GEOGRAPHICAL STUDY ON RESIDENTIAL STRUCTURE OF TOKYO 23 WARDS AND THE SUBURBAN AREAS

by

AKIO BITO

A DISSERTATION
SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF
SCIENCE

at the

INSTITUTE OF GEOSCIENCE OF
THE UNIVERSITY OF TSUKUBA

1990

ACKNOWLEDGMENTS

The author owes endless gratitude to many persons who gladly supported him to complete this dissertation. Special appreciation is presented to Professor Shozo Yamamoto for his kind advice and help in writing this dissertation. The author also would like to thank Professors Takashi Okuno, Hiroshi Sasaki and Nobuo Takahashi of the Institute of Geoscience, the University of Tsukuba, for their useful comments and engagement. Moreover He wishes to express his gratitude to Dr.Tadashi Nakagawa, Yasuhiro Ozeki, Katsuhiko Neda, Munetoshi Yamashita, his colleague in graduate course of University of Tsukuba, for his invaluable critical comments during the preparation of the English manuscript. Appreciation is given to Assistant Professor Toshio Kikuchi, the University of Gunma, Assistant Professor Masatoshi Okui, Akihisa Sakurai, the University of Utsunomiya for kind advice and English manuscript, Professor Mitsuei Hirayama, the university of Utsunomiya and Masahiro Kagami, the Tokyo Gakugei University, for kind information.

Final appreciation is given to Kazuhito Miyasaka, the University of Tsukuba, for writing figures in this dissertation, Mrs. Miyasaka, Miss Sugawara and my family for many kindly advice.

Akio Bito

January, 1990

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

I-1 Purpose of this study

The purpose of this study is to make clear the residential structure of Tokyo 23 wards and suburban areas through the distribution of geographical elements and the residents' image. In this study, the "residential area" is defined as the space in which people lives. This word is used in a wide sense to such space as commercial area and agricultural region in which non-residential land use is more prominent than residential use.

Geography is a branch of learning to study relations between human beings and geographical elements on the surface of the earth. Therefore studies on residential area were carried out by many geographers. Especially in urban area, a variety of homogeneous and functional regional divisions in the use of geographical elements have been proposed.

However, we usually do not distinguish one residential area from another by geographical elements alone[1]. We habitually identify a residential area unconsciously through various information such as its origins, historic events, direction from house, and rumors. Such information creates a special image for the residential area in our mind. Such an image is sometimes shared and by people and is addressed as a "Public Image". The public image affects the decision of migrants into urban areas.

For example, a person holding a high rank typically wishes to live an area which people regard as upper-class or sunny. On the other hand, many young people dream to live in the town with an "urban" and "fashionable" image. Thus, the public image of a residential area is an important geographical factor to draw people. The study of this images therefore, will contribute to the interpretation of present residential areas in the city.

Since the 1970s, urban geographers have come to realize the necessity to study processes of forming geographical appearances, contrary to the traditional approach of identifying similarity of geographical patterns. Consequently, many geographical studies on spatial process from a behavior point of view have been conducted since the 1970s (Takahashi,1984). The purpose of this geographical study on spatial processes is to analyze the spatial behavior of people which plays an important part in growing or making regional structures in urban areas. Although many studies have analyzed the patterns of human spatial behavior through quantitative methods. few empirical case studies exist in this field. Following a current trend for behavioral approaches in urban geography, this study identifies new regional structures of Tokyo 23 wards and suburban areas by examining the residents' image as one of geographical factors.

I-2 Previous studies and their problems

Geographical methods to analyze residential area have been developed through the progress of urban geography. These methods

have been actively applied and elaborated into more sophisticated, precise, and abstract ones. These approaches are classified into three categories.

The first category attempts to identify the characteristics of a residential area examining the relation among various regional elements. This approach can further be categorized into two groups. One approach discusses the relation between the expansion of a residential area and its specific regional factors(Kiuch,1968)[2].

The second approach discusses the interactions of many regional elements found in the residential area. There are considerably many studies through the former approach. Regional factors considered as important for a long time are the elements of natural environment, especially the topographic conditions. Many studies have been made with this approach about large scale new town developments in the hilly areas and the foots of mountains since the middle of 1960s (Iseki et al,1967; Kitabatake,1981; Kusaka,1966; Sato,1969). In this field of study, such factors such as gradient, density of valleys, direction of slope, and phisiographical phisiographical divisions were investigated in connection with the residential area [3]. The importance of topographic condition factor is identified by these studies as well as by the studies of disasters resulted from residential developments. Yamaga(1960) investigated the relation between regional elements of residential area within urban areas. He made clear that urban functions in and around the city center moved outward in a specific order. Such large

urban facilities such as factories, hospital and educational facilities first move into suburbs. Then these facilities tend to attract houses and apartment houses from inside the city.

This study systematizes the relation between urban facilities and residential areas. While this approach examines a residential areas from a single factor, the expansion and multiplication of residential areas have lead to the approaches to analyze residential areas from various factors. One of most typical methods of this approach is the quantitative social area analysis, which will be mentioned below as a second method. This second method identifies residential structures through quantitative methods by using statistical data of relatively wide area. The number of reports with this method have been increase since the 1960s by using computers and such statistical information as census. Hattori et al.(1960) discussed the regional structure through multiple factor analysis by using sixteen variables covering the area within 40 kilo meters from Tokyo station. This study was the first typical case with this method. Many empirical studies of Tokyo metropolitan area have appeared because many statistical data are available for a long period, the number of administrative districts of city-town-village is suitable for statistical analysis, and because there is sufficient population to analyze spatial differentiation (Takano,1979).

Yamada et al.(1974) made a regional division in the Tokyo metropolitan area through principal factor analysis followed by discriminate analysis of 43 variables of urbanization for 296

administrative districts. Fukuhara(1977) introduced the time series analysis from 1955 to 1970 for regional division of the Tokyo metropolitan area and its transition. Most of these studies made regional divisions through statistical data of administrative districts.

Social area analysis was established by Shevky and Williams(1949) and was applied to geography by Anderson and Egeland(1961) who studied spatial patterns within urban area(Morikawa,1975). They first showed that residential segregation appeared in the U.S.A. is well explained by three dimensions:(1) social economical status, (2) life cycle, and (3) race. Sonobe(1985) pointed that social area analysis provided multiple explanations in contrast with the single explanation for residential segregation.

Many studies exist which applied social area analysis covering Tokyo metropolitan area. Takano(1979) show that the sector form identified from the arrangement of factor scores represents social rank and that the concentric circle from the arrangement of factor scores represents urbanization. Similar studies are reported by many geographers (e.g. Saito,1982; Morikawa,1976; Yamaguchi,1976; and so on).

Morikawa(1975) states that the study of factorial ecology in urban area must analyze relation between spatial patterns and urban facilities and between the factors and historical background. Ueno(1982) pointed that it is necessary to apply long-term time space translation model of residential structure to Japanese cities which have considerably different conditions.

Ueno(1981) identify the residential structure of Tokyo- shi in the middle of Taisho-era by applying this model.

Recently, some studies used factorial ecological analysis. Yano and Kato(1988), for example, examined the residential structure of Tokyo 23 wards by using canonical trend surface analysis. Mori(1980) identified the characteristics of residential area in Toyonaka city in Osaka prefecture by investigating residential pattern and migration. Many other similar studies have analyzed different metropolitan areas including Tokyo metropolitan area(Shinto,1985; Yokoyama and Morikawa,1977; Matui,1986).

These studies applied similar methods to discover spatial patterns in residential areas. However it is difficult for these methods to discuss the combination of regional elements and of factors. Kiuchi(1968) stated that geographical studies of regional structures must make clear both the functional organizations of geographical regions and landscape patterns created by these organizations. It is, therefore, insufficient to identify spatial patterns only.

On the other hand, in the 1970s, behavioral approach was introduced in the 1970s, which regarded human behavior as a main agent to create spatial patterns. Some studies attempted to identify spatial processes that created regional structures. This behavioral approach is the third method for studying residential areas.

This method is related to the studies of environmental perception and mental maps by using residential preferences [4].

Lynch(1960) showed the image of the city concretely by using sketch map written by citizens. Gould and White(1968) applied the principal component analysis to the data of residential preferences to show the mental maps. This study showed that the mental maps created by the citizens shared some common forms. Nakamura(1978,1979a) also made clear the example related to the mental map in Japan by using similar method. Nakamura(1979b) reviewed the studies of mental maps related to residential preferences reported in foreign countries and he discussed that the common mental maps in certain region is reflected some objective conditions such as natural environment, regional structure and social structure. Gould and White(1973a,b) investigated the relation between mental maps and human behavior and to pointed that human spatial behavior depend on his own mental map (Downs and Stea, 1973) [5].

In the study of environmental perception it became clear that residents usually perceive residential environment in two respects. Residents first perceive abstract or economical environment and than recognize sociality, culture, comfortableness, and safety of the environment(Koshimizu,1984). Uchida(1986) made clear the image of the city by using valuation of "Fukaku"(close concept of "dignity" or "character") and some symbols. He pointed that the valuation of the city should be composed of two systems : the aesthetic valuation system represented to the historical aspect and that of power represented by economy and the population. There are very few related reports because the method is new and because the data

are hardly available. There are especially few reports discussing the relation between regional elements, mental map and human behavior.

I-3 Methodology

A geographical analysis of a residential area need collect systematic information of the regional elements, to examine the relations among these elements and to synthesize these relations in the region. It is effective for understanding the elements of a residential area to first classify the area into several geographical units by some indices and then to analyze these elements by these geographical units. In urban residential areas, it is generally known that regional segregation results from different occupations and family composition of the residents. These different social attributes of the residents are related to regional characteristics within the urban residential areas. Uneven distribution of such social or economical facilities as factories, shops, transportation facilities, amusement facilities created different residential environment, which in turn caused different regional characteristics. Furthermore, residents and residential environment also created the image of residential areas. The image of the place then influenced the quality of residents and the location of such facilities as shops, amusement facilities. The image, thus, is related to regional characteristics of residential areas.

Residents, residential environment, and the image of

residential areas are related with each other to create the characteristics of residential areas. It is ,therefore, difficult to analyze residential area only from one aspect like previous studies. It is necessary to apply a new comprehensive method which analyzes and synthesizes all important aspects of residential areas.

In order to establish the method, we will first discuss how the image can be studied. While the image of residential areas are represented by various expressions, we can know a certain aspect of the image by the people's evaluation of a place. People do not evaluate a place by the elements geographers have analyzed, such as residents or residential environment. Downs and Stea(1973) defined the absolute space as the space including actual geographical matters, whereas the relativistic space as the once including the information which determines human behavior. Gould and White(1973a) also discussed that the people influences only the information perceived by them.

Therefore the image of residential areas are created in the relativistic space valuations of the information from actual residential areas. In order to understand how the image was created, therefore, it is first necessary to identify So, at first, it is necessary for understanding creating process of image to know the information selected from actual residential areas to the relativistic space. The contents of the image resulted from the information, then, must be identified. These two steps in this study is similar to what Downs and Stea(1973) suggested in the field of mental map studies.

In order to introduce residential area image as a geographical element, it is necessary to identify regional elements related to the image. First, characteristic attributes of residential areas are compared with the peoples' valuation to select some elements related to the evaluation. Next, the relation between the image and some selected elements of the residential areas is investigated in different places. Finally, the spatial patterns of these relationships are identified. By this method, a residential structure is constructed with three elements : residents, residential environment, and the residential area image. We must determine the size of the study area before examining that relation, because the image are usually corresponded to certain scales. Therefore it is adequate to determine the scale of the study unit in which we can easily analyze the relation between the image and other elements.

On the basis of these problems, this study is carried out by the following procedures.

First, are classified with the attributes of residents and other residential elements that are expected to create the regional image. In this study, types of residents are established based on their attributes to examine the distribution of each type. The attributes include residential density, age group, occupation and family make-up. Factor analysis will then be applied to these valuables to define the types of residents by the distribution of factor scores. With this method, kinds of residents and their distribution patterns are identified.

Second, the relation between residents and residential

environment is examined. In order to examine the relation in regional units, types of residential area is defined by grouping the area by distribution patterns of the residents' attributes. The attributes of environment are then examined in each regional unit. With this method, residents and residential environment are connected in every unit of the residential area.

Third, in order to examine the relation between each type of residential area, and its image, representative area of each type is discussed. The characteristics of the residents and environments are presented and it is described how these attributes are related to the image of the area.

Fourth, the extent of residential areas perceived by the residents becomes clear from the distribution of the image and the elements related to the image. Finally, a residential structure is created by the arrangement of the identified residential areas.

This study covers a rectangular area with 31 kilo meters from east to west, 34 kilo meters from north to south, which includes Tokyo 23 wards (Figure 1) [6]. The unit of analysis is a standard regional mesh established by government offices. The number of units is 890. The mesh system is used because the unit is small enough to interpret the detail regional differences and because many sorts of data is provided in this mesh system.

Data of this study area collected from Statistics Bureau, Geographical Survey Institute, and National Land Agency. Some data are made originally from other geographical materials (Table

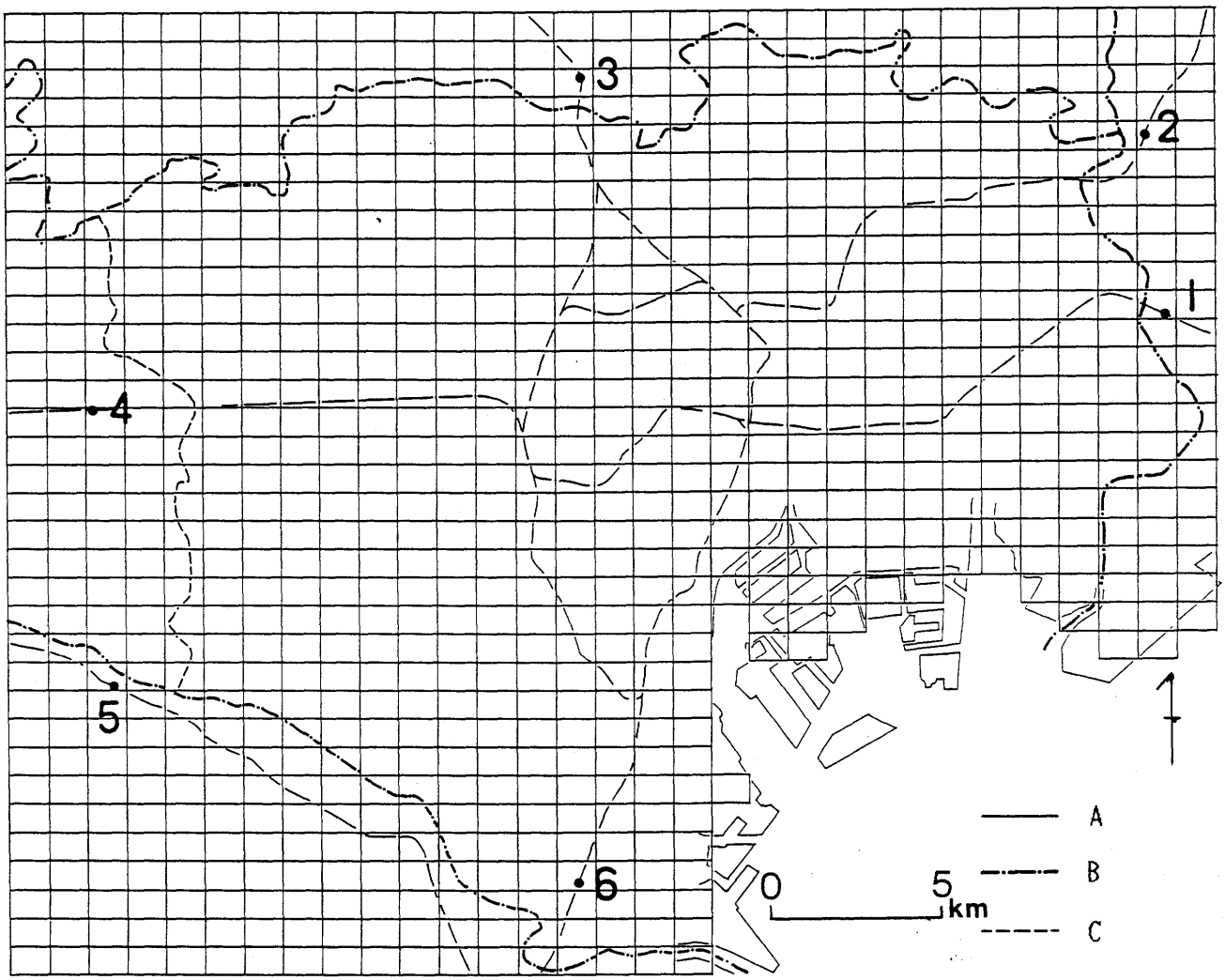


Figure 1 Study area

A J.N.R. Line

B Boundary of Tokyo Metropolis and other prefectures

c Boundary of wards and cities in Tokyo Metropolis

1 Ichikawa 2 Matsudo 3 Kawaguchi 4 Mitaka 5 Noborito 6 kamata

1). The year of the data is about 1980.

Tokyo 23 wards in the study area has 834 thousands people in 1980 and covered an area of 590 square kilo meters. The original Tokyo was established at the construction of Edo castle by Dokan Ota in 1590. Tokyo has been a substantial capital of Japan since the Edo era. Edo castle was constructed at the east edge of Musashino plateau. The west of the castle was 20-50 meters above sea level, while the lowland in the east had a few meters above sea level. Edo river, Arakawa river and their drainage canal flow through this lowland. On the other hand, some small rivers flow to the east from spring-fed pond that exist about 50 meters above sea level on the Musashino plateau.

Edo city had one million people in the early Edo era (Masai,1987). The built-up area in Meiji or Taisho era was extended from Honjo and Fukagawa in the east, Yotuya, Akasaka, and Azabu in the west. Although the population of Edo city decreased to 60 thousand in the beginning of Meiji era, it increased to two million in the end of Meiji era, filling up within the area of Tokyo fifteen wards established in 1889. After the Great Kanto Earthquake, the extent of built-up area expanded to the west beyond the Yamanote line and the population in rural section (gun bu) exceeded it within the city limit. Six gun and eighty two towns or villages neighboring Tokyo fifteen wards were incorporated into Tokyo-shi with 20 wards in 1932. The population within Tokyo-shi was 678 thousands in 1940. It decreased 278 thousands after World War II through the war damage. However, it increased to that before World War II in 1954. Built-up area was

Table 1 Data for analysis

Name of data	Contents	Executive organization or making method
Census mesh data	Population census (1980)	Statistics Bureau
Digital National Land Information	Physiographic division	Geographical Survey Institute
Industrial Statistical research	Industrial statistical research	National Land Agency
Commercial Statistical research	Commercial statistical research	National Land Agency
Time distance from stations in the midtown area		calculated based on timetable made by Japan Travel Bureau
Distance from Tokyo station		calculated based on mash data

Stations in the midtown area -- Tokyo, Kanda, Yurakucho and Shinbashi of J.N.R.line; Kanda, Mitukoshi-mae, Nihonbashi, Kyobashi, Ginza and shinbashi of Eidan subwey Ginza line ; Otemachi, Tokyo and Ginza of Marunouchi line; Hibiya of Hibiya line; Otemachi, nijubashi-mae and Hibiya of Chiyoda line; Yurakucho and Ginza-1 chome of Yurakucho line; Shinbashi of Metropolitan subway NO.1; Otemachi of Metropolitan subway no.6

extended beyond Tokyo 23 wards into Tama area or neighboring prefectures in the period of rapid economic growth (Matui,1986). Hattori(1969) investigated the extension of built-up area to find that the size of urban area in 1982 was 58 square kilo meters, with its geographic in the Marunouchi district, while in the urban area was 428 square kilo meters, with Shinjyuku Oiwake district in its center. In the study area, urbanization has almost completed in the middle of the 1970s in the area of Tokyo 23 wards, although it is now progressing in the suburbs.

CHAPTER II

TYPE OF RESIDENTS BASED ON THEIR CHARACTERISTICS

II-1 Type of residents based on their characteristics

The purpose of this section is to investigate the residential spatial distribution by using factor analysis

The data for this factor analysis is the 1980 Population Census of Japan on mesh bases. The author selects 35 valiables in terms of age, occupation, the educational background and the time of the last move. The original valiables are generally transformed to a ratio in order to minimize the correlations and the variances between valiables (Table 2).

Next, principal factor analysis is applied to the geographical matrix which is composed of 890 districts in columns and 35 valuables. 9 common factors that have eigenvalues greater than 1.0 are obtained. These factors together account for 85.7 % of total variance (Table 3). Each factor interpreted by making reference to the spatial patterns of the factor scores (Figure 2 and Table 4).

The first factor shows a bipolar structure in the factor loadings. High positive loadings of the first factor are associated with Professional and technical worker, Managers and officials, and Financing and insurance worker. On the other hand, high negative loading of this factor is Craftsman. Therefore, the positive extreme of the first factor is interpreted as

Table 2 Input variables(Continued)

Variable no.	Variable name	Definition
1	Total population	
2	0-6-year-old population	Percentage of population aged 0 to aged 6 to the total population
3	13-15-year-old population	Percentage of population aged 13 to aged 15 to the total population
4	20-24-year-old population	Percentage of population aged 20 to aged 24 to the total population
5	30-34-year-old population	Percentage of population aged 30 to aged 34 to the total population
6	40-44-year-old population	Percentage of population aged 40 to aged 44 to the total population
7	50-54-year-old population	Percentage of population aged 50 to aged 54 to the total population
8	60-64-year-old population	Percentage of population aged 60 to aged 64 to the total population
9	Married population	Percentage of married population to the total population
10	Persons living since the time of birth	Percentage of persons living since the time of birth to the total population
11	Persons living since 1964 or before	Percentage of persons living since 1964 or before to the total population
12	Persons living since Oct.1979 or after	Percentage of persons living since Oct.1979 or after to the total population
13	Male labor force	Percentage of male labor force to the total population
14	Employed women	Percentage of women to the total population
15	Unemployed person	Percentage of unemployed persons to the total population
16	Self-employed person	Percentage of self-employed persons to the total population
17	Agricultural worker	percentage of agricultural workers to the total population

Table 2 Input variables(Continued)

Variable no.	Variable name	Definition
18	Construction industry worker	percentage of persons with construction to the total population
19	Manufacturing industry worker	percentage of persons with manufacturing to the total population
20	Wholesale and retail trade worker	percentage of persons with wholesale and retail trade to the total population
21	Financing and insurance worker	percentage of persons with financing and insurance industry to the total population
22	Transport and communication worker	percentage of persons with transport and communication industry to the total population
23	Professional and technical worker	percentage of persons with professional and technical occupation to the total population
24	Managers and officials	percentage of persons with percentage of managers and officials to the total population
25	Clerical and related worker	percentage of persons with clerical and related occupation to the total population
26	Workers engaged in transport and communication	percentage of persons with transport and communication occupation to the total population
27	Craftsman	percentage of persons with craftsman, production process workers and occupations to the total population
28	University student	percentage of persons attending junior college, higher professional school, collage, university or graduate course to the total population

Table 2 Input variables

Variable no.	Variable name	Definition
29	Local worker	percentage of persons working in same city, Ku, town, village to the total population
30	Worker and student going on foot	percentage of persons working or attending school going on foot to the total population
31	Quasi-household population	percentage of households belongs to quasi-household to the total number of household
32	7 and over persons household	percentage of 7 and over persons household to the number of ordinary household
33	Family nuclei	percentage of household belongs to family nuclei-household to the number of household
34	Old age one-persons	percentage of one-persons over 60 years old to the total number of household
35	Salary household	percentage of household whose main income is wages or salary to the number of ordinary household

Table 3 Factor loadings

varuable no.	Factor 1	2	3	4	5	6	7	8	9	Communalities
1				0.73						0.70
2		-0.76				0.39				0.88
3			-0.82							0.80
4	0.38		0.62			-0.46				0.91
5		-0.69				0.57				0.89
6	-0.40		-0.64							0.75
7		0.84								0.81
8		0.75					0.30			0.83
9			-0.51			0.72				0.90
10					0.79					0.84
11		0.62		0.54	0.33					0.91
12			0.60		-0.45					0.68
13	-0.50		0.70							0.88
14		0.40		0.36			0.60			0.85
15				0.71						0.61
16					0.33		0.62			0.65
17					0.59					0.73
18	-0.43							-0.66		0.67
19	-0.52					0.36				0.63
20				0.32			0.73			0.86
21	0.74			0.41						0.77
22									0.85	0.80
23	0.83									0.83
24	0.78						0.32			0.83
25	0.68			0.37						0.75
26	-0.43								0.83	0.95
27	-0.88									0.94
28	0.69			0.31						0.80
29	-0.50							0.64		0.79
30			0.46					0.70		0.87
31			0.68	-0.33						0.70
32					0.81					0.87
33	-0.43	-0.31	-0.33	-0.55						0.83
34		0.59		0.35			0.40	0.33		0.83
35		-0.36				0.62				0.74
Eigenvalue	10.7	5.08	4.98	2.40	1.82	1.39	1.38	1.09	1.00	
Percentage of contribution	30.8	14.5	14.3	6.90	5.20	4.00	4.00	3.10	2.90	
Cumulative percentage of contribution	30.8	45.4	59.6	66.5	71.7	75.7	79.6	82.8	85.7	

Note : only varuables with loadings over | 0.30 | are shown in this table.

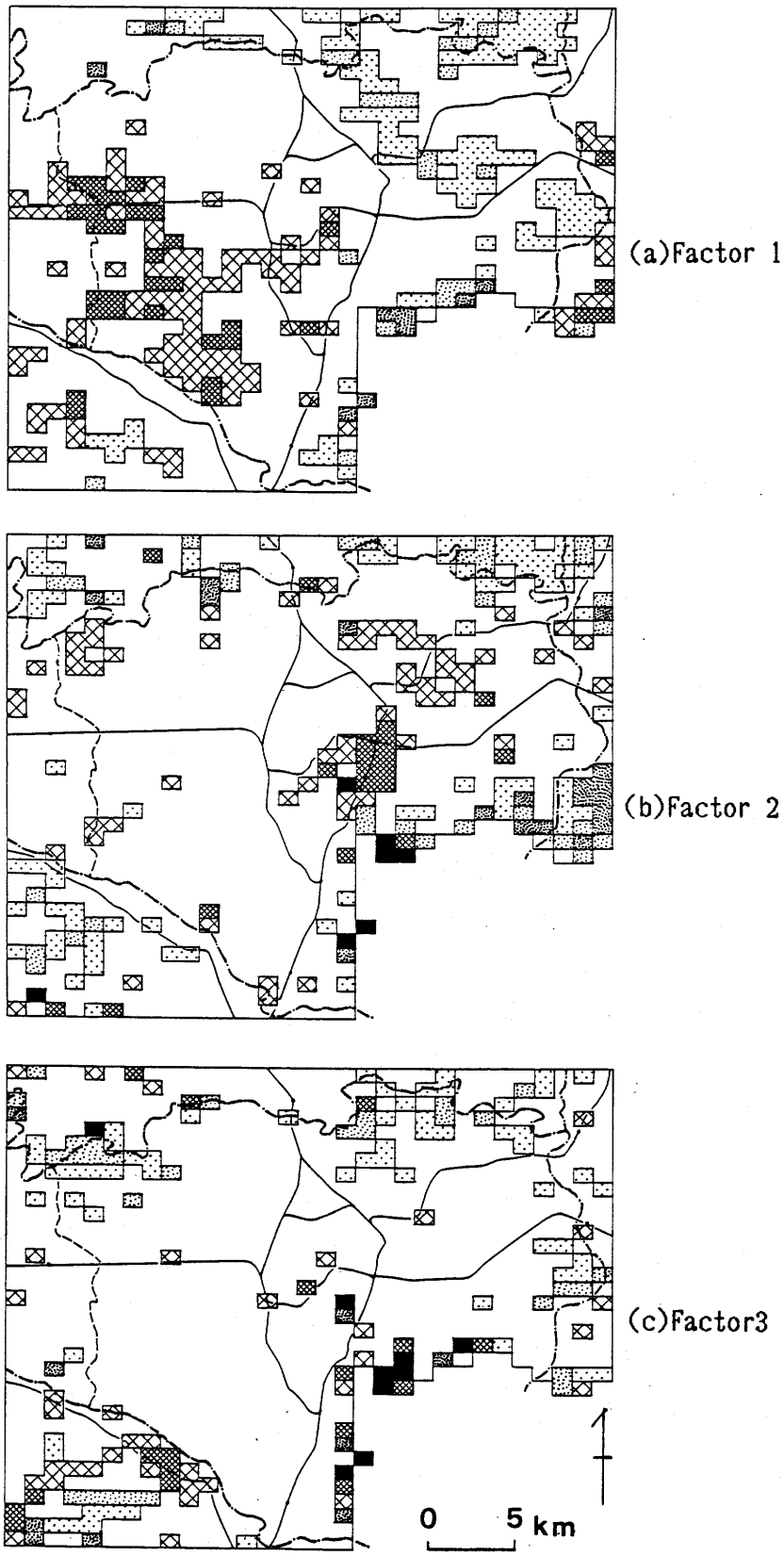
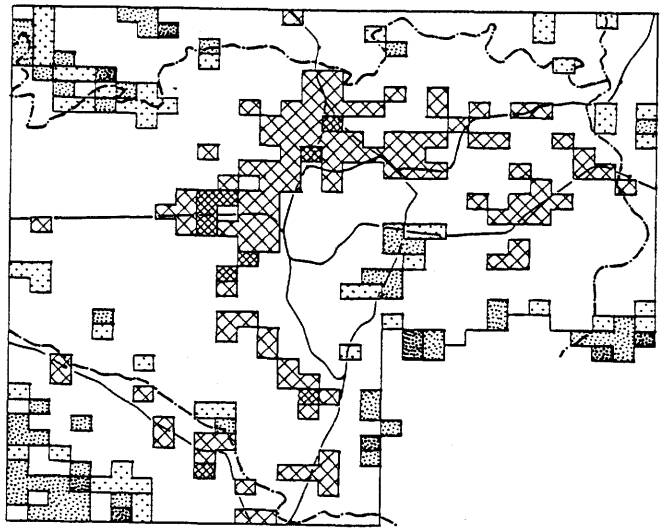
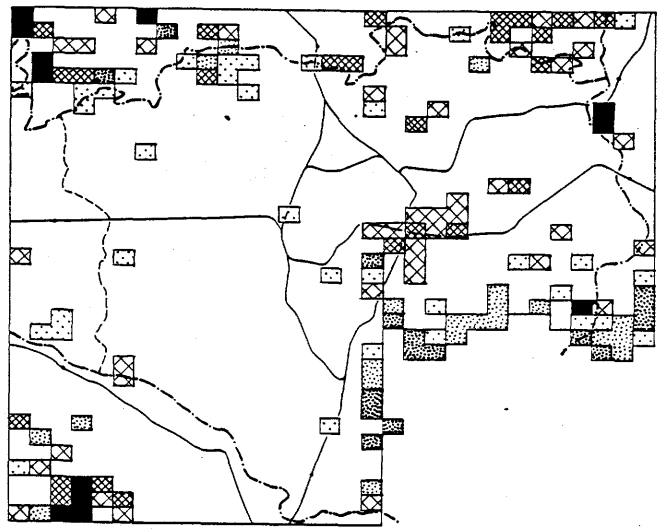


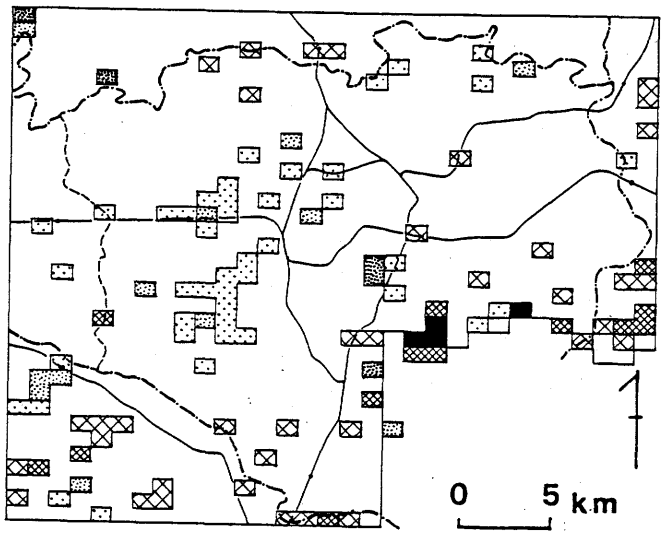
Figure 2 Factor Score (Continued)



(d)Factor4



(e)Factor 5

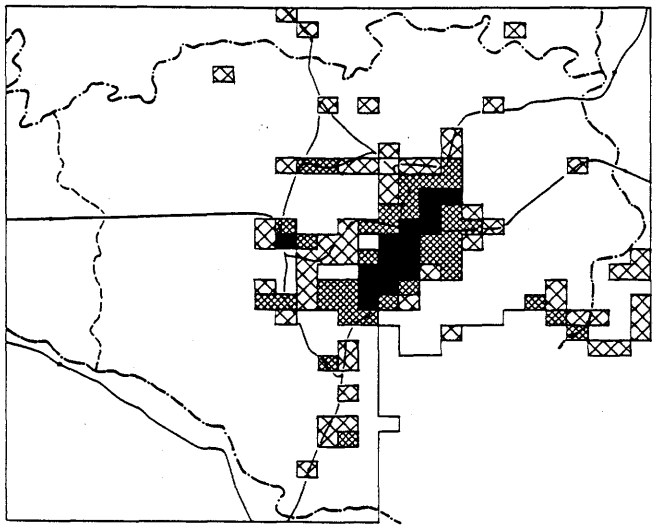


(f)Factor 6

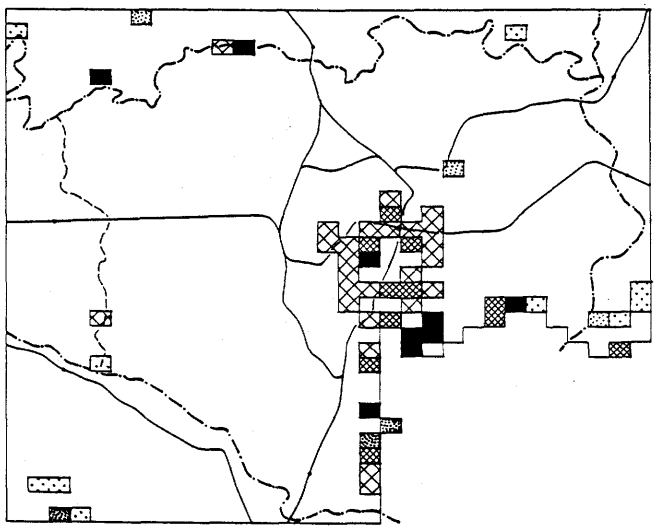
Figure 2 Factor Score (Continued)

0.5≦X<1.0 1.0≦X<1.5 1.5≦X

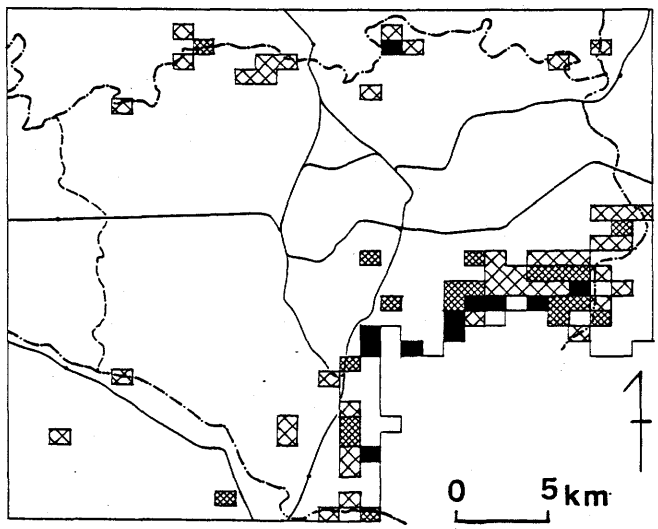
-1.5>X -1.0>X≧-1.5 -0.5>X≧-1.0



(g)Factor 7



(h)Factor 8



(i)Factor 9

Figure 2 Factor Score (Continued)

0.5≦X<1.0 1.0≦X<1.5 1.5≦X

-1.5>X -1.0>X≧-1.5 -0.5>X≧-1.0

Table 4 Factor name

Factor no.	Plus	Minus
I	Professional worker	Craftsman
II	Old person	Couple in the thirties and their children
III	Male labor in the twenties	Couple in the forties and their children
IV	Housewife moved in 15 years ago or before	Non family nuclei-household
V	Large household living there since their birth	Household moved in there within 1 year
VI	Salaried man in the thirties	Person in the twenties
VII	Self-employed person in wholesale and retail	
VIII	Household bringing his residence and place of work close together	Construction industry worker
IX	Transport and communication occupation worker	

'Professional worker', and the negative extreme of this factor is interpreted as 'Craftsman'.

The second factor reveals a bipolar structure. High positive loadings are associated with the 50-54-year-old population, the 60-64-year-old population. High negative loadings are associated with the 0-6-year-old population and the 30-34-year-old population. Therefore, the positive axis of this factor is interpreted as 'old person', and the negative axis of this factor implies 'Couple in the thirties and their children'.

High positive loadings of the third factor are associated with Male labor force, Quasi-household population and the 20-24 year-old population, and high negative loadings are associated with the 13-15-year-old population and the 40-44-year-old population. Therefore, this factor, which shows a bipolar structure, is interpreted as 'Male labor in the twenties' and 'Couple in the forties and their children'.

High positive loadings of the fourth factor are associated with Total population, Unemployed person and Persons living since 1964 or before. High negative loadings are Family nuclei, and a slightly high negative loading is Male labor force. Therefore, the positive extreme indicates housewives. On the other hand, the negative extreme indicates non family nuclei-household. Consequently, this factor, which shows a bipolar structure, is interpreted as 'Housewife moved in 15 years ago and before' and 'Non family nuclei-household'.

The High positive loadings of the fifth factor related to 7 and over persons household, Persons living since the time of

birth and Agricultural worker. High negative loadings are Persons living since Oct.1979 or after. Therefore this factor which reveals a bipolar structure is interpreted as 'Large household living there since their birth' and 'Household moved in there within 1 year'.

High positive loadings of the sixth factor are associated with Married population, Salary household, and 30-34-year-old population. The high negative loading is 20-24 years-old-population. Therefore this factor, which shows a bipolar structure, is interpreted as 'Salaried man in the thirties' and 'Person in the twenties'.

High positive loadings of the seventh factor are associated with Wholesale and retail trade worker, Self-employed person and Employed women. There is no high negative loading. Therefore the seventh factor, which has a simple factor structure with only a positive axis, is interpreted as 'Self-employed person in wholesale and retail'.

High positive loadings of the eighth factor are related with Worker and student going on foot and Local worker. High negative loading is Construction industry worker. Therefore, this factor, which shows a bipolar structure, is interpreted as 'Household bringing his residence and place of work close together' and 'Construction industry worker'.

The ninth factor has a simple factor structure with only positive axis. The high positive loadings are associated with Transport and communication worker and Workers engaged in transport and communication. Therefore, this factor is inter-

preted as 'Transport and communication occupation worker'.

Next, classification of districts is carried out that based on the characteristics of residents in each district. First, the factor scores of each district are divided between positive scores and negative scores. Each district is characterized by the factor having the highest absolute value. But the author investigates only the positive scores of the seventh and ninth factors, which show simple factor structure with only a positive axis. The districts without their factor scores exceed 1.0 are excluded from this analysis. In the result, 16 types are obtained. The types are shown in Figure 3. In the following sections, the distribution of each type are explained.

II-2 Distribution of the types of residents

1) Types for residents' occupation

The type of 'Professional worker' shows a high positive score of the first factor. This type is composed of 92 districts. These districts are concentrated on the western and southwestern area, including Musashino city, Mitaka city, and western Suginami-ku, and are distributed in Setagaya-ku, south Meguro-ku, and north Ota-ku. These are districts along railways, such as the Chuo Main line, the Keioteito- Inokashira line, the Odakyu-Odawara line and the Tokyu-Toyoko line[7].

The type of 'Craftsman' shows a high negative score of the

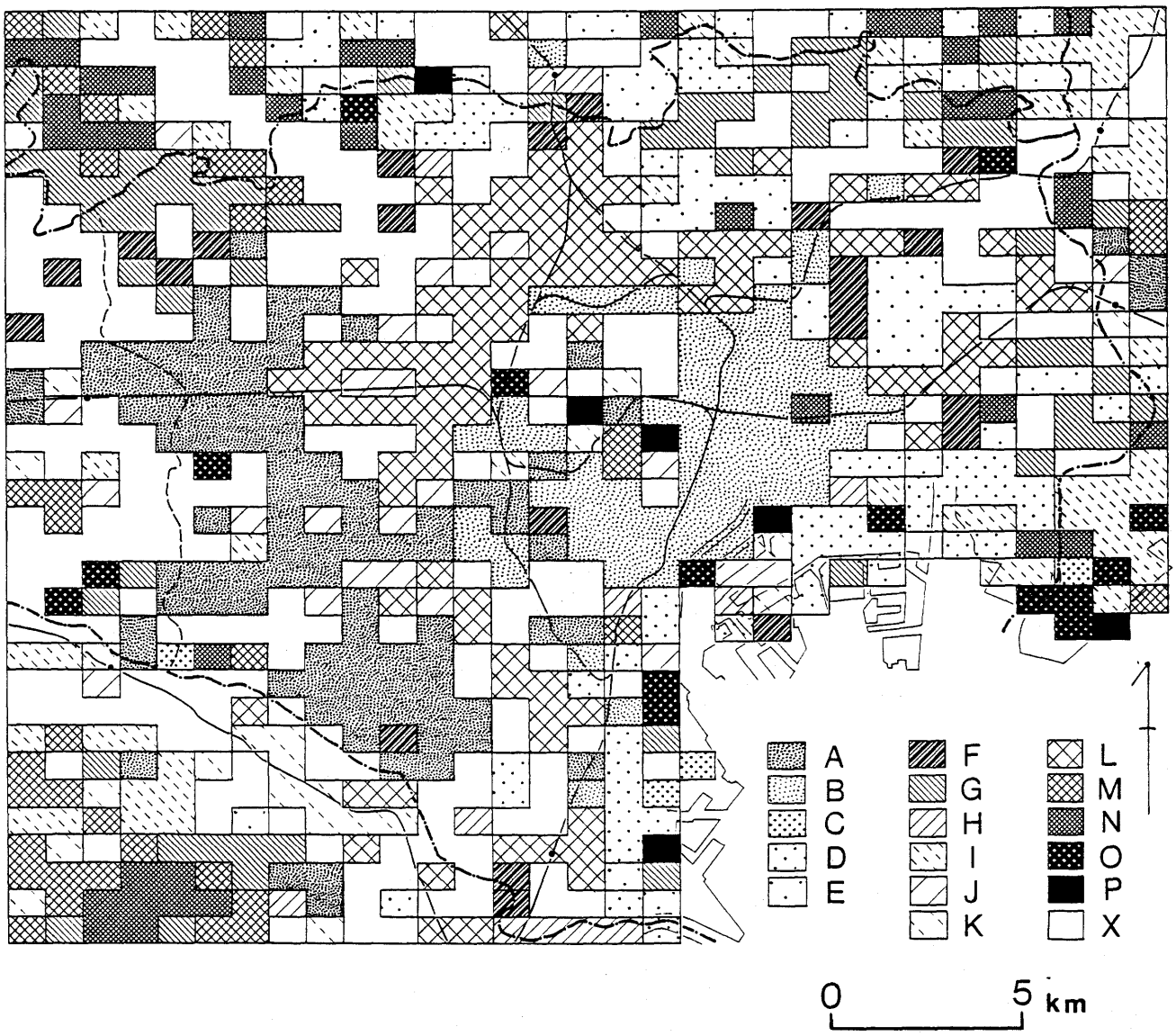


Figure 3 Distribution of the type of residents

Type for resident's occupation

- A Professional worker
- B Self-employed person in wholesale and retail
- C Construction industry worker
- D Transport and communication occupation worker
- E Craftsman

Type for resident's age

- F Old person
- G Couple in the forties and their children
- H Sararied man in the thirties
- I Couple in the thirties and their children
- J Person in the twenties
- K Male labor in the twenties

Type for resident's dwelling term and the form of household

- L Housewife moved in 15 years ago or before
- M Non family nuclei-household
- N Large household living there since their birth
- O Household moved in there within 1 year
- P Household bringing his residence and place of work together

- X District classified into "Others"

first factor. The districts that belong to this type are composed of 51 districts, and these are distributed from southern Kawaguchi city and Yashio city to Adachi-ku and Koto-ku. The distribution of these districts is not along railways, such as the Tohoku Main line, the Jyoban line, and the Sobu Main line, but along the Ala River and Naka River. The pattern of these districts is in contrast to the pattern of the districts of the type of 'Professional worker' which corresponds to areas along railways.

The type of 'Self-employed person in wholesale and retail' is characterized by a high positive score of the seventh factor. This type is composed of 68 districts, which are found mainly in Chuo-ku, Chiyoda-ku, and Taito-ku. The spatial pattern of these districts is limited by a zone 6-7 kilometers from the city center. These districts are widely distributed on the east and south sides of the Imperial Palace and spread along the Yamanote line on the north side of the Imperial Palace.

The type of 'Construction industry worker' shows a high negative score of the eighth factor. This type is composed of only four districts. They are found mainly in Urayasu town, Ota-ku, and Komae city. The author can not find a regularity in the spatial pattern of their districts.

The type of 'Transport and communication occupation worker', consisting of 46 districts, has a high positive score of the ninth factor. The spatial pattern of these districts is divided into two areas. The first is districts extending from Kawasaki city to Edogawa-ku along the Tokyo Bay, and these districts are

located near the Tokyo Bay Road (Route 357). The second occupies in the northern suburbs of Tokyo, such as Adachi-ku and Kawaguchi city, and these districts are located near truck terminals and the distributional estates. Both types are located at the gate of Tokyo and along the Tohoku Express Highway and Rout 17.

2) Types for residents' age

The type of 'Male labor in the twenties', which is composed of 24 districts, has a high positive score of the third factor. These districts are found in the following three areas. The first is the area of districts concentrated in Kawasaki city. The second is the periphery area, such as Ichikawa city and Matsudo city. The third is found mainly in Shinjyuku-ku.

The type of 'Person in the twenties', being composed of 21 districts, displays a high negative score of the sixth factor. Many districts that belong to this type are found in western suburbs, but the spatial arrangement does not have clear characteristics.

The type of 'Couple in the thirties and their children', which consists of 58 districts, shows a high negative score of the second factor. The districts of this type are distributed around the districts that belong to the type of 'Old person', especially from Kawasaki city and Misato city to Matsudo city, and from Ichikawa city to Urayasu town. In the eastern suburbs, these districts are found in an outside zone 10-20 kilometers

from Tokyo station, and in northwestern and southwestern suburbs, these are found in the outside, 20 kilometers from Tokyo station. The spatial arrangement of this type shows a circular pattern.

The type of 'Salaried man in the thirties' displays a high positive score of the sixth factor. Four districts of this type are situated in Kawasaki city and Ota-ku, and eight other districts are distributed in Minato-ku, Koto-ku, and Kawaguchi city.

The type of 'Couple in the forties and their children' is composed of 62 districts. Some districts of this type are concentrated on Nerima-ku and Adachi-ku, and other districts are found in Yokohama city and Edogawa-ku. These districts are located in the following area between railways and far from these railway stations. That is, the place between the Toyoko line and the Tokyu-Tama den-en-toshi line, the Seibu-Ikebukuro line and the Tobu-Tojo line, the Tobu-Isesaki line and the Jyoban line and the Sobu Main line and the Eidan subway Tozai line.

The type of 'Old person', which consists of 23 districts, shows the high positive score of the second factor. These districts are distributed from Nerima-ku to Itabashi-ku, and in Sumida-ku and Edogawa-ku. The spatial arrangement of this type shows a circular pattern centered on the Tokyo station.

3) Types for the characteristics of the time of the last move and the form of household

The type of 'Large household living there since their birth', which is composed of 41 districts, has a high positive

score of the fifth factor. These districts are distributed in Yokohama city, Niiza city, Matsudo city, and their surrounding areas. These districts are located placed far from railways and in outside areas 20 kilometers from the city center.

The type of 'Housewife moved in 15 years ago and before', being composed of 93 districts, shows a high positive score of the fourth factor. Some of these districts are concentrated in southern Itabashi-ku, and other districts are found mainly in Shinagawa-ku and Arakawa-ku. The spatial pattern of these districts shows a circular pattern in the surrounding Yamanote-line, especially along the Tobu-Tojo line and the Chuo Main line.

The type of 'Household moved in there within 1 year', consists of 15 districts, and displays a high negative score of the fifth factor. These districts are distributed in Urayasu town and along the Tokyo Bay area.

The type of 'Non family nuclei-household', which is composed of 34 districts, has a high negative score of the fourth factor. These districts are concentrated on Yokohama city, and are found mainly in Niiza city and Asaka city. There are a few districts of this type in northern and eastern suburbs, but in western suburbs, the spatial pattern of districts of this type is similar to the pattern of districts of the above-mentioned types of 'Couple in the thirties and their children' and 'Couple in the forties and their children'.

The type of 'Household bringing his residence and place of work close together' has a high positive score of the eighth factor. The type consists of only six districts, these are dis-

tributed along the Tokyo Bay area, such as Ota-ku, Chuo-ku, and Urayasu town, and in Chiyoda-ku and Shinjyuku-ku.

Lastly, the author attempts to sum up the spatial pattern of their types. First, the spatial pattern of each types for residents' occupation tends to show a cluster pattern. That is, the districts characterized by 'Professional worker' are concentrated in western areas, the districts of 'Craftsman' are in northeastern areas, the districts of 'Self-employed person in wholesale and retail' are in the surrounding area of the city center, and the districts of 'Transport and communication occupation worker' are along the Tokyo Bay area. Secondly, the districts for residents' age, the time of the last move and the form of household are grouped into three types. The first is the spatial pattern of the districts characterized by 'Housewife moved in 15 years ago and before' and 'Old person', which shows a circular pattern. The second is the districts of 'male labor in the twenties', 'person in the twenties', and 'Household moved in there within 1 year' are dispersed widely. The third is the districts of 'Couple in the thirties' and their children', 'Couple in the forties and their children', 'Non family nuclei-household' and 'Large household living there since their birth' are distributed in the surrounding area.

The spatial pattern of the above-mentioned types is summarized as follows. In the central parts, the districts of types characterized by occupation are clustered. In northeastern areas, the districts of the types characterized by resident's occupation and age are dominant, and in the northwes-

tern and southwestern suburbs, the districts of the types characterized by residents' age and the time of the last move are dominant.

CHAPTER III

RESIDENTIAL AREA TYPE AND RESIDENTIAL ENVIRONMENT

III-1 Establishment of residential area type

In chapter II the author established the type of residents based on their characteristics and clarified the distribution. In this chapter the author investigate the characteristics of the residential environment of each district and clarifies the characteristics of the residents and the residential environment.

First, the author collects the similar distributions of the established type of residents. By the way, it is possible to investigate the residential environment at each district, and to determine the combinations of residents and environment, but it is very difficult to classify all of such combinations into some typical groups, because of their diversity from one district to another. Therefore the author returns to the output of chapter II, and choose about 20 representative districts having especially high factor scores for each type of residents. After that the author collects the similar spatial distributions of such representative districts.

Here the author chooses the elements of the residential environment. According to the purpose of this study, it must be said that those elements are essential as the components of a residential area and are possessed of the characteristics well-

representing the image of the area.

In this study, the author chooses the following four kinds of elements representing the urban residential environment: (1)Accessibility to the city center, (2)Housing condition, (3) Economic condition, (location of industrial facilities and commercial facilities) (4)Topographical condition.

There is a complicated interdependence between the elements of a residential environment. But the author expect that characteristics of residential area can be divided into a few essential types. Sumida also pointed out such types in his definition of the residential area (Sumida,1969). In this study the author intends to clarify the relationships between residents and the residential environment with one regional unit. At this point it seems adequate to introduce the above mentioned elements. To be specific, for this investigation, the author introduces the next 93 elements in total (Table 5):

Elements of accessibility to the city center[8)]	2 elements
Elements of housing condition	25 elements
Elements of economic condition	
Industrial condition	26 elements
Commercial condition	39 elements
Elements of topographical condition[9)]	1 element

The author calculates from these data to ratio data as much as possible except four elements : Total number of industry establishments, total number of industry employees, total number of shops of wholesaling and retailing and total number of employees of wholesaling and retailing. Also the author uses the data of

Table 5 Element of residential environment(continued)

Element no.	Name of element	Unit
1	Distance from the city center	km
2	Time distance from the city center	minute
3	The ratio of ordinary household in detached houses	%
4	The ratio of ordinary households in apartments	%
5	The ratio of ordinary households in owned houses	%
6	The ratio of ordinary households in rented houses in owned by local government or pubic corporation	%
7	The ratio of ordinary households in owned privately	%
8	The ratio of ordinary households living in 1-2 dwelling rooms	%
9	The ratio of ordinary households living in 4-5 dwelling rooms	%
10	The ratio of ordinary households living in 7-8 dwelling rooms	%
11	The ratio of ordinary households living in 10 dwelling rooms or more	%
12	The ratio of ordinary household members living in 1-2 dwelling rooms	%
13	The ratio of ordinary household members living in 4-5 dwelling rooms	%
14	The ratio of ordinary household members living in 7-8 dwelling rooms	%
15	The ratio of ordinary household members living in 10 dwelling rooms or more	%
16	The ratio of ordinary households living in floor space under 12 jou of tatami units	%
17	The ratio of ordinary households living in floor space 24-35 jou of tatami units	%
18	The ratio of ordinary households living in floor space 48-59 jou of tatami units	%
19	The ratio of ordinary households living in floor space 60 jou of tatami units or more	%
20	The ratio of ordinary household members living in floor space under 12 jou of tatami units	%
21	The ratio of ordinary household members living in floor space 24-35 jou of tatami units	%
22	The ratio of ordinary household members living in floor space 48-59 jou of tatami units	%
23	The ratio of ordinary household members living in floor space over 60 jou of tatami unit or more	%
24	The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit	%
25	The ratio of ordinary households living in floor space in 4.5-5.9 jou per person of tatami unit	%

Table 5 Element of residential environment(continued)

Element no.	Name of element	Unit
26	The ratio of ordinary households living in floor space in 8.0-9.9 jou per person of tatami unit	%
27	The ratio of ordinary households living in floor space in 12 jou per person or more of tatami unit	%
28	Number of establishment	
29	Number of persons engaged in establishment	
30	The ratio of establishment of companies and capital size under 2 million yen	%
31	The ratio of establishment of companies with capital size 2-10 million yen	%
32	The ratio of establishment of companies with capital size under 100 million yen or more	%
33	The ratio of establishment with individual proprietorships	%
34	The ratio of establishment with 1-3 persons engaged	%
35	The ratio of establishment with 10-29 persons engaged	%
36	The ratio of establishment with 300 persons engaged or more	%
37	The ratio of establishment - food manufacturing	%
38	The ratio of establishment - manufacture of textile mill products	%
39	The ratio of establishment - manufacture of lumber and wood products	%
40	The ratio of establishment - manufacture of furniture and fixtures	%
41	The ratio of establishment - manufacture of pulp, paper and paper products	%
42	The ratio of establishment - manufacture of publishing, printing and allied industries	%
43	The ratio of establishment - manufacture of chemical and allied products	%
44	The ratio of establishment - manufacture of petroleum and coal products	%
45	The ratio of establishment - manufacture of rubber products	%
46	The ratio of establishment - leather tanning and manufacture of leather products and fur skins	%
47	The ratio of establishment - manufacture of ceramic, stone and clay products	%
48	The ratio of establishment - iron and steel	%
49	The ratio of establishment - manufacture of non-ferrous metals and products	%

Table 5 Element of residential environment(Continued)

Element no.	Name of element	Unit
50	The ratio of establishment - manufacture of fabricated metal products	%
51	The ratio of establishment - manufacture of electrical machinery, equipment and supplies	%
52	The ratio of establishment - manufacture of transportation equipment	%
53	The ratio of establishment - manufacture of precision instruments and machinery	%
54	Number of wholesale trade	
55	Number of persons engaged in wholesale trade	
56	Number of retail trade	
57	Number of persons engaged in retail trade	
58	The ratio of wholesale trade	
59	The ratio of retail trade with 1-4 persons engaged	%
60	The ratio of retail trade with 30-49 persons engaged	%
61	The ratio of retail trade with 50 persons engaged or more	%
62	The ratio of retail trade with proceeds of sales under 2 million yen	%
63	The ratio of retail trade with proceeds of sales 2-20 million yen	%
64	The ratio of retail trade with proceeds of sales 100 million yen or more	%
65	The ratio of retail trade with floor space in under 20 square meters	%
66	The ratio of retail trade with floor space in 50-500 square meters	%
67	The ratio of retail trade with floor space in 1500 square meters or more	%
68	The ratio of retail trade opened before 1944	%
69	The ratio of retail trade opened 1945-1964	%
70	The ratio of retail trade opened after 1976	%
71	The ratio of retail trade - shopping goods	%
72	The ratio of retail trade - department stores	%
73	The ratio of retail trade - dry goods, dress material and bedding stores	%
74	The ratio of retail trade - women's and children's clothing stores	%
75	The ratio of retail trade - footwear stores	%
76	The ratio of retail trade - beverage and seasoning stores	%
77	The ratio of retail trade - grocery stores	%
78	The ratio of retail trade - fresh fish stores	%
79	The ratio of retail trade - cured food stores	%
80	The ratio of retail trade - vegetable and fruit stores	%
81	The ratio of retail trade - confectionery and bakery stores	%

Table 5 Element of residential environment

Element no.	Name of element	Unit
82	The ratio of retail trade - rice, barley and other cereals stores	%
83	The ratio of retail trade - motor vehicle stores	%
84	The ratio of retail trade - bicycle stores	%
85	The ratio of retail trade - furniture, fixture, and straw-mat "tatami" stores	%
86	The ratio of retail trade - hard ware and kitchen ware "aramono" stores	%
87	The ratio of retail trade - chinaware and glassware stores	%
88	The ratio of retail trade - household appliance stores	%
89	The ratio of retail trade - drug and toiletry stores	%
90	The ratio of retail trade - fuel stores	%
91	The ratio of retail trade - book and stationery stores	%
92	The ratio of retail trade - secondhand stores	%
93	Topographical classification	

Note :

1 The ratio of ordinary household :
Number of households fall under each items divided by number of all households.

2 The ratio of ordinary household members :
Number of household members fall under each items divided by number of all household members.

3 The ratio of establishment :
Number of establishments fall under each items divided by number of all industrial establishment.

4 The ratio of wholesale trade :
Number of wholesale trade divided by the number of all stores.

5 The ratio of retail trade :
Number of retail trade divided by the number of all stores.

physiographic division about the topographic condition.

The author extracts the characteristic elements of residential environment. the author uses the number of each element of a residential environment at each residential area type. Precisely, the author calculates the mean value(x) and the standard deviation(q) of the whole study area. Next the author picks up the elements showing above (x + q). According to this procedures, the characteristic elements of a residential environment are extracted for each residential area type. Further, about the topographical condition, the physiographic division appears in large number of district at each type is picks up as the characteristic one.

1) Residential area types for residents' occupation

About the type of 'professional worker', as typical residential districts the author selects 26 districts indicating a +1.5 or over score of factor I in chapter II. Figure 4 shows the distribution of these districts. It presents a dispersed distribution mainly in the central part of the western suburbs. This distribution has no similarity to other types of residents. Therefore the author sets this distribution area to make one group. Then the author analyzes the characteristic elements of the residential environment in each district inhabited by such 'professional worker'(Table 6).

According to this analysis, the most representative elements are the elements of the housing condition. Additionally there are

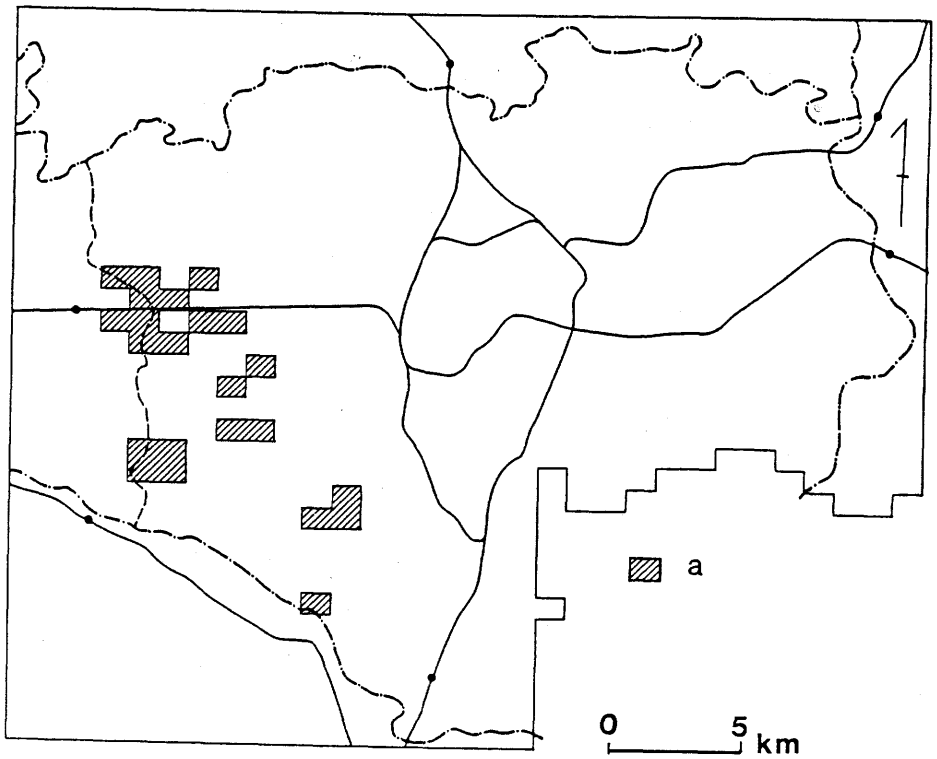


Figure 4 Typical residential districts in "Western Uptown type"

a Typical residential districts of 'Professional worker'

Table 6 Characteristics elements in residential districts of 'Professional worker'

Element no.	Name of element	Number of districts specialized in each element	
10,14	The ratio of ordinary households or household members living in 7-8 dwelling rooms	17	
11,15	The ratio of ordinary households or household members living in 10 dwelling rooms or more	12	
18,22	The ratio of ordinary households or household members living in floor space 48-59 jou of tatami units	20	
19,23	The ratio of ordinary households or household members living in floor space 60 jou of tatami units or more	13	*
27	The ratio of ordinary households living in floor space in 12 jou per person or more of tatami unit	19	*
30	The ratio of establishment of companies and capital size under 2 million yen	8	
31	The ratio of establishment of companies with capital size 2-10 million yen	8	
40	The ratio of establishment - manufacture of furniture and fixtures	7	
53	The ratio of establishment - manufacture of precision instruments and machinery	7	
74	The ratio of retail trade - women's and children's clothing stores	7	
80	The ratio of retail trade - vegetable and fruit stores	8	*
	Loam plateau	23	*

Note :

* : Characteristics elements in districts belong to "Western Uptown type".

Districts specialized :

District with value over one standard deviation.

the other elements of industrial, commercial, and topographical conditions. The elements of the housing condition indicate a large-scale house with many rooms. And about the topographical condition shows a loam surface plateau as the characteristic one.

Based on the distribution area, the type of residents and residential environment are summarized and named the "Western Uptown type" residential area. Table 7 summarizes these residents and residential environment of the "Western Uptown type". In short, the "Western Uptown type" is characterized by the location of the following three constructions on the loam surface plateau: large-scale houses, small-scale companies, and shop selling daily necessities.

About the type of 'craftsman', as typical residential districts, the author selects 21 districts indicating a -1.4 and below score of factor I. Also for the type of 'old person', the author selects 23 districts indicating a +1.0 or over score of factor II. Figure 5 shows the distributions of both districts making a group in the northeastern suburbs. The distributions of 'craftsman' and 'old person' are very similar at the sector. Therefore it seems that both districts compose one regional unit under the same residential environment[10]. First, the author analyzes the characteristic elements of the residential environment in the districts inhabited by 'craftsman'(Table 8) and 'old person'(Table 9).

According to this analysis, for 'craftsman', the first representative element is the element of the industrial condition, and the second is the element of the housing condition. The in-

Table 7 Residents and residential environments of "Western Uptown type"

Residents	Elements of residential environment
Professional worker	The ratio of ordinary households or household members living in floor space 60 jou of tatami units or more The ratio of ordinary households living in floor space in 12 jou per person or more of tatami unit The ratio of establishment of companies with capital size 2-10 million yen The ratio of retail trade - vegetable and fruit stores Loam plateau

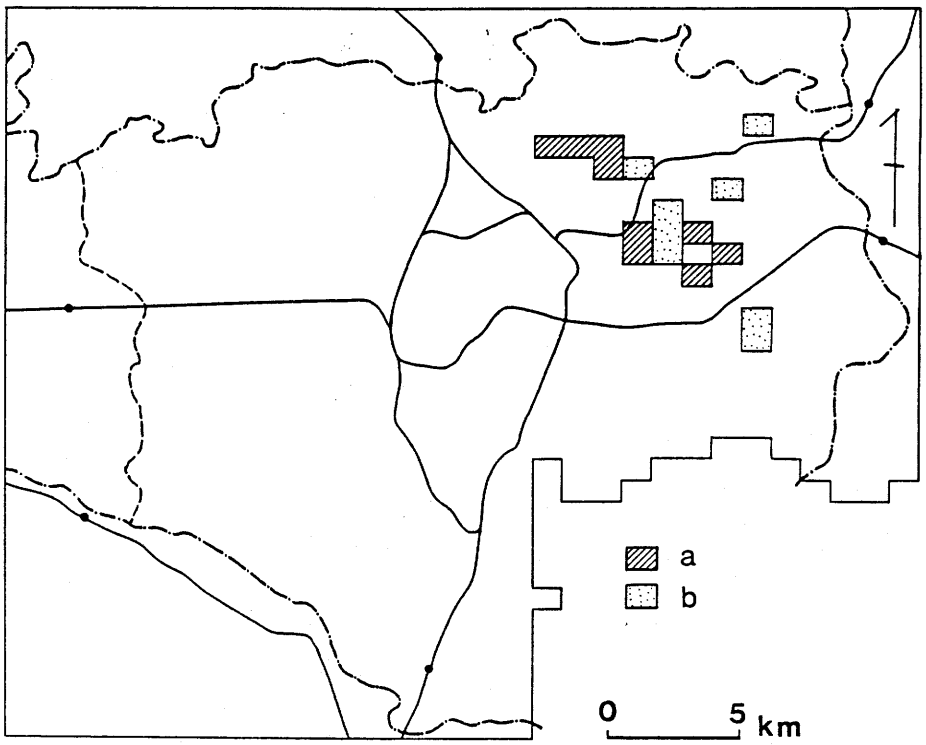


Figure 5 Typical residential districts in "Bokuto type"

a Typical residential districts of 'Craftsman'

b Typical residential districts of 'Old person'

Table 8 Characteristic elements in residential districts of 'Craftsman'

Element no.	Name of element	Number of districts specialized in each element	
3	The ratio of ordinary household in detached houses	7	
6	The ratio of ordinary households in rented houses owned by local government or pubic corporation	6	
11,15	The ratio of ordinary household or household members living in 10 dwelling rooms or more	6	
24	The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit	19	*
28	Number of establishment	13	*
34	The ratio of establishment with 1-3 persons engaged	13	*
45	The ratio of establishment - manufacture of rubber products	11	*
46	The ratio of establishment - leather tanning and manufacture of leather products and fur skins	9	
50	The ratio of establishment - manufacture of fabricated metal products	7	
62	The ratio of retail trade with proceeds of sales under 2 million yen	10	*
84	The ratio of retail trade - bicycle stores	6	
	delta	15	*

Note :

* : Characteristic elements in districts belong to "Bokuto type".

Districts specialized :

District with value over one standard deviation.

Table 9 Characteristic elements in residential districts of 'Old person'

Element no.	Name of elements	Number of districts specialized in each element	
33	The ratio of establishment with individual proprietorships	7	*
38	The ratio of establishment - manufacture of textile mill products	7	*
46	The ratio of establishment - leather tanning and manufacture of leather products and fur skins	6	*
62	The ratio of retail trade with proceeds of sales under 2 million yen	6	
69	The ratio of retail trade opened 1945-1964	6	
75	The ratio of retail trade - footwear stores	6	*
	Loam plateau	10	
	Delta	9	*

Note :

* : Characteristic elements in districts belong to "Bokuto type".

Districts specialized :

District with value over one standard deviation.

dustrial condition indicates a private small establishment of leather products. Also the topographical condition indicates the delta as the characteristic one. The elements of the residential environment deeply related to the districts inhabited by 'old person' are the industrial, commercial, and topographic conditions. The former two conditions are characterized by a establishment with individual proprietorships for the industrial condition and small-scale sales for the commercial one. Also the topographical condition corresponds to a delta. The industrial condition is representative in the elements of residential environment closely related to the two types of resident. Especially an establishment with individual proprietorships and the manufacture of rubber or leather products are common to these districts. In those districts, the specific element is not for industrial condition but for the housing condition.

The type of resident and residential environment, mentioned above, are summarized and named the "Bokuto type" of residential area. Table 10 summarizes these residents and the residential environments of the "Bokuto type". In short, the "Bokuto type" is characterized by the industrial condition such as manufacturing and selling the leather products on a delta.

About the type of 'Self-employed person in wholesale and retail', as typical residential districts, the author selects 30 districts indicating a +2.0 or over score of factor VII. The distribution of these districts has no similarity to the residents' distribution of the other characteristics. Based on the difference of characteristic elements of the residential environ-

Table 10 Residents and residential environments of "Bokuto type"

Residents	Elements of residential environment
Craftsman	The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit
	Number of establishment
	The ratio of establishment with individual proprietorships
	The ratio of establishment - manufacture of textile mill products
	The ratio of establishment - manufacture of rubber products
	The ratio of establishment - leather tanning and manufacture of leather products and fur skins
	The ratio of retail trade with proceeds of sales under 2 million yen
	The ratio of retail trade - footwear stores
	Delta

ment, the author separates the type on the northeast side and the type on the southwest side of the city center[11]. Figure 6 shows the distribution of those districts. The author analyzes the characteristic elements of the residential environment in the districts inhabited by 'Self-employed person in wholesale and retail'(Table 11).

According to the analysis, the most representative element is the one of the commercial condition. Additionally there are the other elements of housing, industrial, and topographical conditions. Among them, the elements characterized at the northeast side of the city center are a shop opened before World War II and a clothes shop. In terms of topographical condition, the characteristic element is the delta. And the establishment of publishing becomes a characteristic element at the southwest side of the city center. Commonly, those elements such as the wholesaling and retailing shop, retail trade with shopping goods and the large-scale house characterized these types..

Therefore, the types of residents and the residential environment at the northeast side and the southwest side are summarized and named the "Northeastern Midtown type" and the "Southwestern Midtown type" residential area respectively. Table 12 and Table 13 summarize these two types. In short, the "Northeastern Midtown type" is characterized by the location of wholesaling and retailing, including the shop opened before World War II and a clothes shop on a delta. Also the "Southwestern Midtown type" is characterized by the location of wholesaling and retailing and industrial publishing estab-

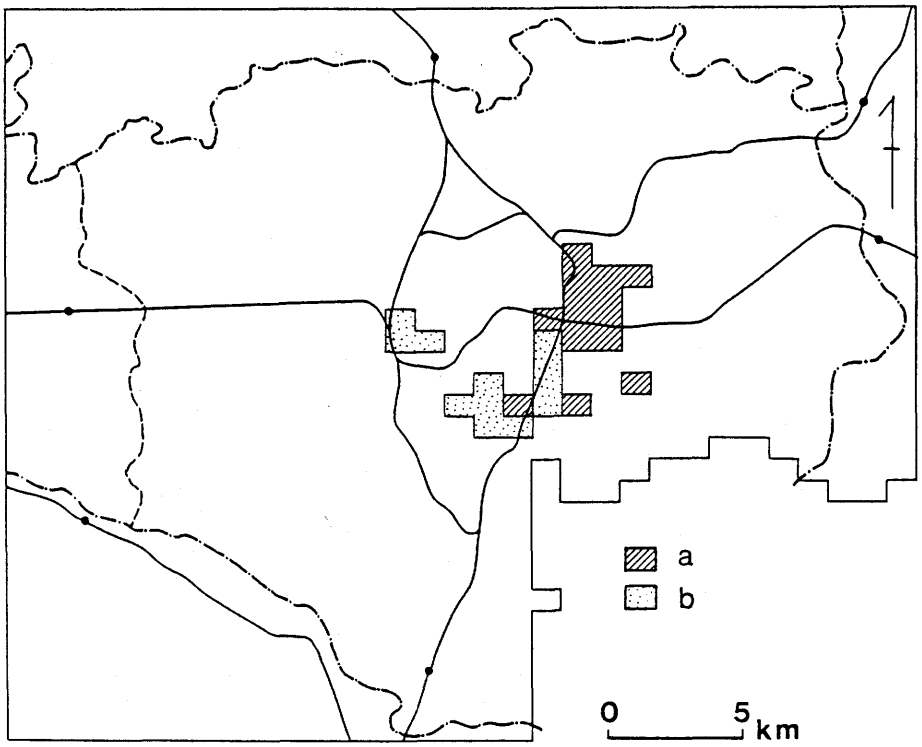


Figure 6 Typical residential districts in "Northeastern Midtown type" and "Southwestern Midtown type"

a Typical residential districts of 'Self-employed person in wholesale and retail' in "Northeastern Midtown type"

b Typical residential districts of 'Self-employed person in wholesale and retail' in "Southwestern Midtown type"

Table 11 Characteristic elements in residential districts of 'Self-employed person in wholesale and retail'

Element no.	Name of element	Number of districts specialized in each element	
5	The ratio of ordinary households in owned houses	11	
11,15	The ratio of ordinary household or household members living in 10 dwelling rooms or more	14	
19,23	The ratio of ordinary household and household members living in floor space 60 jou of tatami units or more	14	*
27	The ratio of ordinary households living in floor space in 12 jou per person or more of tatami unit	15	+
28	Number of establishment	10	
29	Number of persons engaged in establishment	13	*
42	The ratio of establishment - manufacture of publishing, printing and allied industries	22	+
54	Number of wholesale trade	22	*+
55	Number of persons engaged in wholesale trade	19	
56	Number of retail trade	20	*+
57	Number of persons engaged in retail trade	12	
64	The ratio of retail trade with proceeds of sales 100 million yen or more	9	
68	The ratio of retail trade opened before 1944	19	*
71	The ratio of retail trade - shopping goods	17	*+
73	The ratio of retail trade - dry goods, dress material and bedding stores	9	*
75	The ratio of retail trade - footwear stores	8	
	Delta	10	*
	Loam plateau	7	

Note :

* : Characteristic elements in districts belong to "Northeastern Midtown type".

\+ : Characteristic elements in districts belong to "Southwestern Midtown type".

Districts specialized :

District with value over one standard deviation.

Table 12 Residents and residential environments of "Northeastern Midtown type"

Residents	Elements of residential environment
Self-employed person in wholesale and retail	The ratio of ordinary household and household members living in floor space 60 jou of tatami units or more
	Number of establishment
	Number of wholesale trade
	Number of retail trade
	The ratio of retail trade opened before 1944
	The ratio of retail trade - shopping goods
	The ratio of retail trade - dry goods, dress material and bedding stores
	Delta

Table 13 Residents and residential environments of "Southwestern Midtown type"

Residents	Elements of residential environment
Self-employed person in wholesale and retail	The ratio of ordinary household and household members living in floor space in 12 jou per person or more of tatami unit The ratio of establishment - manufacture of publishing, printing and allied industries Number of wholesale trade Number of retail trade The ratio of retail trade - shopping goods

lishment.

About the resident of 'Transport and communication occupation worker', as typical residential districts, the author selects 22 districts indicating a +1.7 or over score of factor IV. Also, for the resident of 'Couple in the thirties and their children', the author selects 21 districts indicating a -1.8 and below score of factor II. Moreover, for the resident of 'Household moved in there within 1 year', the author selects 15 districts indicating a -1.0 and below score of factor V. Figure 7 shows that three types of residents distributed intensively in the Tokyo Bay area. At the Tokyo Bay area in the eastern suburbs, the distributions of these types are very similar to each other. Therefore the author recognizes that all of these districts compose one regional unit under the same residential environment[12]. Therefore the author analyzes the characteristic elements of the residential environment in the districts inhabited by 'Transport and communication occupation worker'(Table 14), 'Couple in the thirties and their children'(Table 15), and 'Household moved in there within 1 year'(Table 16).

According to the analysis, for 'Transport and communication occupation worker' the characteristic elements of the residential environment are those of the housing and industrial conditions. The housing condition corresponds to the a small-scale house, a rented house owned by the local government or public corporation and an apartment house. The topographical condition is characterized by a reclaimed land. And, for 'Couple in the thirties and their children', the most representative element is the one of

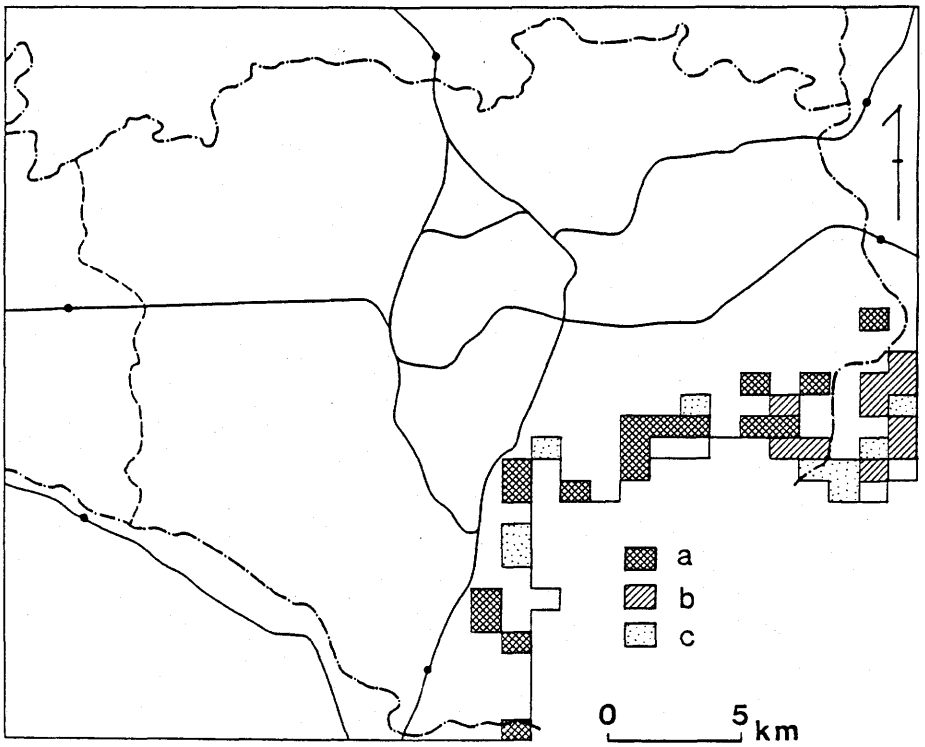


Figure 7 Typical residential districts in "Bayshore type"

a Typical residential districts of 'Transport and communication occupation worker'
b Typical residential districts of 'Couple in the thirties and their children'
c Typical residential districts of 'Household moved in there within 1 year'

Table 14 Characteristic elements in residential districts of 'Transport and communication occupation worker'

Element no.	Name of element	Number of districts specialized in each element
4	The ratio of ordinary households in apartments	8 *
6	The ratio of ordinary households in rented house owned by local government or pubic corporation	6 *
25	The ratio of ordinary households living in floor space in 4.5-5.9 jou per person of tatami unit	6
32	The ratio of establishment of companies with capital size under 100 million yen or more	6
35	The ratio of establishment with 10-29 persons engaged	9 *
37	The ratio of establishment - food manufacturing	6
	Reclaimed land	12 *

Note :
* : Characteristic elements in districts belong to "Bayshore type".
Districts specialized :
District with value over one standard deviation.

Table 15 Characteristic elements in residential districts of 'Couple in the thirties and their children'

Element no.	Name of element	Number of districts specialized in each element	
4	The ratio of ordinary households in apartments	8	*
6	The ratio of ordinary households in rented houses owned by local government or pubic corporation	7	
9,13	The ratio of ordinary household and household members living in 4-5 dwelling rooms	12	*
17,21	The ratio of ordinary household and household members living in floor space 24-35 jou of tatami units	7	
25	The ratio of ordinary households living in floor space in 4.5-5.9 jou per person of tatami unit	7	
26	The ratio of ordinary households living in floor space in 8.0-9.9 jou per person of tatami unit	7	*
31	The ratio of establishment of companies with capital size 2-10 million yen	7	
35	The ratio of establishment with 10-29 persons engaged	9	
50	The ratio of establishment - manufacture of fabricated metal products	8	*
66	The ratio of retail trade with floor space in 50-500 square meters	9	
70	The ratio of retail trade opened after 1976	16	*
73	The ratio of retail trade - dry goods, dress material and bedding stores	6	
88	The ratio of retail trade - household appliance stores	6	
	Delta	12	*

Note :

* : Characteristic elements in districts belong to "Bayshore type".

Districts specialized :

District with value over one standard deviation.

Table 16 Characteristic elements in residential districts of 'Household moved in there within 1 year'

Element no.	Name of element	Number of districts specialized in each element	
4	The ratio of ordinary households in apartments	7	
6	The ratio of ordinary households in rented houses owned by local government or pubic corporation	7	
9,13	The ratio of ordinary household and household members living in 4-5 dwelling rooms	11	*
17,21	The ratio of ordinary household and household members living in floor space 24-35 jou of tatami units	8	
26	The ratio of ordinary households living in floor space in 8.0-9.9 jou per person of tatami unit	5	*
64	The ratio of retail trade with proceeds of sales 100 million yen or more	5	
70	The ratio of retail trade opened after 1976	5	
	Delta	6	*

Note :

* : Characteristic elements in districts belong to "Bayshore type".

Districts specialized :

District with value over one standard deviation.

the housing condition, and there are the other elements of the industrial, commercial, and topographical conditions. The housing condition represents a small or middle-scale house, a rented house owned by the local government, or public corporation and apartment houses. The commercial condition corresponds to a recently opened retailing shop. And the topographical condition is characterized by a delta. Furthermore, for 'Household moved in there within 1 year', the most representative element is the one of the housing condition, and there are other elements of the commercial and topographical conditions. The housing condition represents a small or middle-scale house such as rented house owned by the local government or public corporation and apartment houses. The element of a rented house owned by the public sector and an apartment house are common to those three types of residents. Between these two types, the scale of the dwelling room is similar to each other. In those districts located in the Tokyo Bay area, the characteristic residential environment is the housing condition, especially, houses owned by the public sector and apartment houses, relatively low-priced and constructed on the reclaimed land.

The group of residents and the residential environment are summarized and named the "Bayshore type" residential area. Table 17 summarizes these residents and the residential environment of the "Bayshore type". In short, the "Bayshore type" is characterized by a small or middle-scale rented house or apartments on reclaimed land or a delta, owned privately by the public sector.

Table 17 Residents and residential environments of "Bayshore type"

Residents	Elements of residential environment
Transport and communication occupation worker Couple in the thirties and their children Household moved in there within 1 year	The ratio of ordinary households in apartments The ratio of ordinary households in owned by local government or pubic corporation The ratio of ordinary household and household members living in 4-5 dwelling rooms The ratio of ordinary households living in floor space in 8.0-9.9 jou per person of tatami unit The ratio of establishment with 10-29 persons engaged The ratio of establishment - manufacture of fabricated metal products The ratio of retail trade opened after 1976 Loam plateau reclaimed land

2) Residential area types for residents' age and dwelling term

About the resident of 'Person in the twenties', as typical residential districts, the author selects 21 districts indicating a -1.0 and below score of factor VI. Also, for the resident of 'Housewife moved in 15 years ago and before', the author selects 24 districts indicating a +1.4 or over score of factor IV. Figure 8 shows that these two types of residents distributed intensively in the western suburbs. They are very similar in terms of a belt-shaped distribution from the western suburbs to the northwestern suburbs. Therefore the author recognizes that both districts compose one regional unit under the specific residential environment[13]. The author analyzes the characteristic elements of the residential environment in the districts inhabited by 'Person in the twenties'(Table 18) and 'Housewife moved in 15 years ago and before'(Table 19).

According to the analysis, the most representative element of the residential environment deeply related with the district inhabited by 'Person in the twenties', is the one of the housing condition. Additionally the other element of them is the one of topographical condition. The housing condition corresponds to a small-scale rented house that is privately owned. The topographical condition is characterized by a loam surface plateau. Also, for 'Housewife moved in 15 years ago and before', there are those of the housing, commercial, and topographical conditions. The housing condition is exactly the same case as for 'Person in twenties'. In addition to this, there are some elements for

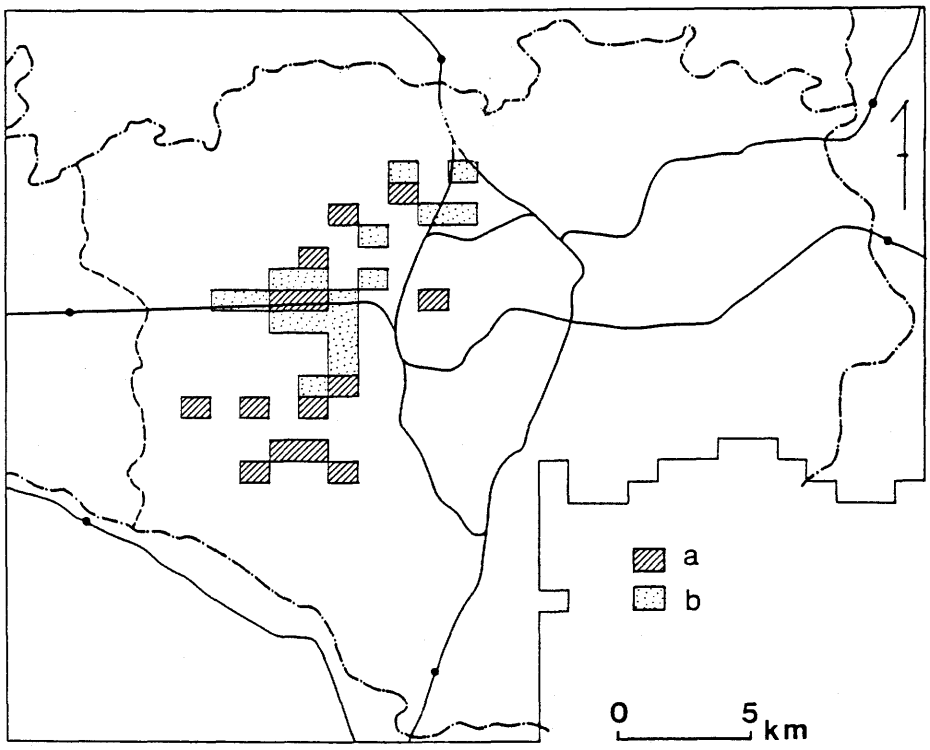


Figure 8 Typical residential districts in "Eastern Uptown type"

a Typical residential districts of 'Person in the twenties'

b Typical residential districts of 'Housewife moved in 15 years ago or before'

Table 18 Characteristic elements in residential districts of 'Person in the twenties'

Element no.	Name of element	Number of districts specialized in each element
7	The ratio of ordinary households in owned privately	10 *
8,12	The ratio of ordinary household or household members living in 1-2 dwelling rooms	13 *
16,20	The ratio of ordinary household or household members living in floor space under 12 jou of tatami units	14 *
30	The ratio of establishment of companies and capital size under 2 million yen	7
71	The ratio of retail trade - shopping goods	8
	Loam plateau	18 *

Note :

* : Characteristic elements in districts belong to "Eastern Uptown type".

Districts specialized :

District with value over one standard deviation.

Table 19 Characteristic elements in residential districts of 'Housewife moved in 15 years ago or before'

Element no.	Name of element	Number of districts specialized in each element
7	The ratio of ordinary households in owned privately	22 *
8,12	The ratio of ordinary household or household members living in 1-2 dwelling rooms	22 *
16,20	The ratio of ordinary household or household members living in floor space under 12 jou of tatami units	23 *
56	Number of retail trade	18 *
75	The ratio of retail trade - footwear stores	6
	Loam plateau	19 *

Note :

* : Characteristic elements in districts belong to "Eastern Uptown type".

Districts specialized :

District with value over one standard deviation.

retailing. The topographical condition is characterized by a loam surface plateau. In comprising among the above mentioned elements, the small-scale rented house that is privately owned is common to these elements.

The type of residents and the residential environment are summarized and named the "Eastern Uptown type" residential area. Table 20 summarizes these residents and the residential environment of this type. In short, the "Eastern Uptown type" is characterized by the location of a small-scale rented house that is privately owned, located on a loam surface plateau.

About the type of 'Couple in the forties and their children', as typical residential districts, the author selects 23 districts indicating a -1.7 and below score of factor III. Also, for the type of 'Large household living there since their birth', the author selects 20 districts indicating a +2.0 or over score of factor V. Furthermore, for the type of 'Non family nuclei-household', the author selects 23 districts indicating a -1.4 and below score of factor IV. Figure 9 shows that these three types of districts distributed intensively in the western suburbs. Their distributions form a massive cluster in the edge part of the northwestern suburbs. And, in the Tama hill area of the southwestern suburbs, the latter two kinds exhibit the massive distribution similarly. These distributions of residents are spatially so similar that the author recognize them compose one regional unit under the specific residential environment[14]. The author analyzes the characteristic elements of the residential environment in the districts inhabited by 'Couple in the forties

Table 20 Residents and residential environments of "Eastern Uptown type"

Residents	Elements of residential environment
Person in the twenties	The ratio of ordinary households in owned privately
Housewife moved in 15 years ago or before	The ratio of ordinary household or household members living in 1-2 dwelling rooms
	The ratio of ordinary household or household members living in floor space under 12 jou of tatami units
	Number of retail trade
	Loam plateau

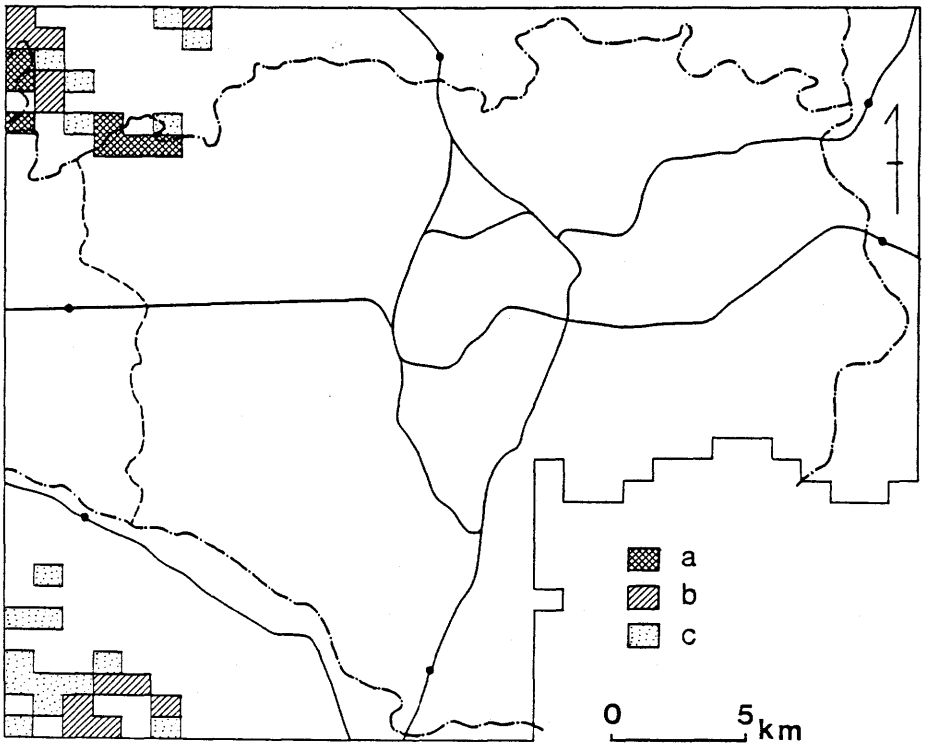


Figure 9 Typical residential districts in "Northwestern suburbs type" and "Tama Hill type"

a Typical residential districts of 'Couple in the forties and their children'

b Typical residential districts of 'Large household living there since their birth'

c Typical residential districts of 'Non family nuclei-household'

and their children'(Table 21), 'Large household living there since their birth'(Table 22) and 'Non family nuclei-household'(Table 23).

According to the analysis, for 'Couple in the forties and their children', the most representative element is the one of the housing condition. Additionally there are other elements of accessibility to the city center, the industrial condition, and topographical condition. The housing condition represents a small-scale rented house owned by the public sector. Also, the topographical condition is characterized by a loam surface plateau. For the type of 'Large household living there since their birth', the most representative element is the one of housing condition. Additionally there is another element of accessibility to the city center. The housing condition corresponds to a middle or large-scale house. And, for the type of 'Non family nuclei-household', the most representative element is the one of the housing condition. Moreover there are the other elements of accessibility to the city center, the commercial condition, and the topographical one. The housing condition corresponds to a small or large-scale house. Also the topographical condition is characterized by a hill with a gentle rise and fall. In the elements of the residential environment closely related to those three types of residents, the latter two residents have many common elements, for example, accessibility to the city center, detached house, owned house and the scale of dwelling room. In the northwestern suburbs and in the Tama hill area, it seems that a middle-scale house of private ownership becomes the charac-

Table 21 Characteristic elements in residential districts of 'Couple in the forties and their children'

Element no.	Name of element	Number of districts specialized in each element	
1	Distance from the city center	10	
2	Time distance from the city center	13	*
6	The ratio of ordinary households in rented houses owned by local government or pubic corporation	15	
9,13	The ratio of ordinary household or household members living in 4-5 dwelling rooms	8	*
25	The ratio of ordinary households living in floor space in 4.5-5.9 jou per person of tatami unit	11	
33	The ratio of establishment with individual proprietorships	11	
77	The ratio of retail trade - grocery stores	9	
78	The ratio of retail trade - fresh fish stores	11	*
	Loam plateau	11	*

Note :

* : Characteristic elements in districts belong to "Northwestern suburbs type".

Districts specialized :

District with value over one standard deviation.

Table 22 Characteristic elements in residential districts of 'Large household living there since their birth'

Element no.	Name of element	Number of districts specialized in each element	
1	Distance from the city center	13	
2	Time distance from the city center	17	*+
3	The ratio of ordinary household in detached houses	17	*+
5	The ratio of ordinary households in owned houses	13	*+
10,14	The ratio of ordinary household household members living in 7-8 dwelling rooms	13	
11,15	The ratio of ordinary household household members living in 10 dwelling rooms or more	11	*+
18,22	The ratio of ordinary household household members living in floor space 48-59 jou of tatami units	13	
19,23	The ratio of ordinary household household members living in floor space 60 jou of tatami units or more	13	*
24	The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit	6	
49	The ratio of establishment - manufacture of non-ferrous metals and products	6	
50	The ratio of establishment - manufacture of fabricated metal products	6	
76	The ratio of retail trade - beverage and seasoning stores	8	
90	The ratio of retail trade - fuel stores	8	*
	Loam plateau	8	
	Delta	6	

Note :

* : Characteristic elements in districts belong to "Northwestern suburbs type".

\+ : Characteristic elements in districts belong to "Tama Hill type".

Districts specialized :
District with value over one standard deviation.

Table 23 Characteristic elements in residential districts of 'Non family nuclei household'

Element no.	Name of element	Number of districts specialized in each element	
1	Distance from the city center	17	
2	Time distance from the city center	17	**
3	The ratio of ordinary household in detached houses	14	
5	The ratio of ordinary households in owned houses	15	+
9,13	The ratio of ordinary household or household members living in 4-5 dwelling rooms	9	*
10,14	The ratio of ordinary household or household members living in 7-8 dwelling rooms	12	+
17,21	The ratio of ordinary household or household members living in floor space 24-35 jou of tatami units	8	
18,22	The ratio of ordinary household or household members living in floor space 48-59 jou of tatami units	13	
19,23	The ratio of ordinary household household members living in floor space 60 jou of tatami units or more	7	+
26	The ratio of ordinary households living in floor space in 8.0-9.9 jou per person of tatami unit	8	
27	The ratio of ordinary households living in floor space in 12 jou per person or more of tatami unit	10	
70	The ratio of retail trade opened after 1976	10	+
76	The ratio of retail trade - beverage and seasoning stores	7	
88	The ratio of retail trade - household appliance stores	6	
89	The ratio of retail trade - drug and toiletry stores	6	
	Loam plateau	9	
	Delta	9	

Note :

* : Characteristic elements in districts belong to "Northwestern suburbs type".

\+ : Characteristic elements in districts belong to "Tama Hill type".

Districts specialized :
District with value over one standard deviation.

teristic residential environments, and one regional unit is formed for this element.

The type of residents and the residential environment in the northwestern suburbs are summarized and named the "Northwestern suburbs type" residential area, and the type of residents and the residential environment in the Tama hill area in the southwestern suburbs are summarized and named the "Tama Hill type" residential area. These residents and the residential environment are summarized on Table 24 and Table 25, respectively.

III-2 Distribution of residential area types

In the former paragraph the author combined residents with the characteristic residential environment, employing eight residential area types. After all, Each of the following eleven types of residents were contained within any one of those residential area types, i.e. 'Professional worker', 'Craftsman', 'Transport and communication occupation worker', 'Person in the twenties', 'Couple in the thirties and their children', 'Couple in the forties and their children', 'Old person', 'Large household living there since their birth', 'Housewife moved in 15 years ago and before', 'Household moved in there 1 year' and 'Non family nuclei-household'. But, for 'Male labor in the twenties', 'Salaried man in the thirties', 'Household bringing his residence and place of work close together' and 'Construction industry worker', the author excluded those from the residential area type because of the absence of a distributed cluster and characteris-

Table 24 Residents and residential environments of "Northwestern suburbs type"

Residents	Elements of residential environment
Couple in the forties and their children	Distance from the city center
	The ratio of ordinary household in detached houses
Large household living there since their birth	The ratio of ordinary households in owned houses
	The ratio of ordinary household or household members living in 4-5 dwelling rooms
Non family nuclei household	The ratio of ordinary household or household members living in 10 dwelling rooms or more
	The ratio of retail trade - fresh fish stores
	The ratio of retail trade - fuel stores
	Loam plateau

Table 25 Residents and residential environments of "Tama Hill type"

Residents	Elements of residential environment
Large household living there since their birth	Distance from the city center
	The ratio of ordinary household in detached houses
Non family nuclei household	The ratio of ordinary households in owned houses
	The ratio of ordinary household or household members living in 7-8 dwelling rooms
	The ratio of ordinary household or household members living in 10 dwelling rooms or more
	The ratio of retail trade opened after 1976
	Hill with gentle rise and fall

tic elements of the residential environment.

In the established residential area types, "Western Uptown type", "Northeastern Midtown type", and "Southwestern Midtown type" are characterized only by the residents' occupation. Other types are characterized by residents' occupation and age or residents' age and dwelling term. Economic and housing conditions are common to each types of residents as the characteristic residential environment. The residents' occupation corresponds to the residential environment with commercial and industrial conditions in the city center. Also, for the residents' age and the dwelling term, housing condition is remarkable.

In terms of the two types adjacent to the city center, the typical residential environment corresponds to commercial condition in the economic ones. Similarly industrial condition does in the types of the eastern area. Also housing condition is the typical condition in the areas of Tokyo Bay and the western suburbs. About the housing condition, there are regional differentiation. For example, middle-scale apartment house is related to the Tokyo Bay area, also, rented house owned by local government and public corporation, large-scale house to the western suburbs, small-scale rented house owned privately to the northern part of the western suburbs, houses with various scales to the northwestern suburbs and detached and owned house to the Tama hill area. The difference of these housing conditions causes the different clusters of residents and the characteristic residential areas. Additionally topographical condition becomes the characteristic residential environment in many areas; delta for three residen-

tial area types located in eastern side of the city center and the eastern suburbs, and loam surface plateau for four types in the western area and suburbs, are characteristic and important residential environment dividing the study area into two parts.

CHAPTER IV

RESIDENTIAL AREA IMAGE AND DISTRIBUTION PATTERNS

IV-1 Residential area type and residential area image

In chapter III, the characteristics of residents and of residential environments by residential area type were clarified. It is observed that in the area covered by this study,there mosaically lines up small districts which are comprised by combining the particular residents and residential environments.

In this chapter,the relationship between the previously clarified residential area type and the residential area image is examined. Originally,"image" is a terminology which was used in the traditional field of psychology, and defined, as "a sensed stimulus or the complex thereof" (Downs and Stea,1973). as pointed out by Lynch (1960), however apart from this original meaning, all senses which meaning, all senses by which we think of a particular place or environment is now treated as "image" in the academic fields which deal with spatial distribution and especially the field of geography. The image dealt with in this chapter is that for geographic space, or the various mental contents by which individuals regard residential space. In this sense it falls under the "Image of space" according to the classification of images by Boulding(1956).

The characteristics of the residents and these of the ele-

ments of the residential environment clarified up to the last chapter, is considered to affect the image of the residential area. As clarified, however, in the case where men recognize the residential environment, it is known that there is a side on which the abstract, all-out environment is recognize apart from determining such a concrete environment. In other words, not only the particular characteristics, but also sides such as the entire panorama realized by their mutual relationship and the sketch of the place appearing in a novel as stated by Uchida (1987). Then, it will be necessary, upon connecting the residential district image to the particular element, to take into account the landscape and the locality built up around that element.

An image is somewhat like vague, and, upon connecting it to the particular element of a residential environment, a clue to determining which element people set their eyes to is necessary. Lynch (1960) stated that the content of the image of this city was attributable to five physical modes of path, edge, district, node and landmark. He said that these five recollected the image (Carter 1977). If such a clue can also be utilized to formulate a district image within a city, it would be possible to clarify the more accurate relationship between them. In this study, materials for the keywords, together with those for the image are obtained. However,many of the keywords mention the phenomenon characteristic to the respective towns[15] and we find several cases where such phenomenon are directly connected with the images. Therefore, this study intends to connect the characteristics of residents and residential environments to the images of residential

area.

Here, firstly, several towns falling under the residential area types obtained up to the last chapter, shall be listed. The relationship between the residents and residential environment and the residential area images will be examined, and the elements conceived to be connected with the image formulation, which shall be called the "image formulating elements", shall be indicated.[16]

As the material for the image, four materials of the survey result of "town images and keywords heard from 100 young ladies" on the 55 towns appeared on a publication by the Sumaino Toshokan Shuppan Kyoku(1988),[17] the survey result of "Town Images, Tokyo" by the Tokyo Chamber of Commerce and Industry (1984, 1987)[18], and the survey of the "List of Suburban Railroad lines Coming to Mind from Image Words" by Parco(1987)[19], and "Town Message Survey" by Hakuhodo(1985)[20], The surveys for these materials covered by youngsters centering around women aged 16 through their twenties. This age group was selected for the surveys because of all city youngsters, this age group reacts most keenly to social trends and fashion whilst being extremely active and curious. The addresses of the persons for survey are widely selected from the near-suburbs of Tokyo, and it is conceived that the image bias according to the residential area which was previously described in the mental map study, were subtracted.

Source of following description for towns are collected from Asahi shimnbun, the Local News Section(1987), Kadokawa Nihon Chimei Daijiten Hensan Iinkai(1978),

Tsuchida(1978), Tokyo-to(1979), Ishizuka and Narita(1986), Yamaguchi(1987), Jinnai(1985), Odauchi(1974) and other many historical materials.

1) "Northeastern Midtown type" residential area

According to the result of chapter III, an areal consistency is to formulate the Northern Midtown by combining its residents who have partial characteristics of 'Self-employed person in wholesale and retail' with its particular residential environment represented by the type of wholesale and retail commerce including garments and other stores opened on a delta before World War II. Towns falling under this residential area type of "Northeastern Midtown type" are as follows:[21)]

Arakawa-ku

Higashi-nippori

Sumida-ku

Yokozuna, Mukojima, Ryougoku

Taito-ku

Asakusabashi, Yanagibashi, Asakusa, Hanakawado, Uenosakuragi Negishi, Moto-asakusa, Kotobuki, Komagata, Nishi-asakusa, Matugaya, Kita-ueno

Chuo-ku

Higashi-nihonbashi, Tukiji, Akashi, Tukishima

Chiyoda-ku

Ochanomizu, Surugadai, Awaji, Soto-kanda, Suda, Shinbashi,

Nishi-shinbashi, Atago, Toranomon

Here, I examine how the characteristic residents and residential environments existed with respect to the towns of Asakusa, Tukiji, Soto-kanda and Shinbashi, and also how it connected with the formulation of residential area images.[22] Table 26 shows the images and keywords of Asakusa and Tsukiji.

Asakusa remarkably developed to formulate a commoners'town because the Sensoji Buddhist temple enjoyed the popular belief of peoples of Edo city in the years of Kyoho (1716-1736) and it also had a Shinyoshiwara gay quarter, etc. Nakamise shopping street was originated by the Sensoji temple authorizing the neighboring people to open stalls as compensation for their cleaning services of its precinct. In this year of 1989, there are still stalls which sell souvenirs such as confectionery, food, notions and clothing. many of these are long-established and passed down from the Edo era (1603-1867). In the northern part of Asakusa town are many leather or shoe wholesalers and medium-small sized enterprises which moved from Kanda town in the early part of the Meiji era (1868-1902). In the Moto-asakusa area there are wholesalers of Buddhist altar fittings, wiliest in Nishi-asakusa there streets of producers-wholesalers' who specialize in restaurant goods, wax display foods samples and confectionery.

Asakusa has rich images, of which "common" and "old" are predominant, being followed by "cultural", "bright", etc. Its keywords are "downtown", "festival", the "kaminarimon" gate to Sensoji temple, and the "Sensoji" temple itself. It may be said

Table 26 Images and keywords of the towns falling under "Northeastern Midtown type"

Image ＼ Town	Asakusa	Tukuji
blight	25	28
dark	9	10
manly	14	48
womanly	2	0
new	2	1
old	69	47
developing	7	7
depressed	13	8
urban	2	8
rural	2	1
high class	1	1
common	78	65
cultural	25	1
noncultural	3	6
convenient	6	12
inconvenient	9	8
fashionable	6	3
unfashionable	14	11
healthy	13	18
unhealthy	5	3
fevorite town	11	3
town never known before	1	2

Image ＼ Town Keyword	Asakusa
humanism	19
dirty	56
hooligan	29
bad-smelling	13
fearful	13
begging	12
downtown	228
festival	121
old	47
trueborn Tokyoite	24
old person	19
Kaminarimon gate	90
Sensouji temple	53
Kannonsama (Goddess of mercy)	26
Sanjasan (three shrines)	25
Okoshi (sweet)	18

keyword of Tukuji

early rising, fish, lively, market, commercial town

source : Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

the best known town which comes to mind is the center of downtown (Shitamachi). Since Kaminarimon and Sensoji are included in the keywords, either of its images are apparently formulated by being centered around the neighborhood of Sensoji. It may also be appropriate to conceive that the landscape centering around shopping streets in particular is the nucleus of image formulation. In this respect, various kinds of wholesaler's streets and small-sized in particular is the nucleus of image formulation. In this respect,various kinds of wholesaler's streets and small-sized stores handling daily necessities such as foods and hardware may read to the "common" image of this area. Furthermore, its image of "old" is conceivably attributable to its connection with the multi-existence of long-established stores as the temple-front town of Sensoji and the relative oldness of the merchandise handled in the shopping streets and their neighboring buildings.

In connection with Tukiji, the concession opened in 1868 (the last year of Meiji) in accordance with the U.S.-Japan Friendship and Trade Treaty is famous. However, Tsukiji, which was less convenient in overseas transaction than Yokohama, was at first unpopular with the foreigners. From around 1872 when the readjustment of town lots in the unit of 500 tsubo (tsubo=3.3m^2) was over, European-style houses in which the foreigners lived began to the built. With the completion of the U.S. Consulate, the Rikkyo Gakuin mission school, and the Tokyo Trinity Seminary, the religious color of Christianity was born. In 1899 (32nd year of Meiji) the legal system of concession was abolished, but with the construction of St. Luke's Hospital, etc., its peculiar at-

mosphere still continued among the citizens. On the whole, the Tukiji area in the Meiji era saw the concentration of the Naval-related facilities such as the Naval Academy and Naval medical School, and is known as the cradle of the Imperial Japanese Navy. The Hirano Movable Type Printing Shop, the forerunner of movable type printer, was also established in Tukiji. In 1923, the fish market moved from Nihonbashi to Tukiji to the side of Naval Academy (12th year of Taisho) and contained 1,700 stores inside and outside the market. The image of this town are "common", "manly" and "old" while the keywords are "early rising", "fish" and "old". Almost every image and keyword is connected with the Tsukiji's fish market but are also conceivably loosely connected with the area's historical background. The image of "old", however, has no conceivable element directly connected with the Fish Market, but has possible connection with old buildings such as St. Luke Hospital built shortly after the Great Kanto Earthquake.

The town of Kanda was originated in the 11th to 12th year of Keicho (1596 -1615) when the town plans were fixed to start a merchant block with the major repair of Edo Castle and the build up of its outer block. Later, artisans patronized by the Shogunate (Tycoon) Government were granted commoners'lots to build up artisans' blocks. Soto-kanda (outer-Kanda) is on the north bank of the Kanda River and out side the Castle. In Pre-modern Age, a mixture of commoners' blocks and warriors' blocks were located there. Many electric appliance wholesalers began to concentrate in front of the Akihabara Railroad Station after

World War II, clustering around a large radio wholesaler already existed there. In 1980, almost 1,000 of there stores existed and presently, many are concurrent retailers and Akihabara became nationally renowned as a town of electric appliances. The vegetable and Fruit market also in front of Akihabara station was opened in 1923 (3rd year of showa). However,a vegetable market had already opened in the years of keicho and there existed vegetable wholesalers. In addition, an area encompassing Nihonbasi-yokoyama-cho, Kanda and Akihabara became fabrics wholesalers' streets since the early Meiji era, and wholesalers of european type clothing and clothes were especially concentrated. These are said to have originated from used clothes stores in the Pre-modern Age, but changed to retailing ready-made clothes from the early Showa era (1925-1989). In this manner, kanda is known as a town of wholesalers of various items. In this year of 1989, it is a mixed commercial-residential area.

Shinbashi was located at the end of the urban area in the Edo era. However, with the construction of the brick building street of Ginza and the opening of the Shinbashi Railroad Station (later Shiodome Freight Station)(1872), it became to function as the main entrance to Tokyo. It was destroyed in the Great Kanto Earthquake, but a reconstruction plan was pushed through the lot rearrangement project, and the area became one of the busiest towns in Tokyo, being concentrated by restaurants, offices and amusement facilities around 1934 (9th year of Showa) when the subway was completed between Asakusa and Shinbashi. It suffered badly from war damage during World War II and a black market

called the Shinbashi Market prospered until 1950 (25th year of Showa). As the market declined in line with administrative guidance, however, the number of legitimate stores, super-markets and coffee parlors increased and in this year of 1989, the station is surrounded by banks, hotels and shopping arcades, being partially mingled by residential lots. According to a survey taking the Shinbashi Shopping Center as an example, most of its tenants are local stores with their headquarters somewhere in Tokyo, while the number of stores for ladies' goods share 80%. The princes here are lower than those in Ginza, and it is characterized by having many clients from the back streets of Ginza and many middle-aged ladies (Aono and Birukawa,1967), attesting that this town has a thicker tint of back street than shopping streets in Ginza and around Tokyo Station.

Naming the elements conceivably connected with image as "image formulating elements", either of the image formulating elements of "Northeastern Midtown type" is the element allied to a shopping street. As the image formulating elements of "common", the numbers of wholesaling and retailing stores can be listed. In the image formulating elements of "old", the stores opened before the World War II can be listed. That the image formulating elements concentrate at commercial conditions like this coincides well with that the commercial conditions were characteristic residential environment when the residential area types were established in chapter III above. In other words, the commercial conditions which are the characteristic residential environment also contribute greatly to the image formulation of this area.

Regarding the period of image formulation , stores which are an image formulating element have existed in this area since as far back as the Edo era, and, if at all never ,since immediately after World War II. The image formulation of "Northeastern Midtown type" is viewed as having been made by the time immediately after World War II. Figure 10 is the diagrammed relationship based upon the above statement between the characteristics included in the residential area type of "Northeastern Midtown type" and the residential area image as seen in typical towns.[23)]

2) "Southwestern Midtown type" residential area

On the south and west sides of the city center, there formulated an regional entity by the combination of the residents with partial property of 'Self-employed person in wholesale and retail' to the specified environmental conditions represented by the wholesaling and retailing commercial pattern and the publishing-connected industry pattern. The towns falling under this "Southwestern Midtown type" are as follows:

Shibuya-ku

Yoyogi

Shinjuku-ku

Shinjuku, Aizumi, Tomihisa, Kabuki, Okubo, Hyakunincho,

Nishi-shinjuku

chuo-ku

Ginza, Tukiji, Yaesu, Kyobashi

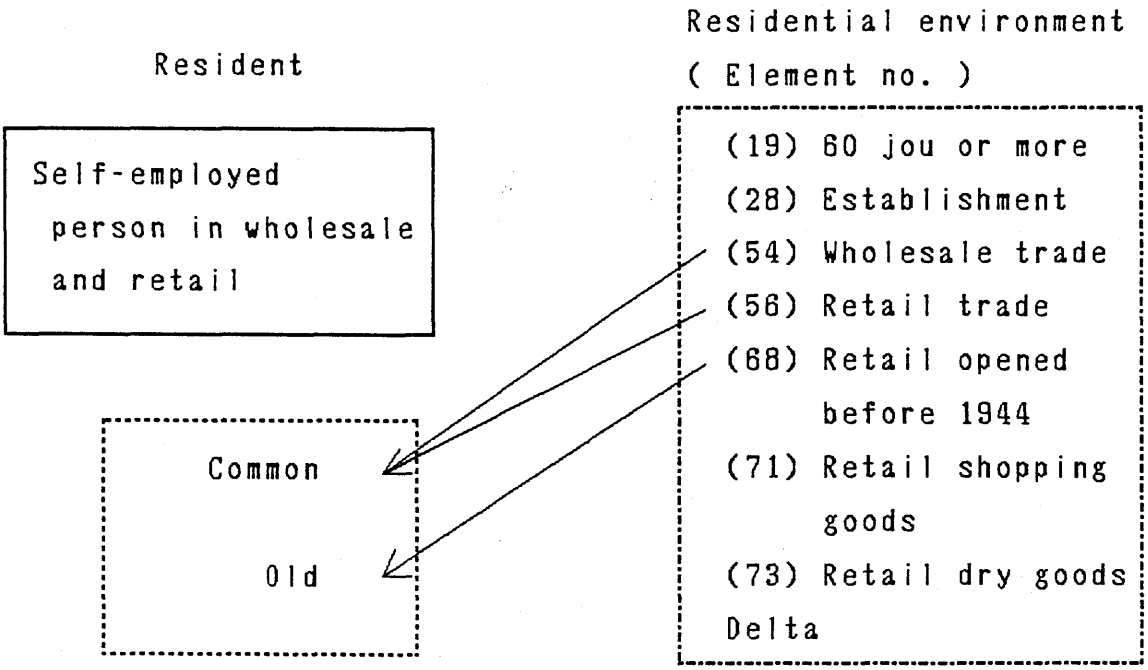


Figure 10 Residential area type and residential area image in "Northeastern Midtown type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Chiyoda-ku

Marunouchi, Otemachi, Yurakucho, Nagatacho, Uchi-kanda, Kanda-nishiki

Minato-ku

Higashi-azabu, Roppongi, Shibakoen, Shibadaimon, Hamamatucho, Toranomon, Akasaka, Roppongi

Here, with respect to such towns as Azabu, Roppongi, Akasaka, Ginza and Shinjuku, how their characteristic residents and residential environments existed and also how they connected to the formulation of residential area image shall be examined. The images and keywords of Azabu, Roppongi, Akasaka and Shinjyuku are shown in Tables 27 and 28.

Azabu was a residential district where landlords and the district retainers of the Shogun (Tycoon) lived in the Pre-modern Age. Since the Meiji era, it changed into much exotic district of embassies, especially on its terraces. Extended on its lowlands were the long-established shopping streets which had supported the residential district of the Pre-modern Age. In particular, before World War II, Azabu-juban is a junction of many roads connect the terraces and the lowlands, and was one of the most flourishing location in Tokyo with many evening stalls, and still continues to exist as an Uptown shopping street. Among its stores, there are 49 old stores which were founded before the Meiji era, 14 of which consisted of office buildings tenanted by stores and other enterprises on the Circular 3rd Street running on the lowland along the Furu river and on Sakurada Street and

Table 27 Images of the towns falling under "Southwestern Midtown type"

Image ＼ Town	Azabu	Roppongi	Akasaka	Shinjyuku	Image＼ Town	Ginza
blight	15	15	17	19	flowery	20
dark	2	12	11	15	elegant	17
manly	4	7	13	20	calm	15
womanly	9	11	8	0	rich	12
new	9	16	6	16	dirty	9
old	20	4	19	8	noisy	6
developing	5	14	14	31		
depressed	6	7	6	10		
urban	44	61	57	38		
rural	3	1	5	0		
high class	56	21	50	0		
common	4	7	0	30		
cultural	14	11	13	10		
noncultural	1	4	1	15		
convenient	10	16	20	63		
inconvenient	8	8	5	2		
fashionable	39	46	39	3		
unfashionable	1	7	3	18		
healthy	6	2	2	2		
unhealthy	6	40	18	57		
fevorite town	14	6	6	5		
town never known before	1	0	0	0		

source : Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

Table 28 Keywords of the towns falling under "Southwestern Midtown type"

Town	Keyword
Azabu	terrace, embassies, flowring at night, international, high class residential area, foreigner's town, down town in uptown
Roppongi	disco, adult town, night, high class, television station, eating and drinking, artiste, international
Akasaka	television station, adult, high class, night, eating and drinking, high class hotel, high class entertainment restaurant, New York in Tokyo
Ginza	movie, adult, high class, expensive, crowded, SONY, high class entertainment club
Shinjyuku	fearful, crowded, high-rise building, ALTA, dirty, night town, movie

source : Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

residential districts of small-sized apartment houses mingled with stores. Many medium-small sized factories are located along its lowlands.

The images of this town are "high class", "urban", and "fancy", common to Nishi-azabu, while the keywords are "terrace", "embassies", "flourishing at night", "international", "high class residential district" and "downtown in uptown". of these, the image of "high class" and "urban", together with the keywords "terrace", "international", and high class residential district" are conceivably mostly connected with buildings such as the well built embassies and apartment house complex on spacious land lots, succeeding the former mansions of upper class people. Also, the image of "high class" and "fancy" are conceivably connected with shops with European appearance which emit an exotic flavor such as restaurants, bistros and boutiques which are recently increasing in number in and around Nishi-azabu. That busy towns centering around Azabu-juban topographically locate at the foot of slopes and that the manufacturing elements are mingled cause people recognize it as a town with downtown elements, despite its being located uptown. This can be said to be reflected in the keywords "downtown in uptown".

In 1869 (2nd year of Meiji) Roppongi, which had been a residential area of local landlords in the Pre-modern Age, annexed many neighboring cathedral towns in front of Shinkoji, Shoshinji, Kyozenji and other temples. However, the area has developed into a midtown amusement center since the Meiji era. Before the World War II, Roppongi flourished because the barracks

of the 3rd Infantry Regiment was located in the vicinity. After World War II, due to the occupation forces occupying this location and building Hardy Barracks, this amusement town gradually changed into an American style town. In addition, the official residences of foreign embassy staff and Japanese VIP's were built, succeeding the mansion blocks,and this area gradually became a high class residential district. In the thirties of Showa (1955-64) not only night restaurants but also fancy boutiques fashion buildings mushroomed. The young people who congregated at these shops created the so-called "culture of the Roppongi race" in 30'th of Showa. In this year of 1989, European style dress shops fine art/crafts shops mingle there, and it also functions as a banking and other business street. High class apartment houses, old residences and offices surround these busy streets.

The image of this town are versatile--"urban", "fancy", "unhealthy", while the keywords are "disco", "adult town", "night", "high class", and additionally "international" as in the case of Azabu. Since the content expressed by the keywords are limited to those concerned with busy streets, its image formulating elements may be thought of centering around busy streets. Image such as "urban" and "fancy" may have their connection mostly with the landscape of shopping streets. The image of "unhealthy", which Azabu dose not have, together with the keywords "disco" and "night" are connected with the fact that the town has shopping streets which are busy at night. Similarly, the "high class" image may be connected with the merchandise handled on its shopping streets.

Akasaka has its origin of commoners' block in the early Edo era. In particular, Hitotsugi street, which is currently the busiest street, has been a shopping street since that time. It was so busy that it was called a "human relay", whose Japanese pronunciation being equally "hitotsugi". This street destroyed during World War II, but, later, especially after High Economic Growth Period, in the 1960s, became a busy street where fashion buildings, restaurants, disco and high-rise hotels concentrated. Particularly since the around time a television station, embassies and the office buildings of foreign companies clustered, it attracted attention as being novel town emitting an exotic mood. The images of this town are "urban", "high class" and "fancy" while its keywords are "adult", "night", "high class hotel", and RYOTEI (Japanese style high class entertainment restaurant), "GYOKAIJIN". "High class" may have its connection with hotels, restaurants and RYOTEI, while "fancy" with stores handling "fancy" fashion items and buildings tenanted by such stores. This town is also characterized by the fact that its keywords include and element of such persons as so-called GYOKAIJIN. Those utilizing this town also have the possibilities of being involved in formulating its images. For example, while GYOKAIJIN describes those concerned with mass communication centering around the television stations, people engaging in especially urban occupations are also conceivable elements which formulate an "urban" image.

Ginza has its origin in 1612 when the staff of the Mint which was moved from Suruga Province (currently Shizuoka

Prefecture) to Edo was granted four blocks to the south of Kyobashi bridge for their housing lots. In 1869 (2nd year of Meiji) Ginza became the formal block name. After a large fire in 1872, the Governor of Tokyo ordered an English engineer to design a street of brick buildings. With many press companies including Tokyo Nichinichi (daily), Yubin Hochi (mail notice) and, Nisshusha, the predecessor or Yomiuri, this street became the center of enterprises allied to publishing. The brick buildings collapsed in the Great Kanto Earthquake, and in the reconstruction period department stores as such Matsuzakaya, Mitsukoshi, and Matsuya came here. From the end of Meiji era through the Taisho era, cafes appeared where painters, actresses and writers congregated. In those periods, Ginza firmly established its position as a modern downtown area until at last, in the period from early Showa through the 10th year of Showa, the special terminology of GIN-BURA (strolling on Ginza street) was used for taking walks on and around Ginza Street. During World War II, Ginza suffered severe damage from air raids and the few surviving buildings were taken over by the occupation forces. Therefore, its reconstruction was much delayed. Since around 1950, the Nihon Gakki (Japan musical Instruments, Inc.) and other major companies came, and in the thirties of Showa (1955-64) Ginza was reborn as a modern shopping/business street. In this year of 1989, show rooms and art galleries cluster here holding a position of a "Mid-nation" shopping street (Hattori,1984) rather than a Midtown one. The image of this town are "flowery", "elegant", "calm" and "rich", while its keywords are "movie", "adult", "high class" and

"expensive". Many of the keywords are abstractive, but either are conceivably connected to the landscape of the shopping street without exception. Especially, they are closely connected with the building manner of stores, the merchandise handled, and the prices. However, the image of "calm", together with keyword "adult", conceivably come form the quality of the clients who gather here rather than that of a shopping street as the formulating element.

Shinjyuku originated from Naitojuku which was established on the Koshu Kaido highway at a midpoint between Edo (Nihonbashi starting point) and Takaido (originally first station). Shinjyuku Railroad Station was established with the opening of the Kobu Railroad in 1885 (18th year of Meiji). However, the station had few users then, and the immediate vicinity of the station was just that of a poor new town. In 1927 (2nd year of Showa), after the Great Kanto Earthquake, the Keio and Odakyu lines opened from shinjyuku. Since around the time when the population along Chuo Main line (formerly, Kobu railroad) increased with the earthquake victims moving from Midtown to the suburbs along the Chuo Main line, Shinjyuku began to develop into a new and bustling place. In 1925, (14th year of Taisho) when Shinjyuku Station was reconstructed, the Hoteiya Department Store was built and the Mitsukoshi Department Store was built the following year. The Isetan Department Store was built in 1933 (8th year of Showa) and in 1931, (6th year of Showa) the Moulin Rouge light opera house was built. The area along the Shinjuku street to the east of railroad station grew into a mammoth bustling town more

flourishing than Ginza by around the 10th year of Showa (1935). Following World War II, department stores capitalized by the private railroad companies, also opened in the west front of the station. On the west side of the station, to begin with Keio Plaza Hotel on the site of the Yodobashi Water Purification Pond in 1973, a town of super high-rise buildings has since been constructed. In this year of 1989, many types of shops and stores including banks, offices, department stores, movie houses, retail stores and businesses which are adverse to public morality established 1 through 4 Chome of Shinjuku.

The images of this town are "convenient", "unhealthy", "social", "urban" and "developing", while its keywords are "high-rise building", "night town" and "movie". "Convenience" may be an image arising from the fast that it is easily reached because the railroad lines connecting the Midtown areas and the suburbs cross here, and that shopping is also easy due to the many stores located here. "Urban" and "developing" may be connected with its landscape of land-sized, established department stores and of its super-high rise buildings built in recent years on the west side of the station. The image "unhealthy" and the keyword "night town" may be connected with the fact that it is a bustling town which bustling town which flourishes more at night due, above all, to the concentration of businesses which are adverse to public morals.

Some of the towns included in the "Southwestern Midtown type" have a point in common wherein relatively small bustling towns which had lasted since the Edo era changed their qualities

with their acquisition of certain exoticism in and after the Meiji era. The applies to the location of embassies in Azabu and Roppongi, and to the Occupation Forces' camp in Roppongi. In towns with an atmosphere allied to foreign countries, the image of "fancy" and "high class" are often observed. On the other hand, some towns have common points wherein the bustling towns since Edo era had impacts to build new towns in and after the Meiji era. Such impacts were enterprises allied to mass communication and their staff, in Akasaka, a street lined by brick buildings and the blossoming of department stores and coffee parlors in Ginza, and the joining of suburban railroad lines and building of a high-rise building town in Shinjyuku. However, since these towns became larger as bustling towns, deepening their pleasure-seeking color mostly at night, they occasionally remind us of an "unhealthy" image.

The image formulating elements of this area are retail shopping streets and residential quarters. While we see signs of the former's development in the Edo era, embassies and residential quarters mostly in apartment buildings, are in most cases elements which appeared after World War II. The image of "urban", "high class" and "fancy" can be said to have been produced after World War II. Of the environmental elements of "Southwestern Midtown Type", those conceived as the image formulating elements are the elements of commercial conditions daily necessities, and also large-sized residential quarters, etc. As an element connecting the residents and the residential environment, the commercial conditions were described in chapter III. It is clear here that

it also poses as an important image formulating element. The relationship between residents, the residential environment, and the residential area image is shown in Figure 11.

3) "Bokuto type" residential area

On the east side of Tokyo, an areal entity is formulated by combining the residents with characteristics of 'Craftsman' and 'Old person', with the particular residential environment on a delta represented by the industrial pattern of leather goods manufacturing/selling. The towns falling under this "Bokuto (meaning the east end beyond the River Sumida) type" residential area are described below;

Adachi-ku

Sekihara, Motoki, Umeda, Senjyu-motomachi, Senjyu-sakuragi, Yasuzuka, Hitotuya, mutumachi, Nishi-kahei, Senjyu, Senjyu-akebono, Senjyu-okawa, Senjyu-yanagi, Senjyu-kotobuki, Nakagawa, Minami-mizumoto, Oyata

Arakawa-ku

Minami-senjyu

Katushika-ku

Higashi-yotugi, Yotugi, Nishi-shinkoiwa, Higashi-horikiri, Ohanajaya, Shiratori, Takara

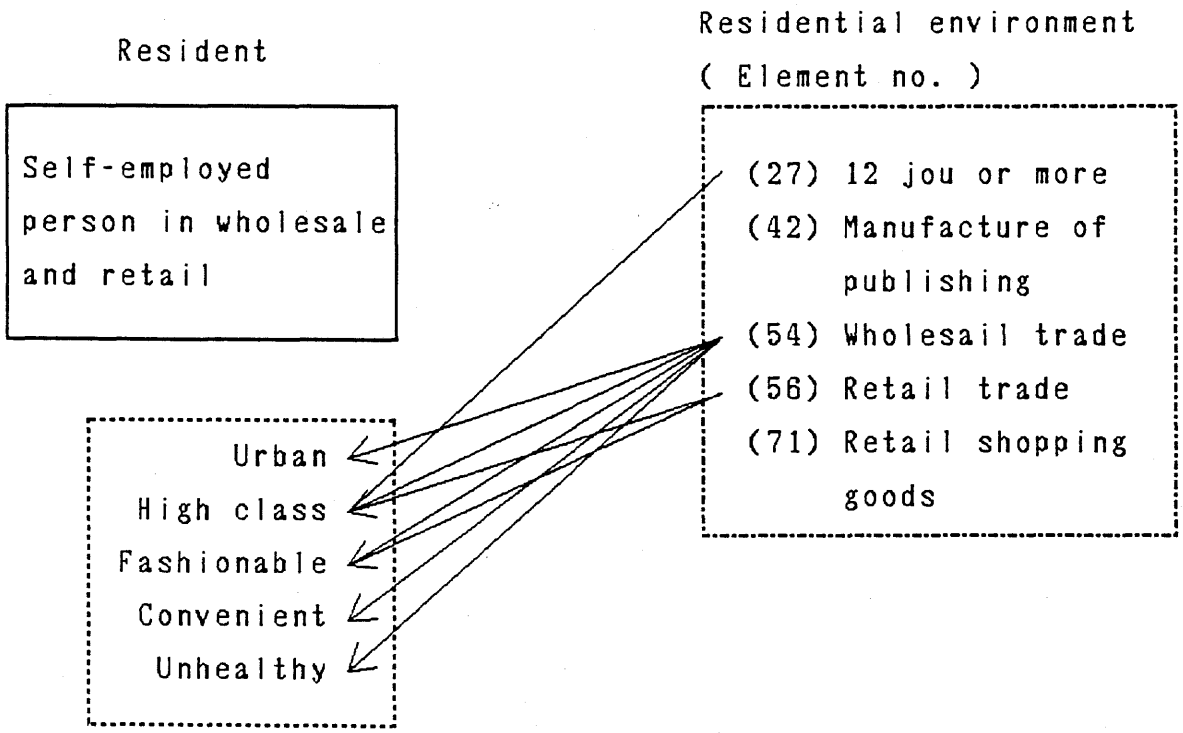


Figure 11 Residential area type and residential area image in "Southwestern Midtown type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Sumida-ku

Yahiro, Kyojima, Higashi-sumida, Tachibana, Sumida, Higashi-mukojima, Tutumi-dori

Taito-ku

Nihonzutumi, Higashi-asakusa, Imado, Kiyokawa, Hashiba

Here, studies are made on how the characteristics residents and the residential environment have existed with respect to such towns as Kyojima, Imado, Higashi-mukojima, Tsutsumi-dori and Senjyu, and also on how the residents and the residential environment has been involved in the formulation of the image of the residential area. Since only a little material is presented here, the images and keywords for kyojima and for SHITAMACHI (downtown) as a whole are shown in Table 29.

Kyojima was swamp land called UKICHI (floating land) until the Taisho era (1912-1926). This area was reclaimed into a town with the earth produced by the excavation work of subway (Ginza line) in the early Showa era. Before that, the Arakawa Canal had not existed, paddy rice fields extended all over, and it was located by the plant of the Dainippon Artificial Fertilizer Company in addition to some forming houses. Prior to the General block Regrouping, this area was called Azuma-cho and Terajima-cho and was well known together with neighboring Sumida and Yahiro, as a mass relocation (around 1887) site of tanners from Asakusa. About the end of the Meiji era (around 1910) this area, together with Mikawashima, became the center of tanners in Tokyo. Since

Table 29 Images and keywords of the towns falling under "Bokuto type"

Image ＼ Town	Kyojima	Image ＼ Town keyword	Downtown
blight	2	houses closely	
dark	4	touching each other	42
manly	2	old house	40
womanly	1	river	39
new	1	irregular row	
old	6	of houses	35
developing	0	many shopping	
depressed	3	street	31
urban	1	low land	21
rural	0	one storied house	21
high class	0	Buddhist temple	19
common	9	factory	15
cultural	1	narrow	15
noncultural	0	smog	12
convenient	0	humanism	109
inconvenient	3	festival	35
fashionable	0	fair	28
unfashionable	2	trueborn Tokyoite	20
healthy	0	crowded	16
unhealthy	1	good wife	15
fevorite town	0	old person	12
		vivid	38
town never known before	68	traditional	37
		bustling	35
		unaffected	30
		common	30
		lower class	10
		vulgar	10

source : Sumaino Toshokan Shuppan Kyoku(1988);Hakuhodo(1985)

this area escaped destruction by the Great Kanto Earthquake and the War damage, retail stores, minor plants and wooden housings are mixed up along maze-like alleys, even as late as 1989, formulating one of the most densely populated areas in Tokyo.

The images of this town are "common", "old", etc. Also, since the item of a "town never known before" shares a large percentage, this town may be said to be a town of little note. Indeed, no note-Worthy Keywords can be found. The image of "old" may be connected with the fact that its developing age dates back to the Meiji era. Another image of "common" may have a close connection with the landscape featured by a mixture of housing, retail stores and factories, which also appeared in the list of keywords.

Regarding Imado, the Imado Bridge crossing the Sanya-bori canal, is famous. this bridge was the first bridge to be passed under by a ferry the Yoshiwara gay quarter with it entered the Sanyo-bori canal from the Okawa river (the main stream of the Sumida River). Since this bridge became the scene of the "Lovers' Suicide of Imado", a novel by Ryuro Hirotsu, and of the "Sumida River" by Kafu Nagai, many people now feel a dark image of it, just as in Yoshiwara. This area has also been known as a center of the leather industry since olden times. However, the businessmen who moved to this area from Nihonbashi and Kanda in the early Meiji era (around 1860) centrifugally moved again to the suburbs in the late Meiji era (around 1890) leaving the tanners here and in this current year of 1989, they still constitute their characteristic factory complex here. As of 1963, the Imado

area had more than 50 leather wholesalers or factories and shoe factories or wholesalers, and was a concentration of that business, side by side with Asakusa-shoten-cho and Asakusa-saruwaka-cho.

Higashi-mukojima, together with the Mukojima area, were the center of the Bokuto area and were knows for their cherry blossoms in the Edo era (17th through 19th centuries). The development of Honjo including Mukojima is said to have been made after the Big Fire of Meireki (1657), and Hyakka-en (Garden of Hundred Flowers)
of Mukojima was known as a famous site of plum blossoms and the autumnal grasses, and has been famous as a resting place of Tokyoites since the Edo era. This garden said to have been the environment creation center of this area as a recreation site. In the Meiji era, many men of culture recorded their visits to the Mukojima Hyakka-en. To begin with, a series of poems entitled "Hyakka-en", by Sachio Ito, this garden has often been the object of poems. On the other hand, however, Tamanoi houses of ill-repute, well-known by the "Bokuto Kidan", (Funny Stories East End), a novel by Kafu Nagai were also in this area, and people still recollect the fact. In the 1960s, an area of and around Higashi-mukojima was famous as a concentration of a metal toys and smoking goods manufacturing. These lines of business provided a typical pattern of the sundry industry of the wholesaler system, under which numerous minor plants, together with similar and allied businesses, gathered near the wholesalers or their plants to constitute a production group. In this current year of 1989, this

area is a mixed area of medium-small sized enterprises and residential quarters, centering around these plants.

Tutumi-dori was developed at the earliest in the Honjo area, but had been a farming village with a station-like character around the ferryboat station on the River Sumida until the middle of the Meiji era (around 1900). In 1889 (22nd year of Meiji) the plant of the Kanegafuchi Cotton Spinning Company opened to play a pioneering role in plant location in the Koto area. In the Taisho era, a Japanese style restaurant called Yaomatsu appearing in the "Hyaku Monogatari (hundred stories)", a novel by Ogai Mori, and "Okawabata (on the River Sumida)" by Kaoru Osanai, and the movie studio of Nikkatsu (Japan movie Company) were famous. The Kanegafuchi Spinning Company located here, being attracted by the spacious and cheap land in addition to the convenient water transport. The land name, Kanegafuchi has been preserved to date thanks to the company. Later, in the neighboring areas of Honjo and Fukagawa, the Tokyo Gasu Boseki (gas spinning) Company and the Fuji Boseki (spinning) Company located their plants in 1887 (20th year of Meiji) and in 1903 (36th year of Meiji) respectively. In addition, large modern plants of rubber, soap, and machinery also located. In this current year of 1989, these areas are mixtures of plants, warehouses and housing. Especially conspicuous among them is a row of high-rise municipal apartment buildings along Tutumi street, which concurrently plays the role as a firebreak wall of a disaster prevention base.

In the Edo era, next to Shinagawa and Naito-shinjyuku Stations Senjyu was the third most prosperous station as the first

station on the Nikko Kaido (Highway for Nikko). Since then, it has always been the commercial center of the area. Today, being divided by the River Sumida, the southern part is called Minami-senjyu of Arakawa-ku, and the northern part is Kita-senjyu of Adachi-ku. In and after the Taisho era, railroad lines such as the Joban line, the Tobu-Isesaki line, the Keisei Main line, and Eidan subway Hibiya line were constructed through this neighborhood, and the area became a major traffic focal point for northern Tokyo. In Minami-senjyu, the Sumidagawa Freight Train Station extended. In the past, Joban coal produced in Fukushima and Ibaraki Prefectures and brought here by freight train, was reloaded onto barges and delivered to factories along the rivers. The leather industry started in the late Meiji era in Kita-senjyu. A paper mill and cotton spinning industries located in the Taisho era, and machinery, metal, and chemical plants came in the early Showa era. Thus, Senjyu is known as the industrialization center of the Joto area.

The towns included in the "Bokuto type" neighbor each other on both banks of the Ara river and each reinforced its character as a factory area since the late Meiji era. However, the areas of Higashi-mukojima and Tsutsumi-dori had been suburban farming areas of Edo city until the middle of the Meiji era, but industrialization gradually started to be located by minor light industries. On the other hand, Senjyu, where the transport route since the pre-modern age was coupled by rail traffic since the modern age, it also became a junction with the water transport on Ara river, developed as the key point of the modern industries in

the district.

However, no data on the images for these towns except Kyojima exist. The district centering around Mukojima and Senjyu, are recognized as especially downtown-like districts among the so-called downtowns. (Hakuhodo, 1985)[24]. Therefore, the images and keywords of downtown are examined jointly. In the images of downtown, there are "vivid", "traditional", "bustling", and "common". On the other hand, keywords are "humanism", "houses closely touching each other", "old house", "river", "irregular row of houses", "many shopping streets" and "factory". From the facts that all of "housing", "retail store" and "factory" appear as the keywords and that their mix state is expressed in "houses are closely touching each other" and "irregular row of houses", the image of "common" is conceived as having connection with the landscape where they are mixed together. The image of "traditional" together with the keyword of "humanity" may have connections with the characteristics of the residents. Furthermore, the keywords, "river" may have a connection with the topographical condition of lowland, while the images of "vivid" and "bustling" with the keyword of "many shopping streets".

From this description, it is clear that the image formulating elements of this area are the characteristics of the housing conditions, industrial condition, commercial conditions, and the residents. In particular, the small-sized housing, owner-managed shops, and small scale stores may be such elements. It was from the early through the late Meiji era that factories and their workers made their appearance in this area. The appearance of

commercial elements in the district, however, can be dated back to the Edo era when the station town prospered and the banks of the Sumida River were a recreation site. In other words, the image formulation of this area might have been made in and after the Meiji era. In chapter III, it became clear that, as the elements which combine the "Bokuto type" residents with the factors of the residential environment, the industrial conditions allied to the particular occupation is important. Nevertheless, from the viewpoint of image formulation, not only the industrial conditions, but also the minor housing and shopping streets may be the elements of image formulation. Figure 12 is the cartographed (based upon the above description) relationship between the characteristics included in the "Northeastern Midtown type" residential area and the image as seen in typical towns.

4) "Bayshore type" residential area

In the district on the shores of Tokyo Bay, an areal entity is formulated by combining the residents with the characteristics of 'Transport and communication occupation worker', 'Couples in the thirties and their children', and 'Household moved in there within 1 year' with the peculiar living environment typified by small-medium sized apartments and municipal housing on delta, or reclaimed land. The towns falling under this "Bay shore type" residential district pattern are described below.

Edogawa-ku

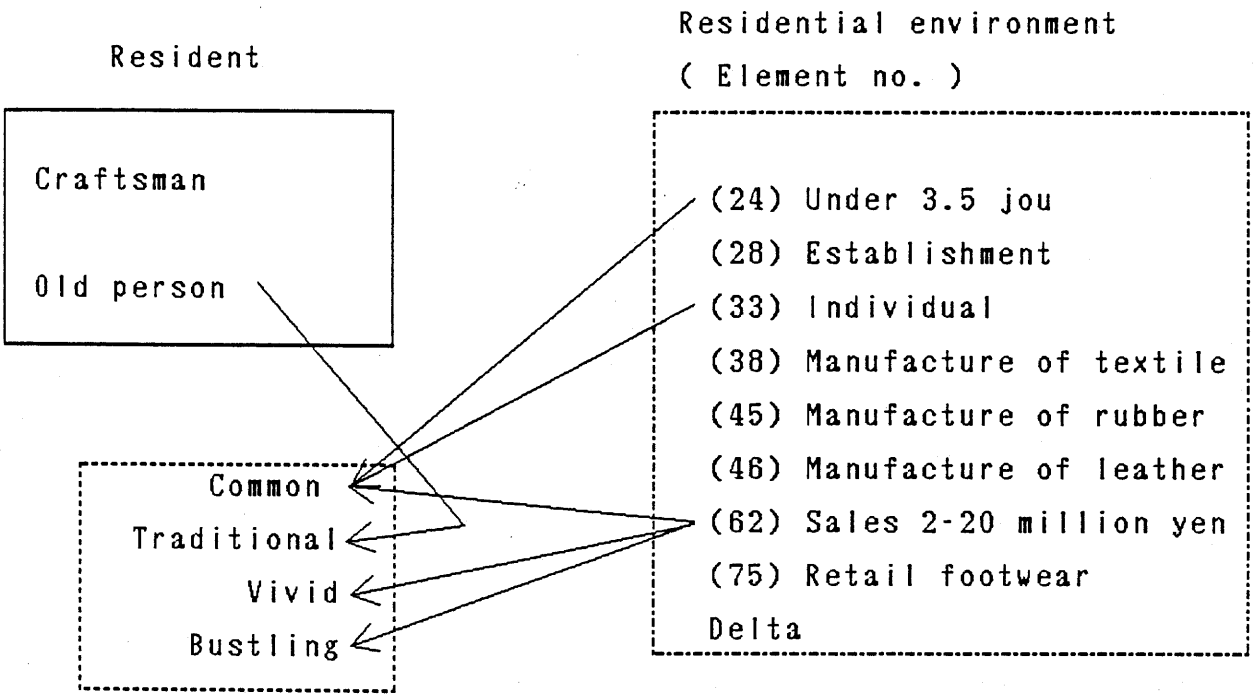


Figure 12 Residential area type and residential area image in "Bokuto type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Naka-kasai, Minami-kasai, Higashi-kasai, Ichinoe, Nishi-fuchie, Seishin, Minami-shinozaki, Tanikawachi, Shinozaki, Rinkai, Kita-kasai

Ota-ku

Omori-honcho, Omorikita, Heiwajima

Koto-ku

Shinonome, Ariake, Tatumi, Toyosu, Ariake, Edagawa, Shiohama, Shinsuna, Shiomi

Shinagawa-ku

Minami-oi, Higashi-shinagawa, Higashi-oi

chuo-ku

Toyoumi

Minato-ku

Konan, Hamamatucho, Shibadaimon, Shibakoen, Daiba, Shibaura, Kaigan

Urayasu town in Chiba prefecture

Tomioka, Imagawa, Benten, Tekkodori, Irifune, Mihama, Kairaku, Higashino, Maihama, Fujimi, Kita-sakae

Ichikawa city in Chiba prefecture

Minami-gyotoku, Arai, Ainokawa, Gyotoku-ekimae, Minato-shinden, Suehiro, Minato, Oshikiri, Shiohama

Here, studies are made on how the characteristic residents and the residential environment have existed with respect such towns as Shibaura, Omori, Higashi-shinagawa, Kasai, and Urayasu, and also on how the residents and the residential environments have been involved in the formulation of the images of a residen-

tial district. The images and keywords of Omori, Minami-shinagawa and Urayasu are shown in Tables 30 and 31.

Shibaura had been an important port of Edo Bay since the middle Ages. Reclamation of its coastline was started with the opening of the Tokaido line Railroad in 1872 (5th year of Meiji), and this reclamation continued until the Showa era. Since The Great Kanto Earthquake, the advancement of plants to this reclaimed land became very popular. On land reclaimed during the period 1907 (40th year of Meiji) to 1931 (6th year of showa) in particular, the Shibaura Works, The Nippon Electric Company and other plants centering around machine tools and electric appliances, as well as industries in the fields of bus, and automotive motorcar body and food located in the form of a move from Shiba-ku. Also, the Shibaura Power Generation Station of Tokyo Municipal Electric Bureau which supplied electricity to these plants was constructed and the Shibaura Industrial Zone was gradually developed. With the build up Tokyo Port including the construction of the Hinode Pier in 1925 (14th year of Taisho) and the Shibaura Pier in 1932 (7th year of Showa), its function as the entrance to Tokyo from the sea was improved. During World War II, this zone became a mammoth industrial zone for military procurement. After World War II, the plant location which temporarily decreased due to air raid damage again increased due to the Special Demand (by the United States Forces) Boom for the Korean War after 1950 until at last, in the latter half of the 30's of Showa, the plant lot shortage became serious. Since then, the deployment of big plants has been on decrease. In this year

Table 30 Images of the towns falling under "Bayshore type"

Image ＼ Town	Omori	Minami-shinagawa	Urayasu
blight	0	3	18
dark	21	10	9
manly	9	5	3
womanly	0	3	4
new	1	1	35
old	11	7	5
developing	0	3	38
depressed	9	11	3
urban	3	5	2
rural	7	1	15
high class	5	5	1
common	17	9	24
cultural	3	1	2
noncultural	3	1	4
convenient	4	4	4
inconvenient	5	8	19
fashionable	1	1	1
unfashionable	19	9	13
healthy	1	0	18
unhealthy	6	4	2
fevorite town	1	1	1
town never known before	14	28	1

source : Sumaino Toshokan Shuppan Kyoku(1988)

Table 31 Keywords of the towns falling under "Bayshore type"

Town	Keyword
Omori	industrial zone, railroad, sea and terrace, light and shade, Omori shellmound, dirty, downtown, residential area
Urayasu	new and old mixed, reclaimed land, condominiums, newly developed housing block, Disneyland, newly people district

source : Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

of 1989, almost the entire this zone is occupied by plants blocks and warehouse blocks, being mingled by housing and shopping streets.

Omori originated from the midway station between Shinagawa and Kawasaki Station on the Tokaido highway. In 1876 (9th year of Meiji), a railroad station was opened at nearby Arai Station, and its shoaling beach was crowded as a sea bathing site. ASAKUSA NORI (edible seaweed for SUSHI) produced by fishermen who were said to have immigrated from Asakusa, was well known with its history of being patronized by the Shogunate. Since 1960, sea-coast reclamation had proceeded to build a part of the Keihin Industrial Zone, and reclaimed islands such as Heiwajima, Keihinjima and Showajima were built. On those reclaimed islands, in addition to, plants and warehouses, a large public parks and housing complexes were constructed. In this year of 1989, the area is mainly occupied by blocks of plants which manufacture electric machinery, machine tools and vehicles and those of warehouses, which are mingled with housing blocks and shopping streets.

The image of Omori are "dark", "unfashionable" and "Common", while the keywords are "industrial zone", "sea and terraces", "Omori Shellmound", "downtown" and "common. "Dark" and "unfashionable", together with the keywords of "industrial zone", etc. are conceivably allied to its landscape centering around plants, while, due to the appearance of "downtown" among the keywords, "common" is closely allied to the landscape where small-sized housing areas and plants are mixed.

Higashi-shinagawa had been a seacoast to the east of

Shinagawa-jyuku station on the Tokaido highway in the olden days, but was developed by reclamation since the Meiji era. In this year of 1989, it is a mixed housing/plant area including municipal housing complexes such as the Municipal Higashi-shinagawa Housing Complexes. The major plants are the Shinagawa Thermo- Power Station of the Tokyo Electric Power Company, and plants of YUKIJIRUSHI (Snow brand) Dairy Industries Company, Toyo SUISAN (aquatic products) Co., Ltd., and the Mitsubishi Fuso automobile company.

For this town, see the image data for neighboring Minami-shinagawa. The images of Minami-shinagawa are "depressed", "dark" and "common". However, no noteworthy keywords is found. The image of "dark" of originates from a landscape with many factories as Omori, but that of "depressed" may originate from the history of a once-flourishing station. "Common" and "unfashionable" are conceived to have connection with its landscape of a mixture of housing and factories mixture like Omori.

Kasai was a fishing village known for fishing, clam and seaweed in Kasai-ura bay in the early Edo era. This was because the stretch of water off Kasai was one of the most extended tidelands in Japan and called Sanmai-zu (three stretches of tideland), where fish including shell fish was abundant. By the earlier 30s of Showa (1955-1959), it was a landscape with farming-fishing houses lined along the Sakon River and its tributaries dotted by metal factories and machine parts factories which came from Koto-ku and its neighborhood after filling up the surrounding paddy rice fields. In 1962, with the reclamation plan

off Kasai, the fishery rights of Kasai-ura bay was abandoned, and was after the opening of the Eidan subway Tozai line and its station in 1969 that this town rapidly changed. On the reclaimed land off Kasai, beginning with the Kasai seaside Park, and in addition to roads and housing, a distribution center and a sewage disposing plant were constructed. In this year of 1989, Kasai is mixed zone of factories, retail stores and housing.

Urayasu was a fishing village which had lasted since early Edo era. In the days of Ieyasu Tokugawa (the first Shogunate of Tokugawa's), many salt farms were constructed because salt making was encouraged in the Gyotoku-ryo territory of this area. After the salt content of sea water decreased by the flowed-in water of the Edo river, however, Urayasu became a village exclusively engaged in fishing. In the 30s of Showa, while the fish catch off Urayasu decreased, a land reclaiming plan was started by the government of Chiba prefecture, and in 1971, the village totally abandoned its fishing rights. Reclamation work by the prefecture started in 1968, an iron and steel complex was completed in the same year, and the entire project was completed in 1981. it was also after 1969 that the Tozai line opened. In this town, now only about 15 minutes by the new subway to Tokyo' business center, high-rise apartment buildings and houses for sale were constructed and sold. School lots and commercial lots were planned and laid out, and a modern, new urban area was raised. In 1983, the Tokyo Disneyland, an amusement facility covering 85 hectares, was opened, and begin to attract many people as one Japan's first-rated recreational sites. In this year of 1989, however,

along the Sakai river, anglers' inns and fishmongers still remain in the also still remaining fishing village. There, wooden housing still stand in rows.

The images of this town are "developing", "new" and "common", while the keywords are "new and old mixed", Newly developed housing block" and "Disneyland". From the appearance of "newly developed housing block" among the keywords, the image of "new" and "developing" are conceivably allied to the landscape centering around the high-rise housing built on the reclaimed land. The contrasting image of "common" may have connection with the old landscape originating from the old fishing village. These mutually contrasting images reflect in the keyword of "new and old mixed", which is peculiar to this town.

Either of the six towns included in "Bayshore type" is the newly developed area which came to be utilized after the 40s of Showa (1965- 1974). The eastern area being developed as residential areas, and western areas as industrial areas. Since the 40s of Showa (1965-1969), when sizable development of housing in inland areas had became unfeasible, public housing and high-rise building to rent were concentrated here to create a characteristic landscape. According to the analytic result under chapter III, this district gathers residents with versatile characters around the element factors of public housing and apartment houses. It is evident that this housing condition also occupies an important position in formulating the image of this area. Through its recent development the bay area of Tokyo became a mass-supplying district of small houses for the relatively young

generations and thus now has an entirely new character in the vicinity of Tokyo.

A remarkable difference in image is seen between the eastern and western areas. Wherein for Urayasu, its new aspect of development is emphasized rather than its conventional old history, and such affirmative images of "new" and "developing" are seen, while for Omori and Higashi-shinagawa in the eastern part, such negative images as "dark" and "unfashionable" are evident. One of the factors which produced this difference may be the presence of Disneyland. It is, however, conceived that an essential difference in land use, the east centering around residential areas versus the west centering around factories, is also very influential. When reclaimed landscape centering around conventional commoner residential blocks and factories supersedes, negative image emerge. When a landscape with rows of high-rise housing supersedes, affirmative images are seen. Nevertheless, in recent years, a new youth culture has sprouted, utilizing no longer used warehouse blocks no longer used in and around Shibaura[25] and it is conceived that the images of the East will be change in the future.

The image formulating factors of these towns may be both the housing industrial conditions. High-rise condominiums, municipal housing, and relatively large-sized working place may be applicable. The housing and factories which became the image formulating elements are factors which were added since the 30s of Showa (1955-1959) to the fishing villages and the station towns prior to the Edo era. In other words,the image formulation of

"developing", "new", "dark" and "common" which represent this area, can be said to have been created since the 30s of Showa. Figure 13 is the cartographed (based upon the above description) relationship between the characteristics included in the "Bayshore type" residential area and the images as seen in the typical towns.

5) "Western uptown type" residential area

In the west suburbs of Tokyo, an regional entity is formulated by combing the residents with characteristics of formulated by combing the residents with characteristics of 'professional worker' with the particular residential environment represented by large-scale housing, small-sized companies, and retail shops handling daily necessities on loam plateau. The towns falling under this "Western uptown uptown type" residential area are described below.

Ota-ku

Den-enchofu

Shinagawa-ku

Higashi-gotanda, Kami-osaki

Suginami-ku

Ogikubo, Kugayama, Miyamae, Omiya, Eifuku, Shimo-takaido, Hamadayama, Nishiogi-kita, Kamiogi, Shoan, Zenpukuji, Shimizu

Setagaya-ku

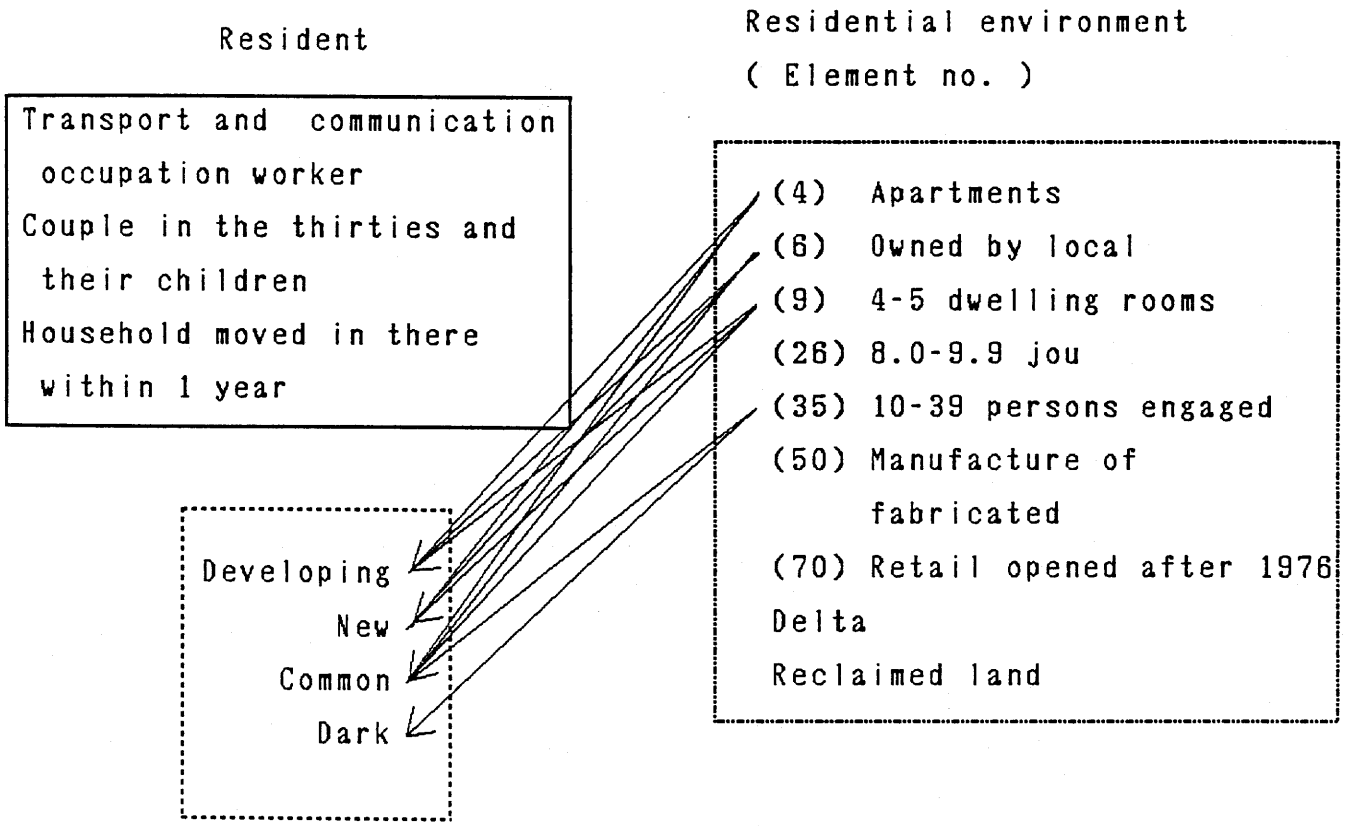


Figure 13 Residential area type and residential area image in "Bayshore type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Seijo, Kinuta, Kitami, Soshigaya, Sakurajosui, Kyodo

Nerima-ku

Kami-shakujii, Tateno

Minato-ku

Shirokane-dai, Takanawa

Meguro-ku

Gohongi, Higashigaoka, Himonya

Mitaka city

Inokashira

Musashino city

Kichijoji-minami, Gotenyama, Kichijoji-higashi,

Here, studies are made on how the characteristic residents and the residential environment have existed with respect to towns such as Seijo, Den-enchofu, Soshigaya, Shimo-takaido, Shirokane-dai and Kichijoji, and also on how the residents and the residential environment has been involved in the formulation of the images of a residential area. Meanwhile, the images and keywords of a respective towns are shown in Tables 32 and 33.

Seijo started its development when the Seijo-gakuen school moved here from Ushigome-ku in 1925 (14th year of Taisho). On this occasion, the school side received a promise through negotiations with the Odakyu Express Railroad Co.,Ltd., which was then planning a railroad through this area, that a station be established in the area and also that the school name would be the station name. When the Seijo-gakuen school opened, its land lot was 24,000 tsubo. The school purchased additional approximately

Table 32 Images of the towns falling under "Western Uptown type"

Image ＼ Town	Seijo	Soshigaya	Kyodo	Shimo-takaido	Hamada-yama	Ogikubo	Shirokane-dai	Kichijo-ji
blight	32	1	8	6	14	8	27	35
dark	0	7	7	9	2	18	2	3
manly	2	2	3	11	1	5	3	2
womanly	15	3	6	2	10	6	14	12
new	13	1	6	3	4	5	11	21
old	10	19	23	11	7	20	13	10
developing	5	1	3	3	3	3	6	32
depressed	0	7	6	10	1	10	2	0
urban	17	2	6	1	2	2	27	8
rural	22	9	13	9	14	6	4	8
high class	81	9	13	3	17	4	55	3
common	2	20	22	36	11	35	0	36
cultural	22	4	9	6	7	7	17	20
noncultural	1	2	2	5	1	2	3	0
convenient	4	3	13	17	8	12	6	32
inconvenient	8	10	11	5	4	5	10	7
fashionable	36	2	6	4	2	3	34	33
unfashionable	0	7	3	8	2	13	0	5
healthy	20	5	8	10	11	5	10	15
unhealthy	1	0	0	3	0	2	2	7
fevorite town	30	5	10	5	4	7	20	17
town never known before	2	9	10	6	34	3	9	0

source : Sumaino Toshokan Shuppan Kyoku(1988)

Table 33 Keywords of the towns falling under "Western Uptown type"

Town	Keyward
Seijo	high class residential area, young lady, young boy, residential block surrounded by greenery, elegant, new rich, performing artist
Soshigaya	downtown Setagaya, residential area of the 30s of Showa, down town along the Odakyu line
Kyodo	commoner's town, residential area from old time
Shimo-takaido	all mixed up, quiet but inconvenient, neat apartment
Hamadayama	park for young children, Inokashira line, spinsterhoods working in office, residential area represent Suginami
Nishiogikubo	high class residential area, boarding house, apartment town, old residential area, comfortable for student, Zenpukuji park
Shirokanedai	high class residential area in greenery, traditional manshion area, upstart, condominium, town without odor of dairy life, old house for noble
Kichijoji	new and old mixed up, student town, jazz, woman's town, bustling town of young sters

source : Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

20,000 tsubo of land lots nearby and sold them as housing lots to raise the funds for the school's construction. In this course, the land lot rearrangement was made, cherry trees were planted to make the roads into cherry avenues. Lot boundary walls avoided, but uniform hedges were provided. In this way, under the guidance of Mr.Kunio Yanagita, a scholar of ethnology, the town left the images of the Musashino landscape. Since then, many well-known people including poet Hakushu Kitahara, poet Yaso Saijo and writer Kenzaburo Ohe came to live here. In this year of 1989,it is still a quiet residential town.

The images of the town are "high class", which is overwhelming, being followed by "fashionable" and "bright". The keywords are "high class residential area","young lady", "elegant", "performing artist", etc., most of which are allied to its housing and the residents. From this, the image of "high class", together with the keywords of "high class residential area" and "young lady" are conceived as reflecting the residents and housing. Similarly, "fashionable" and "cultural" are conceived as being allied to the landscape of a residential area as a whole and to the residents. "Rural" may have a connection with the residences standing on spacious lots on the analogy of "residential block surrounded by greenery". The occupants of such residences, who are the buyers of the housing lots sold by the authority and are thus concerned with the school authority, and who are also conceived as connected with the image of "high class", are mainly the highly educated with high incomes.

Additionally, the residential have a history of having been

planned and built based upon the concept of building a beautiful town. In any case, both made their appearance here in the period from the end of the Taisho to the early Showa era.

Den-enchofu has a history formulation similar to Seijo. It is a modern urban residential town planned and built on lots bought by the Denen Toshi (rural town) Co., Ltd. which had started in 1918 (7th year of Taisho) based upon the rural town concept by Ei-ichi Shibusawa, a business giant. Blocks divided by the concentrically circular avenues and the residential streets, a gentleman agreement was made as to the establishment of respective private gardens, ratio of a house to its lot (building coverage ratio), and the material/height of boundary walls, and then, a planned town making was pushed, as in the case of Seijo. Even in this year of 1989, this town remains as a beautiful residential town. It was immediately after the Great Kanto Earthquake of 1923 (12th year of Taisho), and its rough completion as a residential area materialized as late as early Showa as in the case of Seijo.

Soshigaya had been a farming village with by 20% paddy rice fields and 80% upland farm until the Odakyu line opened in 1927 (2nd year of Showa). Since then, however, its development into housing lots progressed gradually and those moving in from central Tokyo increased. It was around 1935 (10 th year of Showa), some time after the opening of the Odakyu line, that the town began its progress. In this year of 1989, it still formulates a suburban residential area where farmland and suburban residential block mix. In particular, the shopping street leading

to the station is lined with more than two hundred small stores constituting a commercial center which attracts customers from a wide area despite the absence of a large supermarket. Among the stores, we see a SUSHI restaurant patronized by a famous artist, a bakery which bakes and sells its own goods, and other unique stores. There are also many stores which sell three fresh items, i.e., vegetables, meat and fish. There are the characteristics of this shopping street as well as of this town itself.

The image of this town are "common" and "old", while the keywords are "downtown Setagaya" and "residential area of the 30's of Showa". "Common" is conceived to have a connection with the landscape including the shopping street centering around fresh food stores if analogized from the keyword, "downtown Setagaya". On the other hand, "old" is conceived to have a connection with its developing days dating back to the early Showa era, as shown by its keyword of "residential area of the 30's of Showa". The residents here are, different from those in Seijo and Den-enchofu, immigrants from the neighborhood of central Tokyo to its suburbs, and its landscape is formulated by the residences they built and which were different from that planned and formulated through mutual consultation among them. As a result, a residential area which is not so orderly as it should be was built. This is conceivably connected with the image of "common".

Shimo-takaido has been a station town on the Koshu Kaido highway in the pre-modern age, but did not flourish as most travelers merely passed through since the establishment of a new station at Shinjyuku In 1698 (11th year of Genroku). In the early

Showa era when the Keio line railroad opened, the town started to change into a residential area. The change, however, was accelerated only after the late 20's of Showa (1950-1955) when many of the people bombed out by air raids immigrated. In this year of 1989, a dense residential area full of low-storied houses is formulated.

The image of this town are "common", and "convenient", while its keywords are "all mixed up", "quiet" and "neat apartment". Either is conceived to have its connection with its landscape centering around the residential and retail stores. In particular, the image of "common" is conceivably connected with the landscape centering around the low-storied residences as the keyword of "neat apartment" suggests. As for "convenient", nothing assumable from the keywords is found, but it is conceivably connected with the constitution of its shopping street and its proximity to Shinjyuku and Shibuya, sub-business centers. Especially, traffic conditions such as its accessibility to either of the sub-business center in 15 minutes or so by train, and also its proximity to Chuo express highway are likely connected its images[28].

Nishiogi-kita covers the area on the north side of Nishi-ogikubo station on the Chuo Main line. It was 1889 (22nd year of Meiji) that the current Chuo Main line opened between Shinjyuku and Tachikawa under the name of the Kobu railroad. However, it was as late as 1922 (11th year of Taisho) when the Nishi-ogikubo Station was opened at the request of the residents. Furthermore, it was just after the 30's of Showa (1955-1964) when the

station's neighborhood change to housing lots. The images of Nishi-ogikubo are "common" and "old", while its keywords are "high class residential area", "boarding house", "apartment town" and "old residential area", and its keywords are "high class residential area". Of these, "old " is conceivably connected with the keywords of "residential areas", while "common" is also connected with the residential area centering around condominiums as suggested from the keywords "boarding house" and "apartment town".

Shirokane-dai is located at the eastern end of the terrace surface of uptown, and has been known as a mansion town in uptown since olden times. It was a quiet residential area in the Meiji era, but, since around the arrival of street cars in the early Taisho era, a shopping street was formulated. Since this town escaped disaster from the Great Kanto Earthquake and World war II, mansions and western style buildings built from the Taisho through the Showa eras and surrounded by trees still remain. After World War II, the subdivision of housing lots and the construction of apartment houses proceeded. In this year of 1989, the land lots along Sakurada street and Meguro street are covered by office buildings and condominiums, while others are housing lots.

The images of this town are "high class", "fashionable", "bright" and "urban", while the keywords are "high class residential area in greenery", "traditional mansion area" and "high class condominium". "High class" conceivably had connection with the residences, while "fashionable" and "bright" with the

landscape of the residential area where European style buildings with surrounding trees remain. "Urban" may be connected with the groups of office buildings standing side by side along the main thoroughfare through the keywords of "high class condominium" and "town without odor of daily life ". The name of Shirokane comes from a legend that a landlord called the Millionaire of Shirokane lived here which possibly has an indirect connection with the image of "high class".

Kichijoji started from a SHINDEN-MURA (village of new rice fields) immigrated for open new rice fields by the residents of the town in front of the Kichijoji temple which located at Suidobashi, downtown Edo, but which burned down in the Great Fire of Meireki (1657). Its present road network extending northeast to southwest reflects the lined oblong land lots along the Itsukaichi-kaido highway which runs on the south side of this town. This town started its development into a suburban residential area with the opening of the Kichijoji Station on Kobu Railroad in 1899 (32nd year of Meiji). Its rapid increase in population started immediately after the start of the through-run service from Tokyo Station in 1920 (9th year of Taisho). The town progressed, especially with the move-in of the Seikei-gakuen school and the selling of land lots after the Great Kanto Earthquake. Its shopping street with a commercial integration as being recently described as a sub-sub-city-center originates from the black market on the station plaza which appeared after World War II resulted by the compulsory building evacuation during the War, and therefore its history is short. With the move-in of

department stores in and after the 40's of Showa (1965-1974), the appearance of the shopping street changed and since around the time when jazz and classical music coffee house made their appearance, this town is seen as a base of the new youth culture.

The image of this town are "common", "bright", "fashionable", developing" and "convenient", while the keywords are "moderate fashionability", "bustling town of youngsters", "new and old mixed up", "student town" and "jazz". "Common" may be connected with the small-sized shopping street, originated from the black market after the war, while "bright", "fashionable" and "developing" with the newly built department stores and the fashion buildings. This contrast between the new shopping street and the old one may be reflected in the keyword "new and old mixed up". Inokashira Park on the south side of the station has been known as a recreation site for cherry blossom viewing, etc. since the original opening of the station in the Meiji era, and is strongly tied with this town as an area of recuperation. Therefore, the images of "bright", etc., together with the keyword of "town where nature still remains", also has possible connection with this park. "Convenient" may also have a possible connection with, in addition to a full set of various stores and shops, its transport conditions wherein the town is a junction of the Chuo Main line and Inokashira lines directly leading to either the sub-city centers of Shinjyuku or Shibuya in about 20 minutes, and further to the main city center in about 40 minutes.

Studying the towns under the "western uptown type", I found

two contrasting images, one being "high class", "bright" and "fashionable", while another is "common" and "old". The town image formulation elements to be listed are mostly residential conditions, but a few commercial conditions are also found. The large-sized residences and the retail stores of daily necessities may be applicable. The time periods when the town image formulation elements appeared in these towns vary considerably according to each town. In towns where the images of "high class" and "fashionable" appeared, the social statuses and residences of the residents, which became the image formulating elements, were made in the period from the end of the Taisho to the early Showa era, while the residences and stores in towns where the images of "common", "old" and "bright" which became the image formulating elements developed in the period after early Showa through 30's of Showa (1955-1964). The relationship between the characteristics included in the residential area of "Western Uptown type" and the residential area images observed in the typical towns is cartographed in Figure 14, based upon the above description.

6) "Eastern Uptown type" residential area

On the northwest side of the western area, a areal entity is formulating by combining the residents who have such characteristics as 'Person in the twenties' and 'Housewife moved in 15 years ago or before' with the particular living environment represented by minor private houses to rent on the loam plateau. The towns falling under this "Eastern Uptown type" residential area are

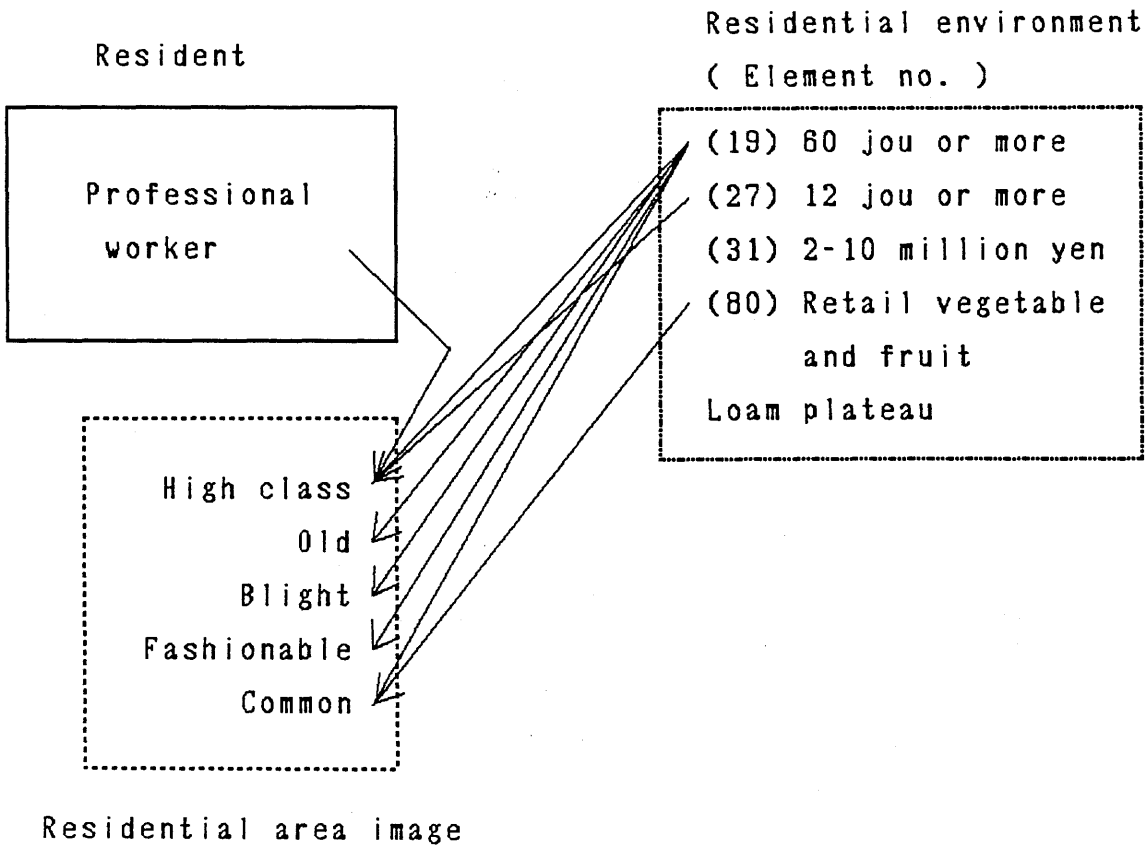


Figure 14 Residential area type and residential area image in "Western Uptown type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

described below.

Shibuya-ku

Sasazuka, Hatagaya, Nishihara

Shinjyuku-ku

Nakai, Nishi-ochiai, Nishi-waseda, Toyama

Suginami-ku

Honan, Wada, Asagaya-kita, Kouenji-kita, Amanuma, Ogikubo, Shimo-takaido, Eifuku

Setagaya-ku

Ohara, Setagaya, Wakabayashi, Daizawa, Matubara, Sakurajosui, shimouma

Toshima-ku

Ikebukuro-honcho, Kami-ikebukuro, Nishi-sugamo, Sugamo, Nagasaki

Nakano-ku

Minami-dai, Yayoi, Honcho, Higashi-nakano, Nogata, Nakano, Arai, Numabukuro, Ekoda

Here, studies are made on how the characteristic residents and residential environment existed with respect to towns such as Asagaya, Ikebukuro, Numabukuro, Nakai and Matsubara, and also on how the residents and the residential environment have been involved in the formulation of the images of each residential district. The images and keywords of Asagaya, Ikebukuro, Numabukuro, Nakai and Matsubara are shown in Tables 34 and 35.

In 1899 (32nd year of Meiji) the Kobu line was laid through

Table 34 Images of the towns falling under "Eastern Uptown type"

Image ＼ Town	Asagaya	Ikebukuro	Numabukuro	Nakai	Matubara
blight	8	11	3	1	6
dark	10	26	7	6	5
manly	4	22	7	2	3
womanly	5	3	1	0	3
new	3	11	2	3	1
old	17	14	6	6	10
developing	2	22	1	0	0
depressed	6	9	6	5	4
urban	3	14	0	0	0
rural	2	0	10	5	8
high class	4	0	0	1	5
common	35	29	22	16	13
cultural	3	9	2	5	4
noncultural	1	14	4	1	1
convenient	20	42	5	3	6
inconvenient	2	2	10	8	7
fashionable	0	3	1	1	2
unfashionable	9	39	17	8	3
healthy	9	2	4	0	5
unhealthy	1	32	3	1	2
fevorite town	3	1	0	1	0
town never known before	5	0	25	44	38

source : Sumaino Toshokan Shuppan Kyoku(1988)

Table 35 Keywords of the towns falling under "Eastern Uptown type"

Town	Keyword
Asagaya	residential block, quiet, student, Chuo line, shopping street in front of station, SUMOU
Ikebukuro	Sunshaine 60, SEIBU, department store, movie theater, unpolished, indecent, dull
Numabukuro	disorderly, residential block, small town in large city, town of unfashionable name, boarding town of country people, culture village
Nakai	just seen from train windows, town just passed through,
Matubara	town inhibited by the employees of major corporations, Setagaya, near but far

source Sumaino Toshokan Shuppan Kyoku(1988);
Tokyo Chamber of Commerce and Industry(1984)

Asagaya, and in 1921 (11th year of Taisho) a station was established there as the result of a local inducing movement. After the Great Kanto Earthquake which occurred the year following the opening of the station the landscape was formulated in this suburban farming area. The change of its upland fields into housing lots was brought about by the population outflow from the City of Tokyo. In the period from the 20th through the 30's of Showa (1955-1964), many wooden apartments to rent were built along meandering farming lanes, and a highly dense landscape was formulated with many housing and stores mixing therein. In the current year of 1989, the neighborhood of the north entrance to the station and Nakasugi street are shopping streets, while the other areas are residential areas. Of the image of this town, "common" is the most seen being followed by "convenient" and "old". The keywords are "residential block", "shopping street in front of station", "student" and "Chuo Main line". "Common" is conceivably allied to the landscape, especially to that of the dense residential areas centering around wooden apartments to rent. Because "shopping street" is listed as a keyword, it appears that the shopping street in front of the station is recognized as a large-scale one. Regarding "convenient", this may be connected with the shopping street in front of the station and which also appeared in the list of keywords. However, because the railroad line name of "Chuo Main line" is listed, the traffic condition of direct access to Shinjyuku sub-city center in 10 minutes and to the main city center in 30 minutes due to the junction of the Chuo Main line with the Eidan subway Marunouchi line is also conceivably

appreciated.

Ikebukuro started its development with the construction of a station in 1903 (36th year of Meiji) when the Toshima line of the Nippon Railroads company (currently part of the Saikyo line) opened. In 1914 (3rd year of Taisho), the Tojo line was constructed, and the Musashino Railroad (currently Seibu-Ikebukuro line) was constructed the following year. In 1954, Marunouchi line opened. Thus, Ikebukuro Station made its character as a terminal station from suburbs. For some time after World War II the area in front of the west entrance to the station was an disorderly market place. With the opening of the Tobu Department store in 1962, the atmosphere changed drastically. In the current year of 1989, it is not only a shopping center centering around the department store, but is also a sub-center of Tokyo with heavily endowed with amusement facilities, such as movie theaters, sauna baths, PACHINKO (pinball game) halls, a bowling alley a skating rink, and a swimming pool. The former site of the Sugamo prison, well-known as the site of the Tokyo International Military Tribunal after World War II, became the Sunchine City, including a skyscraper and built in 1978 through redevelopment. Sunshine City is a new symbol of Ikebukuro. Kami-ikebukuro and Ikebukuro-honcho are the residential areas off the busy town near the station, but condominiums and banks are increasing recently.

The images of Ikebukuro are "convenient", "unfashionable", "unhealthy", "common" and "dark". The keywords are "Sunshine 60", "SEIBU", "department store" and "movie theater" and "department store". The image formulation of this town is conceivably derived

centering around the shopping streets and therefore, images such as "unfashionable", "unhealthy" and "dark" conceivably have strong connection with the structure of the shopping streets in front of the station where facilities such as saunas and PACHINCO halls as well as vulgar movies theaters are conspicuous. However, it may also be possible that the situations of the west entrance area immediately after World WarII and Sugamo Prison are recollected. The image of "convenient" is, of course, symbolized by the keyword "department store", appreciating the commercial function and connected with the fact that large department stores represented by Seibu and Tobu as well as the Sunshine City facilitate the availability of consumer goods as a whole including daily necessities.

Numabukuro is a town which was developed with the opening of a station on the Seibu-Shinjuku line in 1927 (2nd year of Showa). In the early Showa era, the land lot rearrangement was enforced. In this year of 1989, there is a shopping street extending about 400 meters in front of the station, an old residential area with woods surrounding mansions on the hillside, and densely housed residential areas on the lowland.

The images of this town are "common" and "unfashionable", while the keywords are "disorderly", "town of unfashionable name" and "residential area". The image of "common", together with the keyword of "residential area", mostly have connection with the landscape of a residential area expanding on the lowland, and have an especially strong connection with the landscape of the densely built residential area. The additional presence of

"unfashionable" may, as explained by the keyword "unfashionable land name", probably come from the impression given by the arrangement of KANJI (Chinese letters) for the land name meaning Middle Well.

Also at Nakai, a station on the Seibu-Shinjuku line was opened in 1927 (2nd year of Showa). Its development as a residential area came after the Great Kanto Earthquake when a real estate called Hakone Tochi K.K. developed the Mejiro Bunka Mura (mejiro cultural Village) as land lots for sale and BUNKA JUTAKU (cultural housing or modernized residences) were built. The village was a beautiful terrace commanding a view of Mt. Fuji, and many writers and painters lived here. The western style houses built in those days still remain here and there. Fumiko Hayashi, who lived here, describes the scenery of this quiet residential area like this, "this is a town with many stepped roads, and every house has its own garden...." On the lowland at the foot of the terrace and along the river of Myoshoji river, are shopping streets centering around Nakai Station being mingled by medium-small factories originated from the dyeing factories which located here since the early Showa era, being attracted by the merits of springs at the foot of the terrace and the river Myoshoji river as drainage.

The image of this town is mostly "town never known before". In other words, it is less known with just one additional image of "common". There are also very few keywords, only including "just seen from train windows", "town just passed through" and "culture village". Also, nothing suggests any concrete element.

From this, the image of "common" is conceivably connected with the landscape of the housing-factory mixed area on the lowland as one of the scenes observed through the train windows of the Seibu-Shinjuku line. Also, it may not be necessary to seek other concrete elements.

Matsubara was a rural district in the suburbs of Tokyo until the railroads were constructed around it in the Taisho and early Showa eras. The current Keio line opened in 1915 (4th year of Taisho), the Tokyu-Setagaya line in 1925 (14th year of Taisho), Odakyu line in 1927 (2nd year of Showa) and the Inokashira line in 1933 (8th year of Showa). Thus, there opened as many as ten stations including those in neighboring towns. suburban type residences were then built along the footpaths between the farmlands and the area became a quiet residential area with many trees and hedges. At present, except for tiny shopping streets around each stations, this is a residential area mingled by some condominiums.

The images of this town are "common", "old", and "rural", while the keywords are "town inhabited by the employees of major corporations", "Setagaya" and "near, but far". Of the keywords, "setagaya" may come from the recognition as a residential area of Tokyo, while "common" and "rural" may have its connection with the landscape of the greenery residential area where many narrow alleys still remain. Likewise, "old" also has its connection with the landscape of the residential area where buildings constructed in the early Showa era still remain.

As above description, I studied, the towns categorized as

the "Eastern Uptown type". In Asagaya and Ikebukuro, the railroads opened as early as at the end of the Meiji era and stations were also established before the Taisho era. However, it was as late as the 20's and 30's of Showa (1945-1964) that the construction of apartment houses reached its peak and when the dense residential areas connected with the image formulation came into being. The keywords for Asagaya and images for Ikebukuro originated from the retail shopping street. Especially for Ikebukuro, the commercial landscape itself gives certain negative images. As these shopping streets were gradually built up from the opening of stations, the image formulating period of the surrounding areas is almost the same as the replenishing period of commercial functions. In other words, for either town, it may well be understood to be in the 20's and 30's of Showa that the two elements of housing and retail shopping streets which became the image formulating elements, made their appearance.

Both Numabukuro and Nakai are less known, and have no characteristic image. Also, despite partially having quiet residential areas, the clumsy residential area on the lowland formulates their images. This may not be indifferent to creating the peculiar landscape of dips on the terrace mingled by factories.

Regarding the clumsy houses, stores and transport network which became the image formulating elements for these districts, small houses, private house to rent, and retail stores may apply. The relationship between the characteristics included in the "Eastern Uptown type" and the images of residential areas as seen

in the typical towns are cartographed in Figure 15, based upon the above description.

7) "Northwestern suburbs type" residential area

In the northwest suburbs covered by this study, a areal entity is formulated by combining the residents who have the characteristics of 'Couple in the forties and their children', 'Large household living there since their birth', and 'non family -nuclei household' with the particular living environment represented by small or large independent houses on the loam plateau. The towns falling under the "Northwestern suburbs type" are described below.

Nerima-ku

Oizumi-gakuen

Asaka city in Saitama prefecture

Negishi, Tajima, Oka, Hamasaki, Shimo-uchimagi

Tokorozawa city in Saitama prefecture

Sakanoshita

Niiza city in Saitama prefecture

Nobidome, Owada, Nakano, Horinouchi, Baba, Hatanaka

Wako city in Saitama prefecture

Minami, Hirosawa

Here, studies are made on how the characteristic residents and residential environment existed with respect to towns such as

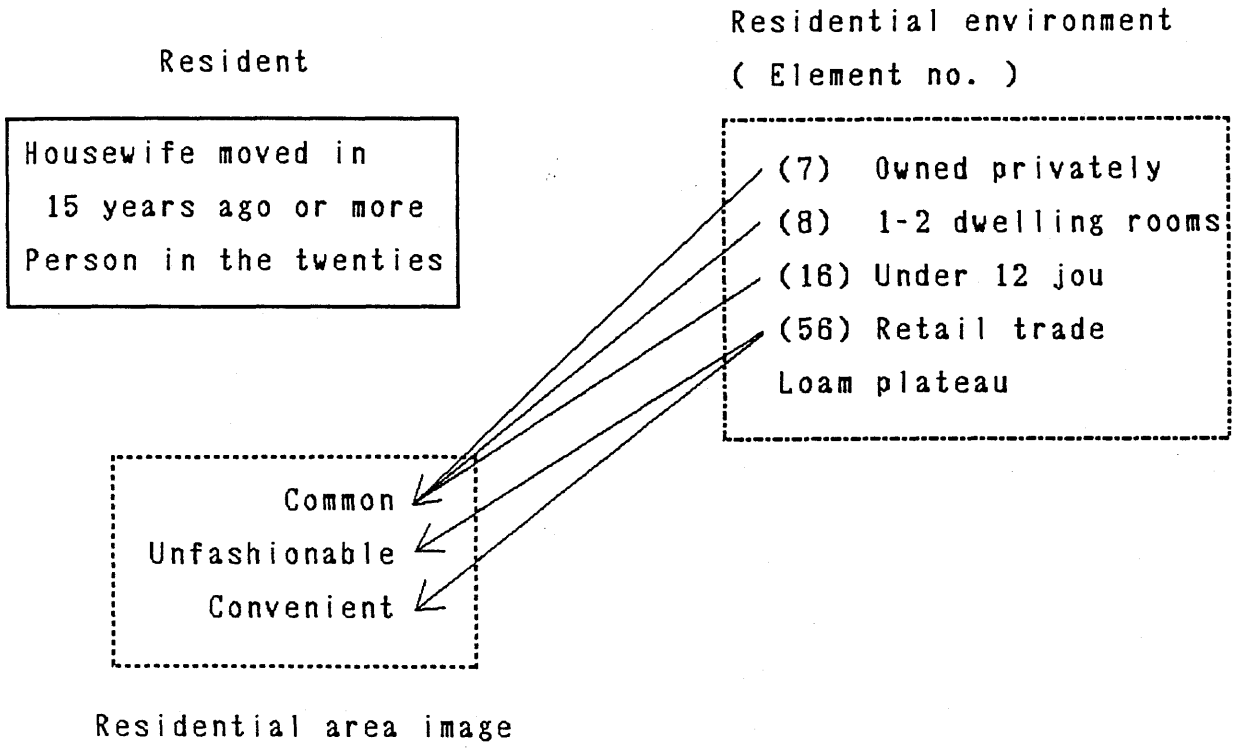


Figure 15 Residential area type and residential area image in "Eastern Uptown type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Nobidome in Niiza city, and Minami, Hirosawa and Niikura in Wako city, and also on how the residents and the residential environment were involved in the formulation of the images of the residential district.

Nobidome in Niiza city was a vegetable raising area in the suburbs of Tokyo until the early Showa era, except for a locally capitalized fertilizer company which located here in 1932 (7th year of Showa). However, in the neighborhood of this town, there were many wire extending factories located in the period from the end of the Meiji era to the Taisho era, becoming a center of the wire extending industry in Saitama Prefecture. In around the 13th year of Showa (1938) a weapons manufacturing factory which partially contributed to the military demand industry, came from kojimachi-ku, downtown Tokyo. After World War II, 6 factories of copper extension, wood products, matches, and communication instruments concentrated in the Nobidome area and many wooden apartment houses for their workers were constructed at the same time. In addition, in the High Economic Growth Period beginning from around the middle of the 30's of Showa (about 1960), many factories of, in addition to such primary metal products of extended tubes/iron/copper, metals, machinery, apparatus, woods products, precision instruments, and military power located to make its color of an industrial area darker. In the current year of 1989, it is now the center of Niiza city, but residences and factories are distributed together with vegetable fields such as carrots and burdock, peas and grapes, and flat land forests. The Niiza-Nobidome Housing Complex of the Japan Public Housing Cor-

poration was constructed in 1961.

Both Minami and Hirosawa in Wako city are situated on a terrace. In 1934 (9th year of Showa) Niikura station (currently Wako-shi station of Tojo line) was established, but these areas were upland farm areas before World War II. In 1941 (16th year of Showa), the Army Preparatory Academy moved from Ichigaya in Tokyo city into the southern part of these areas. Into Niikura, a neighboring area, came a plant which manufactured machine guns. Since then, into the neighboring areas came plants which manufacturing military power, machine tools, and airplane parts, and many apartment houses were built for their workers. After World War II, the former site of the Army Academy became Camp Drake and the Momote Housing Complex for the occupation forces. The former sites of the plants in Niikura became warehouses for the United States Army. Since 1960, plants with headquarters in downtown Tokyo moved into the peripheral areas. After the reversion of military bases, the Physics and Chemistry Research Institute as well as Nishi Yamato, Suwahara, and the Minami-yamato housing complexes were constructed on their sites. 730 houses of the Wako residential Quarters for the Ground Self-Defense Forces were constructed over a 3 year period from 1970. In the current year of 1989, in Minami and Hirosawa upland farms and housing complexes mix, while in Niikura, paddy rice fields, factories and warehouses are seen on the lowland along the Shin-gashi-gawa river. On the right bank of the Ara river is a residential area mingled by upland farms on the terrace.

No data exists on the images for these towns. However, since

these towns are known by Tokyoites as areas going and back to downtown Tokyo by the Tojo line, the images for towns along the Tojo line shall be studied as substitutes of the images for these towns. (Parco,1987) The images for the areas along the Tojo line are shown in Table 36. They are "rural", "poor" and "noncultural", and their keywords are "housing complex" and "wooden apartment house". Of these, "housing complex" and "wooden apartment house" well coincide with the landscape of residential areas. "Rural" may have connection with the landscape as a whole where residential areas are mingled with farmlands. Regarding the images of "noncultural" and "poor", it is difficult to specify their concrete image formulating elements, but, if assumed from their content, possible connection with the characteristics of the residents in these towns is conceivable. Regarding "poor", it may have a connection with the fact that images themselves along the railroad line are scarce but the residents, in other words, that the characteristic elements allied to the image formulation are few[27].

The author described the town names falling under the "Northwestern suburbs type", and examined some of them. Also, the farming landscape mixed therein as well as their residents can be examined. The farming landscape is the land use pattern which was predominant here prior to the 30's of Showa (1955-1964). The wooden apartment houses were constructed before and after World War II, while the housing complexes came into existence after the 40's of Showa (1965-1974). Also, the increased residents in this area may well be assumed roughly as same as the construction

Table 36 The images and keywords for the towns along the Tobu-Tojo line and the Tokyu-Tama den-en-toshi line passing through the residential area falling under "Northwestern suburbs type" and "Tama Hill type"

Image ＼Line Keyword	Tojo line	Tama den-en-toshi line	Keyword ＼ Line	Tojo line	Tama den-en-toshi line
new		16	student	1	3
urban		5	suburban residential lot	1	36
rural	17		mansion	2	7
rich		22	housing complex	11	4
poor	6		mansion for alone		10
cultural		7	wooden apartment house	6	
noncultural	7		ladies magazine	2	31
healthy		10	shopping		13
unhealthy	1		business	1	1
manly	2		culture	2	7
womanly		7	sport	2	6
day time		1	playing		3
night time		1			
weekday	1	1			
holiday		1			
daughter of good family		19			
housewife of good family	2	27			
single		3			
couple		4			

source: Parco(1987)

period of wooden apartment houses and housing complexes. In other words, images formulation of "rural", "noncultural" and "poor" which represent these areas may be said to have been gradually made mostly before World War II and around the 40's of Showa (1965-1974). If the image formulating elements were selected from among these "Northwest suburbs type", the number of households living in the public housing would be picked up. The large time and distance from downtown Tokyo results in preserving the farming landscape leading to the image of "rural". Therefore, this element may be judged as an image formulating element, albeit indirectly. The residential characteristics constitute in one entity the formulating elements of such images as "noncultural" and "poor". Since the image of "rural" is conceived as almost anonymous to that of "pastoral", the relationship between the residents and residential environment and the residential images is shown in Figure 16 after replacing "rural" by "pastoral".

8) "Tama Hill type" residential area

In the southwest suburbs covered by this study, a areal entity is formulated by combining the residents which characteristics of 'Large household living there since their birth' and 'Non family nuclei-household' with the specified residential environment represented by large or small independent owner-houses far from downtown Tokyo. The towns falling under the "Tama Hill type" are described below.

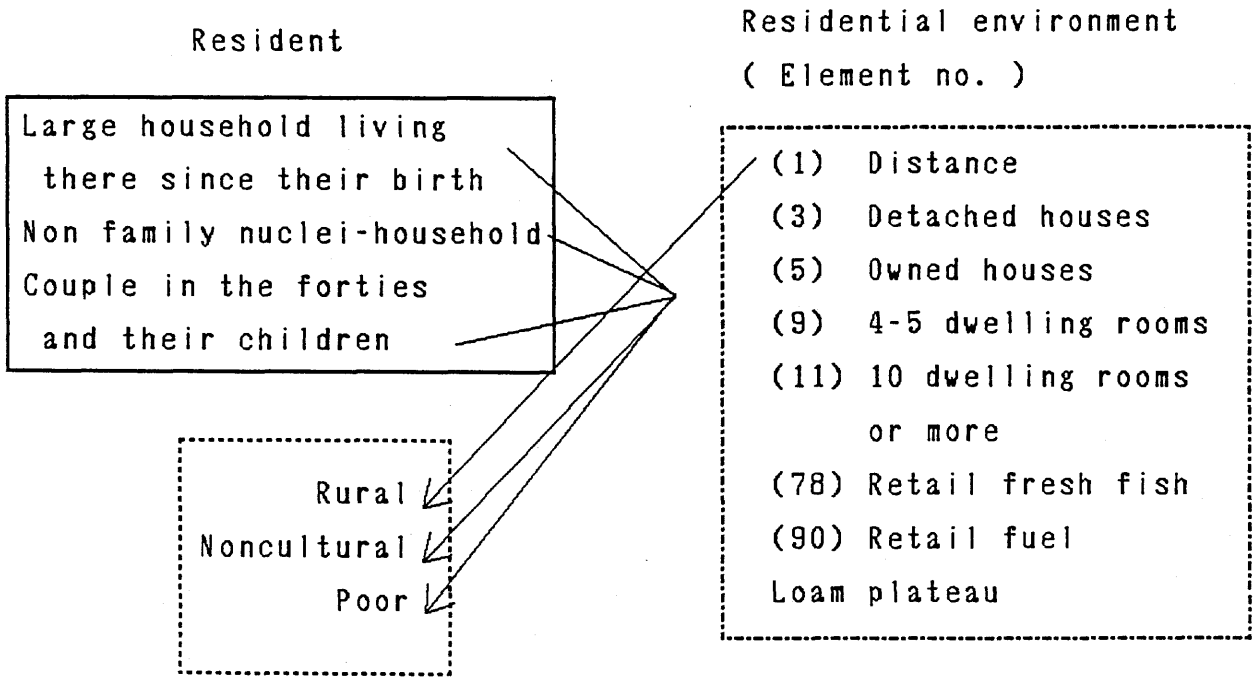


Figure 16 Residential area type and residential area image in "Northwestern suburb type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

Tama-ku in Kawasaki city, Kanagawa prefecture

Sugo

Midori-ku in Yokohama city, Kanagawa prefecture

Eda, Eda-minami, Ikebe, Eda-higashi, Ichigao, Oba,

Azamino, Moto-ishikawa, Utsukushigaoka

Kouhoku-ku in Yokohama city, Kanagawa prefecture

Chigasaki, Nakagawa, Ushikubo, Minami-yamada, Shin-yoshida,

Sumiregaoka

Here studies are made, with respect to Edo and Ichigao in Midori-ku, Yokohama city, and a few towns in Kohoku-ku of the same city, on how the characteristic residents and residential environment have existed, and also on how they have been involved in formulating the images of their residential areas.

All towns included in Midori-ku of Yokohama city neighbor each other, and are in the courses of new type town building up in line with the Tama Pastoral city Plan by the Tokyu Railroad Company. The outlined plan for the Tama Pastoral Town is first referred.

By Matsubara (1982), the Den-entoshi Kaisha (Pastoral Town Company), predecessor of the Tokyo Kyuko Railroad Company, the Meguro Kamata Dentetsu (Electric Railroad Company) and the Tokyo Yokohama Dentetsu had been engaged in the development of residential areas over a wide area since the development in and around Den-enchofu in the Taisho era. Based upon such practical experience, the concept of the Tama Pastoral Town was mapped out in 1953. Before the development,this district was a semi-farming

village zone where undeveloped forest and infertile farmlands mixed in the valley of the Tsurumi river. Most farming households were minor operators with an average farmland area of 5-6a. Since 1962, by the original method of Tokyu, to be enforced by a union, 2616ha of land were rearranged by 1980 (Total 3160ha). The development area was roughly broken down into four sub-areas, piercing which the Den-en-toshi line railroad opened between Musashi-mizonokuchi and Nagatsuda in 1966. In each sub-area, in addition to the development of condominiums by Tokyu, the high densely development of housing including medium high storied housing complexes by the Japan Public Housing Corporation and the Kanagawa Prefecture Housing Supply Corporation is in progress. Of the above sub-areas, Eda.and Ichigao are towns which had old communities before the development. Eda had been a station town on the Oyama Kaido highway since the Kanbun era (1661-1673), while its surroundings and Ichigao were semi-agrarian areas. Before World War II, the cultivation of rice, barley and wheat in addition to silkworm raising (since the middle of the Meiji era) were popular. Since the Taisho era, the cultivation of vegetables for urban areas such as Tokyo and Yokohama also became popular. In and after the 1960's, on almost every area on the terrace, land lot rearrangement progressed in accordance with the Tokyu Tama Pastoral Town Plan. In the current year of 1989, urbanized, zones with high-rise housing are built centering around the Eda and Ichigao station. There also are many housing lots on their peripherals, but farmlands where vegetables are raised and forests still remain here and there. Especially in Eda, on the

lowland along the Hayabuchi river together with neighboring valleys, a considerable stretch of paddy fields remain just as they were, partly due to being designated an Urbanization Adjustment Area. In Ichigao also, the area along the Tsurumi river became an Urbanization Adjustment Area and is utilized for tree nurseries and orchards. For this reason, the contrast between the dense residential landscape on the terrace and the farming landscape on the lowland along the rivers is conspicuous. Since around 1965 or some years thereafter, the start of development these areas experienced a drastically increased population. The Kohoku New Town Project is in progress in towns in the northern part of Kohoku-ku of Yokohama city. Announced in 1985, this project is a housing lot development covering 2500ha to be populated by 250,000 persons. In towns of Ushikubo, Odana, Kita-yamada, Minami-yamada, Chigasaki and Nakagawa, the land leveling works of this development are under way but also leaving many upland farms, orchards and tree nurseries as they are. Sumiregaoka is the section where the leveling work was first completed as early as 1972. Since its developing time is later than that of the Tokyu Tama Pastoral Town, there are still only a few residents in the new housing in the development area.

No data on the residential area images for these towns exists. However, since this area formulates the most typical housing area on the Den-en-toshi line, its regional images are strongly reflected in the images for the areas along this railroad line. Of the Images by Railroad line (Parco, 1987), the most conceivable images and keywords for the this district have been

selected. The images for the towns along the Den-en-toshi line are shown in Table 36. The images for the towns along this railroad line are "rich", "new" and "healthy", while the keywords are "suburban residential area", "ladies' magazine', "housewife of good family" and "daughter of good family". From the image of "new", the connection with the landscape of housing lots where development is seen of the keyword of "suburban residential lot". However, in view of the special appearance of the image of "rich", this town is conceivably recognized as a comparatively high class housing area. From the appearance of the keywords "housewife of good family" and "daughter of good family" which depict high level residents, the connection may be made with the high status of residents. The keyword "woman's magazine" suggests the presence of fashionable restaurants and clothing stores which are the features of such magazines. This may also have a connection with the image formulation of "new".

Hitherto, the author described the town names under the "Tama Hill type" and studied some of them. It is clear that the image formulating elements for this area are the housing conditions and commercial conditions especially allied to the high class image and the residents who have newly come here to live. The new landscape and residents were induced to this area by this plan since the 40's of Showa (1965-1974) with the development of housing lots. From this, it may be said that the image formulation of "rich" and "new" which represent this area was made after the 40's of Showa. If the image formulating elements are selected from among the elements of "Tama Hill type" residential area,

independent house, owned-house, large house, and newly opened store may be listed as the housing conditions. With respect to the residents, however, since the two characteristics appeared for the "Tama Hill type" are hard to be considered as the elements of residents who live in new houses, they are not included. Since the image of "rich" is considered almost synonyms to that of "high class", the relationship between the residents and residential environment and the residential area image is shown in Figure 17, after replacing "rich" by "high class".

IV-2 Distribution pattern of residential area images

Lastly, the extension of the images for the living areas have been examined. Since the commercial conditions tend to be more influential than any other elements on deciding the residential area image, it can be said to say that the characteristics themselves of the commercial area directly decide the image. In the bay coastal area and the northeast suburbs, the industrial and housing conditions have connections with image formulation, but their formulating periods are quite different from each other. Especially, the industrial conditions of each district probably has a strong tendency to put forth dark and negative image. On the other hand, in the case of the west suburbs, the image formulating period vary remarkably according to the place. It is noteworthy that the oldest one of these is not the "Eastern Uptown type", which is closest to the city center, but the "Western Uptown type" which is located slightly outside. This

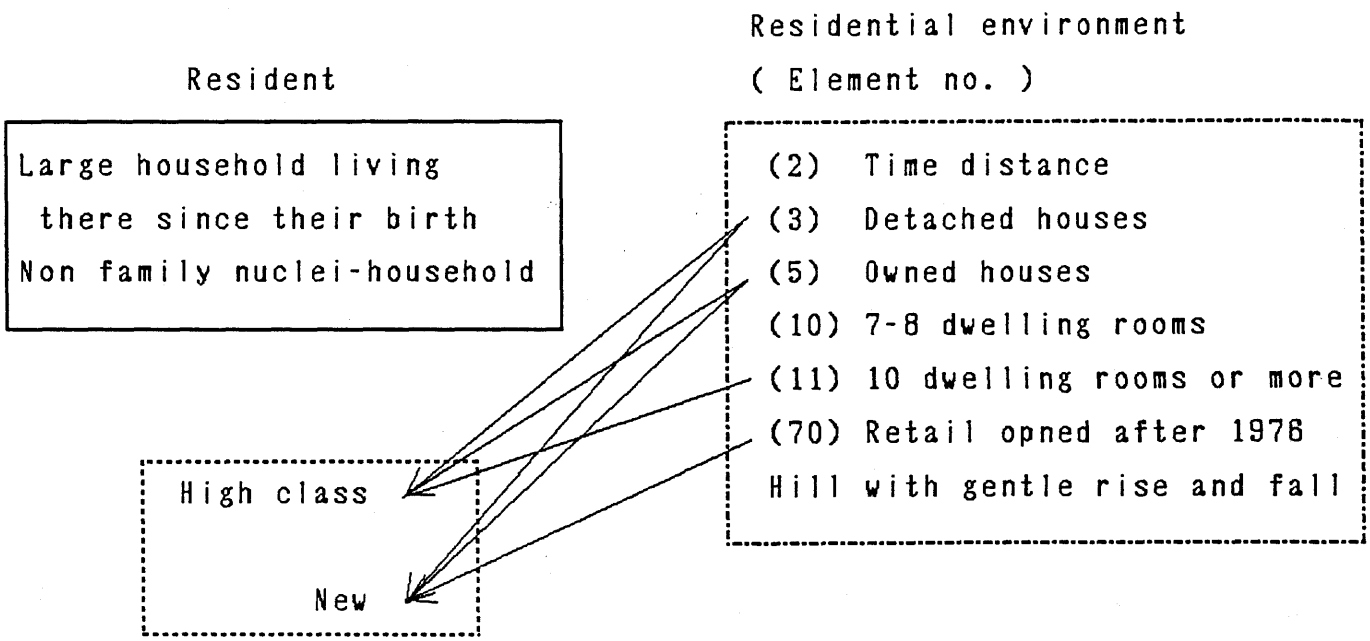


Figure 17 Residential area type and residential area image in "Tama Hill type"

note : Elements of residential environment are abridged from Table 5

Closely related elements of residential area type and residential images are shown by arrow lines

type had a rich stock of images. It is also conceived that, in the districts which experienced a relatively slow conversion to housing lots, including planned residential districts, rich images might have been created for the towns which could ferment their respectively original characters. In the west suburbs, there is a strong tendency that the housing conditions generally have a connection with the image formulation. this fact, as stated on establishing the type of residents, may be caused by that, in the west suburbs, there is a tendency of residents whose age structure and living periods are similar, live together. Thus, the connection with the commercial/industrial conditions which puts forth a stronger image is weak.

By summarizing these factors, it is clear that the residential area images in this study area are structured centering around two contrasting images axes of "common versus high class" and "new versus old". The image of "high class" extends its chain toward the southwest with "Southwestern Midtown type" at its east end to "Tama Hill type" through "Western Uptown type". This direction is also common to the images of "urban" and "fashionable" what constitutes the axes of this extension are the districts along Route 246 and the Odakyu line. With respect to the formulation of fashionable towns in this direction, Parco (1986) stated that it was motivated by the improvement of Route 246. This improvement was made in the latter half of the 30's of Showa (1960-64) to effectively connect the National Stadium, Yoyogi Olympic Village, and Komazawa Park as a part of the remodelling works of Tokyo for the sake of the Tokyo Olympics.

However, an extension of this image to the residential districts far from the center of Tokyo, and even further to Tama Hill, is unexplainable by a partial remodelling of the big city of Tokyo. Then, the author examine the image formulating elements for the respective regional patterns in this direction. For instance, the elements connected with the image of "high class" are stores on the side of central Tokyo (Southwestern Midtown type), the residents and the quality of housing in the hill section (Tama Hill type). In this manner, it is found that their contents vary greatly. In other words the image of "high class" in this direction is produced out of "highness high level" which is common to all stores which handle quality goods, residents of high status, and the high quality of the residences. The incidental continuation in a chain of these elements in this direction may also define the image. In this sense, an all-inclusive housing development of Tokyu progressed in the Tama Hill area which was near central Tokyo, but made great allowance for development with the intention of providing a high quality image can be viewed as having contributed greatly to the strengthening of the image in this direction.

The image of "old" is seen for the "Northeastern Midtown type" in the eastern area and for the "Western Uptown type" in the western area. They respectively overlap to the images of "common" and "high class". In the eastern areas, the image of "old" extends widely on the northeastern side to central Tokyo and is produced from the commercial conditions. On the other hand, in the western suburbs, it is produced from the conditions

of relatively large residences dotted in small groups. The image of "old" in the eastern suburbs does not continue to that in the western suburbs. The image of "new" is seen for the "Bayshore type" in the eastern suburbs and also for the "Tama Hill type" in the southwestern suburbs. This partially overlaps the images of "common" and "high class". The image of "new" is produced from centering around the housing conditions, but its connection with the commercial conditions is also seen in the southwestern suburbs. The difference between "new" and "old" is connected with the development periods of the housing concerned. However, in view that the housing area on the bay shore are with the image of "new" was developed after the 30's of Showa (1955-1964) while Tama Pastoral Town with the same image being after the 40's of Showa (1965-1974), and also while uptown residential areas with the image of "old" being in the 30's of Showa, the 30's of Showa is conceivably the rough boundary between them.

CHAPTER V

ARRANGEMENT PATTERN OF RESIDENTIAL AREA TYPE AND RESIDENTIAL STRUCTURE

V-1 Residential area types and establishment of residential image region

In this chapter the author establishes residential image region analyzing relationships between residential area types and images that have been made clear by former chapter and pointed out the details of their characteristics in Table 37. Because definite relationships among residents, residential environments and images, and the regional extent of images have been clarified by former chapter, each extent in terms of residential area types can be prescribe as a "residential image region". Namely the residential image region is organized with residents, residential environments and residential area images, and one residential image region has synthesized these three characteristics.

1) "Northeastern Midtown image region" and "Southwestern Midtown image region"

In terms of two residential area types adjacent to the city center, contrasting areal differences were identified in the residential images. Although characteristics of resi-

Table 37 Characteristics of residential areas

Type of residential area	Distribution area	Residents			Residential environment					Residential area image				Creating time of image	Towns representing each type
		Occupation	Age group	Time of last move Form of household	Access	House	Industry	Commercial	Topo	High class —Common	New — Old	Urban —Rural			
Northeastern Midtown image region	Northeastern area of midtown	Self-employed person in wholesale and retail				○	○	◎	○	★	★			Edo era - before World War II	Asakusa, Tukiji Kanda, Shinbashi
Southwestern Midtown image region	Southwestern area of midtown	Self-employed person in wholesale and retail				○	○	◎		★		★		After World War II	Azabu,Roppongi, Ginza, Akasaka, Shinjyuku
Bokuto image region	Northeastern suburban area	Craftsman	Old person			○	○	○	○	★				After Meiji era	Kyojima,Yotugi, Higash-mukoujima, Senjyu
Bayshore image region	Tokyo Bay area	Transport and communication occupation worker	Couple in the thirties and their children	Household moved in there within 1 year		◎	○	○	○	★	★			After 30s of Showa era	Shibaura,Omori,Kasai, Urayasu (Chiba prefecture)
Western Uptown image region	Western side of Musashino plateau	Professional worker				○	○	○	○	★	★	★	★	Early years of Showa era - 30s of Showa	Seijo, Soshigaya Nishi-ogikubo, Kichijoji
Eastern Uptown image region	Eastern side of Musashino plateau		Person in the twenties	Housewife moved in 15 years ago or before		◎		○	○	★				20s of Showa -30s of Showa	Asagaya, Ikebukuro, Nakai, Matubara
Northwestern suburbs image region	Northwestern suburban area		Couple in the forties and their children	Large household living there since their birth	○	◎		○	○				★	Before World war II -40s of Showa	Nobidome(niiza city) Minami,Shinkura (Wako city)
Tama Hill image region	Tama hill area			Large household living there since their birth and Non family nuclei-household	○	◎		○	○	★	★			After 40s of Showa	Midori-ku Eda Ichigao, Utukushigaoka Kohoku-ku Sumiregaoka (Yokohama city)

Note : ○ Characteristic residential environment ; ★ Characteristic residential area image
◎ More characteristic residential environment
Access Accessibility to the city center ; Commerce Commercial condition
House Housing condition ; Topo Topographic condition
Industry Industrial condition

dents and residential images are common in these residential types, different images of residential area have originated in some commercial conditions. As analyzing typical town history in terms of commerce, the historical background of the first type's towns is different from that of the second type's towns. The first type's towns have been existed since the Edo era and have been developed commercial areas having the same characteristics consistently. On the other hand, the second type's towns have changed the characteristics of their commercial centers with the adding exoticism to them and with the modern town planning. It was possible to infer that the definite differences of residential images with regard to these regional types were strongly related to the changing process of town attributes and background of town history. Despite their adjacency, there different regions were classified into two residential image regions; i.e. "Northeastern Midtown image region" and "Southwestern Midtown image region".

Next the author clarifies the regional extent of the "Northeastern Midtown image region". In this study, residents, residential environments and residential area images were examined as important elements of the residential area, and 8 residential image region were established through analyzing these three elements. Mapping method is available to express the interrelationships between these residential elements. Therefore the author examined the following items about residents, residential environments, and residential

images respectively.

a) Typical residential districts in each type of residents[28].

b) Elements of residential environment related with each type of residents[29].

c) Typical residential area images[30].

As regards, the analyzing objects of distributions are three elements related to the residential area.

First, the districts of (Typical district A) are defined the district together with a), b) and c), that is the complete set of residents, residential environments and residential area images. Second, the districts of (Typical district b) are defined the district together with b) and c), that is the set of residential environments and residential area images. Third, (Image area) is defined the area of c). According to these procedures, "Northeastern Midtown image region" is divided into three regional characteristics; (Typical district A), (Typical district b) and (Image area). As going outward to (Typical district b) and (Image area), this residents' perception is diminishing by degrees, because the elements of residential area are gradually decreasing. Therefore the extent and the intention of the perceived residential area are represented with mapping (Typical district A), (Typical district b), and (Image area) respectively.

According to the above analysis, and the extent of "Northeastern Midtown image region" are shown in Table 38 and Figure 18 respectively.

Table 38 Typical district and Image area of "Northeastern Midtown type"

District	Resident	Residential environment	Image
Typical district A	Self-employed person in wholesale and retail	-- Number of wholesale trade Number of retail trade	-- "Common" 20% or more
	Self-employed person in wholesale and retail	-- The ratio of retail trade opened before 1944	-- "Old" 20% or more
Typical district B		Number of wholesale trade Number of retail	-- "Common" 20% or more
		The ratio of retail trade opened before 1944	-- "Old" 20% or more
Image area			"Common" "Old" 20% or more

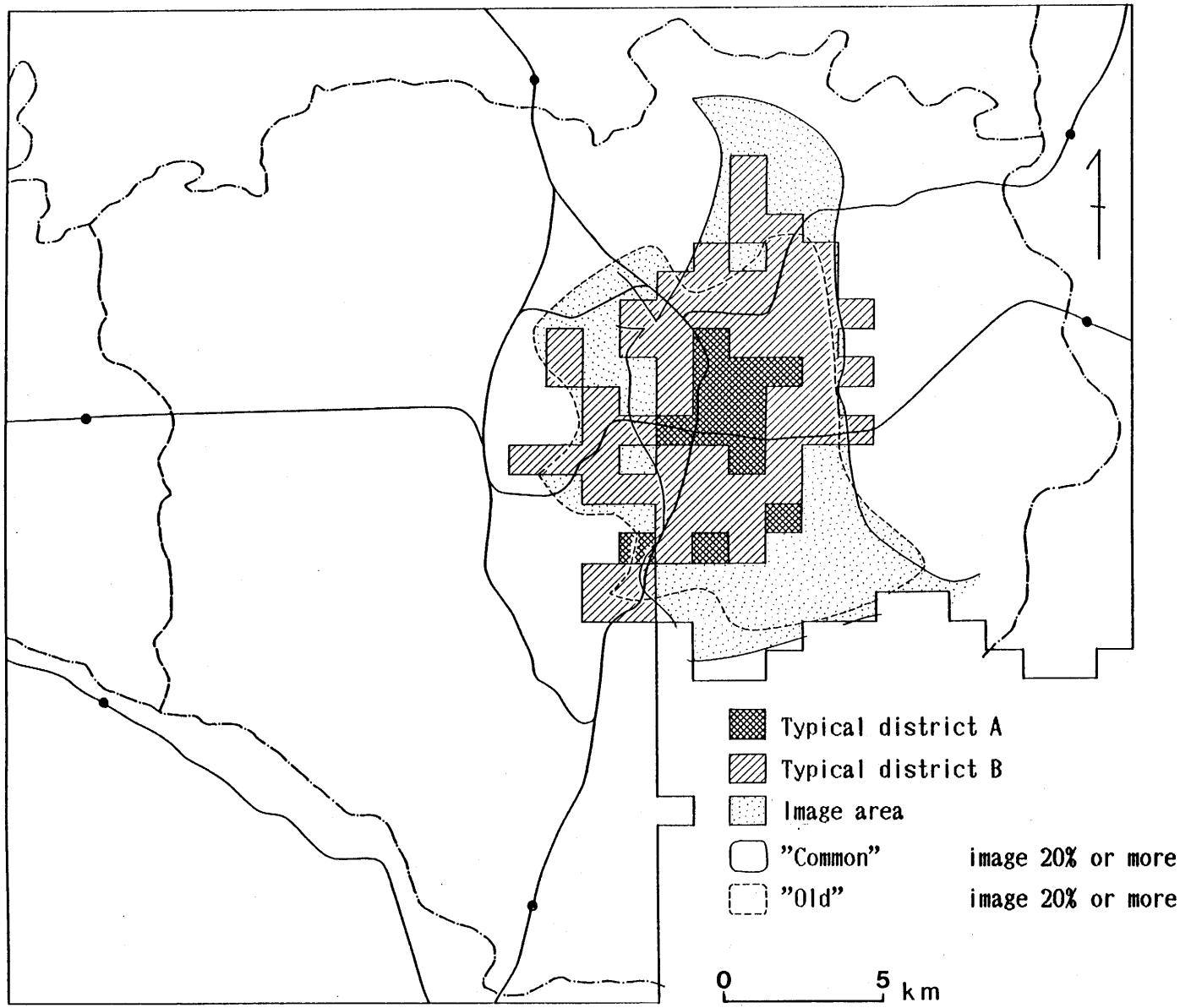


Figure 18 Typical districts and image area of "Northeastern Midtown type"

The districts of (Typical district A) in "Northeastern Midtown image region" are extended from Asakusa, which is the center of this image region, and the east to west and south to north of its extent are three and four kilometers respectively. Other district belong to this region are partly extended near Monzen-Nakamachi and Shinbashi. The districts of (Typical district b) extend from south to north surrounding the districts of (Typical district A). The northern and the southern margins of this extent are near Senjyu and Tsukuda, respectively, and the eastern and the western margins are the cliff line between the lowlands and loam plateau, and the drainage canal of the Ara River, respectively. On the other hand, The (Image area) extends from Takenozuka on the north to Yumenoshima at the south. Some parts of this area extend northwestward from Ikebukuro on the northern margin to the northwestern suburbs, and southeastward from Kasai on the southern margin to the Tokyo Bay. Namely, the "Northeastern Midtown image region" is identified as the residential area extend from the drainage canal of the Ara River to Bunkyo-ku and Chiyoda-ku centering around the Akasaka and Kanda. It is notable that this region is characterized by shopping centers of downtown, and that the extent of these characteristics spread to Bunkyo-ku and Chiyoda-ku at the western part of this region. This fact indicates that the residents' perception for the residential area does not reflect topographical differences between downtown (Shitamachi) and uptown (Yamanote).

In the same way, the details and the extent of the "Southwestern Midtown image region" are shown in Table 39 and Figure 19 respectively. The districts of (Typical district A) in the "Southwestern Midtown image region" is extended from Kanda to Ginza at the east side of the Imperial Palace, and to Akasaka, Azabu, Roppongi, and Aoyama at the southwest side, and around Sinjyuku. The districts of (Typical district A) are surrounded by the districts of (Typical district B). The districts of (Typical district b) extend from Iidabashi at the northern margin to Daikanyama and Himonya. Typical direction of these developments is southwestward from the districts of (Typical district A). Other districts of (Typical district b) extend westward from Shinjyuku to Asagaya along the Chuo Main line, and northward from Ikebukuro to Itabashi. The districts of (Typical district b) extend westward from the districts of (Typical district A) merely. On the other hand, the (Image area) extends from the east side of the city center to the southwestern suburbs and from Roppongi and Akasaka on the southwestern margin to the Route 246, and extend to Shibuya and Takenozuka. In and around Shinjyuku the (Image area) extends westward to Asagaya and northward from Ikebukuro to Nerima.

As regards, the former image region extends to the whole area of the eastern suburbs, while the extent of the latter region is limited to within the southwestern and western suburbs. According to some investigations about the available zone of each town (Hattori; 1969, 1984), the available zone of Akasaka, which is classified into the "Northeastern Midtown type", is

Table 39 Typical district and Image area of "Southwestern Midtown type"

District	Resident	Residential environment	Image
Typical district A	Self-employed person in wholesale and retail	-- Number of retail trade	-- "High class" "Urban" "Fashionable" "Unhealthy" "Convenient" 20% or more
	Self-employed person in wholesale and retail	-- The ratio of retail trade - shopping goods	-- "Urban" "Fashionable" 20% or more
	Self-employed person in wholesale and retail	-- The ratio of ordinary household living in floor space in 12 jou per person or more of tatami unit	-- "Urban" 20% or more
Typical district B		Number of retail trade	-- "High class" "Urban" "Fashionable" "Unhealthy" "Convenient" 20% or more
		The ratio of retail trade - shopping goods	-- "Urban" "Fashionable" 20% or more
		The ratio of ordinary household living in floor space in 12 jou per person or more of tatami unit	-- "Urban" 20% or more
Image area			"High class" "Urban" "Fashionable" "Unhealthy" "Convenient" 20% or more

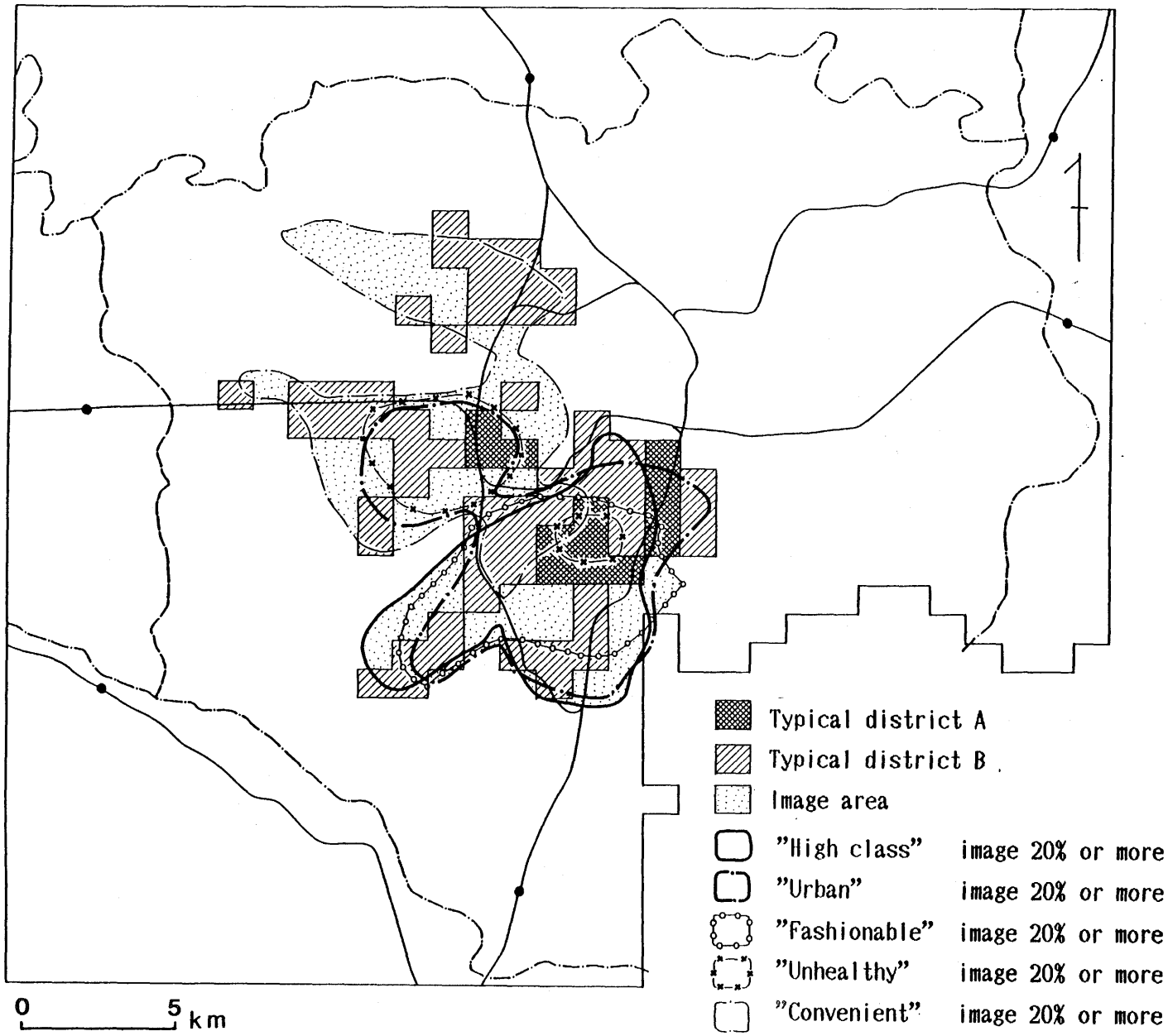


Figure 19 Typical districts and image area of "Southwestern Midtown type"

centered in Taito-ku and Sumida-ku, and it spreads along the Tobu-Isesaki line and the Sobu Main line. Moreover the available zone of Nihonbashi spreads along the Sobu line and Tozai line. In the "Southwestern Midtown type", the available zone of Aoyama extends in Shibuya-ku and Minato-ku. The available zone of Akasaka spreads southward to Minato ward and the southern suburbs of the Tokyo metropolis, Each image region corresponds to customers' available zone for each shopping center exactly. Therefore the image of the residential area reflects some images of these shopping centers. In other areas, however, some images are formed with residential conditions.

2) "Bokuto image region" and "Bayshore image region"

The residential image corresponding to the "Bokuto type" is consists of factories, residences, and shops. These elements of the residential image are different from those of the city center. This residential image is distinct from that of the "Bayshore type" of the southern parts and the "Eastern Uptown type" of the western parts. Because one distinct residential area is developed in the eastern areas of the Tokyo metropolis, it is possible to establish a "Bokuto image region". The details and the extent of the "Bokuto image region" are shown in Table 40 and Figure 20.

According to Table 40 and Figure 20, the districts of (Typical district A) in the "Bokuto image region" extends

Table 40 Typical district and Image area of "Bokuto type"

District	Resident	Residential environment	Image
Typical district A	Craftsman Old person	-- The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit The ratio of establishment with individual proprietorships The ratio of retail trade with proceeds of sales under 2 million yen	-- "Common" 20% or more
Typical district B		The ratio of ordinary households living in floor space under 3.5 jou per person of tatami unit The ratio of establishment with individual proprietorships The ratio of retail trade with proceeds of sales under 2 million yen	-- "Common" 20% or more
Image area			"Common" 20% or more

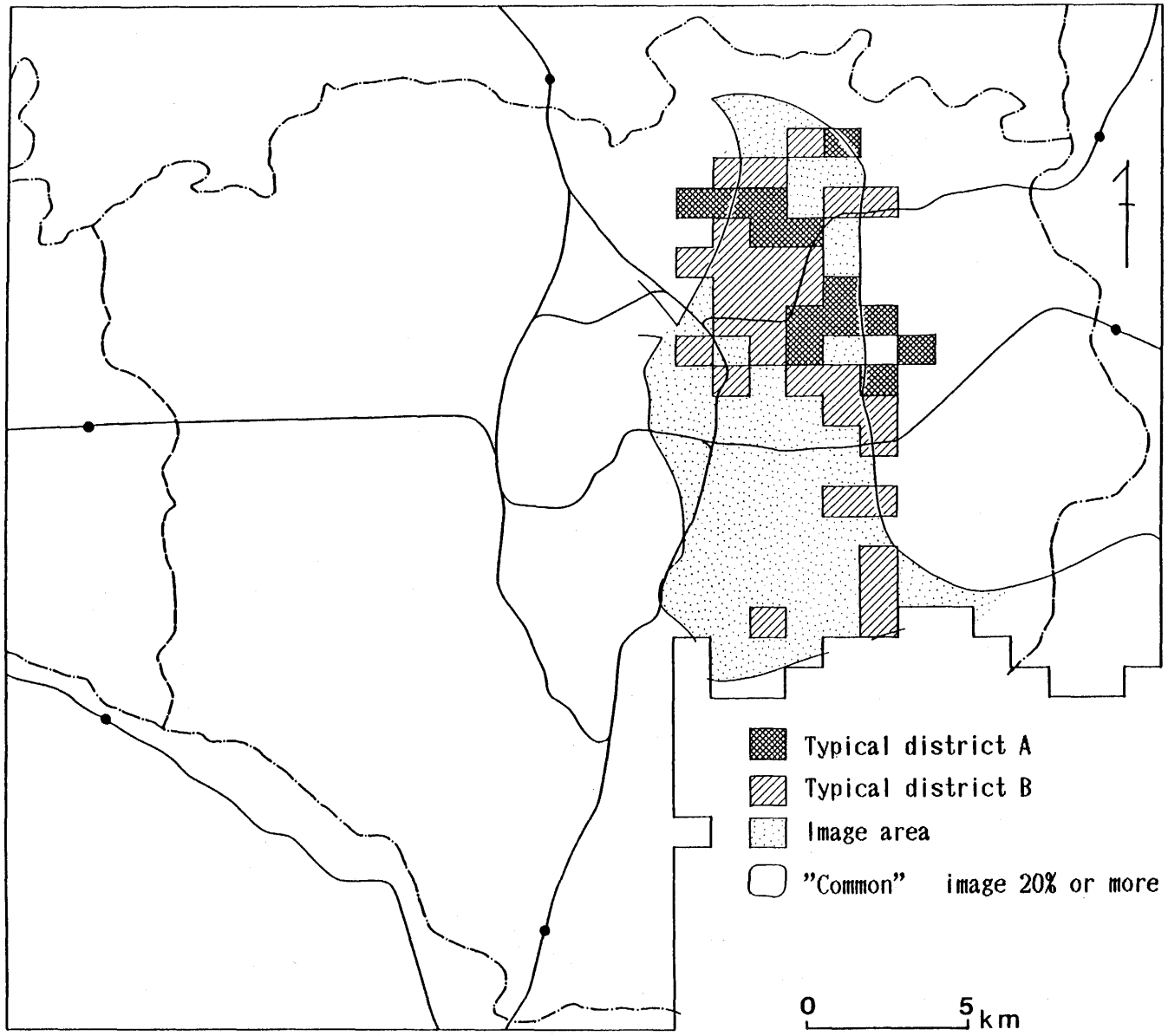


Figure 20 Typical districts and Image area of "Bokuto type"

from Motoki to Senjyu, Nihonzutumi, and Sumida, and is adjacent to the north side of the "Northeastern Midtown image region". At the southern side of (Typical district A), (Typical district b) extends from Ogu to Kameido. The eastern margin of these districts are the drainage canal of the Ara River as well as the "Northeastern Midtown image region". On the other hand, the (Image area) extends to the whole eastern suburbs of the Tokyo metropolis. It is distinct that "Bokuto image region" forms the residential area centered along the Sumida and the Ara River, and extend to the eastern suburbs at the north of the Sobu Main line.

Because this residential image is distinct from other image of the eastern suburbs, it is possible to identify one residential image region as a "Bayshore image region". The details and extent of this image region are shown in Table 41 and Figure 21.

The districts of (Typical district A) of "Bayshore image region" are divided into east and west parts; i.e. the Tokyo Bay area from Urayasu town to Ichikawa city in Chiba prefecture and Heiwajima. The districts of (Typical district b) fill up between two cluster of (Typical district A) and distribute along the coast of the Tokyo Bay from Toyocho to Ariake. Moreover the (Image area) extend from the districts of (Typical district A) to the eastern bay areas, centered Kasai and Urayasu town, and to the southern bay areas at the south of Heiwajima.

Table 41 Typical district and Image area of "Bayshore type"

District	Resident	Residential environment	Image
Typical district A	Transport and communication occupation worker Couple in the thirties and their children Household moved in there within one year	The ratio of ordinary households in apartment The ratio of ordinary households in owned by local government or public corporation The ratio of ordinary household living in 4-5 dwelling rooms	"New" "Developing" "Common" 20% or more
		The ratio of establishment with 10-29 person engaged	"Dark" "Common" 20% or more
Typical district B		The ratio of ordinary households in apartment The ratio of ordinary households in owned by local government or public corporation The ratio of ordinary household living in 4-5 dwelling rooms	"New" "Developing" "Common" 20% or more
		The ratio of establishment with 10-29 person engaged	"Dark" "Common" 20% or more
Image area			"New" "Developing" "Dark" "Common" 20% or more

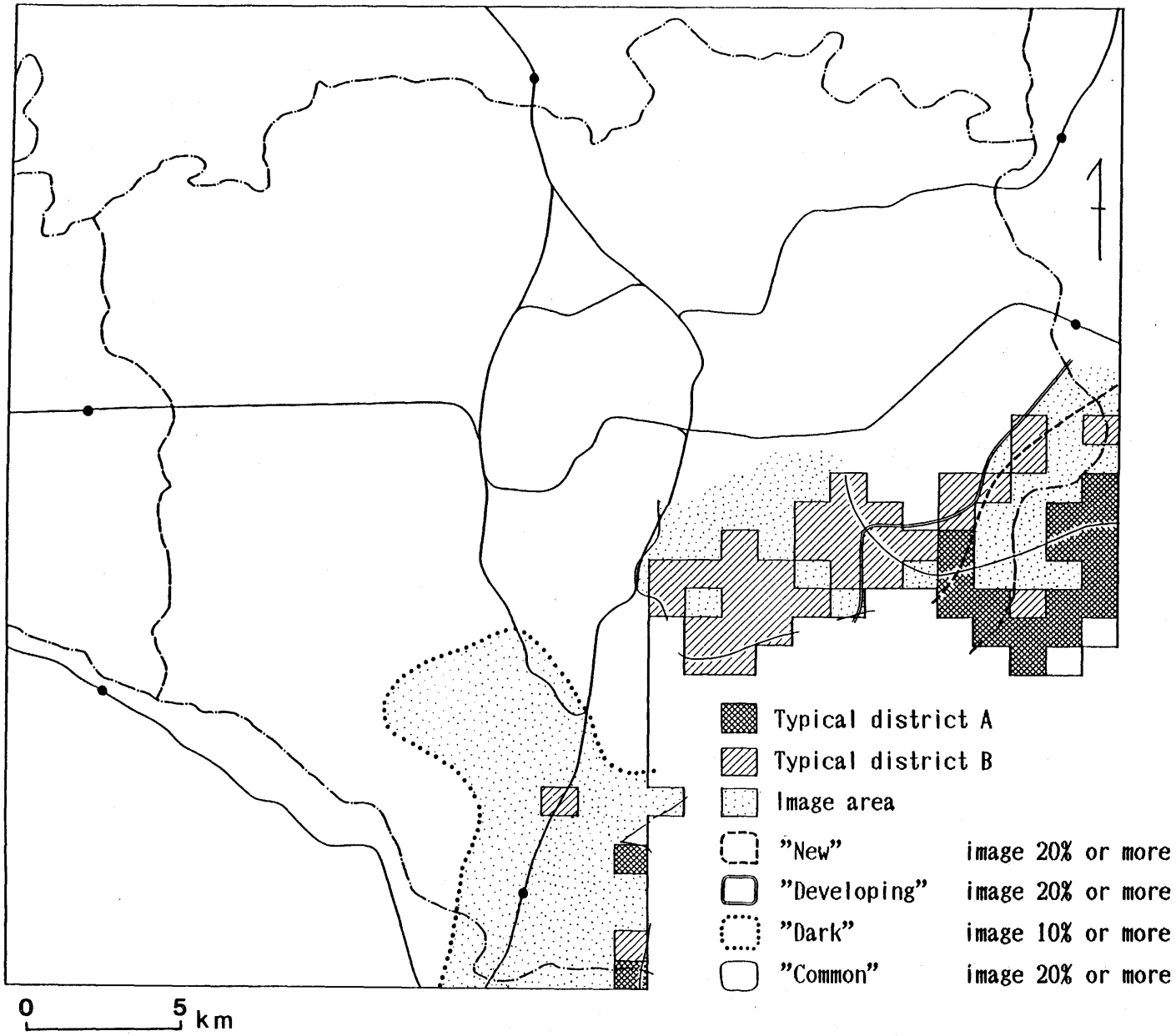


Figure 21 Typical districts and Image area of "Bayshore type"

3) "Western Uptown image region"
and "Eastern Uptown image region"

There are four residential area types in the western areas of the Tokyo metropolis. In these types the residential images are characterized by many common elements. There are plenty of residential images in terms of the "Western Uptown type". According to an investigation of typical towns, residential images are formed with individual landscapes of residential development based on careful town planning, and unique and small shopping centers. This image region, however, is different from the "Eastern Uptown type" adjacent to this type in terms of the characteristics of the residents and the residential environment. There are scare common characteristics between both residential images.

From the viewpoint of these differences, it is possible to identify one residential image region as a "Western Uptown image region", because this region is a distinct residential area in the western suburbs of the Tokyo metropolis. As regards forming elements of the residential image, 'Professional worker' played an important role in characterizing images (Figure 14). In order to comprehend the distribution of residents widely and to clarify relationships between residents and residential area images, the distribution of residents was analyzed with the type of 'Professional worker'. The details and the extent of the "Western Uptown image region" are shown in Table 42 and Figure

Table 42 Typical district and Image area of "Western Uptown type"

District	Resident	Residential environment	Image
Typical district A	Professional worker	-- The ratio of ordinary households living in floor space 60 jou of tatami units or more	-- "High class" "Old" "Light" "Fashionable" 20% or more "Common" 30% or more
	Professional worker	-- The ratio of ordinary households living in floor space under 12 jou of tatami units	-- "High class" 20% or more
	Professional worker	-- The ratio of retail trade - vegetable and fruit stores	-- "Common" 30% or more
Typical district B		The ratio of ordinary households living in floor space 60 jou of tatami units or more	-- "High class" "Old" "Light" "Fashionable 20% or more "Common" 30% or more
		The ratio of ordinary households living in floor space under 12 jou of tatami units	-- "High class" 20% or more
		The ratio of retail trade - vegetable and fruit stores	-- "Common" 30% or more
Image area			"High class" "Old" "Light" "Fashionable 20% or more "Common" 30% or more

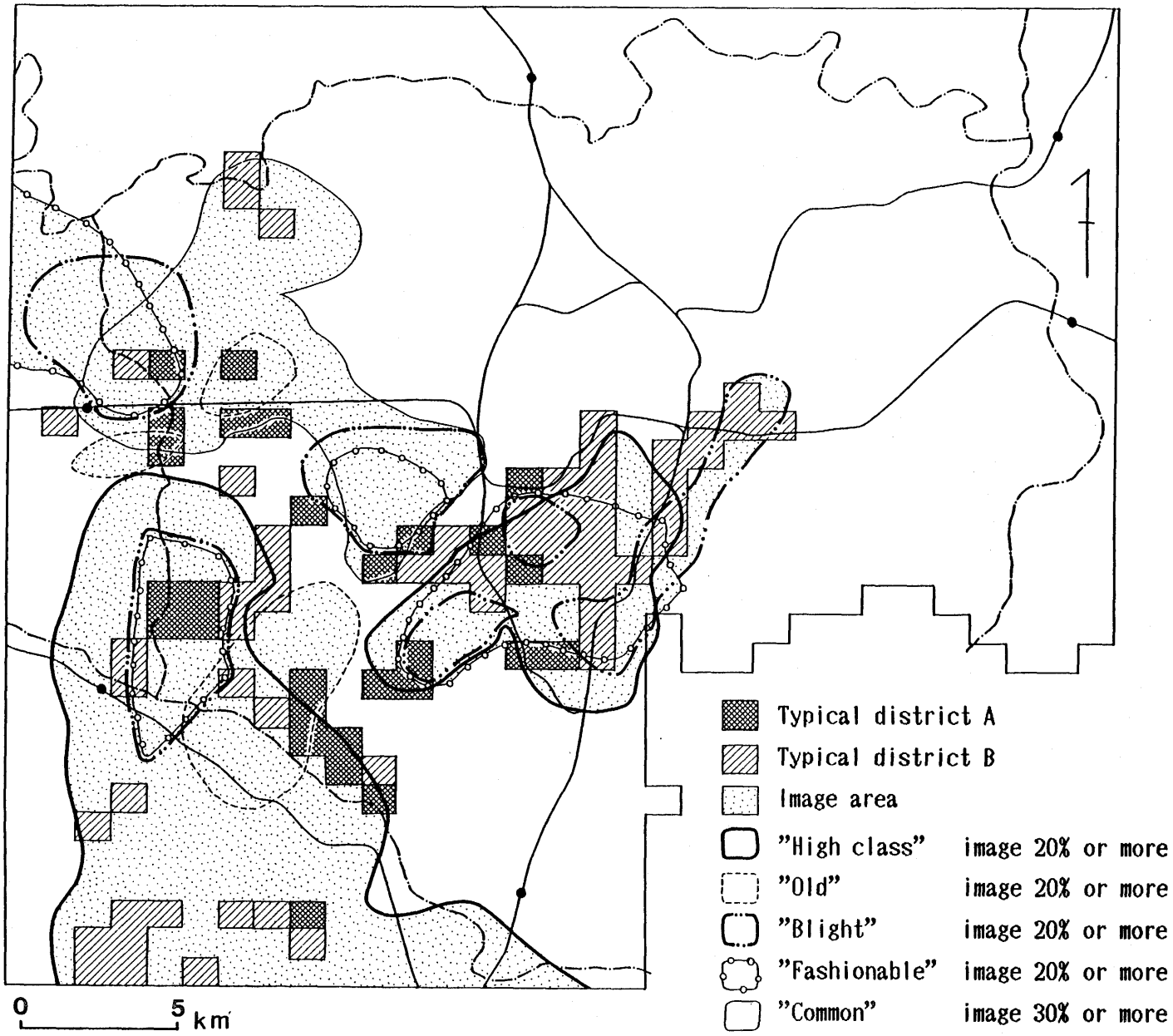


Figure 22 Typical districts and Image area of "Western Uptown type"

22.

It is characteristic that the districts of (Typical district A) of this region are dispersed and located at Den-enchofu, Himonya, Seijo, Kichijoji, Zenpukuji, and Takanawa. The districts of (Typical district b) overlap the "Southwestern Midtown image region" partly, and these areas are forming a continuous residential area. On the other hand, the (Image area) is divided into three parts; i.e. the northern part, centered on Ogikubo, the southern part, centered on Seijo and Den-enchofu, and the eastern part, centered Aoyama and Himonya.

In eastern parts of the western areas, the residential image corresponding to the "Eastern Uptown type" is characterized by the small houses and shops densely located in a built-up area. This type is different from the "Western Uptown image region" with regard to these characteristics of the residential landscape, and is different from "Northwestern suburbs type" with regard to the characteristics of residents and the residential environments. Therefore this type is identified as an "Eastern Uptown image region". The details and the extent of the "Eastern Uptown image region" are shown in Table 43 and Figure 23.

The districts of (Typical district A) in "Eastern Uptown image region" are mainly extended in Ikebukuro, Yamato and Ekoda. Other districts of (Typical district A) extend from Nakano to Asagaya along the Chuo Main line and form a continuous zone in Hatagaya and Shimo-kitazawa. The districts of (Typical district b) are developed in and around those core areas and

Table 43 Typical district and Image area of "Eastern Uptown type"

District	Resident	Residential environment	Image
Typical district A	Housewife moved in 15 years ago or before Person in the twenties	The ratio of ordinary households in owned privately The ratio of ordinary households living in 1-2 dwelling rooms	"Common" 30% or more
		Number of retail	"Convenient" "Unfashionable" 20% or more
Typical district B		The ratio of ordinary households in owned privately The ratio of ordinary households living in 1-2 dwelling rooms	"Common" 30% or more
		Number of retail	"Convenient" "Unfashionable" 20% or more
Image area			"Common" 30% or more "Convenient" "Unfashionable" 20% or more

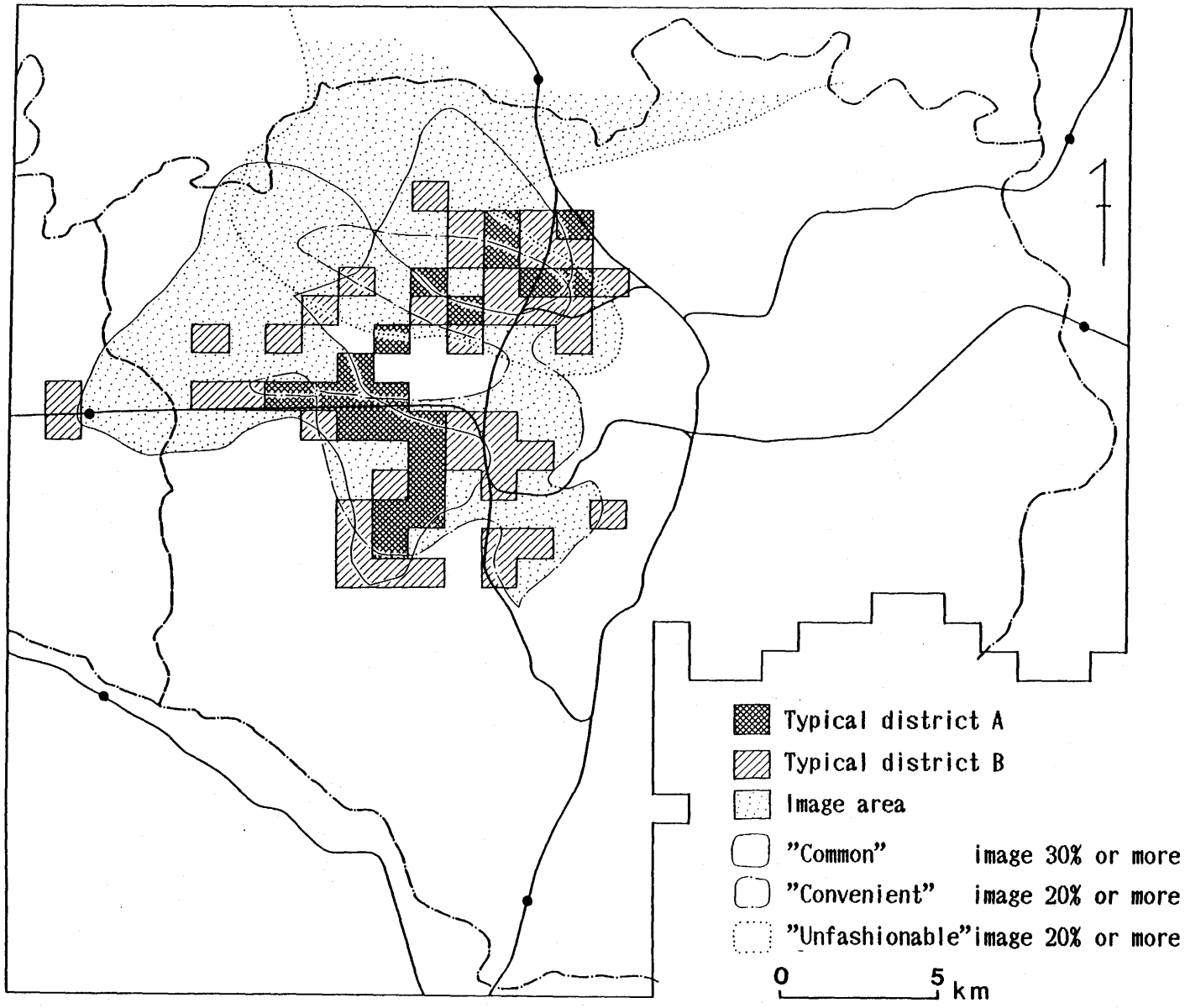


Figure 23 Typical districts and Image area of "Eastern Uptown type"

spread as far as the boundary between the Tokyo metropolis and Saitama prefecture. It is clear that the "Eastern Uptown image region" centers on areas adjacent to terminal stations of the Seibu-Shinjyuku line, the Seibu-Ikebukuro line, the Chuo Main line, and the Keio line, and extend to the northern suburbs of the Tokyo metropolis.

4) The "Northwestern suburbs image region" and the "Tama Hill image region"

There is no distinctive difference on features of residents and residential environments between the "Northwestern suburbs type" and that of "Tama Hill type". The residential image is, however, remarkable contrast between these types and the image formulating elements are quite different. The author classified their regions into the "Northwestern suburbs image region" and the "Tama Hill image region". Some of the elements formulating the residential area image about the "Northwestern suburbs type" include the following types of residents ; 'Couple in the forties and their children', 'Large household living there since their birth', and 'Non family nuclei household'(Figure 16). The author analyzed the distributions of residents by each types of residents just like the "Western Uptown type". The details and extent of this "Northwestern suburbs image region" are shown in Table 44 and Figure 24.

The districts of (Typical district A) of the "Northwestern suburbs image region" are distributed from Niiza city and

Table 44 Typical district and Image area of "Northwestern suburbs type"

District	Resident	Residential environment		Image
Typical district A	Large household living there since their birth Couple in the forties and their children Non family nuclei household	Time distance from the city center	--	"Rural" 20% or more "Noncultural" 10% or more
Typical district B		Time distance from the city center	--	"Rural" 20% or more "Noncultural 10% or more
Image area				"Rural" 20% or more "Noncultural 10% or more

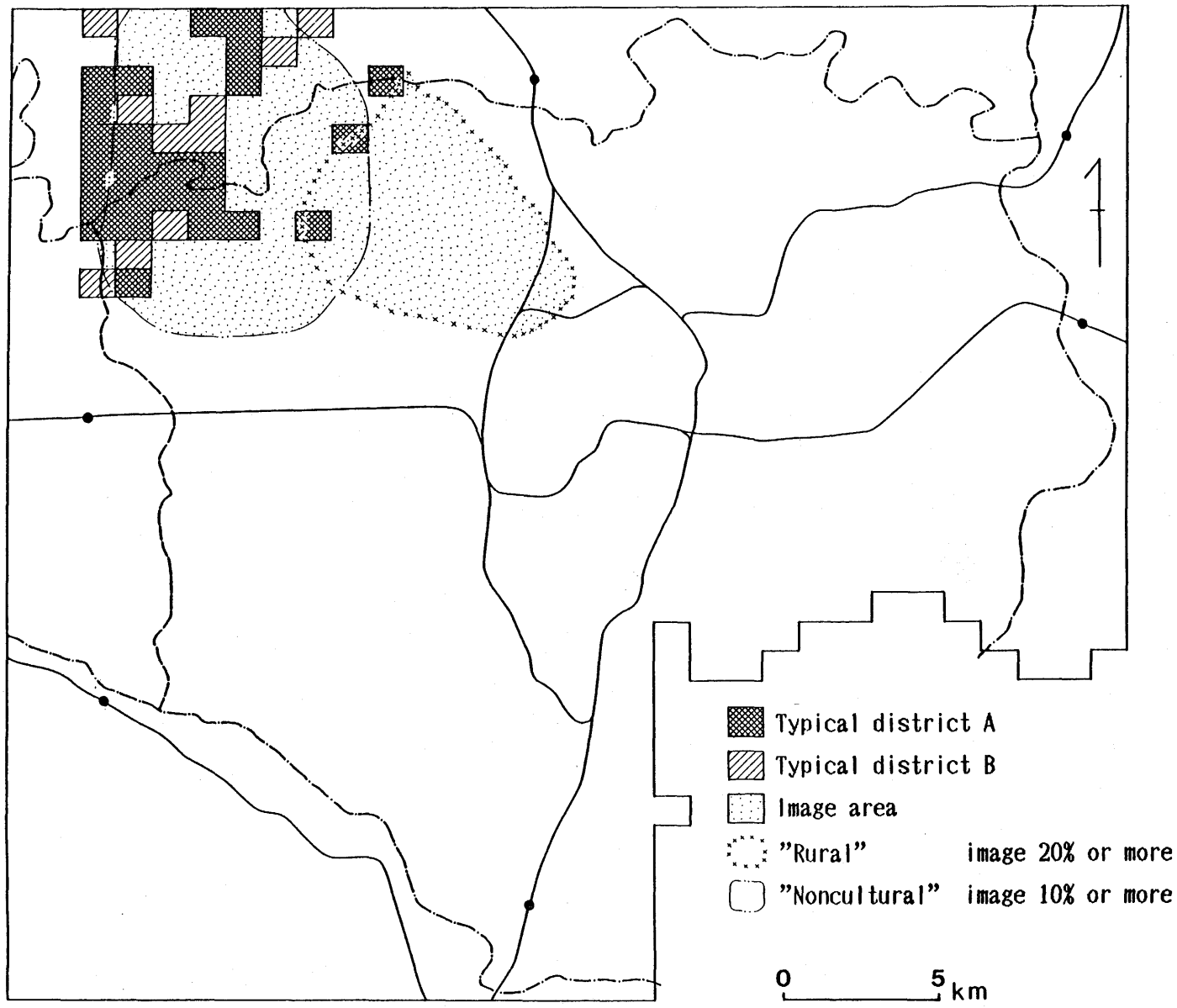


Figure 24 Typical districts and Image area of "Northwestern suburbs type"

its neighborhood to Oizumi-gakuen besides Wako city. The districts of (Typical district B) are distributed smaller only around the (Typical district A). On the other hand, (Image area) is extend from Shakujiidai to Hasune and to Ikebukuro. The "Northwestern suburbs image region" is characterized by its areal distribution which extends from the (Typical district A) southwestward to the city center. This feature is in contrast with the adjacent the "Eastern Uptown image region".

Table 45 shows the details and Figure 25 shows the extent of image region about the "Tama Hill image region". The districts of (Typical district A) of this "Tama Hill image region" are distributed at Azamino, Sumiregaoka, and Ichigao where Tokyu group have developed largely as the Tokyu Tama Pastoral Town. The districts of (Typical district B) are located north of the (Typical district A). (Image area) extending from the (Typical district A) to Komae city and Mitaka city, is adjacent to the southwestern part of the "Western Uptown image region".

The "Northwestern suburbs image region" and the "Tama Hill image region" are located at the same distance from the city center, but their residential area images are quite different. In spite of each residential area images relate to housing conditions, in the former region the residential landscape mixed agricultural landscape creates the residential area image and in the latter region the newly residential landscape with commercial condition is essential. In short the differences of residential area images make up the differences of residential area.

Table 45 Typical districts and Image area of "Tama Hill type"

District	Resident	Residential environment		Image
Typical district A	Large houseohld living there since their birth	--The ratio of ordinary households in owned houses	--	"High class" 20% or more"
		trade		"New" 10% or more
	Non family nuclei household		--	"Old" 20% or more
		--The ratio of trade opened after 1976	--	"New" 10% or more
Typical district B		The ratio of ordinary households in owned houses	--	"High class" 20% or more"
		trade		"New" 10% or more
			--	"Old" 20% or more
		The ratio of trade opened after 1976	--	"New" 10% or more
Image area				"High class" 20% or more" "New" 10% or more

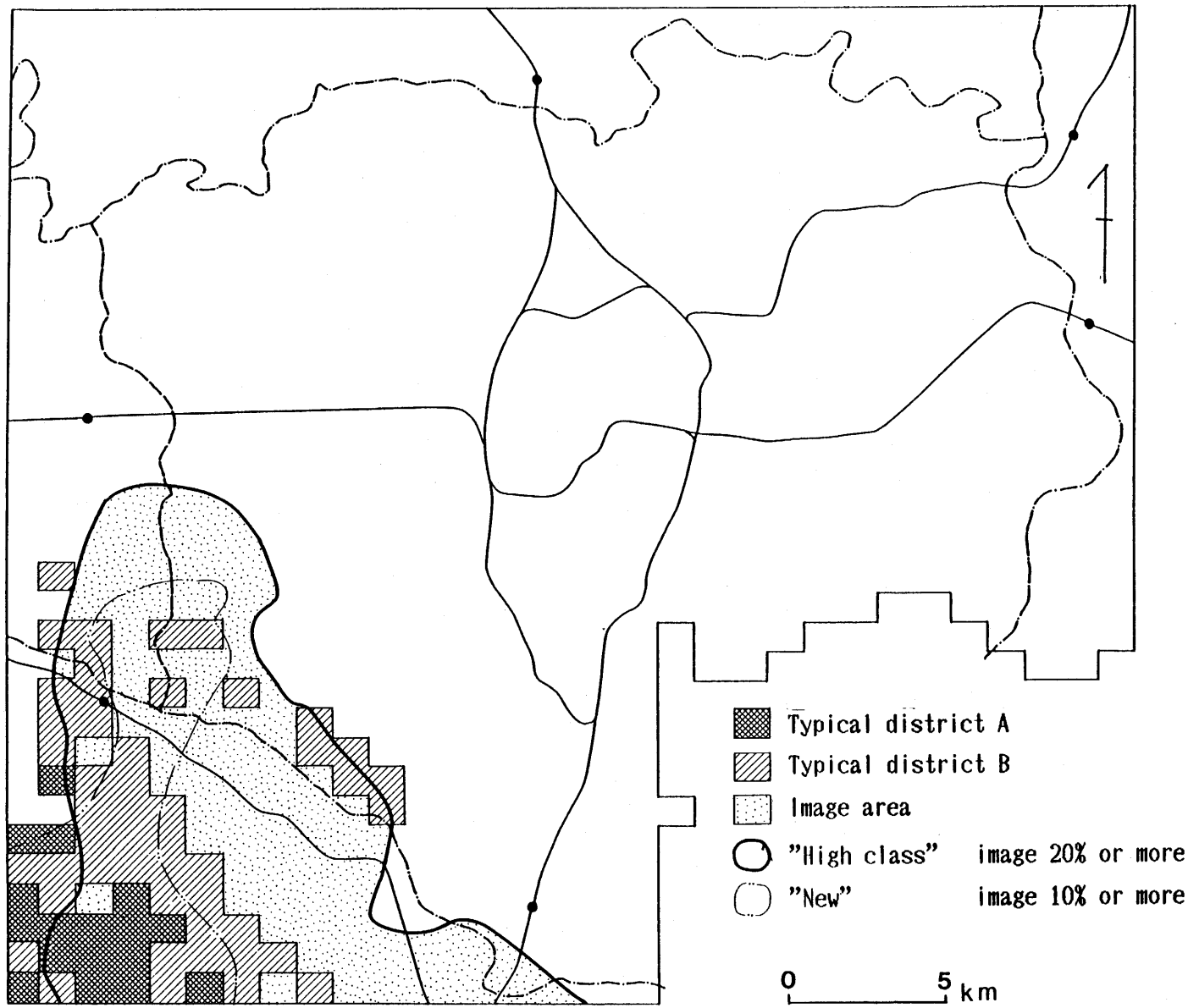


Figure 25 Typical districts and Image area of "Tama Hill type"

V-2 Arrangement pattern of the residential image region

The author aimed to determine the each residential image region. A series of this method built Figure 26 which showed each bound of residential area including residents, residential environments and residential area image and which showed their arrangements. Here, each bond of residential image region and the factor building its arrangement pattern are analyzed.

The "Northeastern Midtown image region" is distributed from northwest to southeast including Asakusa and Nihonbashi. Its southwestern part touched with the "Southwestern Midtown image region" is bounded by the line running from Iidabashi through Kanda to Tsukuda. The line from Zoshigaya to Iidabashi and Kanda accords with Kanda River and its valleys. The landscape on the valleys with many publishing establishments is quite different with that on the surrounding hills. The southern part is bordered by the "Bayshore image region" with the line running from Tsukuda through Kiba, Toyocho to Oshima. Aono and Birukawa (1967) explained this edge as the old shoreline in the Edo era. In short the line accords with the old shoreline before the development. The settlement of a new Kiba began in 1701, therefore this area is the south limit of densely built-up area, Machiya, extending from Fukagawa.

The southwestern part of the "Bokuto image region" is touched with the "Northeastern Midtown image region", the edge

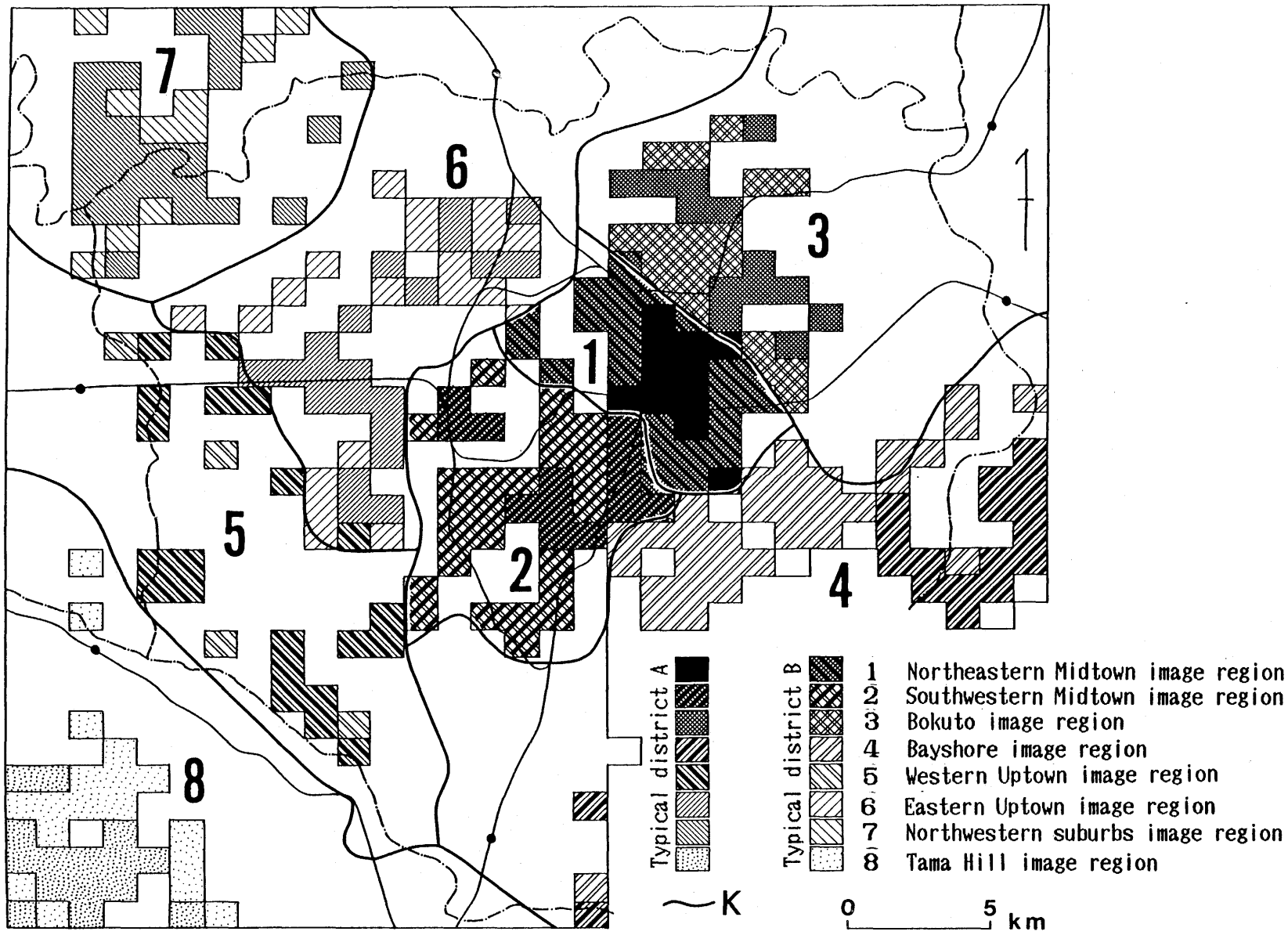


Figure 26 Arrangement pattern of residential image region

is running from Oshima through Oshiage, Mukojima, Mikawashima to Ogu. Some characteristic districts are found along Sumida River and the Arakawa drainage canal in spite of short data points. They are Mikawashima and Yotsugi where smaller rubber industries moved from Asakusa forcibly are concentrated, Kanegafuchi where dust are gathered to, and Yoshiwara and Tamanoi with amusement places of prostitutes. These were located at the outside of built-up area in those days because avoiding outer urban institutions (Yamaga, 1976) are gathered in these districts. Even today the imaginary of these districts are affected wrongly with the place names. According to the map surveyed in 1909, the margin of built-up in the latter Taisho era was located along Nippori to Mukojima, Kameido and Suzaki. This line is agreed with the above mentioned line accurately. This fact shows that the area along this line was the edge of built-up area before the Meiji era. It is difficult to analyze its north-eastern adjacent area for short data points, but the author regards it as the similar residential area because the smaller rubber factories are distributed in Senjyu and Kyojima and their workers are distributed widely in Misato city and Yashio city. In Chiba prefecture, however, there are few districts in this image region.

The "Southwestern Midtown image region" is touched with the "Bayshore image region" on the south along the line from Hamamatsucho through Minami-shinagawa to Meguro, on the west with the "Eastern Uptown image region" and the "western Uptown

image region" along the line from Takadanobaba through Higashi-nakano, Hatsudai to Ohashi. The south edge is complicated but it accords with valley of Meguro River between Tokyo bay and Meguro. The "Southwestern Midtown image region" comes from the new developed districts about Akasaka, Roppongi and Shinjyuku after World War II. On the other hand the landscape of valley of Meguro River results from middle or small factories such as electric-machinery, metal, pharmacy and chemicals, so the line between these regions becomes boundary. According to the maps in 1925, the Taisho era, around the western edge there were large outer urban facilities such as a firing range at Okubo, a crematory at Ochiai, a prison at Nakano, a filtration plant at Yodobashi, a military ground at Yoyogi and Komazawa and a college of agriculture at Komaba which were built in the Taisho era. These districts indicate the edge of built-up before the Great Kanto Earthquake. After all the "Southwestern Midtown image region" accords with the line of discontinuity of factory landscape on the northern or southern valley, with the edge of built-up on the west.

The "Bayshore image region" touches not only with the "Bokuto image region", the "Northeastern Midtown image region", and the "Southwestern Midtown image region" but also with the "Western Uptown image region" along Himonya, Senzoku and Ikegami line and with the "Tama Hill image region" along Tama River. Analyzing the former section, There is no any (Image area) in Meguro-ku and Ota-ku, so it is hard to identify the residential image region to include. In Meguro-ku, however,there

is the same "dark" image as the "Bayshore image region", and in the near Himonya and Kugahara there is a elements related to high class residential area. Judging from this characteristics the author divided Meguro-ku and Ota-ku into two districts along the line from Himonya through Senzoku to Ikegami, and east side including Meguro is in the 'Bayshore image region" and west side including Himonya and Kugahara is in the "Western Uptown image region". The "Bayshore image region" has the different character between the eastern part and the western part, in other words, the landscape is different by the time of development. Around Ota-ku on the west part, the existence of factory landscape and the dark image divides between the inner area and outer area.

The "Western Uptown image region" touches not only with the "Southwestern Midtown image region" and the "Bayshore image region in the ease but also with the "Tama Hill image region" along the line from Haneda through Tamagawa, Kitami, Tsutsujigaoka to Jindaiji. This edge almost runs along Tama River and Nogawa River and it makes cliff line with Musashino surface and Tachikawa surface in the field of geomorphological study, with 15-20m relative height in the northern part from Kitami. Nogawa River origins much spring at terrace scarp, there were many large settlements along the river rather than on the plateau according to the map in 1941. Therefore geomorphological line of discontinuity coincides the boundary of these two regions. Chofu and Komae, however, may not belong to the "Tama Hill image region" because of short data. This region

is adjacent to the "Eastern Uptown image region" along the line from Ohashi through Umegaoka, Eifuku, Ogikubo to Kamishakujii. According to the map in 1941, there were many residents in the eastward of the line from Sangenjyaya through Daitabashi, Horinouchi to Kichijoji, therefore, that boundary agrees with the edge of built-up area before World War II.

The "Eastern Uptown image region" touches with the "Bokuto image region" in the east edge and with the "Northeastern Midtown image region" along the line from Zoshigaya through Komagome, Ogu to Shikahama. The edge from Zoshigaya to Komagome almost coincides with the outskirt of built-up in the latter Taisho era where large institutions such as Gakushuin university, the Sugamo prison, an arsenal at Otsuka, Oji and Toshima gunpowder factory were lined. After all this boundary accords accurately with the edge of built- up area in the end of the Meiji era.

The "Western Uptown image region" and the "Eastern Uptown image region" are adjacent to the southern edge of the "Northwestern suburbs image region". According to the aerial photography in 1982, agricultural lands are distributed widely in the northern part of this boundary. Hakuhodo(1985) indicates that the images and keywords of the suburbs includes "green land", "paddy field and farm", "large apartment houses". In this research the landscape of agriculture and apartment houses remember the residential area in the suburbs too. In the "Northwestern suburbs image region" there are much agricultural landscapes and many huge apartment houses, so the

region is characterized by the suburban landscape in 1988.

Both the "Tama Hill image region" and the "Northwestern suburbs image region" have the same character as agricultural landscape and the time developed after 1965. Tama River which divides the "Tama Hill image region" and the "Western Uptown image region" has an effect as a topographical obstruction for residential developments and to delay to develop. The typical residential districts as Den-enchohu and Seijo in the "Western Uptown type" were developed in the latter Taisho era and others are till 1935s, on the other hand, the development of the Tama hill area are about 30 years later than the former region. The boundary is consistent with the delay of time of development by Tama River. In Kawasaki city, however, industrial area has developed along Tama River, this district are not included to the "Tama Hill image region". This is the problem result from the lack of data points in Kawasaki city. But it is thought that Kawasaki city may not be regarded as the residential region because the districts along the Odakyu line, the Toyoko line and the Den-en-toshi line which link the urban center and the Tama hill area do not have any factories and their lines run across the narrow part of Kawasaki city,

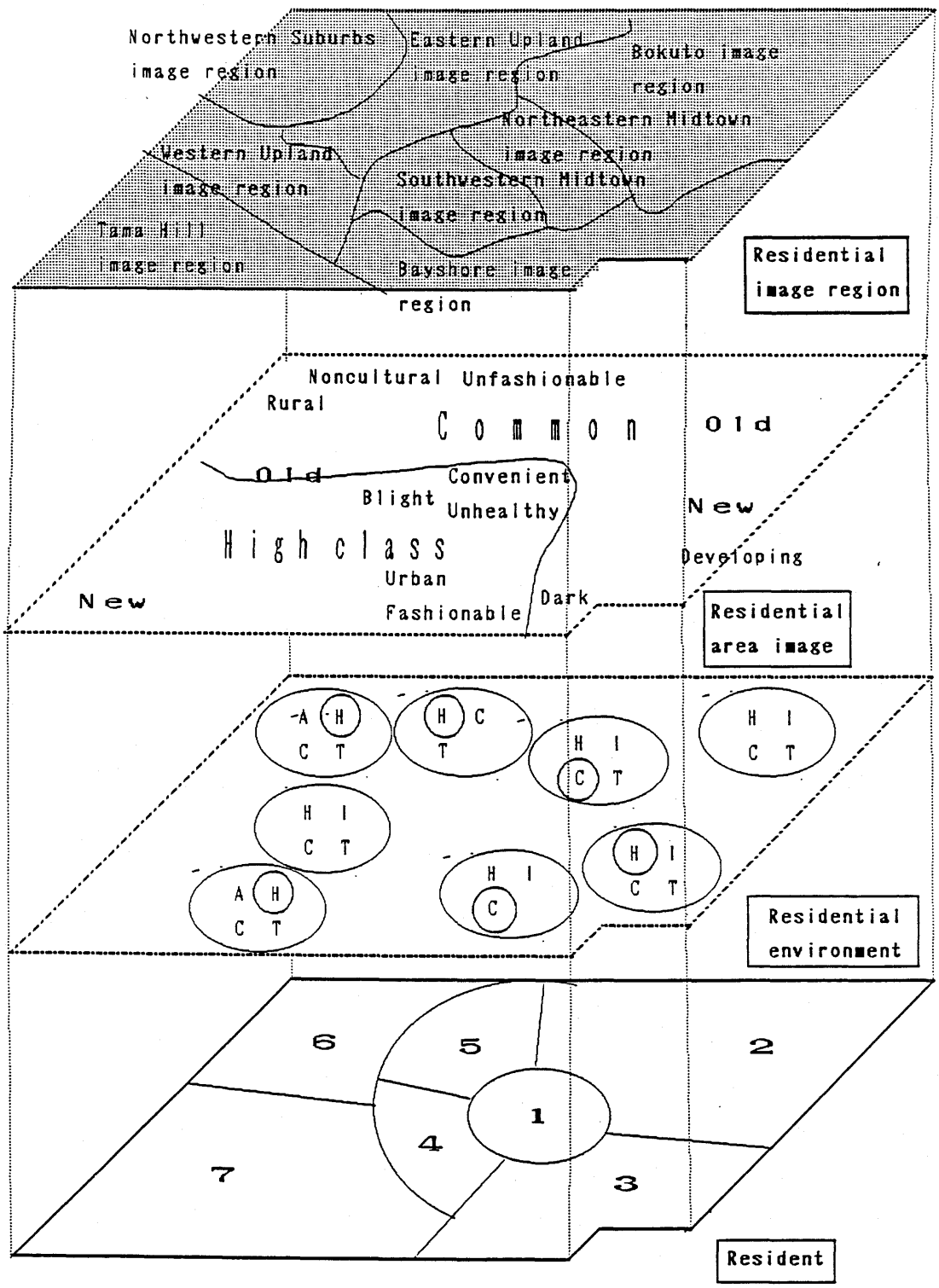
After the analysis of each boundary of image regions, the author can conclude that the boundary of residential image regions are divided into two categories, one comes from the time lag of development and the differences of landscape caused by it and the other comes from the

topographical features such as wide valleys and shore line and the differences of landscape caused by them. The built-up area in the eastern part of Tokyo till the Meiji and Taisho era and the edge of built-up area in the latter Taisho era and World War II in the western part of Tokyo accord with the landscape in 1989 accurately. As the landscape between on valleys and on plateau is quite different, the lines of discontinuity of landscape also accord with their boundaries. This fact indicates that smaller natural geographical boundary has a great effect to the differences of residential region in addition to larger geographical boundary such as Musashino plateau or alluvial plain.

V-3 Model of the residential structure

Figure 27 shows the model of residential structure after the analysis. Residential region consists of two elements, residents and residential environments, and residential area image are formulated by these two elements. So the pattern of residential area images are very characteristics. Each region has these three elements and is built with unique regional characteristics. Consequently the author tries to identify the structure of residential area to make clear the relationships between these three elements and the distribution of them.

The characteristics of residents are quite different between in the city center and its suburbs. In the city center there is a certain occupational cluster around the city center,



gure 27 Model of residential structure

Characteristic residential environment

Accessibility to the city center	H	Housing condition
Industrial condition	C	Commercial condition
Topographic condition	○	More chracteristic residential environment

Characteristic type of resident

Self-employed person in wholesale and retail	5	Person in the twenties
Craftsman Old person		Housewife moved in 15 years ago or before
Transport and communication occupation worker	6	Couple in the forties and their children
Couple in the thirties and their children		Large household living there since their birtl
Household moved in there within 1 year		Non family nuclei-household
Professional worker	7	Large household living there since their birtl
		Non family nuclei-household

on the other hand in the suburbs there is a complicated residential district on age, dwelling term and a form of household. Particularly in the suburbs the characteristics of residents are different according to the direction from the city center.

In the eastern part of Tokyo the residential environments such as housing, industrial and commercial conditions are unique. In the near of the city center the residential image are created from commercial condition, in the northern part of the city center a unity of housing, industrial and commercial conditions create the residential image. Around the Tokyo Bay area, however, housing condition is great. In the western part of Tokyo the relationship between housing condition and images are significant. Residential area images are created by the housing and commercial conditions in the near center of western part of Tokyo, and in the outer part of western area residential area images are related to the accessibility to the city center and housing condition. On the whole, The main residential area images are composed of three contrastive image, that are "common" to "high class", "new" to "old" and "urban" to "rural".

Housing condition is the most significant in the western part of the study area to create a residential area image. Housing condition, however, is not the only one to create images. It is clear by the fact that the contents of residential area images are not similar inevitably of the Tokyo Bay area, the northwestern area and the Tama hill area. Other factors

such as the developed period and the town planning may have great influence on residential images.

Commercial conditions such as selling systems and goods have greater effect on the residential area images particularly in the city center. This characteristics appears in the residential area images of two regions near the center.

Industrial conditions have effect on some regions, particularly on the eastern part and the Tokyo Bay region. In general industrial conditions have a bad effect. Commercial condition and housing condition, however, have greater effects than industrial conditions, so industrial ones are weak.

An accessibility to the city center, a condition of residential environment, which related to the agricultural landscape has a good effect on images "rural" in meaning "Pastoral" in the southwestern suburbs and it has a bad effect, "rural" in meaning "rustic", in the northwestern suburbs conversely. This feature comes from other factors like as the residential factors.

The structure of residential area is divided into three types, those are the area composed of two types near the city center, the area composed of four types surrounding the former area and the area composed of two types in the western suburban area. These are distributed in order of the distance from the city center. Four types surrounding the city center are shown in a concentric circular pattern. Each residential area is not simple but affected by the background such as the period of development, the shape of built-up area under rapid

urbanization after the Taisho era and topographical feature. The residential structure is built not only the distance and directions from the city center but also the many factors such as historical backgrounds and the topographical features.

CHAPTER VI

CONCLUSION

In this study, regional structure in Tokyo 23 wards and the suburban area was identified by examining not only the attributes of residents and residential environment, but also the image of the residential area as a factor of regionality. Previous studies of residential structure have emphasizes the attributes of residents through such methods as factorial ecology to analyze residential segregation observed from old times. However, it became difficult to investigate residential areas only by socioeconomic characters because residents recently had much freedom of choice in their occupation and their dwelling place. In other words, residents could choose their environmental conditions more freely. The relation between residents and the environment, therefore, became more complicated than before.

In this circumstance, the image of residential area became more important in creating regionality. Many reports about the image of residential area including Tokyo metropolitan area pointed out that many people understand various residential areas by the image. The image is related to residential structure by affecting people's choice in intra-urban migration.

The study area was determined as Tokyo 23 wards and the suburban areas because there are sufficient population to analyze regional differentiation within this residential area. The existence of many reports of the image in this area also

facilitates the study. This study consists four steps of analysis.

First, types of residents were established based on their attributes. Second, types of residential area were established from the relation between residents and residential environment. Third, attributes of residents or residential environment were connected with the image of residential area in each type of the residential area. Finally, regional divisions were made from the extent of residential area type and the residential image.

Although there are many reports about the business or shopping quarters by using image conception perceived by citizens, few of them investigated the image related to wider area. In this study, residential structure perceived by the residents became clear through the examination of image data and regional elements by town. The processes of the study and their results are summarized as follows.

From the distribution of each type of residents, four agglomerations of residents were identified characterized by certain occupations within the Tokyo 23 wards neighboring city center. On the other hand, there were some agglomerations of residents characterized by similar age group, the time of residence and family make-up in suburban areas. The agglomerations of residents in suburban areas were different from one another according to the direction from the city center. Second, eight types of residential areas were established. Two of them in and around the city center were characterized by commercial conditions, while the one in the northeastern area

was characterized by industrial, residential and commercial conditions. Other five types were mainly characterized by housing conditions. The characteristics of each type were also distinguished from another. Housing conditions were especially various and each type of residential area is related to the characteristic of housing ownership and size. Third, the image of each type of residential area was connected with the characteristics of residents or residential environment. Finally, the study area was divided into eight image regions based on the type of residential areas. As a result, the residential structure perceived by citizens was divided into three regions, forming concentric circles centering around city center. The fairly irregular boundaries of these regions reflect the urban sprawl in the end of Taisho era or the different topographical conditions. The residential structure perceived by citizens was thus affected by natural and historical background.

There are many reports about the residential structure. Especially many cases are presented from social area analysis. Residential structure resulted from social area analysis is similar to concentric circles divided by sectors. However, the analysis of residential area only from the attributes of residents is insufficient for Tokyo where segregation has long been progressing. It is also necessary to examine residential environment such as historical or natural background. Furthermore, the areas with similar attributes of residents and residential environments were not always categorized in a same residential area in this study, because various images were

associated to one area. It is identified that the different perception of a residential area by the residents resulted from different regional elements selected into relativistic space. In other words, similar landscape does not always create a similar image when other regional elements are involved in the perception.

This study proposed an investigation of residents, residential environment and detail descriptions of individual areas as a new method for constructing a residential structure perceived by people. However, it is necessary for this new method to understand public image correctly and to obtain substantive regional elements that are relate to the image. It remains to be a future task to develop quantitative analysis of historical or natural background as a residential environment.

NOTES

1) The term of 'public image' was defined by Lynch(1968), as the image that is generally held in the majority of dwellers in a city.

2) The term of 'regional element' was defined as the elements of land surface by Kiuchi(1968).

3) The term of 'physiographic division' means the classification such as plateau or alluvial lowland recorded on a land condition map.

4) The environmental perception studies that were taken the initiative in the field of geography by Wright(1947), concentrate particularly on the difference between the objective environment and the subjective one perceived by individuals. On the other hand, the mental map studies that has developed since the 1960s when behavioral geography was beginning to surface, concentrate on the mental maps as a parameter of decision-making process of individuals. The mental map studies were initiated by an empirical one by Gould(1966).

5) The cognitive maps are not the same with the mental maps. That is to say, the former emphasizes the psychological aspect of the image, but the latter the visual aspect of that (Gould,1966).

6) The Standard Mesh System, also being called the Longitude and Latitude Method, divides an area into the meshes of a net by using regular circles of both longitude and latitude. The Standard Mesh System consists of three orders of the meshes. Each of the first order meshes is equivalent to a topographic map with a scale of 1:200,000. Each of the second order meshes is equivalent to a topographic map with a scale of 1:25,000. Both edges, lengthwise and breadthwise, of a second order mesh is divided into ten equal parts respectively and an one-hundredth part of the second order mesh is the third order mesh, also being called a standard mesh (Geographical Survey Institute, 1985).

7) Such term as 'eastern or western suburbs' in the text shows the sectorial area in the eastern or western direction of the central part of Tokyo respectively. Also in the text, when place names outside the City of Tokyo are indicated, the names of prefecture and county are omitted. Moreover when the names of railway lines belonging to the Japanese National Railways are indicated, only the line names are written. On the other hand, when names of privately-owned railway lines are indicated, both the company's and the line's names are written for the first time in the text, but thereafter the former is not to be repeated.

8) Distance from the city center of Tokyo is equal to the straight one from the mesh in which Tokyo Station is situated to another each mesh. The distance is calculated on the basis of the fact that each standard mesh in the study area measures 0.924

kilometers in length by 1.131 kilometers in breadth. Subsequently, time-distance from the city center of Tokyo is equal to the time required from one of those twenty-one central railway stations already defined to each mesh, going by a train in the rush hours and then on foot. When the time-distance is calculated, five minutes as a waiting time and also five minutes as a transfer time at railway stations are postulated. Namely, the time required to a mesh with one or more railway stations is the sum of the waiting time five minutes, the transfer time five minutes, the traveling time by train and the walking time ten minutes, while the time required to a mesh without any railway station is the sum of the time required to the nearest neighbor mesh with one or more railway station and ten minutes.

9) Topographic condition is adopted as an index of physiographic division. The physiographic division are set up by each prefecture. Those separate categories by the City of Tokyo and by each of three other prefectures just studied are much the same. For example, 27 categories such as loam plateau and delta are set up by the City of Tokyo (Toyo Koku Jigyosho, 1980).

10) Those meshes forming this regional unit amount to ten meshes which fall under 'craftsman' type, and to eight meshes which fall under 'old person' type.

11) The meshes forming this regional unit amount to twenty-seven meshes falling under 'self-employed person in wholesale and

retail' type. Of these meshes 13 are distributed in the northeast of the central part of Tokyo and 14 in the southwest of there.

12) Those meshes forming this regional unit amount to 17 meshes falling under 'transport and communication occupation worker' type, to 10 meshes falling under 'couple in the thirties and their children' type, and to 9 meshes falling under 'household moved in there within 1 year' type.

13) Those meshes forming this regional unit amount to 17 meshes falling under 'housewife moved in 15 years ago or before' type and to 14 meshes falling under 'person in the twenties' type.

14) Those meshes forming this regional unit appeared in northwestern suburbs amount to 19 meshes. Of these 7 meshes fall under 'couple in the forties and their children' type, 6 meshes 'large household living there since their birth' type and 6 meshes 'non family nuclei-household' type. And those meshes forming this regional unit appeared in Tama hill area amount to 18 meshes, which are composed of 7 meshes falling under 'large household living there since their birth' type and eleven meshes 'non family nuclei-household' type.

15) Although two terms of 'image' and 'keyword' have been used together and the difference between them has not been distinguished strictly in previous studies, the term of image is used for an adjective which modifies a place name, but the term of

keyword is used for a noun or a sentence which indicates also the place name in the present study.

16) The towns falling under each residential area type were determined according to an uniform procedure as follows. First, meshes involved in each residential area type were drawn on a map. Next, every town whose areal extent includes at least a mesh above-mentioned, was collected. Lastly, such towns were gathered and were classified into each residential area type.

17) This survey was carried out for office girls in the twenties living in Tokyo and its suburbs. The items of questionnaire were twofold as follows. First, for each of 74 towns located in the City of Tokyo and in its adjacent prefectures, five words at the most which modifies the town were chosen from 22 image words listed. Second, keywords indicative of the town's character were noted down as they liked.

18) This survey was executed for 3rd-year students who were on the register of 28 high schools extracted uniformly within the 30 kilometers radius from the city center of Tokyo. Each of 1,614 male and 1,397 female students was questioned regarding the images indicative of each of 8 towns as he or she liked (Tokyo Chamber of Commerce and Industry, 1984). The second survey was carried out for 898 persons of 10 years to 50 years concerned in the members of Tokyo Chamber of Commerce and Industry. Each of them was questioned regarding the images indicative of each of

given 10 towns as he liked (Tokyo Chamber of Commerce and Industry, 1987).

19) This survey was carried out for 100 women in the twenties or so who came to Shibuya Parco a department store in the tenth and eleventh of April, 1987. Each of them was asked the name of railway line associated with 39 image words on a list.

20) The street interview survey were carried out for 1,000 persons of 16 years to 49 years, all told at the ten places of Tokyo, Shibuya, Shinjuku, Ikebukuro, Ginza, Harajuku, Aoyama, Ueno, Kichijoji, Shimokitazawa and Asakusa, in the fifteenth to the twentieth of February, 1985. Two questions were asked at that time. First, by place name of Shitamachi, Yamanote or Kogai (Tokyo's suburbs), where did he mean? Second, what was the element that differentiates one place from the others?

21) The town names here in the text, are used as they stand in a map of the City of Tokyo, a map of cities of Saitama and Chiba Prefecture, published by Shobunsha Co.,Ltd. In case of administrative towns outside of the City of Tokyo such as Urayasu town, section's name of a town is equalized with the town's name.

22) Towns picked up for representing each residential area type are not always the towns described below but neighboring towns. For example, Kita-ikebukuro is picked up for representing "Eastern Uptown type" but detail description is made for Ikebukuro.

23) Terms on this map are suitably abbreviated.

24) According to Hakuhodo's 'Town Message Survey', most persons conceived that the Shitamachi zone was meant by the square area whose vertexes correspond to Nippori, Kitasenjyu, Asakusa and Akihabara (Hakuhodo, 1985).

25) Since the latter half of the fifties of the Showa era, warehouses out of use on the shore of Tokyo Bay have been turned into designer's offices, galleries, coffee bars, boutiques and so forth, which attract eyes of the youth nowadays. This recent trend is due to the demand of people engaged in art industries for non-daily space (Parco, 1986).

26) When it is difficult to guess concrete element from keywords such as 'convenient' in this case, an element adequate for the situation is given on the basis of the geographical location and its treatment in the magazine.

27) According to Parco(1987), the image along the Tojo line is regarded as the poorest one, together with those along the Tobu Isesaki line and the Keisei Main line.

28) Typical residential districts in each type of residents are shown in chapterIII, for example, typical residential districts of 'self-employed person in wholesale and retail' is shown in Figure6.

29) Environmental elements used here is that picked up by proceedings in chapter III from mean value and standard deviation.

30) The areal extent of image was mapped according to the following procedures. First, the areal extent of image data on each town was delineated on a map and then a mesh was extracted from those which cover the town's district. Second, a geographical matrix in which the coordinate of the data point, namely an above-mentioned mesh in X-Y perpendicular axes is arranged columnwise and the result of image questionnaire on the town is rowwise, was made. Third, isopleths of each image strength were drawn by using GCONTOUR program of Statistical Analysis System packages. Because image items are not fixed among the data sources and some towns lack image data for themselves, isopleths were drawn for only towns whose data on each image item were completely gathered. Moreover, with regard to the images along railway lines, the twelve railway lines radiating from terminal sta-

tions on the Yamanote loop line were analyzed. Since twenty percent isopleth was pertinent to the criterion in order to understand an extent of the residential area image, it was established that an area encircled by the twenty percent isopleth corresponds to the extent of the image of residential area. In some cases ten or thirty percent isopleth was used suitably.

REFERENCES

Anderson, T.R. and Egeland, J.A. (1961): Spatial aspects of social analysis. American Sociological Review, 26, pp.392-398.

Aono, H. and Birukawa, S. (1967): Nihon Chisi, vol.7, The City of Tokyo (Tokyo-to). Ninomiya-shoten, 510p. (in Japanese)

Asahi Simbun, the Local News Section (1987): Place Names of Tokyo (Tokyo Chimei Kou), I,II, 409p., 415p. (in Japanese)

Boulding, K.E. (1956): The Image : Knowledge in Life and Society. University of Michigan Press. (Japanese translation : Okawa, N. (1979): Za Imeji. Seishin-shobo, 222p.)

Canter, D. (1977): The Psychology of Place. Architectural Press. (Japanese translation : Miyata, N. and Uchida, S. (1982): Basho no Shinrigaku. Shokokusha, 309p.)

Downs, R.M. and Stea, D. (eds.) (1973): Image and Environment. Edward Arnold. (Japanese translation : Yoshitake, Y., Sota, T., Hayashi, A., Funo, S. and Oka, F. (1976): Kankyo no Kukanteki Imeji. Kajima-shuppankai, 470p.)

Fukuhara, M. (1977): A study of regional structure of the Tokyo Metropolitan Regions. Journal of Geography (Chigaku Zasshi),86, pp.158-173. (in Japanese with English abstract)

Geographical Survey Institute (1985): Digital National Land Information (Kokudo Suchi Joho no Gaiyo). Geographical Survey Institute, 151p. (in Japanese)

Gould, P. (1966): On mental maps. Michigan Inter-university Community of Mathematical Geographers, Discussion Paper, no.9, pp.1-53.

Gould, P. and White, R. (1968): The mental maps of British school leavers. Regional Studies, 2, pp.161-182.

Gould, P. and White, R. (1973a): Mental Maps. Penguin Books. Japanese translation : Yamamoto, S. and Okuno, T. (1974): Atama no Naka no Chizu : Mentaru Mappu. Asakura-shoten, 192p.)

Gould, P. and White, R. (1973b): On mental maps. Downs, R.M. and Stea, D. (eds.), Image and Environment. Edward Arnold. pp.182-220. (Japanese translation : Yoshitake, Y. et al. (1976) : Kankyo no Kukanteki Imeji. Kajima-shuppankai, pp.197-236.)

Hakuhodo(1985): Town Watching : Under-standing of the Times Based on Town Information (Jidai no Kuki kara Machi o Yomu). PHP Kenkyusho, 226p. (in Japanese)

Hattori, K., Kagaya, K. and Inanaga, S. (1960): The regional structure of surrounding areas of Tokyo. Geographical Review of Japan (Chirigaku Hyoron), 33, pp.495-513. (in Japanese with English abstract)

Hattori, K. (1969): A Study on Tokyo Metropolitan Area (Daitoshi Chiikiron). Kokon-shoin, 245p. (in Japanese)

Hattori, K. (1984): An Expression of City : An Image of Rashisa (Toshi no Hyojo : Rashisa no Hyogenzo). Kokon-shoin, 259p. (in Japanese)

Iseki, H., Kato, H. and Mifune, S. (1967): Geographical study of selecting the suitable area for large scale housing estate: Case study in Nagoya Metropolitan Area. Human Geography (Jinbun Chiri), 19, pp.491-514. (in Japanese with English abstract)

Ishizuka, H. and Narita, R.(1986): A Hundred Years of the City of Tokyo (Tokyo-to no Hyakunen). Yamakawa-shuppansha, 382p. (in Japanese)

Jinnai, H. (1985): Spatial Anthropology of Tokyo (Tokyo no Kukan Jinruigaku). Chikuma-shobo, 306p. (in Japanese)

Kadokawa Nihon Chimei Daijiten Hensan Iinkai (1978): Gazetteer of Japan (Kadokawa Chimei Daijiten), Vol. 13, The City of Tokyo. Kadokawa-shoten, 1253p. (in Japanese)

Kitabatake, J. (1981): Housing development in the northwestern hilly part of the Nara Basin. Geographical Review of Japan (Chirigaku Hyoron), 54, pp.437-447. (in Japanese with English abstract)

Kiuchi, S. (1968): An Introduction to a Study of Region: Its Theory, Techniques, and Practical Application (Chiiki Gairon : Sono Riron to Oyo). University of Tokyo Press, 370p. (in Japanese)

Koshimizu,H. (1984): Perception structure of residential environment. Tabata, S., Ide, H., Kosui, H., and Tashiro, J. (eds.) Green Space and Residential Environment (Midori to Kyoju Kankyo). Kokon-shoin, pp.69-75. (in Japanese)

Kusaka, M. (1966): Urbanization and flood disaster : A case of the right bank area of Katsura River. The Ritsumeikan Bungaku, 252, pp.1-36. (in Japanese)

Lynch, K. (1960): The Image of the City. MIT Press. (Japanese translation : Tange, K. and Tomita, R. (1968): Toshi no Imeji. Iwanami-shoten, 276p.)

Masai, Y. (1987): Castle Town Tokyo(Jokamachi Tokyo). Hara-shobo, 217p. (in Japanese)

Matsubara, H. (1982): A study of large-scale residential development by private railway enterprises : The case of Tama Den'en Toshi. Geographical Review of Japan (Chirigaku Hyoron), 55, pp. 165-183. (in Japanese with English abstract)

Matsui, K. (1986): A short history of Tokyo (Tokyo no Chikuteki Hatten). Kurasawa, S. (ed.), Social Atlas of Tokyo (Tokyo no Shakai Chizu). University of Tokyo Press, pp. 21-29.

Mori, N. (1980): Residential patterns and mobility in Toyonaka City. Human Geography (Jinbun Chiri), 32, pp.452-465. (in Japanese with English abstract)

Morikawa, H. (1975): The development of urban social geography : From social area analysis to factorial ecology. Human Geography (Jinbun Chiri), 27, pp.639-666. (in Japanese)

Morikawa, H. (1976): A comparative study of factorial ecologies in Hiroshima and Fukuoka. Geographical Review of Japan (Chirigaku Hyoron), 49, pp.300-313. (in Japanese with English abstract)

Nakamura, Y. (1978): Mental maps and geographic space in Nagoya. Geographical Review of Japan (Chirigaku Hyoron), 51, pp.1-21. (in Japanese with English abstract)

Nakamura, Y. (1979a): Spatial patterns and residential preference systems of mental maps in Japan. Human Geography(Jinbun Chiri), 31, pp.307-320. (in Japanese with English abstract)

Nakamura, Y. (1979b): Mental map studies in geography : results and significance. Human Geography (Jinbun Chiri), 31, pp.507-523. (in Japanese with English abstract)

Odauchi, T. (1974): Tokyo and its suburbs (Teito to Kinko). Arimine-shoten, (reissue), 215p. (in Japanese)

Parco(1986): Now Changing Tokyo (Ima Yureugoku Tokyo). Parco-shuppan, 215p. (in Japanese)

Parco(1987): Modern lady's new image along railway lines. Across (Akurosu), 158, pp.34-49. (in Japanese)

Saito, K. (1982): Social and economic structure of the Tokyo Metropolitan Area. Human Geography (Jinbun Chiri), 34, pp.363-377. (in Japanese)

Sato, T. (1969): A geographical study on the residential development of Yokohama City. Geographical Review of Japan (Chirigaku Hyoron), 42, pp.363-375. (in Japanese with English abstract)

Shevky, E. and Williams, M. (1949): The Social Areas of Los Angels : Analysis and Typology. University of California Press.

Shinto, H.(1985): Characteristic analysis for structure of residential location in Tokyo Prefecture: Urban economics approach. Annals of the Japan Association of Economic Geographers (Keizai Chirigaku Nenpou), 31, pp.146-160. (in Japanese with English abstract)

Sonobe, M. (1985): Residential structures of Tokyo and their spatial patterns : A social area analysis. The Journal of social sciences and Humanities (Jinbun Gakuho), 177, pp.1-29. (in Japanese)

Sumaino Toshokan Shuppan kyoku (1988): Tokyo Selection : Volume of Water, Volume of Flower,Seiun-sha, 316p.,316p. (in Japanese)

Sumida, M. (1969): Characteristics of residential area (Kyojuchi no Seikaku). Kanazawa, Y., Nishiyama, U., Fukutake, T., and Shibata, T. (eds.) Residential Environment (Jutaku Kankyo), pp. 70-111. (in Japanese)

Takahashi, N. (1984): A review of studies on urban geography. Takahashi, N., Kanno, M., and Nagano, M. Urban Geography (Toshi Chirigaku). Hara-shobo, pp.23-38. (in Japanese)

Takano, T. (1979): The factorial ecology of Tokyo Special District. Annals of the Tohoku Geographical Association (Tohoku Chiri), 31, pp.250-259. (in Japanese with English abstract)

Tokyo Chamber of Commerce and Industry (1984): The SAKARIBA : Town Image Tokyo. Tokyo Chanber of Commerce and Industry, 130p. (in Japanese)

Tokyo Chamber of Commerce and Industry (1987): TOWN IDENTITY : Study on Modern Social Phenomena (Town Image Tokyo 2). Tokyo Chamber of Commerce and Industry, 240p. (in Japanese)

Tokyo-to (1979): A Hundred Year History of Tokyo (Tokyo Hyakunen-shi), vol. 3. Tokyo-to, 1491p. (in Japanese)

Toyo Koku Jigyosho (1980): Report on Preparation and Survey of the Digital National Land Information (Kokudo Suchi Joho Sakusei Sokuryo Sagyo Hokokusho). Toyo Koku Jigyo Co., 243p. (in Japanese)

Tsuchida, M. (ed.) (1978): Tokyo's Gazetteer of Literature (Tokyo Bungaku Chimei Jiten). Tokyodo-shuppan, 406p. (in Japanese)

Uchida, Y. (1986): On the Fuukaku (a distinct character) of the city : An attempt to evaluate cities by the place image. Geogr-aphical Review of Japan (Chirigaku Hyoron), 59, pp.276-290. (in Japanese with English abstract)

Uchida, Y. (1987): Place, place name and place image: An essay on symbolization of place image. Human Geography (Jinbun Chiri), 39, pp.391-405. (in Japanese with English abstract)

Ueno, K. (1981): Residential structure of Tokyo during the Taisho Era: A factorial ecological study of the socio-economic characteristics of residential population. Human Geography (Jinbun Chiri), 33, pp.385-404. (in Japanese with English abstract)

Ueno, K. (1982): A review on the study of urban residential structures : On the relationships between factorial ecology and urban geography. Geographical Review of Japan (Chirigaku Hyoron), 55, pp.715-734. (in Japanese with English abstract)

Yamada, K., Kobayashi, Y. and Kondo, M. (1974): Structure of the Tokyo Metropolitan Region (Tokyo Daitoshiken no ken'iki kozo). Economic Analysis (Keizai Bunseki), 46, pp. 1-58. (in Japanese)

Yamaga, S. (1960): Urbanization in the suburban areas of large cities : Case of the western suburb of Tokyo. Journal of Geography (Chigaku Zasshi), 69, pp.187-199. (in Japanese with English abstract)

Yamaga, S. (1976): Urban Geography (Toshi Chirigaku). Taimeido, 197p. (in Japanese)

Yamaguchi, T. (1976): The social areas of Sapporo : A factorial ecology. The Proceedings of the Department of Humanities College of General Education, University of Tokyo (Jinbun Kagakuka Kiyo), LXII, Ser. Human Geography, no.5, pp.83-105. (in Japanese with English abstract)

Yamaguchi, K. (1987): Genealogy of Suburban Residential Areas : Rural Utopia of Tokyo (Kogai Jyutakuchi no Keifu : Tokyo no Den'en Utopia). Kajima-shuppankai, 282p. (in Japanese)

Yano, K. and Kato, F. (1988): Canonical trend surface analysis of residential structure in the Tokyo City Area. Human Geography (Jinbun Chiri), 40, pp.20-39. (in Japanese with English abstract)

Yokoyama, K. and Morikawa, H. (1977): An analysis of urban factorial ecology in Hiroshima. Chiri Kagaku, 27, pp.25-39. (in Japanese with English abstract)

Wright, J.K. (1947): Terrae incognitae : The place of imagination in geography. Annals of the Association of American Geographers, 37, pp.1-15.