

The Cognition of Landscape as a Tool for Rural-Urban Planning in Japan

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Abstract

This research examines the development of a visual-assessment method as a fundamental regional planning concept which can provide guidance for landscape management and conservation in suburban areas of Japan. The surveys were undertaken in the rural-urban fringe of Kobe City, where a considerable urban development has been planned extensively in rural areas, causing serious social and environmental problems. Residents of a new urbanized district and an old rural community were interviewed, and their cognitive image evaluated in order to understand how they perceive the landscape changes and to visualize how this area should be restored according to their preferences. Within this context, a regional planning proposal is suggested, where a preliminary design for the development of a riverside park, which crosses the region, is presented. This park is conceived as a reference for land-use management and landscape integration where recreational facilities in specific zones are proposed to strengthen the regional identity and socialization.

Keywords

environmental cognition, rural-urban fringe, visual assessment of landscape change, regional planning in Japan.

Introduction

In recent years, there have been many studies regarding people's cognition toward the environment.¹⁾ Most of them have focused on the landscape,²⁾ and its changes, as a tool to establish guidance for planning.³⁾ These changes are most notable in areas where the countryside and city meet, a zone called the rural-urban fringe,⁴⁾ inside which are located many old rural communities whose landscape is threatening to disappear.

Due to urbanization,⁵⁾ residents who live at the city center want to settle on the fringe, mostly attracted by the low land prices and quiet natural environment. They begin to live together with the older residents, still living in the rural communities. This constitutes the

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beginning of diverse problems in terms of planning due to social and cultural differences between the two groups, as well as their opinions and preferences.

On the fringe, there are many pressures of interests that compete for a limited amount of land. Urban development of rural areas is attractive for investors, but at the same time it entails strong opposition from farmers, local residents, and conservationists due to landscape degradation and ecological damage. People who have moved from the city to the fringe frequently have different perceptions and attitudes,⁶⁾ compared with rural residents. They might in addition have a different appreciation about development, referring to any change as harmful to their country life, while inhabitants of rural areas might consider such changes as beneficial for their communities. This conflict appears in all countries, but Japan is considered the most urbanized one, which makes it a special case for study.

Due to drastic changes on the fringe, people's perception and attitudes toward their environment should be understood as a valuable tool for planning. As residents here possess varied perceptions, this study is concerned about cognition of the landscape, and aims to know how they perceive the changes, evaluate their attitudes, and visualize how this area should be restored according to preferences.

1. Japanese urbanization trend and its effects on the fringe

After World War II (1945-), the Japanese economy grew rapidly. This phenomenon was accompanied by a rapid growth of industrial sectors, but the agricultural sector and its work force have been constantly decreasing. The growth of the economy has engendered a rapid mobilization and concentration of population in so called "urban centers." A study about the impact of this process (Hirohara et al., 1988) makes reference to the so-called "*the billiards phenomenon*" to represent the migratory movement from farming areas to provincial cities simultaneous with the movement from provincial cities to the nation's three largest urban centers (Tokyo, Nagoya, Osaka). As result, the population of Japan is almost entirely concentrated in cities which are located in the outskirts of these urban centers, where the most significant characteristic in development has been the investment in transportation systems.

This urban growth concentrated in one region of the country has been designated as the Tokaido megalopolis; however, this is viewed with concern and alarm because the constant tendency to concentrate urban activities here is producing a steady weakening and abandonment of the agricultural work force, even if it is strongly protected.

Mr. Hirohara et al. (1988: 374) also argues that these three urban centers started a process called *suburbanization*, the phenomenon in which population and employment growth are experienced not in the central city (or inner city) but in the peripheral areas (or rural-urban fringe). Yamada (1980: 31-36) also mentioned this type of urbanization stage.⁷⁾ Studies made by Hirohara are more specific and declare that the rate of suburbanization in the Keihanshin metropolitan area (Kyoto, Osaka, Kobe) is particularly high. As result, the growth of this urban

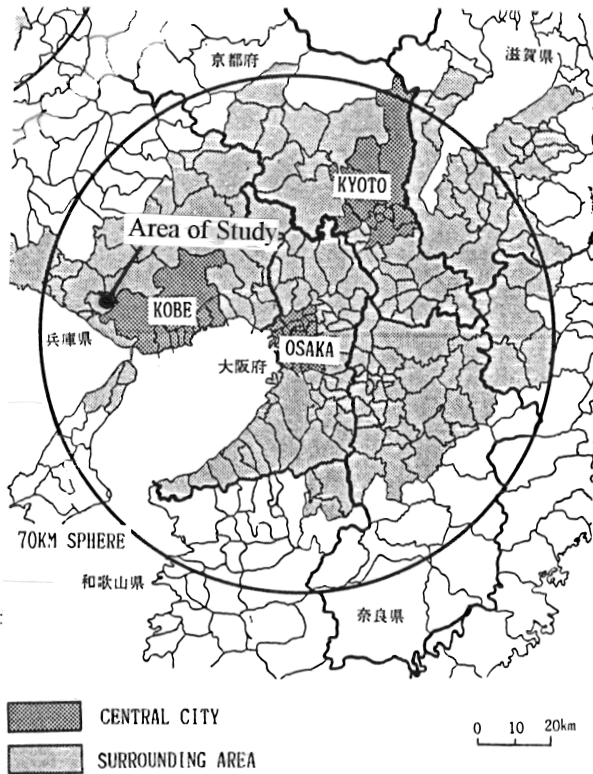


Figure 1 Keihanshin metropolitan region

leading it to be “a system network of settlements” that expand and integrate within interconnected fringes of cities. An area measured in about 80 to 100 km for a city of one million inhabitants or more (as Keihanshin metropolitan region). Their concept of “*the regional city*” is quite applicable as it shows an increasing mobility of people, goods, communication technology, leisure possibilities, and greater environment concerns that have accompanied the shift of increasing economic and social structures.

As an example of this new structural organization, the farming systems located around cities has been affected. More than a half of farm households in Japan are now part-time farms which are mainly engaged in non-agricultural activities (Rural Developing Planning Commission, 1992: 19). Many types of these activities have flourished as a convenience to farmers, from whom recently tourism and recreation in contact with agricultural activities are achieving a positive role through improving income and helping farm investment.

Regarding this fact, new questions are now being asked about changing attitudes of young people to work, society, leisure, and environment. The main raised is whether the younger generation, brought up during the recent period of rapid urbanization, may have different attitudes to urban living from those who moved to cities from rural areas. Due to the high standard of living of young people, society is showing an irreversible trend toward more

region is being restricted to the peripheral areas of the cities (Fig 1); a fact that bring diverse problems to rural lands. Our study will be later concentrated in this area through the analysis of a typical case study.

This fact clearly shows how Japan is at an early stage of the process of decentralization that affects every modern metropolis sooner or later. The rural to urban migration has ceased, and the governments of big cities are now starting to worry about declining population, where the planning of high-density projects in the rural-urban fringe accelerates this process.

In this regard, Bryant et al. (1982) who have studied the trend on the evolution of the fringe, has affirmed that this area is becoming now a place of growing pressures

recreational activities. Free time has risen and so has the proportion of people playing sports, of some kind. If this tendency continues, it is obvious that it will have consequences on the demand for a more pleasant environment in the fringe.

2. Cognition of landscape change and a method for its visual assessment

Public participation⁸⁾ should provide an opportunity to residents to implement and evaluate an integrative approach to planning and design. This approach aims at an integration of planning with design activities, but also at the improvement and evaluation of residents' cognition about their region in order to eliminate the sense of rootlessness or placelessness, which is characteristic in those new residents who have moved to live in the rural-urban fringe.

A study on public participation (Dearden, 1981a) suggests that there exist differences between the perceptions of planner authority and residents. One of those is regarding in the priority toward the aesthetic value in landscape, because planners trained in aesthetics aim to satisfy an aesthetic goal, often planning the region as if it were a work of art, not as a place in which people live and work. Nevertheless, most of residents give lower priority to beauty in their everyday life environment than do planners. They are more in contact with human needs.

Conflicts in the landscape are mostly perceived by residents who benefit or not from urban policies, mostly made without their consultation and defined by planning authorities. On this concern, lack of communication, interactive feedback, and an equal interest should be defined as the major characteristic of elements playing a role on the fringe. Based on this, most of the conflicts have their roots in the interactions taking place among three elements: (1) landscape, (2) residents, and (3) planning authorities. The problems in managing the landscape of the fringe might be rooted in trying to harmonize the interactions between them.

A model based on a feedback interaction is shown that views the assessment processes as a function of the characteristics of the landscape, the actions of the planning authorities, plus needs, demands, and perceptions of the local residents (Fig. 2).

The model provides a double feedback loop represented by the clockwise and counterclockwise circles of the arrows. In the inner counterclockwise loop, management actions produce changes in landscape which elicit perceptions and judgments toward it from local residents. The outer clockwise loop is a similar feedback system operating in a different direction. The actions of residents produce certain environmental capacities and

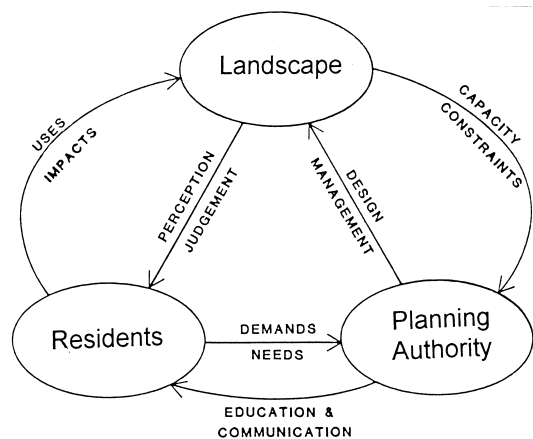


Figure 2 A public preference model for landscape assessment in the rural-urban fringe

constraints. Planning authority, then completes the feedback loop to residents through education and communication regarding environmental consequences of user's behaviors. These perceptions and judgments then constitute feedback to planning authorities regarding the landscape, thus affecting future designs and plans for the region. This model incorporates actions, perceptions, and judgments of residents and planning authorities in design process or assessment methods.⁹⁾

Cognitive studies on landscape preferences can be used here to determine in which proposals for development would be visually acceptable or not. They could evaluate the beneficial impact of agricultural management and motivate local residents to participate more in planning their local areas. These kind of studies have been developed starting with the principal work that merely consists of physical landscape evaluation where descriptions include the selection and measurement of various bio-physical parameters of the land that were at the same time related with preferences. One of the pioneers in this approach was Dearden (1981b), who argues that the visualized landscape should be evaluated as a whole, where a subjectivity analysis be eliminated and more objective evaluation theories strengthened by the application of mathematical procedures.

Due to problems involved in using true landscapes, the use of photographs has become widespread. These have become an important resource due the need to show a variety of scenes for comparison. Nevertheless, since these are a technical landscape representation, many things have to be considered as photographs can distort scenes: they represent a landscape composed into an image of two dimensions, a fact that may cause loss of one's sense of scale. In this sense and in order to find better procedures, some studies were conducted through the comparison of results obtained by using of photographs and by on site evaluation (Shuttleworth, 1980; Kellomaki and Savolainen, 1984). According to them, it has been determined that there exists a high function between both methods, which offer a valid argument in favor of the use of visual aids.

On this context, this study prepared a questionnaire, with questions regarding the region's spatial features, and required respondents to consider and visualize the relationships between activities, landscapes, and land-uses. An aerial-photograph was used to help respondents to answer the questions and to understand reactions and reasons that they gave for their answers. The method used was nurtured by a Japanese experiment called the *Gulliver map* (Nakamura, 1989). This was a large-scale aerial photograph (1:1500) of a local area in Tokyo where participants were invited to write or draw freely on it, using felt tip pens to express their ideas, feelings and opinions about their neighborhood and environment. The purpose was to try to understand people's cognitive image of their surroundings by analyzing spontaneous expressions of their desires, tastes, frustrations, and attachments recorded on the photograph.

The Gulliver map had been very effective in achieving a bridge between community participation and cognitive image of the environment, but it also has a wider application. Its simple methodology has appealed to people of all ages and levels of education, and was

recommended for participatory process in plan making.

Techniques on the repertory grid method (Harrison and Sarre, 1976) were also incorporated to provide a mesh-map based on residents' cognitive construct and then a "cognitive map" with a basis for planning that gives a useful snapshot of perceived qualities of prominent elements in the region. Also, it will put the information in a form easily communicated to public and decision makers in order to elaborate the recommendations and control for visual quality of the landscape.

3. Kobe City as a case study

Inside the Keihanshin metropolitan area, the City of Kobe has developed and through continuing growth, it has been characterized by the promotion of urban renewal and new cities on artificial islands. The city is divided into nine districts where two of them, *Nishi-ku* (western district) and *Kita-ku* (northern district), are quite large and less populated, which offer the majority of natural resources that support its economy.

In the western district, which until now had been viewed as a rural land, new urban projects are being drawn up to accommodate the city's growing population. The projects are made in the context of an integrated development in accordance to the City's Third Comprehensive Master Plan (1986), which includes new transportation systems, industrial parks, office areas, shopping centers, and universities. The city's subway was extended into the region (1987), which has as characteristic, an elevated structure to support the railway over agricultural lands. Due to a progressive development of services along the metro line, the urban growth is taking the form of developed areas dispersed and located along each station.

Here, the small valley of Ikawadani region (3.128 ha., pop.: 5.118) has become an important point of reference, where its station is placed at the center and located between a new urbanized district called Ikegami (107 ha., pop.: 4.116) and an old rural district called Zenkai (1.860 ha., pop.: 1.002). Both districts were chosen for survey due to those characteristics that better represent the conflicts in the fringe. Ikegami is zoned by the New City Planning Act as *Chigaika-kuiki* (Urban Promotion Area) in order to promote development and urban land-use through the granting of construction. There are industries, karaoke boxes, love hotels, restaurants, residential quarters, and shopping areas. Zenkai, on the other hand, is zoned as *Chigaika-Chosei-kuiki* (Urban Control Area) and *Nougyou-shinkou-chiiki* (Agricultural Promotion Area), where urbanization is restricted and the local government allows public participation to its inhabitants for planning decisions under the context of farmland protection.

Areas around Ikawadani Station have been designated as *kukaku-seiri-jigyō* (or for land readjustment works) in order to improve urban environment as well local agriculture, but this designation has created the expectation in all residents about what type of direction development will be taken. The Ikawa River, that runs across the region, is another important feature where rural and urban differences on its landscape are notable. There are also many

temples and shrines, but Taisan-ji Temple (in Zenkai district) is the largest, which offers variety in the landscape and cultural heritage.

Lack of communication between new and old residents, the pollution of the Ikawa River, increasing garbage disposal, and traffic jams are the major problems in the area (Ikawadani District Village Construction Council, 1993: 46). Because of these facts, the region shows the most intense interaction between development and preservation, and this study aims to give some recommendations for future planning and conservation.

3.1 Methodology:

The Surveys are part of a previous study¹⁰⁾ made in the area, where 166 people were interviewed (Ikegami: 60, Zenkai: 106). As criteria, we asked the chairman of each neighborhood association (or Jichikai -three in each district-) to explain and distribute the questionnaires to the residents of his own community some days before the day of the survey. He asked them to participate in order to respond the questionnaire in a meeting for this survey. This type of procedure allowed collecting data at the end of each meeting. The surveys were done on weekends from 9:00 am to 5:00 pm, where university students explained the procedures.

At the meeting (total: 6), the responders chose areas on a transparent film placed over the region's aerial-photograph on a 0.95 x 1.10 cm panel (Fig. 3) and marked their selection with eight different color pens that represented each question of the questionnaire. The survey took about 15 minutes by respondent and the questions were as follows:

- No. 1: *Where do you live and how long have you lived here* (please mark with the black pen)?
- No. 2: *Where do you work and what is your job* (mark with brown pen)?
- No. 3: *Where has the landscape changed and why* (violet pen)?
- No. 4: *What areas should be preserved and why* (green pen)?
- No. 5: *What areas should be developed for recreation and what facilities are needed* (blue pen)?
- No. 6: *What areas should be developed and what facilities are needed* (orange pen)?
- No. 7: *What is your favorite place and why* (yellow pen)?
- No. 8: *What is your hateful place and why* (red pen)?
- No. 9: Personal data (years of residence, type of work, age, and gender).

A map of the area drawn to the same scale as the aerial-photograph was prepared with a mesh (2.50 x 2.50 cm). Residents' responses were placed on the transparent film, where each square of the grid represented 2.5 ha. The marked areas on the transparent sheets were transferred to the grid pattern on the map and in each marked grid were given one point. These were summed up, and the frequency obtained calculated in percentage. The results obtained (question no. 3 to 8) were assigned by symbols that represented the percentage as: 1%-25%: , 26%-50%: , 51%-75%: , and 76%-100%: .

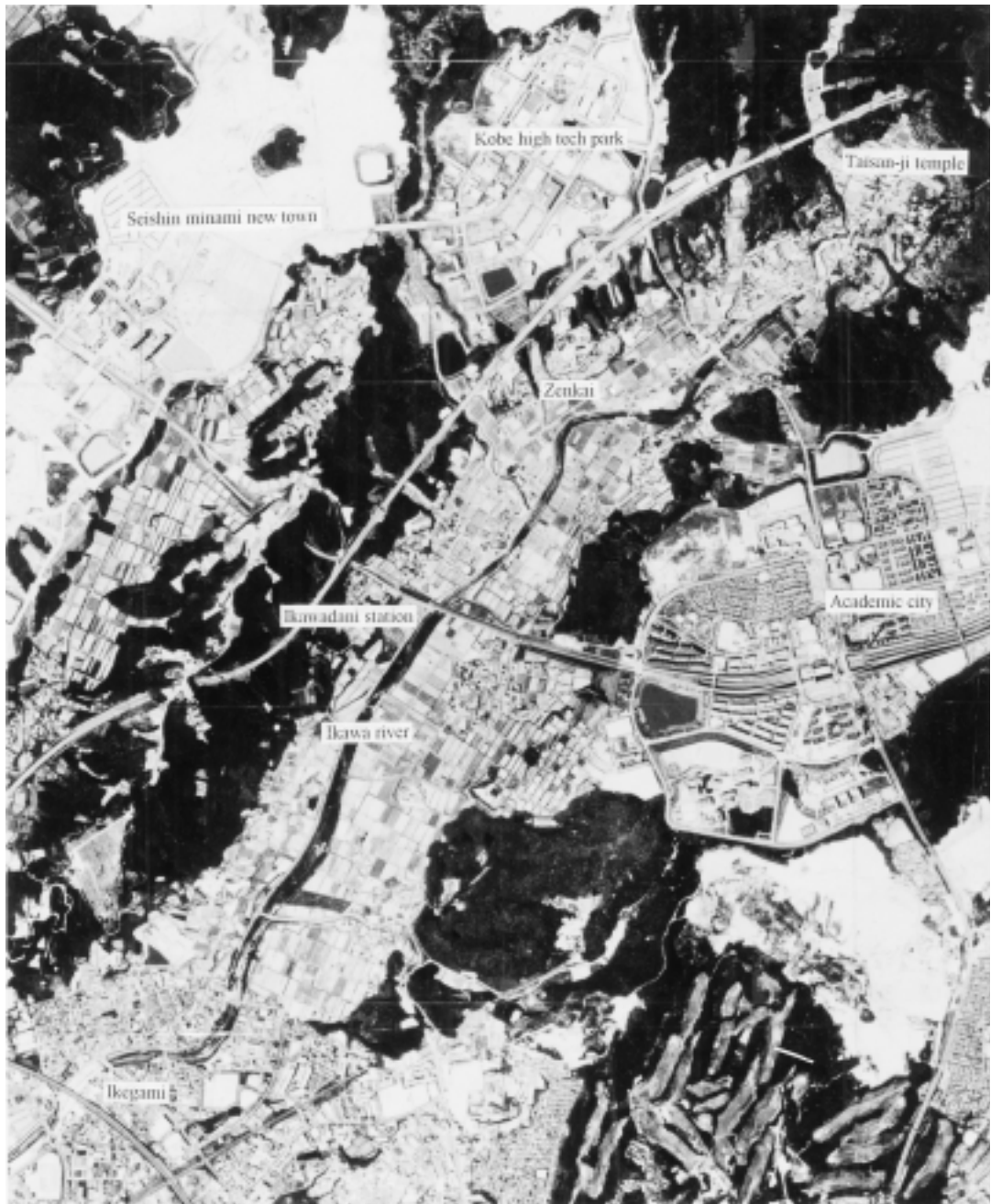


Figure 3 Aerial-photograph of Ikawadani region (scale: 1/6,000)

3.2 Results:

According to the data (Table 1), the majority of the residents in Ikegami are between 30 to 49 years old. Because most of them are young people or newly established families, their length of residence is short and mostly have occupations in companies. In the Zenkai district, agriculture is the main occupation, and part-time farming is increasing. As a representative

Table 1 Personal data of respondents (%)

		Ikegami District	Zenkai District	Total
gender:	male	59.3	81.1	73.3
	female	40.7	18.9	26.7
age:	less than 29 years	6.8	1.9	3.6
	from 30 to 39 years	27.1	18.9	21.8
	from 40 to 49 years	40.7	29.2	33.3
	from 50 to 59 years	16.9	21.7	20
	from 60 to 69 years	8.5	19.8	15.8
	more than 70 years	0	8.5	5.5
years of residence:	less tha 2 years	10.2	0	3.6
	from 2 to 5 years	22	0	7.9
	from 5 to 10 years	44.1	1.5	17
	from 10 to 20 years	5.1	6.6	6.7
	from 20 to 30 years	0	8.5	6.1
	more than 30 years	18.6	83	58.8
occupation	agriculture	8.5	71.7	49.1
	company or govern.	42.4	15.1	24.8
	student	1.7	0.9	0.8
	store, shop	10.2	3.8	6.1
	monk	0	0.9	1.2
	own business	0	0.9	0.2
	professor	3.4	0.9	1.2
	house-keeper	22	0.9	9.1
	job-less	3.4	0.9	1.8
	others	8.5	3.8	5.5

traditional role of their community, most of them were men with a high average age.

Regarding cognitive average maps (Fig. 4), a perceptual differentiation is determinate. Ikegami perceived changes mostly in areas inside or close to their district, while Zenkai shows the most wide range of area perceived. This differentiation is obtained in most of the questions. Subsequently, an analysis by question will supply more information.

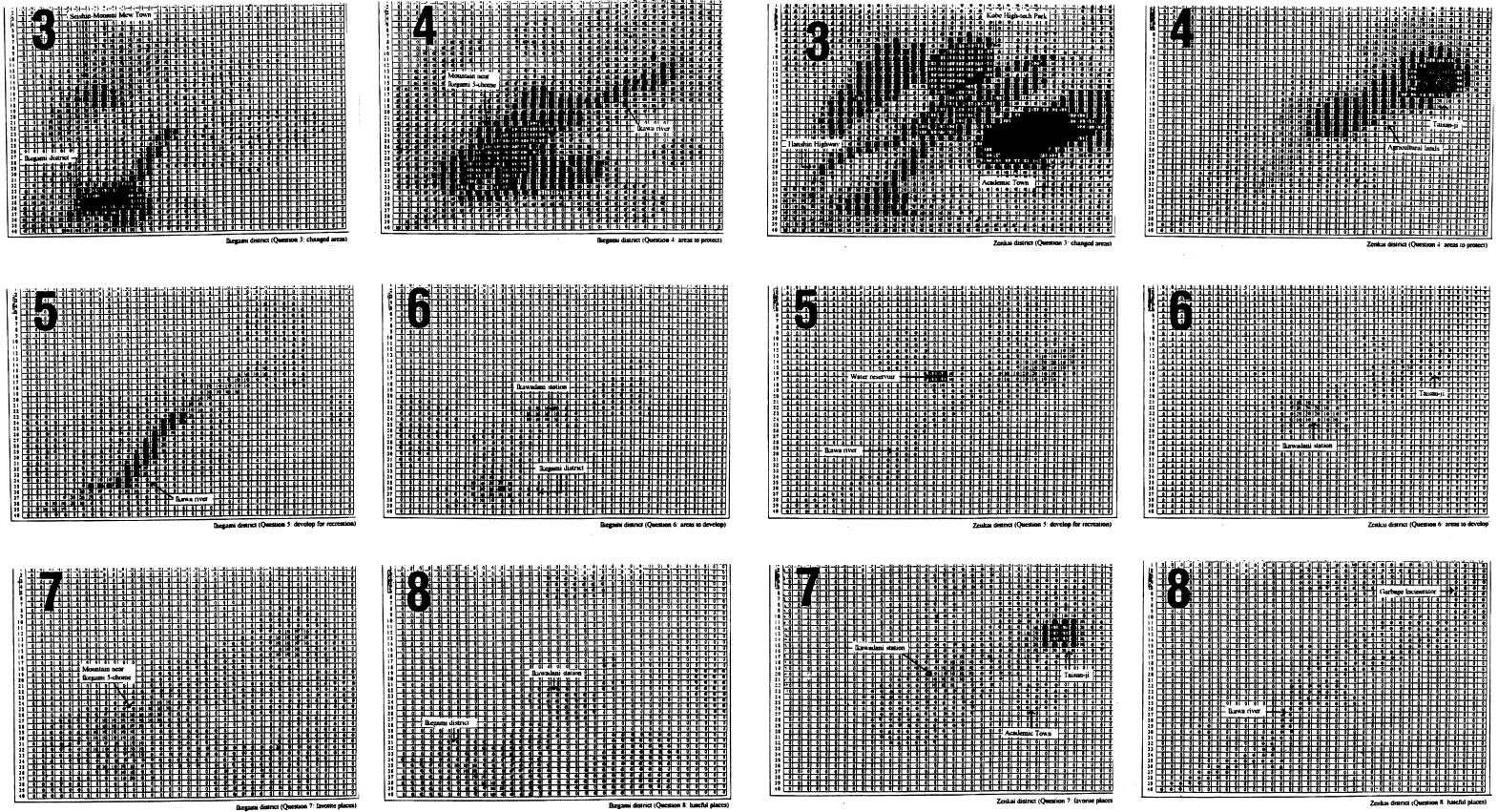
3.2.1 Regarding question no.3 (*Where has the landscape changed and why?*):

Both districts have different perception toward the landscape changes. Zenkai's *wide-extensive perception* quite differs from Ikegami's *narrow-concentrated perception*. Ikegami reported that changes were caused by new dwellings, river's modifications, shopping centers, and mountain-agricultural land modification, while for Zenkai, by new dwellings, the Hanshin Highway, and mountain-agricultural land modification. Some changes are equally perceived, where

new dwellings is defined as the main factor. Nevertheless, the way it is perceived has different variations or intensities. Here perception toward changes is related to the degree of interaction between residents and their environment. Daily activities related to landscape and length of stay are important to determining the degree of perception.

In Ikegami, females are mostly housekeepers, while males commute daily to work outside the district. In Zenkai, all residents work in agriculture, which give them more contact with the surrounding landscape. The 76.3% of Ikegami's residents have not lived there for more than 10 years, showing lack of ties and a weak cognitive image, while 83% of Zenkai's residents have been there for more than 30 years, having in mind a long experience of changes through time. Based on this assertion, the more their interaction with the environment in time is, the more their perception increases in intensity and covered area.

On questions no. 3 and no. 4, the Ikawa River was perceived by both districts as a changed area that should be preserved. This selection implies a gap between residents' desired to preserve this area and its actual state. It also suggests that environmental improvement is required for Ikawa River.



Ikegami district

Zenkai district

Figure 4 Cognitive average frequency maps of preferences (by district and question)

On questions no. 3 and no. 5, both districts choose Ikawa River as a changed area that should be developed for recreation. The combination of questions no. 3, no. 4, and no. 5 clearly shows the residents' desire for conservation and improvement of a changed area by recreational facilities. On questions no. 3 and no. 6, residents are not satisfied with more development, and only detailed services are required. This implies that some changed areas should be improved or its effects placated by specific facilities.

On questions no. 3 and no. 7, the changes in Ikawadani Station, Academic new town, agricultural lands, and Ikawa River are accepted as pleasant changes because they offer amenities and improve quality of life. This selection indicates that the development in these areas was successful. On questions no. 3 and no. 8, both districts chose Ikawa River as an unpleasant place due to concrete canalization and water pollution. This shows a paradox with previous analysis, but appreciation toward its landscape potential categorized it as a favorite place. Other unpleasant places are Ikegami district, Ikawadani Station, and Kobe high-tech park, whose selection indicates that development here was not successful at all.

3.2.2 Regarding question no. 4 (*What areas should be preserved and why?*):

Both districts differ toward areas that should be preserved. Ikegami wants to preserve a nearby forest-hill because it offers greenery in their urbanized area, while Zenkai concentrates its attention on Taisan-ji Temple and its surrounding mountains. Nevertheless, there exist some equal preferences regarding Ikawa River, mountains, agricultural lands, and Taisan-ji Temple. Both districts show an opposite type of perception if we compared with results of question no. 3, while Ikegami possesses a narrow-concentrated perception toward changes. Regarding conservation issues, their perception is strong in intensity and encompasses a widely expanded area. Zenkai, with its wide-extensive perception toward changes, shows less need for conservation due to their necessity for urban services.

On questions no. 4 and no. 5, conservation of the Ikawa River should be supported by recreation. Facilities should ameliorate the harm that urbanization has caused and promote communication among residents. It suggests that conservation through recreation should play a major guideline in planning. On questions no. 4 and no. 6, little compatibility exists between conservation and development, but it was requested that conserved areas could be better maintained by basic services that can support environmental quality.

On questions no. 4 and no. 7, most of the areas for conservation are favorites places. Taisan-ji Temple is considered the most favorite place, which should be protected from any type of development. It suggests that effort is needed in the conservation of these areas for a successful plan. On questions no. 4 and no. 8, the Ikawa River should be conserved, but water pollution and canalization defined it as a hateful place.

3.2.3 Regarding question no. 5 (*What areas should be developed for recreation and what facilities are needed?*):

Both districts show desire for landscape restoration through recreation. However there are differences in the type of facilities required. Ikegami wants a strolling path and others facilities which can support urban amenities between Ikegami and Ikawadani Station. Zenkai desired recreation through facilities integrated with the existing rural environment, placed between Ikawadani Station and Taisan-ji Temple. The idea of a river sidewalk has generated a good response in residents. Also, the desire for a sports-park to be constructed on an old reservoir in Zenkai is perceived as the highest priority.

On questions no. 5 and no. 6, the recreation that supports conservation should be assisted by specific services as parking lots, stores, restaurants, coffee shops, souvenir shops, and a cultural center. On questions no. 5 and no. 7, there exists a relationship between recreation and favorite place, in which such activities can help this achievement. Ikawa River and Taisan-ji Temple are under this aspect. On questions no. 5 and no. 8, recreation is a resource for changing the aspect of hateful places. The dislike of Ikawa River should be ameliorated by recreation.

3.2.4 Regarding question no. 6 (*What areas should be developed and what facilities are needed?*):

Ikegami requested social institutions such as hospital, school, cultural center, a parking lot, and a kindergarten in the district; however, due to the lack of space, a location near Ikawadani station is acceptable. Zenkai needs a parking lot, supermarket, and hospital close to the station due to its convenience, while a cultural center, souvenir shops, and a parking lot are desired near Taisan-ji Temple for tourism improvement. In conclusion, three areas for development are determined: (1) inside Ikegami district, (2) around Ikawadani Station, and (3) in nearby areas of Taisan-ji Temple.

On questions no. 6 and no. 7, Ikawa River, Ikawadani Station, and Taisan-ji Temple are favorite places that should be improved by services. The academic town is also favorite but further development is not acceptable. On questions no. 6 and no. 8, unpleasant places also have been chosen for development of services that could better help the landscape improve.

3.2.5 Regarding question no. 7 and no. 8 (*What is your favorite place and your hateful place, and why?*):

For both districts, Taisan-ji Temple is considered the favorite place, but difference in percentage of selection (Ikegami: 19.7% and Zenkai 87.5%) show the real affection for this place. Desire for its conservation also show different selections (Ikegami: 10.2% and Zenkai: 38.7%), which means that its importance is perceived more in Zenkai than in Ikegami. For Ikegami, the greenery of a nearby forest-hill is highly appreciated and its percentage does not differ much from Taisan-ji Temple. On question no. 7 and no. 8, The Ikawa River was selected as favorite but also a hateful place. It suggests that its environmental improvement is required.

Both districts show differences regarding hateful places. Pachinko parlor, industries,

Ikawadani Station, motorcycle-court, and love hotels were cited by Ikegami, while Zenkai pointed out the garbage incinerator behind the mountains of Taisan-ji Temple, river pollution, and devastation of riverside by car repair shops as unpopular places.

3.3 Discussion:

Old and new residents have different types of perceptions. Toward changes, a “narrow and concentrated” type of perception is developed in Ikegami, while a “wide and extensive” one is in Zenkai. Housing development is the main factor of change, and people’s length of residence is the most important factor in assessing those changes.

Areas for protection were perceived in an opposite manner. Ikegami perceived an extension of areas because urbanization fulfills their needs for greenery and recreation. Zenkai concentrates their attention only inside their district due to their need for basic urban services, but also to the presence of a protective attitude toward their own rural environment.

On this regard, places of daily life, such as residential areas, work places, favorite places and protected areas offer an idea of people’s *everyday landscape zone*, which refers to the affective bond to those places based on daily contact and interaction with it. The result suggests the presence of two categories:

A.- Landscape zone with common interests: Zones defined by residents who wanted to develop the land or to protect it, that is either preference of two. These zones do not present a conflict of opinions and preferences toward its future. These are: (1) Taisan-ji Temple and its surroundings, (2) a forest-hill in Ikegami, (3) Kobe high-tech park, (4) Academic town, (5) Seishin-minami new town, (6) farmlands, (7) the Hanshin highway, and (8) Zenkai’s water reservoir and garbage incinerator.

B.- Landscape zone with opposed interests: Zones defined by some residents who wanted to develop the land, and others who wanted to protect it. These zones commonly showed conflict of opinions toward its future. As an example, desires for urban development and natural conservation of the same piece of land or the selection of a favorite place which is unpleasant for an other group of residents is quite often mentioned. These zones are: (1) Ikawa River, (2) Ikawadani Station, and (3) Ikegami district.

Under the context of the everyday landscape zone, there is an “*intimate zone*,” rich in meaning, which is perceived in a different manner by residents. This zone is the landscape of Taisan-ji Temple. For the people of Zenkai, it is part of their intimate landscape, in which they live and work every day, and where their appreciation has been longer lasting and mixed with their emotional feelings toward the land and experiences through time.

Regarding this fact, they show what Tuan (1974) has called a perception based on a “*native point of view*” toward the land, with a more developed awareness, familiarity and attachment to the place, while people of Ikegami, without affective ties, show a perception based on a “*visitor or tourist point of view*.” As their district is located far away from the temple, they do not

participate in its activities or festivals, and do not perceive it as an important element in their everyday environment. Appreciation that is only based on aesthetic values and the desire for tourist-sporting activities.

This area also demonstrates a tendency toward the “Nimby” attitude (Lake, 1993) by the people of Zenkai. A concept, which means “*not in my back yard*,” to refers the local protectionism by this community to its most affective place, and an opposition toward development. This reaction does not necessarily exclude all kinds of development inside the area because landscape improvement is also desired. In our study area, it is also founded in the forest-hill near Ikegami.

All this information has been summarized in order to be expressed in a *cognitive map* (Fig.5), which is the sum of the total spatial environmental knowledge stored as an image in residents’ brains, and where its routes and relationships can determine their attitudes and behavioral responses, mediated by this image. The map was elaborated according to the five basic elements in the development of a cognitive imaginary, proposed by the Lynch’s study (1960).¹¹⁾ As it shows not only the people’s awareness, but also affection and frustrations toward their surroundings, the map is a valuable resource for planning. It clearly shows that future development should be defined by the following three concepts:

1.- Integration: restoration of Ikawa River as a greenway for regional landscape integration.

Because the Ikawa River runs across the region, it has meaning to residents as it supports rural lands and constitutes the main landscape. It should play the role of a vertebral column through a “*greenway*”¹²⁾ to connect different places along its riverside. A first proposition for this idea is presented into this study (Fig. 6). Restoration should promote a strolling path, citizens farm, forest park, and should offer a wide space on its riverside to protect from flooding. Facilities are most needed between Ikegami and Ikawadani Station, but in Zenkai, it should be done according to the rural landscape, and where a sport-park in a nearby water reservoir could be an important facility.

2.- Socialization: development of Ikawadani Station as a social center to improve communication among residents.

There is a need to integrate both districts that are visually separated by the Ikawadani Station and its elevated railway line. The need for a “social center” is based on its location as the frontier between both districts and as an important transportation node. New services should be defined as hospital, supermarket, stores, and a parking lot. Accessibility to the river is suggested to improve communication among residents.

3.- Identification: conservation of Taisan-ji Temple as a cultural symbol to develop a regional identity.

Taisan-ji Temple is the favorite place. Although residents possess different types of attitudes and their enjoyment varies in kind and intensity, it should be a “regional symbol” due

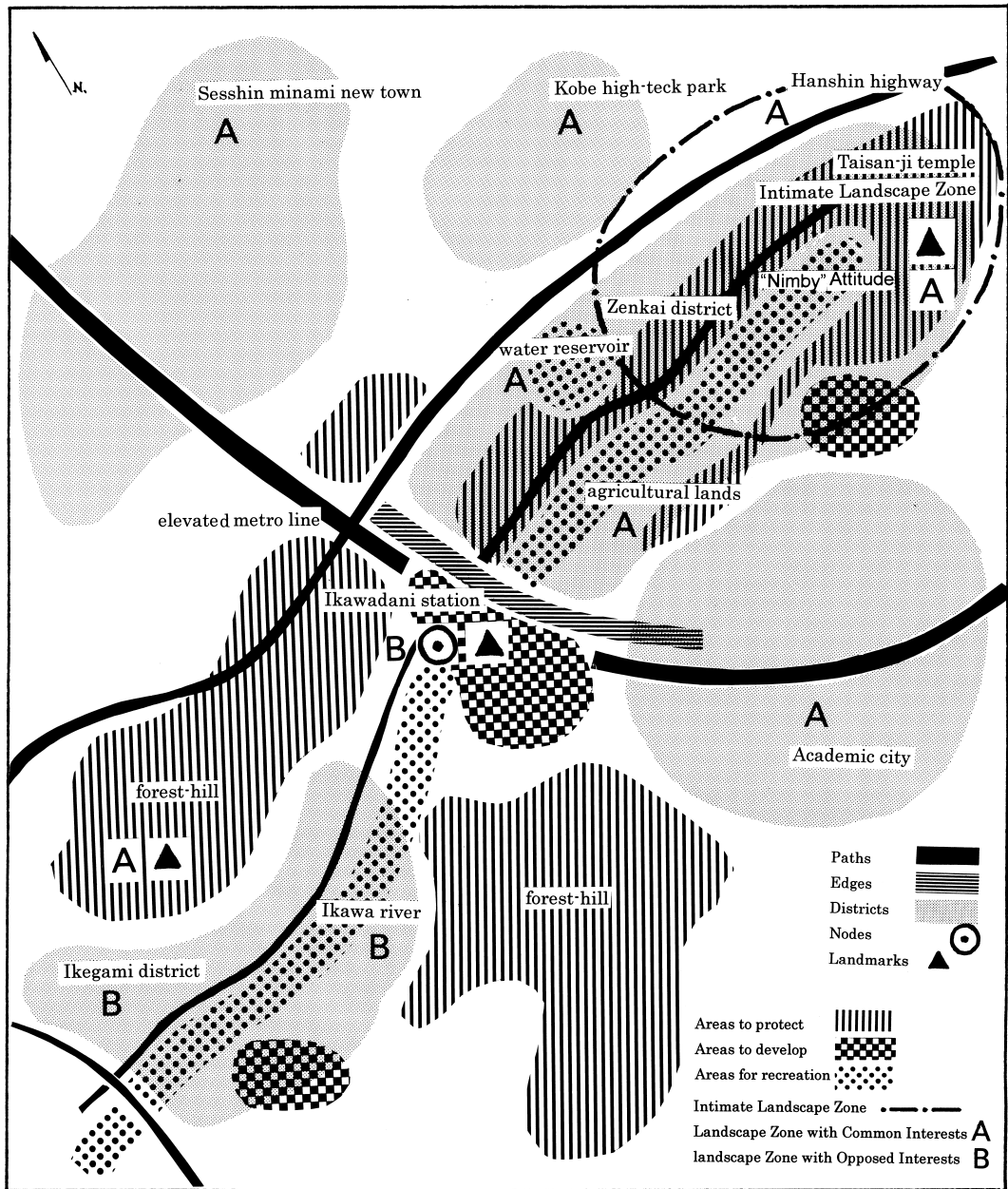


Figure 5 Cognitive map of Ikawadani region

to its historical value. Its conservation should increase the sense of identity with the land through basic tourist services to revitalize the area, and according to existing architectural features. A parking lot, signs, benches, and garbage disposal are needed, which means to develop in a passive way.

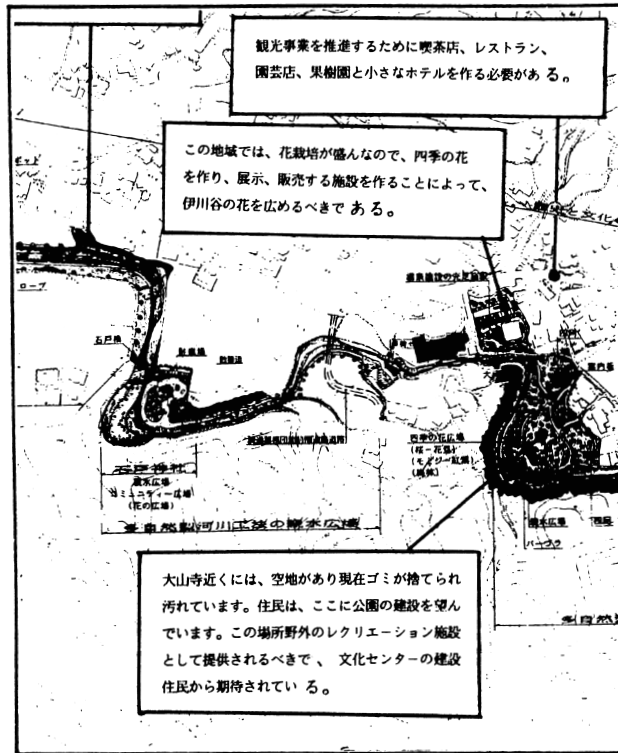


Figure 6 A proposition for Ikawa River's greenway plan (based on residents' opinions)

Conclusion

In Japan, the urbanization trend has a tremendous effect on the rural-urban fringe. In these areas, land-use is becoming confused, landscape is changing, and different types of people are intermixed. It is assumed that residents here possess a varied perception toward their own environment, a fact that constitutes a problem in terms of planning. A typical case study was selected in the western rural-urban fringe of Kobe City, and a method on visual assessment of landscape developed in order to understand how people perceive the changes and evaluates their attitudes and preferences.

As result, differences and similarities on people's perception were determined, and preferences visualized in a cognitive map to define the basis for future planning and conservation. The people's length of residence is an important factor in assessing the chances. A strong opposition to development that can affect their most "intimate" living environment was determined as the "Nimby" attitude, but there is also a need for basic services and recreational activities that can support conservation. Preferences and opinions toward the landscape are varied and were defined under two categories: Landscapes with common interests toward its

future, and those with opposed interests. A suggestion for planning was proposed under three basic concepts: (1) integration, (2) socialization, and (3) identification. These will create the basis for global integration that can strengthen the regional identity and socialization among residents.

In this study, the cognitive assessment of residents' landscape preferences offers a new approach to creating the basis for regional planning in Japanese suburban areas. It aims to contribute to a better understanding of socio-cultural and environmental problems, which are fundamental human-perceptual problems; furthermore, it hopes to achieve a new step forward based on the cognitive image of sub-urban dwellers.

Notes

- 1) Studies on social ecology, geography, and psychology have proposed the term *environmental cognition* to define the mental process by which individuals and groups acquire, code, store, recall, and decode the information about relative locations and attributes of the everyday large-scale spatial environment. The main tool for this evaluation is done by methods on cognitive mapping (see Golledge, 1987).
- 2) *Landscape* came to mean "a prospect seen from a specific standpoint" (Tuan, 1974: 133), which means the process of perceiving that prospect. Appleton (1975: 22, 53-54) also confirms this statement and suggests that this term should mean the environment which is perceived, and especially visually perceived.
- 3) The term *planning* related to the landscape, refers to "the continuing process that strives to make the best use for mankind of the limited area of the earth's surface while conserving its productivity and beauty" (Vanicek, 1974: 105).
- 4) The term *rural-urban fringe* refers to "the zone of the land on the periphery of a city which is experiencing a process of transformation of characteristically rural modes of production, social interaction, and land-use to characteristically urban ones, or which has experienced this in the recent past" (Leeming and Soussman, 1979: 273).
- 5) The term *urbanization* describe "the process of infiltration of the countryside by non-farm elements..." (Bryant et al. 1982: 6).
- 6) *Perception*, related to the landscape, involves the process of information gained from a visualized environment, which is conditioned by a range of factors (as the individual's previous experiences, his values, beliefs, and socio-economic well-being). It takes time and tends to start with a diffuse, undifferentiated image of the whole, which is progressively modified and elaborated through time. *Attitudes*, is a consequence of this perceptual process. It has greater stability than perception and is formed of a long succession of perceptions, that is of an experience (see Tuan, 1974: 4).
- 7) The first stage is *urbanization*. At this stage, population of the central city grows rapidly, but population of suburban areas declines or only grows gradually. The second stage is *suburbanization*, where population of suburban areas grows rapidly, but the population of the central city grows or declines gradually. The third stage is *deurbanization*, where migrants from urban areas to rural areas increase so that urban population decreases.
- 8) *Public participation* is the opportunities for residents or organizations to voice their problems, concerns, interests, or ideas about planning issues. It is important to increase the planning project efficiency and effectiveness, to encourage self-reliance among participants and to increase the number of people who

- potentially can benefit from development (see Oakley, 1991).
- 9) There is a widespread use of methods and also a criticism concerning the way in which landscape has to be evaluated. On the range of purposes, the most popular are: (1) evaluation by consensus, (2) by description, and (3) by preferences. The last one is concerned with our purpose, as it makes emphasis on people's preference for a particular type of landscape.
 - 10) *Studies on Visual Assessment Methods as a basis for Landscape Conservation*. Institute of Landscape Architecture, Kyoto University, 1997.
 - 11) These are: (1) *Paths* (channels along the region which the resident moves), (2) *Edges* (barriers, more or less penetrable, which close one region off from another), (3) *Districts* (medium-to-large sections of a region, which are recognizable as having some common, identifying character), (4) *Nodes* (spots in the region such as junctions, place of break in transportation, a crossing, or convergence of paths), and (5) *Landmarks* (a point-reference defined by a physical object such as building, sign, store, or mountain).
 - 12) A definition of greenway is presented in Fabos's study on the subject (1995). It is "a living network system of green-nature corridors," where a river or a shoreline of a coast can provide such networks. There are corridors for ecological significance, for water-based recreational sites, and for historical heritage. In our study, the Ikawa river satisfies those categories for global integration.

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日本における都市近郊の地域計画のための景観認識評価

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要約：都市近郊は農村と都市との間にあって、農村的土地利用と都市的土地利用が混在する過渡的な状況にある地域として定義づけられる。このような地域では都市的開発にともない景観も変化するとともに、都市からの新住民と農村に居住してきた旧住民との間の文化的、社会的な差異が地域計画のうえにさまざまな問題をひきおこしている。都市近郊のひとつの典型的なケースとしてこの20年間に都市的な開発が進展し、景観変化をひきおこしてきた神戸市西区伊川谷地域をとりあげた。この地域の南部に位置する池上地区は近年都市化されてきた地区で市街化区域となっており都市部からの転入者が多い。これに対して北部の前開地区は市街化調整区域であり農業振興地域に指定されており農村集落と農地が展開する。

本論文は景観の変化や保全と開発に対する両地区の住民の、主として視覚的な評価を明らかにし、地域計画の基礎的な資料を提供することを目的とした。その調査では景観に関する住民の認識や選好を言葉や文章のみで問うのではなく、空中写真とアンケート調査を併用し住民の意識する景観の視覚化を試み、それを通して住民の視覚的な評価を明らかにしようとしたものである。ここでは地域全域の空中写真を住民に示し景観の変化、保全、開発などの質問に対して回答すべき景観・地域を写真上にマークさせる空中写真認識法を用いた。これをメッシュ・データに変換し住民の選好を分析した。その結果新旧住民は地域の環境に関しさまざまな意識を持っている事が明らかになった。新住民では保全に関する選好が周辺の山林や農地など自然的な景観に拡散的に広がる傾向をみせた。これに対して旧住民の保全対象は、農地のほか旧地区にある歴史的な文化財としての寺院とその背後の山林に新住民よりもより強く集約的に収斂し、新旧住民の保全に対する意識の質的差異が明らかになった。一方、両地区を縦貫する一つの小河川に対する保全の意識は共通的で、空間的、景観的共有性が示唆された。さらに開発に関しては両地区の中央に位置する高速鉄道駅一帯が共通する地区として把握された。このように新旧地区の住民による選好の差異性と共通性が明らかにされた。最後に地域景観の変化に対する住民の意識を図解して表した。この「コグニティブ・マップ」はこれからの地域計画にとって役立つものとなるだろう。以上の調査から地域計画のために3つの計画的概念「地域景観と調和したグリーンウェイとしての小河川の保全」、「地域の社会的中心としての高速鉄道駅地区の開発」、文化的シンボルとしての文化財の保全と整備」を提案した。

キーワード：環境認識，都市近郊，景観変化に関する視覚的な評価，日本における地域計画

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