

A Study on the Pedestrian Environment of Apartment Housing Complex

- Focusing on Comparison and Analysis of Cases in Kwangju and Japan -

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I . Introduction

Land readjustment program by land readjustment project law and the national housing site construction business by housing construction promotion law were used to secure the housing site required in developing the rapid urbanization in Korea for late 30 years till 1970s, and in 1980s public housing site development program based on housing site development promotion law was mainly used. But, since these programs concentrated on the quantitative distribution of housing and neglected the pedestrian environment which is the qualitative aspect of urban environment, the safety problems in the city and complex were emerged. The mortality of pedestrian from traffic accidents in Korea (based on 10.31/100,000 persons as of 1996) was four times higher than that of Japan, 12 times higher than that of Sweden, 10 times higher than that of Germany and five times higher than that of U.S.A and the mortality of pedestrian among the dead from traffic accidents in Korea is 37.84% which is higher than France with 12.2%, America with 12.9% and Germany with 13.4%.¹⁾ For these reasons, the concerns on the pedestrian road is increased and the discussion that the structure of residential complex should be changed from the macro planning in the stage of land use is in progress. In case of the West, the introduction of pedestrian road is thoroughly made in planning new urban district.²⁾ The construction of pedestrian road and green road is done actively when the new urban district is built in Japan since 1960s and 1970s.

However, while in Korea the pedestrian road was not built till late 1980s and it was introduced in newly developed district in early 1990s, it is insufficient in its quantity and the qualitative planning which connects city and the whole complex organically. Therefore, this study compares and analyzes the cases of new urban district in Japan and housing development cases of Kwangju city and is to suggest the materials which can be reflected in improving pedestrian environment for the land use plan of the future housing site development district.

II . Preceding Research

Because urban problems of centering of Industry, population were spreaded from late 19 century to the 20', variety of alternatives about urban problems were proposed.³⁾

Taking 'the theory of garden city'(1898), the new concept of site plan were proposed centering modern functionalism and etc.(Radburn plan about separating pedestrian and motor road of housing site plan(1928), the theory of Neighbourhood housing about functional road plan(1929), the Athens charter synthesizing C.I.A.M. movement(1933))

Begining the period of controlling motor traffic, Buchanan Report(1963) defined the pedestrian and motor traffic applying the concept that were ordering grade of housing site road. SCAFT Guide(1968) spreaded out not only transporting secure but also reducing the dependence of motor traffic. Woonerf(1970) planned housing site road with the view of human reinstatement.

III . The Methods of Research

1. The Methods of Research

This study aims to show stratigic alternatives about pedestrian environment among macro index of the land use plan of housing site development district, and analysed the ratio of total length & area of pedestrian road between Kwangju and Japan

Besides understanding the change of period of pedestrian environment, analysed the ratio of total length & area of pedestrian road dividing early the 1990's, after the 1990', and early the 2000'

This study analyzed land use plan between Japan and Korea centering around pedestrian environment with the object of continuous research about the historic process of housing estate, alternatives of problems through studying the whole object of housing estates in Kwangju.

2. The Objects of Investigation

Total 29 housing site development districts were designated in Kwangju city as of August 1997(Table 1): 16 distircts (1,094ha) were developed, 9 districts (652ha) are under development and 4 districts (929ha) are in progress.

Table 1. Actual States of Housing Site Development Program in Kwangju city

Executor	District	Designated Date	Development Period	Area (m ²)	Working Expenses*	No. of Houses	Population
KOLAND	Yomju	81. 6.11	82. 9 ~ 83.11	534,423	99	3,640(2,745)	14,100(10,980)
KOLAND	Duam1	83.11.19	83.11 ~ 84.12	173,564	56	900(604)	4,000(2,718)
KOLAND	Usan1	83. 6.28	84.12 ~ 87. 9	234,233	103	1,100(650)	4,100(2,300)
KOLAND	Bongsun/Bangnim	83. 6.28	84.12 ~ 86. 8	454,824	205	3,150(2,480)	11,400(8,931)
KOLAND	Hanam1,2	84. 9.17	86. 7 ~ 91.12	1,807,386	599	14,832(12,438)	59,327(49,751)
KOLAND	Ohchi/Usan	84. 4.11	87.12 ~ 91. 6	266,255	192	4,378(4,256)	17,512(17,124)
KOLAND	Ssangchon	85. 7.31	87.12 ~ 90. 6	328,573	199	5,518(5,119)	14,584(13,108)
KNHC	Duam2	85. 7.11	90. 6 ~ 95. 3	425,790	1,214	6,126(5,978)	24,504(23,912)
Local Gov.	Hwajung	89. 5. 4	90. 6 ~ 92. 5	232,218	387	2,526(2,288)	10,104(9,152)
KOLAND	Munhung	89.12.19	90.12 ~ 94. 4	1,153,058	2,822	11,075(9,950)	38,763(34,825)
Local Gov.	Paekil	90. 3.21	90.10 ~ 92. 5	90,583	181	1,135(1,064)	4,540(4,256)
Local Gov.	Kumho	90. 3.21	91. 6 ~ 93.11	433,247	708	5,268(4,910)	21,072(19,640)
Local Gov.	Kumho2	91.12.10	92.11 ~ 97.12	204,827	481	2,443(2,244)	10,430(8,976)
KOLAND	Ilkok	89.12.19	92.12 ~ 96.12	1,473,172	400	11,507(10,344)	40,276(36,205)
KNHC	Unnam1	89.12.29	92.12 ~ 97. 3	279,445	641	4,850(4,850)	16,975(16,975)
KOLAND	Pungam	91. 4. 2	92.12 ~ 99.12	2,070,264	3,092	19,018(9,098)	62,759(58,204)
Local Gov.	Sangmu 1-1	90. 3.21	92.11 ~ 97.12	2,395,452	7,264	10,152(9,732)	35,532(34,062)
Local Gov.	Sangmu1-2	91.12.10	92.11 ~ 98. 8		154	-	-
Local Gov.	Shinga	89. 5. 4	94. 4 ~ 99. 6	500,066	1,141	4,893(4,649)	17,125(16,271)
KNHC	Donglim	90. 7.26	94.11 ~ 98. 9	240,075	663	3,599(3,566)	12,596(12,481)
Local Gov.	Sangmu2	93. 7.23	95. ~ 98.12	466,450	1,723	2,461(2,037)	8,614(7,130)
KNHC	Sangmu4	95. 2.17	95.11 ~ 00.12	287,129	929	3,995(3,940)	12,710(12,331)
KOLAND	Shinchang	92. 9. 4	97. 8 ~ 01.12	1,260,791	3,056	9,928(9,098)	30,775(28,204)
Local Gov.	Sunun1	96. 4.24	97.11 ~ 01.12	639,154	1,234	4,171(3,924)	4,893(4,649)
Local Gov.	Sangmu3	93. 7.23	98. 1 ~ 99.12	123,050	614	129(-)	404(-)
KNHC	Unnam2	93.11. 8	98. ~ 01.12	708,785	1,464	7,600(7,429)	23,790(23,255)
KOLAND	Suwan	96. 4.24		8,092,000			
Local Gov.	Bongsun2	96.12. 5		108,693			
Local Gov.	Sunun2	97. 7.22		482,000			
KNHC	Donglim2	97. 7.22		608,000			

Note. KOLAND : Korea Land Corporation, Local Gov. : Local Government.
 KNHC : Korea National Housing Corporation, * one hundred million WON(₩)

This study dealt with 9 of 25 districts an object of study.(Table 2). Japanese object districts were the newtown scale of 'Dama' & Narita' and the district scale of 'Hugusez Central District', 'Dama B-3, 4, 6'. The case of Kwangju were the small scale site within 100ha, 'Hwajung', 'Paekil', 'Kumho' and the district scale site above 100ha, 'Ilkok', 'Sangmu', not being case of newtown scale like Japanese and 'Ilsan' of Korea in Kwangju.

Table 2. Abstracts of Investigation-Object-Site

Development Completion	Executor	District	Designated Date	Development Period
Early the 1990's	Local Gov.	Hwajung	89. 5. 4	90. 6 ~ 92. 5
	Local Gov.	Paekil	90. 3.21	90.10 ~ 92. 5
	Local Gov.	Kumho	90. 3.21	91. 6 ~ 93.11
After the 1990'	KOLAND	Ilkok	89.12.19	92.12 ~ 96.12
	Local Gov.	Sangmu 1-1	90. 3.21	92.11 ~ 97.12
	Local Gov.	Shinga	89. 5. 4	94. 4 ~ 99. 6
Early the 2000'	KNHC	Sangmu4	95. 2.17	95.11 ~ 00.12
	Local Gov.	Sunun1	96. 4.24	97.11 ~ 01.12
	KNHC	Unnam2	93.11. 8	98. ~ 01.12

IV. Pedestrian Environment of Apartment House Complex

Housing development program is executed by 「Housing Site Development Promotion Law」 enacted in 1981 for the purpose of massive supply of the houses for the people and obtaining the developmental profits. As the housing problems have been deepened due to the continued population concentration in big cities since 1981 and the rise of land value and speculation on real estates are emerged as the serious social problems, government enacted the housing site development promotion law, set the construction plan of two million houses and developed housing supply through actual housing site development. Consequently land readjustment program by replotting method was the mainstream of land development business till 1980s, but housing site development business which security of housing site and housing construction are relatively easy has been settled as the typical urban development method since 1980s.⁴⁾ (See Table 3)

The viewpoint of house and housing site development was changed greatly since 1990s, but as quantitative lack has been improved, the importance of qualitative aspect is emerged.⁵⁾ The variety of development is required and the development considering the pedestrian environment is in progress although it is under the level of Europe and Japan. The land use plan of Ilsan and Bundang regions shows such a concept comparatively.

Table 3. Housing Site Development Program and Pedestrian Environment in Korea

Division	Designation method of expected district of housing site development
Related Law	Housing Site Development Promotion Law
Proprietor	Nation, Local Government, Korea Land Development Corp, Korea National Housing Corp.
Business Purpose	Supply of Low Housing Site Development
Business District	Expected District of Housing Site(Urban Planning District and Its Surrounding Area)
Land Acquisition	Whole purchase, Replotting
Land Use	Residential Site
Fund Raising	Prepayment of Supplier, Issuing bonds, National subsidy loan, Proprietor burden
Site Supply Object	Housing constructor, Local governments, Korea National Housing Corp., Private, Company, Association, Private, Person to involve in public facility construction

Note. Bae Sun-Sik, Issues and Policies in the Residential Development Systems in Korea, Korea Research Institute For Human Settlements, 1997.12. P 27 quotation

For Table 4, Residential population density of housing site development district in Kwangju is higher than that of planned housing site development project in Japan. While the central district of Hukusetz has 109 people, Ohki 85, Tama 79 and Narita 123 in Japan, Hwajung has 435 people, Paekil 503, Kumho 486, Ilkok 274 and Shinka 343 in Kwangju and then Kwangju has high density housing.

In the rate of park and green zone, Kwangju has extremely lower than the districts of Japan and it has been improved in late 1990s. That is, while Ohki has

11.82% of park and green zone, Tama 18.5% and Narita 20.57%, Hwajung has 6.2%, Paekil 3.5% and Kumho 3.28 in Kwangju city. Sangmu 1 district has 18.3%, Shinka 11.18%, Sunun 1 district 12.24% and Unnam 2 district 8.96%.

In case of Kwangju, the rate of park, green zone and pedestrian road has been higher in mid and late 1990s than the housing site development district planned and developed in 1980s. But, it has remarkably low level in the quantitative side and has not organic connection system in the qualitative side in comparison with the planned districts of Japan and then much consideration for future housing site development business is required.

While rates of pedestrian road length in the whole road length are 16.83 in central district of Hukusetz, 18.90 in Ohki, 38.58 in Tama B-3 district and 21.6 in Narita, Japan, that of Hwajung, Paekil and Kumho is 0%, Ilkok 3%, Shinka 3.84%, Sangmu 4 district 9.01%, Sunun 1 district 7.97%, Unnam 2 district 8.85% and Sangmu 1 district 18.14%.

In the rate of pedestrian road in the whole road area, while central district of Hukusetz has 16.8%, Ilkok 1.64, Shinka 1.07 and Sunun 1 district 2.97%. More extremely low rate in area reflects the qualitative aspect of pedestrian road space and it means there is a problem in connection system.

In road rate (roadway + pedestrian road), while Kumho has 28.76%, Ilkok 28.44%, Sangmu 1 district 26.2% and Shinka 30.01%, central district of Hukusetz, Japan has 21% and then the continuous examination with the plan variables in the stage of the whole land use planning is required.



Fig. 1. Central District of Hukusez(Japan)

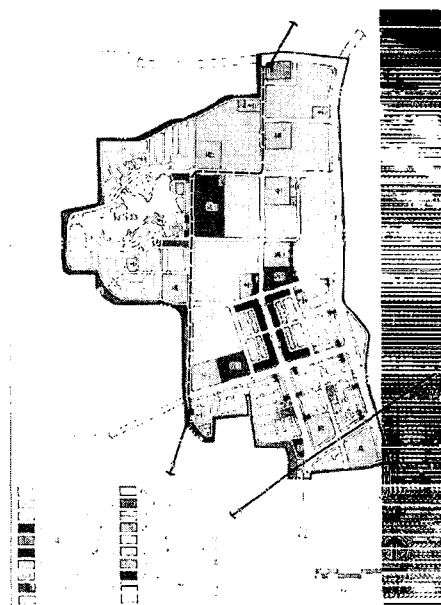


Fig. 2. Ilkok(Korea)

Table 4. Land Use Plan of Housing Site Development District and Pedestrian Environment in Kwangju City and Japan

Country	Area (ha)	Period	Household	Population (ha/person)	Housing Site ha(%)	Park Green Site ha(%)	Education Facilities Site ha(%)	Public Facilities Site ha(%)	Commercial Site ha(%)	Others Site ha(%)	Road (A) km, ha, m ² (%)		B / A (%) ext. area	
											Car	Pedestrian (B) ha(%)		
Japan	Central district of Hukusez	600 73-88	16,615	65,515 (109)	243 (40.50)	127 (21.17)	48 (8)	47 (7.83)		5(1)	area: 125	area: 21 (3.5)	①16.8 ②16.8	
	Ohki	188.7 80-93	4,000	16,000 (85)	97.0 (51.4)	22.3 (11.82)	12.8 (6.78)		3.2 (1.70)	22 (11.66)	ext.: 36.87km area: 31.8	ext.: 6.97km	①18.9 ②0	
	Tama	3,916 (2,356) 63-94	79,999	309,000 (79)	865.9 (36.7)	435.9 (18.5)	245.0 (10.4)	other public 254.2 (10.8)		102.9 (4.4)		area: 452.9		
	Tama B-3 District	286.6		6,390	24,000 (84)	79.39 (27.70)	33.10 (11.55)	26.82 (19.36)	other public 26.76 (9.34)	center facilities 21.46 (7.50)	30.04 (10.48)	ext.: 38.1km area: 68.99	ext.: 14.7km	①38.5 ②8
	Tama B-4 District	220	78-86	7,100	26,200 (119)	92.8 (42.18)	41.54 (18.88)	21.60 (9.82)		center facilities 5.88 (2.67)	13.15 (5.98)	area: 44.77		
	Tama B-6 District	292		7,400	28,000 (96)	108.5 (37.16)	67.83 (23.23)	32.33 (11.07)			6.96 (2.56)	area: 56.38		
	Narita	487 68-86	16,000	60,000 (123)	224.73 (46.15)	100.16 (20.57)	50.43 (10.36)	medica 1 site 5.32 (1.09)	center facilities 20.92 (4.29)	16.84 (3.48)	area: 65.78		①21.1 ②6	
Kwangju	Hwajung	23.3 90.6-92.5	2,526	10,104 (435)	15.4 (66.24)	park 1.44 (6.2)	1.38 (5.9)	0.17 (0.73)		ⓐ 0.52 (2.3)	road: 4.34(18.7) ext.: 4,581 area: 43,439	0	0	
	Paek-ill	9.0 90.10-92.5	1,135	4,540 (503)	5.27 (58.4)	park 0.32 (3.5)	1.11 (12.3)			ⓐ 0.47 (5.2)	road: 1.86(20.6) ext.: 1,721 area: 16,788	0	0	
	Kunho	43.3 91.6-93.11	5,268	21,072 (486)	24.38 (56.3)	park 1.42 (3.28)	2.71 (6.2)	0.61 (1.41)		ⓐ 1.72 (4)	road:12.46(28.76) ext.: 8,946 area: 124,647	0	0	
	Ilkok	147 92.12-96.12	11,507	40,276 (274)	64.35 (43.8)	park green 19.72 (13.4)	11.70 (8.0)	3.56 (2.42)		ⓐ : 0.97 ⓑ : 2.10 ⓒ : 2.76	car+pedestrian : 41.80(28.44) ext.: 28,242 area: 418,035	ext.: 855m ² area:6,842m ²	①3.03 ②1.64	
	Sangmu 1	263 92.11-98.8	10,152	35,532 (135)	48.16 (18.3)	park 43.32 (16.5)	7.98 (3.0)	66.44 (25.31)		ⓐ : 0.35 (0.1) ⓒ : 26.71 (10.2) ⓓ : 0.72 (0.3)	car+pedestrian : 68.90(26.2) ext.: 34,519m ² area: 689,008m ²	ext.: 6,263m ² area:65,233m ²	①18.1 ②4 ③9.47	
	Shinka	50 94.4-99.6	4,893	17,125 (343)	22.98 (45.96)	5.59 (11.18)	3.37 (6.74)	0.65 (1.3)		2.4 (4.8)	car+pedestrian : 15.00(30.01) ext.: 10,495m ² area: 150,076m ²	ext.: 403m ² area: 1,612m ²	①3.84 ②1.07	
	Sangmu 4	28.7 95.11-90.12	3,995	12,710 (443)	13.74 (46.7)	3.46 (12.06)	2.26 (7.9)	0.52 (1.81)		ⓔ 0.52	car+pedestrian : 8.47(29.7) ext.: 5,602m ² area: 84,711m ²	ext.: 505m ² area:3,449m ²	①9.01 ②4.07	
	Sun-1	63.92 97.11-90.12	4,171	13,055 (204)	23.68 (48.1)	park green 7.82 (12.24)	8.99 (14.0)	3.07 (4.80)		ⓔ 0.90 (1.4)	car+pedestrian : 16.95(26.5) ext.: 9,785m ² area: 169,629m ²	ext.: 780m ² area:5,046m ²	①7.97 ②2.97	
Un-nam 2	70.88 98-01.12	7,600	23,790 (336)	33.89 (47.8)	6.35 (8.96)	8.08 (11.4)	1.25 (1.76)		ⓔ :1.34 (1.9) ⓕ :1.13 (1.6) ⓖ :0.34 (0.5)	car+pedestrian : 12.01(16.9) ext.: 6,772m ² area:120,125m ² (including bridge)	ext.: 599m ² area:7,463.4m ² (8,904m ²)	①8.85 ②6.21		

Note : ⓐlight commercial facilities, ⓑsemi residential facilities, ⓒcommercial facilities, ⓓgeneral commercial facilities, ⓔcentral commercial facilities, ⓕmarket. ① rate of road ext : B/A (%). ②rate of road area : B/A (%)

IV. The Abstract-Conclusion & Suggestion of Strategy

This study compares and analyzes the cases of new urban district in Japan and housing development cases of Kwangju city and indicates problem of pedestrian environment in Kwangju through analysing land-use-plan & drawing of district

Making good and continuous city, We must be concerned about city of desiring walking, i.e. pedestrian environment. We are going to experiencing traffic accident of pedestrian and ash-colored city not lived at public & common downtown area securely if we develop housing estates by quantitative development like current system.

As if Kwangju city develops housing estates quantitatively for expanding ratio of housing-supply, the future housing estate development program must approached pedestrian environment qualitatively.

It is required that Kwangju city foster the ability of housing plan, speciality controlling service administration, establish a municipal ordinance considering scape & pedestrian environment of security & amenity, specify the district of urban design & special plan and induct the participation of citizens, specialists.

This study did not include alternative research considering a point of view regulation, background analysis of administration process about housing estates, variables of district scale, district environment, for these, the continuous examination & research are required by stages.

Footnotes

- 1)'Green Traffic Movement' reported the results that were analyzed between Korean statics and the ratio of world traffic accident through 'Traffic security Paper' of Japan(1988)
- 2)Korean Land Development Corp, The Plan and Design of Pedestrian Road, 1989, Preface.
- 3)Translated by Kum Ki-Jung, Earth Traffic Plan, Chungmunkak, 1998. P1
- 4)Kwangju city, Kwangju Urban Planning, 1996, PP44-46
- 5)Bae Sun-Sik, Issues and Policies in the Residential Development Systems in Korea, Korea Research Institute For Human Settlements, 1997.12, Preface

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