.344	34.205	34.612	33.615	.000	36.139	31.113
int_8	33.317	36.249	39.900	40.669	33.317	38.523	36.139	.000	37.202
int_9	36.028	28.284	27.459	25.179	32.062	27.495	31.113	37.202	.000

Places

Vibrant places - Proximity Matrix

Euclidean Distance

	pic_1	pic_2	pic_3	pic_4	pic_5	pic_6	pic_7	pic_8	pic_9	pic_10	pic_11	pic_12	pic_13	pic_14	pic_15	pic_16	pic_17	pic_18	pic_19	pic_20
pic_1	.000	7.211	21.749	16.432	25.475	34.015	32.465	15.652	17.464	20.025	19.672	31.353	33.347	26.420	29.206	29.462	26.363	26.077	37.135	24.536
pic_2	7.211	.000	20.905	18.221	23.473	31.575	28.249	16.703	18.574	18.358	21.656	33.272	33.941	25.219	29.309	28.213	28.089	27.821	34.799	24.495
pic_3	21.749	20.905	.000	18.358	12.247	19.596	25.788	25.573	24.900	18.000	27.350	27.532	24.799	21.048	18.921	11.358	27.019	27.586	21.909	20.809
pic_4	16.432	18.221	18.358	.000	24.637	30.150	31.273	22.605	24.062	13.748	28.965	29.000	32.218	26.115	21.424	22.847	26.739	24.207	34.482	15.684
pic_5	25.475	23.473	12.247	24.637	.000	18.655	21.000	27.713	23.022	22.891	25.612	28.566	24.597	14.036	22.627	17.804	27.964	25.397	19.596	28.337
pic_6	34.015	31.575	19.596	30.150	18.655	.000	17.117	30.529	30.757	24.083	32.000	27.386	25.080	19.570	21.863	15.524	27.313	27.404	10.100	24.718
pic_7	32.465	28.249	25.788	31.273	21.000	17.117	.000	29.614	28.548	24.960	32.419	33.061	32.062	18.601	26.702	26.571	29.513	27.240	19.519	29.665
pic_8	15.652	16.703	25.573	22.605	27.713	30.529	29.614	.000	11.662	18.655	13.928	27.092	28.267	21.840	26.268	30.282	19.131	23.431	31.843	21.932
pic_9	17.464	18.574	24.900	24.062	23.022	30.757	28.548	11.662	.000	21.071	10.000	24.372	25.159	16.279	24.779	31.480	22.000	21.000	31.145	28.018
pic_10	20.025	18.358	18.000	13.748	22.891	24.083	24.960	18.655	21.071	.000	27.019	26.907	28.302	22.023	16.248	21.190	26.981	26.552	27.749	13.153
pic_11	19.672	21.656	27.350	28.965	25.612	32.000	32.419	13.928	10.000	27.019	.000	26.230	27.037	19.774	30.463	33.362	22.361	22.956	32.772	31.575
pic_12	31.353	33.272	27.532	29.000	28.566	27.386	33.061	27.092	24.372	26.907	26.230	.000	14.036	24.880	18.055	28.583	24.000	20.273	28.983	28.618
pic_13	33.347	33.941	24.799	32.218	24.597	25.080	32.062	28.267	25.159	28.302	27.037	14.036	.000	23.108	19.209	24.698	23.473	25.020	22.561	29.766
pic_14	26.420	25.219	21.048	26.115	14.036	19.570	18.601	21.840	16.279	22.023	19.774	24.880	23.108	.000	21.794	24.372	21.656	18.493	19.672	27.423
pic_15	29.206	29.309	18.921	21.424	22.627	21.863	26.702	26.268	24.779	16.248	30.463	18.055	19.209	21.794	.000	20.469	26.683	25.515	22.804	20.224
pic_16	29.462	28.213	11.358	22.847	17.804	15.524	26.571	30.282	31.480	21.190	33.362	28.583	24.698	24.372	20.469	.000	26.963	28.844	18.788	18.762
pic_17	26.363	28.089	27.019	26.739	27.964	27.313	29.513	19.131	22.000	26.981	22.361	24.000	23.473	21.656	26.683	26.963	.000	15.264	27.240	23.087
pic_18	26.077	27.821	27.586	24.207	25.397	27.404	27.240	23.431	21.000	26.552	22.956	20.273	25.020	18.493	25.515	28.844	15.264	.000	30.282	26.721
pic_19	37.135	34.799	21.909	34.482	19.596	10.100	19.519	31.843	31.145	27.749	32.772	28.983	22.561	19.672	22.804	18.788	27.240	30.282	.000	28.653
pic_20	24.536	24.495	20.809	15.684	28.337	24.718	29.665	21.932	28.018	13.153	31.575	28.618	29.766	27.423	20.224	18.762	23.087	26.721	28.653	.000

Desirable places - Proximity Matrix

Euclidean Distance

	pic_1	pic_2	pic_3	pic_4	pic_5	pic_6	pic_7	pic_8	pic_9	pic_10	pic_11	pic_12	pic_13	pic_14	pic_15	pic_16	pic_17	pic_18	pic_19	pic_20
pic_1	.000	21.749	20.445	21.610	31.670	28.496	30.265	33.882	22.716	14.422	35.511	35.665	35.398	27.166	24.556	33.586	33.437	25.239	29.462	28.125
pic_2	21.749	.000	28.160	25.495	25.962	31.289	28.337	31.000	26.665	22.561	34.641	36.180	34.205	24.352	29.833	34.366	31.639	16.553	25.710	24.454
pic_3	20.445	28.160	.000	17.000	19.925	18.601	18.868	24.495	23.580	18.385	24.474	29.017	26.401	20.881	11.874	23.195	23.833	27.331	20.050	15.716
pic_4	21.610	25.495	17.000	.000	27.459	26.058	20.518	26.963	22.561	23.896	34.117	32.202	35.609	22.913	20.298	25.554	27.477	23.022	28.125	22.539
pic_5	31.670	25.962	19.925	27.459	.000	18.303	23.896	21.000	29.547	26.096	19.442	25.981	20.494	21.886	23.065	22.338	18.466	23.707	14.457	14.353
pic_6	28.496	31.289	18.601	26.058	18.303	.000	26.495	20.100	25.884	22.891	25.040	27.240	21.095	23.958	23.516	22.136	17.607	25.749	24.940	22.650
pic_7	30.265	28.337	18.868	20.518	23.896	26.495	.000	24.042	27.313	27.019	26.963	34.641	29.850	21.494	18.466	26.796	24.207	29.069	19.596	15.906
pic_8	33.882	31.000	24.495	26.963	21.000	20.100	24.042	.000	19.131	28.810	17.861	18.055	14.731	18.601	24.021	23.664	15.033	27.550	21.772	26.287
pic_9	22.716	26.665	23.580	22.561	29.547	25.884	27.313	19.131	.000	25.179	28.862	19.799	25.199	14.629	26.851	29.120	21.587	23.601	26.382	31.097
pic_10	14.422	22.561	18.385	23.896	26.096	22.891	27.019	28.810	25.179	.000	27.946	34.059	27.731	28.036	17.578	26.077	30.265	25.436	23.875	21.610
pic_11	35.511	34.641	24.474	34.117	19.442	25.040	26.963	17.861	28.862	27.946	.000	24.145	12.329	27.185	21.166	26.963	23.087	35.553	16.031	24.454
pic_12	35.665	36.180	29.017	32.202	25.981	27.240	34.641	18.055	19.799	34.059	24.145	.000	19.975	21.119	32.234	25.417	17.436	28.931	25.298	33.779
pic_13	35.398	34.205	26.401	35.609	20.494	21.095	29.850	14.731	25.199	27.731	12.329	19.975	.000	23.685	25.962	25.632	18.894	32.094	19.209	27.313
pic_14	27.166	24.352	20.881	22.913	21.886	23.958	21.494	18.601	14.629	28.036	27.185	21.119	23.685	.000	26.439	27.604	17.146	20.712	20.396	23.896
pic_15	24.556	29.833	11.874	20.298	23.065	23.516	18.466	24.021	26.851	17.578	21.166	32.234	25.962	26.439	.000	23.812	28.408	32.062	20.469	16.432
pic_16	33.586	34.366	23.195	25.554	22.338	22.136	26.796	23.664	29.120	26.077	26.963	25.417	25.632	27.604	23.812	.000	20.050	25.278	22.405	21.749
pic_17	33.437	31.639	23.833	27.477	18.466	17.607	24.207	15.033	21.587	30.265	23.087	17.436	18.894	17.146	28.408	20.050	.000	22.956	19.494	24.880
pic_18	25.239	16.553	27.331	23.022	23.707	25.749	29.069	27.550	23.601	25.436	35.553	28.931	32.094	20.712	32.062	25.278	22.956	.000	25.826	25.060
pic_19	29.462	25.710	20.050	28.125	14.457	24.940	19.596	21.772	26.382	23.875	16.031	25.298	19.209	20.396	20.469	22.405	19.494	25.826	.000	14.933
pic_20	28.125	24.454	15.716	22.539	14.353	22.650	15.906	26.287	31.097	21.610	24.454	33.779	27.313	23.896	16.432	21.749	24.880	25.060	14.933	.000

Sorting Task

Vibrant places – Ranking Table

Interviewee	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Rank 16	Rank 17	Rank 18	Rank 19	Rank 20
int_1	pic_9	pic_13	pic_12	pic_11	pic_15	pic_8	pic_10	pic_1	pic_2	pic_14	pic_4	pic_5	pic_3	pic_18	pic_20	pic_17	pic_19	pic_16	pic_7	pic_6
int_2	pic_11	pic_17	pic_13	pic_12	pic_8	pic_9	pic_18	pic_1	pic_2	pic_19	pic_7	pic_14	pic_6	pic_5	pic_3	pic_15	pic_16	pic_20	pic_10	pic_4
int_3	pic_8	pic_11	pic_7	pic_9	pic_2	pic_14	pic_10	pic_1	pic_6	pic_19	pic_20	pic_17	pic_5	pic_18	pic_4	pic_3	pic_15	pic_16	pic_12	pic_13
int_4	pic_11	pic_5	pic_1	pic_2	pic_3	pic_9	pic_14	pic_16	pic_8	pic_17	pic_18	pic_13	pic_19	pic_6	pic_10	pic_20	pic_7	pic_12	pic_4	pic_15
int_5	pic_18	pic_11	pic_12	pic_17	pic_9	pic_8	pic_4	pic_1	pic_14	pic_15	pic_20	pic_13	pic_10	pic_2	pic_3	pic_5	pic_6	pic_16	pic_19	pic_7
int_6	pic_2	pic_1	pic_7	pic_18	pic_4	pic_9	pic_5	pic_14	pic_11	pic_10	pic_8	pic_3	pic_12	pic_15	pic_17	pic_6	pic_20	pic_16	pic_13	pic_19
int_7	pic_1	pic_2	pic_4	pic_8	pic_20	pic_10	pic_3	pic_9	pic_17	pic_15	pic_11	pic_16	pic_5	pic_7	pic_14	pic_19	pic_18	pic_13	pic_6	pic_12
int_8	pic_1	pic_2	pic_4	pic_20	pic_10	pic_3	pic_16	pic_8	pic_12	pic_11	pic_15	pic_6	pic_9	pic_5	pic_13	pic_18	pic_17	pic_7	pic_19	pic_14
int_9	pic_17	pic_20	pic_18	pic_8	pic_4	pic_1	pic_2	pic_10	pic_9	pic_11	pic_12	pic_13	pic_16	pic_14	pic_15	pic_7	pic_3	pic_6	pic_5	pic_19

Desirable places – Ranking Table

Interviewee	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Rank 16	Rank 17	Rank 18	Rank 19	Rank 20
int_1	pic_1	pic_2	pic_9	pic_10	pic_11	pic_12	pic_13	pic_19	pic_15	pic_14	pic_8	pic_18	pic_3	pic_4	pic_5	pic_20	pic_7	pic_17	pic_16	pic_6
pic_2	pic_13	pic_12	pic_11	pic_6	pic_5	pic_8	pic_3	pic_14	pic_17	pic_15	pic_9	pic_19	pic_20	pic_16	pic_10	pic_1	pic_4	pic_7	pic_18	pic_2
pic_3	pic_11	pic_17	pic_13	pic_12	pic_19	pic_8	pic_7	pic_9	pic_14	pic_6	pic_5	pic_3	pic_15	pic_16	pic_20	pic_1	pic_10	pic_4	pic_18	pic_2
pic_4	pic_16	pic_11	pic_12	pic_5	pic_13	pic_8	pic_17	pic_19	pic_6	pic_18	pic_20	pic_15	pic_10	pic_2	pic_4	pic_3	pic_9	pic_7	pic_14	pic_1
pic_5	pic_18	pic_12	pic_1	pic_4	pic_9	pic_14	pic_17	pic_2	pic_3	pic_16	pic_5	pic_6	pic_19	pic_10	pic_20	pic_8	pic_7	pic_15	pic_13	pic_11
pic_6	pic_2	pic_18	pic_8	pic_9	pic_14	pic_17	pic_6	pic_12	pic_13	pic_5	pic_4	pic_1	pic_7	pic_11	pic_10	pic_19	pic_20	pic_3	pic_16	pic_15
pic_7	pic_12	pic_8	pic_9	pic_4	pic_14	pic_7	pic_16	pic_17	pic_15	pic_11	pic_13	pic_3	pic_19	pic_18	pic_20	pic_5	pic_6	pic_2	pic_1	pic_10
pic_8	pic_1	pic_10	pic_6	pic_9	pic_4	pic_15	pic_3	pic_16	pic_8	pic_12	pic_13	pic_17	pic_11	pic_18	pic_7	pic_14	pic_2	pic_20	pic_5	pic_19
pic_9	pic_12	pic_13	pic_16	pic_17	pic_18	pic_9	pic_14	pic_8	pic_6	pic_19	pic_10	pic_11	pic_5	pic_2	pic_1	pic_20	pic_3	pic_7	pic_15	pic_4

BIBLIOGRAPHY

Angel, S. (2000). *Housing Policy Matters: a global analysis*. New York: Oxford U Press.

Baer, W. C., & Koo, C. (1994). Housing Turnover in Developing Nations: The Case of Seoul. *Journal of Planning Education and Research*, 13(2), pp.104-118.

Banerjee, T., & Baer, W. C. (1984). *Beyond the Neighborhood Unit - Residential Environments and Public Policy*. New York and London: Plenum Press.

Barton, H. (2000). *Sustainable Communities: The Potential for Eco-Neighbourhoods*. London: Earthscan.

Barton, H., Grant, M., & Guise, R. (2003). *Shaping neighbourhoods: a guide for health, sustainability and vitality*. London: Spon.

Calthorpe, P. (1993). *The next American metropolis : ecology, communities, and the American dream*. New York: Princeton Architectural Press.

Canter, D. V. (1977). *The Psychology of Place*. London: The Architectural Press.

Canter, D. V., Brown, J., & Groat, L. N. (1985). A Multiple Sorting Procedure for Studying Conceptual Systems. In M. Brenner, J. Brown & D. V. Canter (Eds.), *The Research Interview: Uses and Approaches*. Orlando, FL: Academic Press, Inc.

Chase, J., Crawford, M., & Kaliski, J. (Eds.). (2008). *Everyday Urbanism* (Expanded ed.). New York, New York: The Monacelli Press.

Cho, C.-J. (1997). Joint choice of tenure and dwelling type: A multinomial logit analysis for the city of Chongju. *Urban Studies*, 34(9), pp. 1459-1473.

Choi, J. (1988). *Modernization and its impacts on the internal spatial organization of the traditional Korean house*. Unpublished Ph.D. Dissertation, Georgia Institute of Technology, United States -- Georgia.

De Certeau, M. (1988). *The Practice of Everyday Life* (S. Rendall, Trans.). Berkeley: University of California Press.

Dowall, D. (1992). From Central Planning to Market Systems: Implications of Economic Reform for the Construction and Building Industry. *Housing Policy Debate*, 3(2), pp.977-994.

Duany, A., & Plater-Zyberk, E. (1992). *Towns and town-making principles*. Cambridge, Mass: Harvard University Graduate School of Design; New York: Rizzoli.

Frampton, K. (1992). *Modern Architecture: A Critical History* (3rd edition). London: Thames and Hudson.

Galster, G., & Rothenberg, J. (1991). Filtering in Urban Housing: A Graphical Analysis of a Quality-Segmented Market. *Journal of Planning Education and Research*, 11, pp.37-50.

Gelézeau, V. (2007). *아파트 공화국 Republic of Apartment* (H.-Y. Gil 길혜연, Trans.). 서울 Seoul: 후마니타스 humanitas book.

Golledge, R. G. (1999). *Wayfinding behavior: cognitive mapping and other spatial processes*. Baltimore: Johns Hopkins University Press.

Grant, J. (2004). *Encouraging mixed use in practice*. Paper presented at the International Planning Symposium on Incentives, Regulations, and Plans –The Role of States and Nation-States in Smart Growth Planning.

Groat, L. N. (1995). Introduction: place, aesthetic evaluation and home. In L. N. Groat (Ed.), *Giving Places Meaning*. London: Academic Press.

Groat, L. N. (2000). Civic Meaning: The Role of Place, Typology, and Design Values in Urbanism. *Carolina Planning*, 25(1), 13-25.

Groat, L. N., & Wang, D. (2002). *Architectural research methods*. New York: J. Wiley.

Ha, S.-K. (2002). The Urban Poor, Rental Accommodations, and Housing Policy in Korea. *Cities*, 19(3), pp.195-203.

Habraken, N. J. (1998). *The structure of the ordinary: form and control in the built environment*. Cambridge, Mass.: MIT Press.

Hillier, B., & Hanson, J. (1984). *The social logic of space*. Cambridge [Cambridgeshire] ; New York: Cambridge University Press.

Hillier, B., Penn, A., Hanson, J., Grajewski, T., & Xu, J. (1993). Natural movement: or, configuration and attraction in urban pedestrian movement. *Environment and Planning B: Planning and Design*, 20(1), 29-66.

Hummon, D. (1992). Community Attachment. In I. Altman & S. M. Low (Eds.), *Place Attachment* (pp. 253-278). New York, New York: Plenum Press.

Hur, S., & Kwak, S.-J. (1997). The Choice of Functional Form and Variables in the Hedonic Price Model in Seoul. *Urban Studies*, 34(7), pp.989-998.

Hwang, M., Quigley, J. M., & Son, J.-Y. (2006). The Dividend Pricing Model: New Evidence from the Korean Housing Market. *Journal of Real Estate Finance and Economics*, 32(3), pp.205-228.

Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.

Jun, M.-J., & Hur, J.-W. (2001). Commuting costs of "leap-frog" newtown development in Seoul *Cities*, 18(3), pp. 151-158.

Kallus, R., & Law-Yone, H. (1997). Neighborhood - The Metamorphosis of an Idea. *Journal of Architectural and Planning Research*, 14(2), 107-125.

Kallus, R., & Law-Yone, H. (2000). What is a neighbourhood? The structure and function of an idea. *Environment and planning B*, planning & design, 27, 815-826.

Kaplan, S., & Kaplan, R. (1983). *Cognition and Environment*. Ann Arbor, MI: Ulrich's.

Kelbaugh, D. (1997). *Common place: toward neighborhood and regional design*. Seattle: University of Washington Press.

Kim, J., & Kaplan, R. (2004). Physical and Psychological Factors in Sense of Community. *Environment and Behavior*, 36(3), 313-340.

Kim, J.-H. (2000). An Analysis of Demand for Living Space by Housing Tenure Type in Korea. *International Review of Public Administration*, 5(2), pp.143-152.

Kim, K.-B. (2005). Towards sustainable neighborhood design: a sustainability evaluation framework and a case study of the Greenwich Millennium Village Project. *Journal of architectural and planning research*, 22(3), 181-203.

Kim, K.-H. (2004). Housing and the Korean economy. *Journal of Housing Economics*, 13(4), pp.321-341.

Kim, K.-J. (1998). New form, classic problem: psuedo [*sic*] –public residential redevelopment in Seoul. *Built Environment*, 24(4), pp.235-250.

Landis, J. D. (2006). Growth Management Revisited. American Planning Association. *Journal of the American Planning Association*, 72(4), pp. 411-430.

Lara, F. L. (2008). *The Rise of Popular Modernist Architecture in Brazil*: University Press of Florida.

Lara, F. L., & Kim, Y. (2010). Built global, lived local: a study of how two diametrically opposed cultures reacted to similar modern housing solutions. *Journal of Architectural and Planning Research*, 27:2 (summer 2010), pp. 91-106.

Larice, M., & Macdonald, E. (Eds.). (2005). *The Urban Design Reader*. New York / London: Routledge.

Le Corbusier. (1929). "The Pack-Donkey's Way and Man's Way" and "A Contemporary City" from The City of To-morrow and Its Planning. In M. Larice & E. Macdonald (Eds.), *The Urban Design Reader* (pp. 66-75). New York: Routledge.

Lee, C.-M. (1999). An Intertemporal Efficiency Test of a Greenbelt: Assessing the Economic Impacts of Seoul's Greenbelt. *Journal of Planning Education and Research*, 19(41), pp.41-52.

Lefebvre, H. (2008). *Critique of Everyday Life* (J. Moore & G. Elliott, Trans. Vol. 1): Verso.

Lynch, K. (1960). *The Image of the City*. Cambridge [Mass.]: MIT press.

Lynch, K. (1984). *Good City Form*. Cambridge, Massachusetts, and London, England: The MIT Press.

Mehrotra, R. (Ed.). (2005). *Everyday Urbanism: Margaret Crawford vs. Michael Speaks* (Vol. I): Distributed Arts Press.

Montgomery, J. (1998). Making a City: Urbanity, Vitality and Urban Design. *Journal of Urban Design*, 3(1), 93-116.

Moudon, A. V. (1992). A Catholic Approach to Organizing What Urban Designers Should Know. *Journal of Planning Literature*, 6(4), 331-349.

Moudon, A. V. (1997). Urban morphology as an emerging interdisciplinary field. *Urban Morphology*, 1, 3-10.

Mumford, L. (1965). "The Garden City Idea and Modern Planning" from the Introduction to Garden Cities of To-Morrow. In M. Larice & E. Macdonald (Eds.), *The Urban Design Reader* (pp. 43-53). New York: Routledge.

O'Sullivan, A. (2003). *Urban Economics* (5th ed.): McGraw-Hill.

Perry, C. (1929). "The Neighborhood Unit" from Regional Plan of New York and Its Environs. In M. Larice & E. Macdonald (Eds.), *The Urban Design Reader* (pp. 54-65). New York: Routledge.

Pozdena, R. J. (1988). *The Modern Economics of Housing: a Guide to Theory and Policy for Finance and Real Estate Professionals*. Chapter 2: The Determinants of Housing Demand, Chapter 3: The Fundamentals of Housing Supply, Chapter 4: The Market for Land and Improvements.: Praeger/Greenwood.

Read, S. (1997). Space Syntax and the Dutch City. *Proceedings of the First International Space Syntax Conference*, 02.01-02.13.

Seifel, E. (2003). Bay Area Models of Urban Infill Housing. *Urban Land*, 62(September), pp. 104-109, 141-147.

Sime, J. D. (1995). Creating Places or Design Spaces. In L. N. Groat (Ed.), *Giving Places Meaning* (pp. 27-41). London: Academic Press.

Smith-Heimer, M. (1990). The Potential for Filtering as Public Policy. *Berkeley Planning Journal*, pp.94-104.

Sternberg, E. (2000). An Integrative Theory of Urban Design. *American Planning Association*. *Journal of the American Planning Association*, Summer 2000, 66(3), pp.265-278.

Thomas, J. M., & Hwang, H.-Y. (2003). Social equity in redevelopment and housing: United States and Korea. *Journal of Planning Education and Research*, 23(1), pp.8-23.

Toker, U., Barran, P. and Mull, M. (2005). (Sub)Urban Evolution: a Cross-temporal Analysis of Spatial Configuration in an American Town. Paper presented at the Fifth International Space Syntax Symposium, Delft, June.

Turkington, R., van Kempen, R., & Wassenberg, F. (Eds.). (2004). *High-rise housing in Europe* (Vol. 28). Delft, The Netherlands: DUP Science.

U.S. Census Bureau. (2005). *Units in Structure,* Census Bureau, Housing and Household Economic Statistics Division.

Vallance, S., Perkins, H. C., & Moore, K. (2005). The results of making a city more compact: neighbours' interpretation of urban infill. *Environment and Planning B: Planning and Design*, 32, 715-733.

van Kempen, R., Dekker, K., Hall, S., & Tosic, I. (Eds.). (2005). *Restructuring large housing estates in Europe*. UK: Bristol: The Policy Press.

The World Factbook (Publication. (2007). from Central Intelligence Agency: https://www.cia.gov/library/publications/the-world-factbook/

Ye, L., Mandpe, S., & Meyer, P. B. (2005). What Is "Smart Growth?"—Really? *Journal of Planning Literature*, 19(3), 301-315.

Yin, R. K. (1994). *Case Study Research: Design and Methods*. Calif: Sage Publication.

강경호 Kang, G.-H. (2004). 블록형 집합주택의 발전과정과 우리나라에서의 정착화 방안 연구 *The Development of Urban Block Housing and Application Methods in Korea.* Unpublished Ph.D. Dissertation, 중앙대학교 ChoonAng Univerisity,서울 Seoul.

강부성 Kang, B.-S., 강인호 Kang, I.-H., 박광재 Park, G.-J., 박인석 Park, I.-S., 박철수 Park, C.-S., 백혜선 Bak, H.-S., et al. (1999). 한국 공동주택계획의 역사 *History of Apartments in Korea.* 서울 Seoul: 세진사 Sejin Book.

강상훈 Kang, S.-H. (2004). 일제강점기 근대시설의 모더니즘 수용 – 박람회, 보통학교, 아파트 건축을 중심으로 *The Adoption of Architectural Modernism in Modern Facilities during Japanese Ruling Era of Korea - Focused on Expo Buildings, Elementary Schools and Apartments*. Unpublished Ph.D. dissertation, Seoul National University, Seoul, Korea.

국가통계포털 Korean Statistical Information Service (Publication. (2007). from 통계청 Korea National Statistical Office: http://www.kosis.kr/

국토연구원 Korea Research Institute for Human Settlement. (2006). 2006년 주거실태조사 연구보고서 *Housing Survey in 2006*: 국토연구원 Institute of Land in Korea, 건설교통부 Ministry of Construction and Transportation.

김현아 Kim, H.-A., 백성준 Baik, S.-J., & 김우영 Kim, W.-Y. (2004). 아파트 분양가격의 상승 원인과 가격결정구조 분석 *Causes of Housing Pre-Sale Price Increase and Analyses of Housing Price Determination System*: 한국건설산업연구원 Construction & Economy Research Institute of Korea.

안창모 Ahn, C. (2000). 일제강점기 철도 건축과 식민지 관광주의 Colonial Tourism in Korean Railroad Architecture during Japanese Ruling Era. Paper presented at the 한국건축역사학회 춘계학술발표대회 논문집 *Proceedings of Spring Conference of Korean Association of Architectural History*.

이병담 Lee, B.-D. (2004, January). 길음 뉴타운 개발 계획 *Case of GilUm New Town Developemt Plan*. Paper presented at the 대한도시설계학회 심포지움 Symposium of Urban Design Institute of Korea.

이보라 Lee, B.-R., 이해경 Lee, H.-K., & 손세관 Sohn, S.-K. (2005, November). 우리나라 공동주택 도입기에 등장한 중소규모 아파트의 계획적 특징에 관한 연구 *A Study on the Characteristics of Small & Middle Scale Apartments Appeared on Introductory Period of Multi-Family Housing*. Paper presented at the 대한도시설계학회 추계학술발표대회 Autumn Conference of Urban Design Institute of Korea.

이상헌 Lee, S.-H. (2004, November). *왕십리 뉴타운 계획: 실천과 반성 Case of Wangsimri New Town Plan: Execution and Reflection*. Paper presented at the 대한도시설계학회 심포지움 Symposium of Urban Design Institute of Korea.

이정형 Lee, J.-H., 전영훈 Jeon, Y.-H., & 김진욱 Kim, J.-W. (2006). 중정형 집합주택지 계획방향에 관한 연구 – 일본 마쿠하리 베이타운을 중심으로 - A Study on

Planning Direction of Perimeter Collective Housing focused on the Urban Architectural System in case of Makuhari Baytown in Japan. 大韓建築學會論文集 計劃系 *Journal of Architectural Institute of Korea*, 22(5 (통권211호)), 225-234.

이종상 Lee, J.-S. (2006). 뉴타운 사업의 현황과 정책과제 *The present situations and policy implications of New Town Projects*. 서울균형발전위원회 Seoul Balance Development Committee.

정양희 Jeong, Y.-H. (2004, January). 은평 뉴타운 사례발표 *Case of EunPyoung New-town*. Paper presented at the 대한도시설계학회 심포지움 Symposium of Urban Design Institute of Korea.

최재필 Choi, J.-P., 조형규 Cho, H.-K., 박인수 Park, I.-S., & 박영섭 Park, Y.-S. (2004). 국대 아파트 단위주호 평면의 공간 분석 – 1966년~2002년의 서울지역 아파트를 대상으로 - A Spatial Analysis of the Apartment Unit Plans from 1966 to 2002 in Seoul. 大韓建築學會論文集 計劃系 *Journal of Architectural Institute of Korea*, 20(6), 155-164.

통계정보시스템 Korea Statistical Information System. (2005). 주택총조사 *Census of Housing*. 통계청 Korea National Statistical Office: