LANSING, MICHIGAN AND SHIZUOKA, JAPAN
A COMPARISON OF AREAL FUNCTIONAL ORGANIZATION IN TWO DIFFERENT ENVIRONMENTS

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AN ABSTRACT

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ABSTRACT

The purpose of this dissertation is to present comparative systematic analysis of the Lansing and the Shizuoka areas as samples of the United States and Japan respectively. The analysis was made by applying Allen K. Philbrick's principles of areal functional organization, as well as his concept of three aspects of geography (culture, areal functional organization, and nature) to the comparison of the two sample areas. The two study areas are very different in traditional cultures and physical environments. They were found to be basically similar in patterns of areal organization, however.

The Lansing area was transformed from a primitive culture region of the American Indians to a European-type culture region after the Whites settled there. Today, this area is characterized by distinctive twentieth-century-American culture traits, such as tremendous mobility or large-scale use of land. The Shizuoka area was developed from a primitive to a modern cultural stage of the present as the result of the introduction of two foreign cultures--Chinese and Euro-American.

Subsistence nature of the economy has virtually disappeared from the Lansing area. It is a dynamic region in which functional units are now interconnected very intensively by very numerous movements of people, goods, and ideas. The functional organization of the Shizuoka area is characterized also by dynamic interconnections among establishments and focal or central places. A major difference of such interconnections was found in their kinds and degree of development.

Comparison of a hierarchy of functions and of unit areas in the two study areas was based on principled criteria. In general, the two areas tend to show similar hierarchical patterns of occupance. In the Lansing area, many of the small centers, especially sub-second-order focal places, have tended to retrogress or to be functionally absorbed by larger centers as in the case of highway-oriented ones. In the Shizuoka area, by contrast, still a great many sub-second-order centers are to be seen, located at small intervals. This fact may be a reflection of a society which still maintains a subsistence nature of areal organization to some extent.

Specialized land use or areal division of labor is more pronounced in the Lansing area than in the Shizuoka area. This is especially apparent in the case of urban residential development in the Lansing area. Another significant phenomenon is the prevalence of widespread non-farm residences in so-called rural areas in the American case.

In dealing with settlements, both functional and morphological analysis were employed in order to understand the settlements more comprehensively. Morphological differences and similarities in patterns of culture are a significant part of geographic analysis of culture.

Major findings of the dissertation concerning the two study areas, or the United States and Japan, include the following: The two areas do not show basic differences in the character of economic areal functional organization, as

one might expect from the differences in traditional culture forms, racial characteristics, or geographic locations including their marked differences in physical environment. The terms "Occident" and "Orient," which have been used often referring to the two areas, are no longer a significant distinction between them. The present patterns of occupance in the two areas both exhibit characteristics of what may be called a truly international "style" of exchange-type areal organization.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF ILLUSTRATIONS	vii
INTRODUCTION	1
Objective of the Study	1
Definitions	1
The Dissertation Study Areas	3
Occidental Versus Oriental Culture	5
Areal Functional Organization	9
The Physical Environment	15
Summary	16
CHAPTER	
I. OVERVIEW OF THE TWO AREAS	19
Location and Physical Environment	19
Land Use Patterns: Simplicity vs. Complexity	22
Farming Areas	25
Forests, Waters, and Mountains	28
Urban and Suburban Areas	29
Population Distribution	30
Rural Population	31
Urban Population	32
Relation to the Administrative Boundaries	33

Chapter Page

Communication Network: An Even-Grid and Radial Pattern Vs. Uneven and Primarily Linear Alignment 34

Individual Transportation 34

Public Transportation 34

Tele- and Mass-communication 37

II. CULTURES IN AREAL SETTING 39

Methodological Introduction 39

Comparison of the Two Study Areas in Terms of Cultures 42

Areal Patterns of the Two Cultures in the Past 42

Some Characteristics of the Present Cultures 58

Transportation 59

Urban-industrialization 64

Agriculture 68

Some Characteristics of Political and Social Systems 72

Summary 77

III. AREAL FUNCTIONAL ORGANIZATION 80

Methodological Introduction 80

Hierarchical Organization 87

Hierarchy of Settlements in Both Study Areas 89

First-order Establishments and Their Functions 98

Second-order Centers and Their Functions 106

Chapter		Page
	Composite Second-order Service Areas	111
	Third-order Centers and Their Functions	116
	Fourth and Fifth-order Centers and Their Functions	129
	Land Use and Areal Organization of the Cores of the Two Urban Complexes (Lansing-East Lansing and Shizuoka-Shimizu)	139
IV.	THE PHYSICAL ENVIRONMENT	156
	Methodological Introduction	156
	Use of Physical Environment and Its Relation to Culture	157
	Atmosphere and Its Relation to the Cultures	157
	Biosphere and Its Relation to the Cultures	161
	Lithosphere and Its Relation to the Cultures	163
	Hydrosphere and Its Relation to the Cultures	168
	A Diagrammatic Summation of Physical Environments and Cultural Stages	169
V.	A SUMMARY AND CONCLUSIONS	188
	Systematic Analysis	188
	An International Style of Areal Functional Organization	199
BIBLIOGRAPHY		202

LIST OF TABLES

Table		Page
1.	Relation between culture, areal functional organization, and nature for the Lansing area	44
2.	Relation between culture, areal functional organization, and nature for the Shizuoka area	50
3.	Functional centers in the Lansing area	94
4.	Functional centers in the Shizuoka area	95
5.	Economic establishments (excluding farms) along the three roads between Shizuoka and Shimizu	144
6.	Character of concentrations of third-order establishments in Fig. 22	148
7.	Character of concentrations of third-order establishments in Fig. 23	150
8.	Climatic data	158
9.	Some cultural characteristics by hierarchical orders of settlements	191

LIST OF ILLUSTRATIONS

Figure		Page
1.	Overview of the two study areas. (Frontispiece, color photographs, 1-4) . . .	
2.	Location of the Lansing area	20
3.	Location of the Shizuoka area	20
4.	Gross land use of the Lansing area	23
5.	Gross land use of the Shizuoka area	24
6.	Traffic flow of the Lansing area	35
7.	Traffic flow of the Shizuoka area	36
8.	Road patterns	63
9.	Areal functional organization in the Lansing area	90
10.	Areal functional organization in the Shizuoka area	91
11.	First-order settlements with sub-second-order focal places	99
12.	Second-order focal places--land use	107
13.	Trade areas of Mulliken and Needmore	109
14.	Composite second-order 50% service areas--Lansing area	112
15.	Composite second-order 50% service areas--Shizuoka area	114
16.	Hierarchy of nodal places in Central Michigan	119
17.	Third-order external areal functional organization of the Lansing-East Lansing urban complex	122
18.	Third-order focal places--land use	126

Figure | Page

19. Fifth-order areal functional organization of the Lansing-East Lansing Urban Complex . 135

20. Land use of the Lansing-East Lansing urban complex 140

21. Land use of the Shizuoka-Shimizu urban complex 142

22. Functional centers within the Lansing-East Lansing urban complex 146

23. Functional centers within the Shizuoka-Shimizu urban complex 147

24. Physiography with some cultural landscapes--Lansing area 165

25. Physiography with some cultural landscapes--Shizuoka area 166

26. Use of land area by cultural stages 170

27. Photographs (1-24) 174

FIGURE 1

(1) Northwest of Lansing. Picture was taken on June 11, 1960. A typical American rural landscape from air. Farm units are large scale (over 100 acres on the average) and very regularly patterned on the gently undulating plain of a glacial origin. Each unit is composed of a farmstead and several fields which are contiguous to the farmstead in general. Extensive mechanized farming is also characteristic. Farmers practice dairy and general farming almost exclusively. Woodlots are usually used as pastures. This area has a considerable number of scattered non-farm residences. A few of such establishments are clearly shown along the nearest road in the picture.

(2) North of Shizuoka. Picture was taken on November 24, 1956. The alluvial lowland in the middle of the picture has tremendously many small patches of cultivated fields. Contiguous land holding is rare, although fields are quite regularly patterned. The average size of a farm is about two acres around here. Paddy rice is the most important crop on the lowlands. Most of the rice plants have been harvested after the fields were drained. Those harvested rice plants are hung on the poles laid in the paddy fields in order to dry. In the winter half of the year after the harvest of rice, other crops are usually grown such as barley, wheat, and vegetables. Light green patches in the middle of the picture are vegetables. Low hills which surround the lowlands are very intensively planted with mikan (mandarin orange) and tea. Along the foot of a hill in the distance to the left of the picture, a compactly agglomerated farming village is to be seen. To the right of that village, Shizuoka's suburbs are expanding into the farming area. In the far distance, a diluvial plateau is to be seen. Sea coast is just beyond this plateau.

(3) Mulliken Village (June 11, 1960). A typical American "village." This nucleated "village" is virtually void of farmers. Rather it is of an urban nature, consisting of relatively many retail stores, a grain elevator, a small railroad yard, an elementary school, and a couple of religious establishments, as well as many non-farm residences. The business section near the railroad is quite dilapidated. A newer business section has come into being on a highway just outside the picture. This village services many scattered farms in the surrounding area. Older residences have trees around them, but newer ones are exposed without trees.

(4) Tokigaya Buraku (November 24, 1956). A typical small agglomerated village (buraku or mura) in Japan. This village has both farming and urban functions. It has several retail stores, a few household-type tea processing factories, an agricultural cooperative association, and other establishments servicing the buraku and its immediate surrounding area, as well as relatively many farmsteads. Non-farm residences are practically none. Hill-sides are devoted to mikan and tea primarily. Young mikan trees are planted between the rows of tea bushes in the foreground of the picture. A smokestack in the middle of the picture is the one for a small tea processing factory. Lower slopes of the mountains in the distance are also used for mikan and tea growing, but higher parts are covered with forests.

INTRODUCTION

"East is East, West is West, and never the twain shall meet." This thought from Kipling has been accepted quite commonly by people when comparing Asia with the Americas. This dissertation concerns the comparison of two sample areas taken from the United States and Japan. The results of such a comparison show that the two countries are very different in cultural backgrounds and in material resources, but quite similar in the areal patterns of modern economic and political development.

Objective of the Study

The purpose of the present study is to compare the areal functional organization of two sample areas from these two countries in their areal settings of both culture and nature. In order to understand what this means, it will be necessary to define certain terms.

Definitions

The term "areal functional organization" may initially be taken to be the general equivalent of the statement "occupance and use of area and resources," although it has additional technical meanings which will be discussed more fully later.[1] The relation of the human organization of

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[1]Allen K. Philbrick, "Principles of Areal Functional Organization in Regional Human Geography," Economic Geography, Vol. 33 (1957), 299-336. Also, A. K. Philbrick, Contents of lecture on Areal Functional Organization, course on Geographic Methodology, Geography 516, Michigan State University, East Lansing, Fall, 1959.

any area, or its occupance and use, to culture and to nature, may best be indicated in terms of the three sides of a triangle.[2] To analyze comparatively the occupance of two areas geographically, the activities of the people must be viewed in relation to both the material resources gained from their respective natural environments and the ways of life transmitted to the present generation out of their respective cultural backgrounds. In the presentation of this dissertation, the three ingredients or aspects of geography which are brought into mutual relationship with each other are taken to be these three sides of a triangle, as shown in the following: (1) transmitted and evolved culture, (2) material resources or nature, and (3) the human organization of area.

Culture is defined here in terms of the specifics of human ways of living. These include, according to A. K. Philbrick,[3] ways of doing things, ideas, and works of man. The present patterns of culture in any region of society have evolved (through innovations and modifications) and have been transmitted from generation to generation. Such transmission also involves the dispersal of culture from place to place.

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[2]Philbrick, Contents of lecture on Culture, course on Geographic Methodology, Geography 516, Michigan State University, East Lansing, Fall, 1959.

[3]Ibid.

Nature is defined in terms of all phenomena of the earth except human culture. This is a generally accepted arbitrary separation. For the purpose of this dissertation, however, primarily those natural phenomena directly resulting in the material resources, actual or potential, which are usable by the inhabitants of the two sample areas under discussion will be treated.

Areal Functional Organization constitutes the organized pattern of interconnected establishments and facilities which the people of the two respective study areas have built in the process of solving the day-to-day problems of living. (For a more specific interpretation of this term, see Methodological Introduction to Chapter III.)

These three aspects of geographical analysis are intimately interrelated. For example, the pattern of organization is an integral part of the culture of each area. It is so by reason of the fact that the functioning of each society expresses the ways of doing things, the ideas or values of the people, in the process of becoming a local regional composite of the "works" of man. From another viewpoint, the material resources of nature by the very act of being used are incorporated into the pattern of organization, on the one hand, and through the apperception of the people are items of the culture on the other hand.

The Dissertation Study Areas

An area of about 1,400 square miles was taken as a

sample from the United States by connecting the boundaries of 40 townships around Lansing, Michigan. This geometrically delineated territory is located in the middle of the Lower Peninsula of that state, as shown by the map in Fig. 2 in Chapter I. The size of the area was chosen in order that a considerable number of settlements would be included. The total population in the study area was 229,860 in 1950.[4] Lansing is the state capital and it shows a typical American-style urban-industrialization. The surrounding rural areas are dotted with relatively few smaller settlements of an urban nature and a pattern of many isolated farmsteads. The area, as is true of most of the United States, is characterized by an exchange economy, with cultural roots in a European background.

The Japanese sample area was taken from Shizuoka Prefecture in Central Japan (Fig. 3 in Chapter I). The size of the study area is about the same as that of Lansing (1600 square miles). The total population in the study area was 1,315,506 in 1955.[5] Shizuoka is the prefectural capital. Many of the geographical phenomena characteristic of Japan are to be seen. For example, urban-industrialization is developing in the area, which has a previous background of traditional Japanese culture. As in most other parts of

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[4]Bureau of Census, 1950 U.S. Population Census (Washington, D. C.).

[5]Prime Minister's Office, 1955 Japan Population Census (Tokyo).

Japan, the number of settlements, both urban and rural, is very large for such a small area. The form of rural settlements is primarily the nucleated village. Mountains cover a large proportion of the area. This contrasts sharply with the Lansing area, where the terrain is a glacial plain. Both study areas, it is believed, typify the general patterns of the American and the Japanese scene.

Occidental Versus Oriental Culture

American culture has been considered by many people as "Occidental," and Japanese culture as "Oriental." The terms Occident and Orient were first used in the narrow geographical sense of west and east by Europeans in classical times. The term Orient then became applied to the countries east of Europe, first to those of Middle Eastern cultures, and then to those of South Asian and Far Eastern cultures. In the nineteenth century, the term "Oriental" became equated by Marx with the "Asiatic mode of production," namely the grinding poverty of the subsistence agricultural village. Today the terms Oriental and Occidental are misnomers, for they contain the emotional overtones of racism and have lost any semblance of geographic meaning, either as terms for "east" or "west" or as terms of cultural differences, since they are applied to such huge regions indiscriminately. To the average American, "Oriental" means everything in Asia, whereas to the average Japanese <u>Oriento</u> means the

countries of the Middle East. Therefore, for the purposes of this dissertation, these vague terms will be avoided. In their places, when reference to the cultural origins of Japanese or American culture traits needs to be made, such reference will be to specific geographical areas, such as China or Europe. Geographical comparison of cultures in the dissertation will refer specifically to Japanese and United States' cultures.

European culture has developed from a subsistence level to the present industrial stage as a consequence of the Great Geographical Discoveries, the Industrial Revolution, and other epoch-making events. Specialization and division of labor have resulted in a highly diversified human occupance. Today, this kind of occupance is found, for the most part, in those parts of the world peopled by Europeans or their descendants; that is, in Europe and the new lands settled by Europeans. The United States is an example. Here, many aspects of European culture have been transmitted, although additional innovations and other modifications have been numerous.

As Preston E. James put it, all occupance patterns of mankind today are more or less under the influence of European-type culture, except for those of a very few remote tribes.[6] Westernization has been generated and distributed

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[6]Preston E. James, A Geography of Man (Ginn and Co., N. Y., etc., 1951), 12-13.

almost exclusively by Europeans and their descendants. The first significant exception to this general trend appears in Japan. Without significant contacts with the Western World, Japan had been developing capitalism similar in nature to that of Europe for many years during the Tokugawa period before the Meiji Restoration (1868).[7] Contacts with America and Europe began primarily with the arrival of Commodore Perry from the United States in 1853. The Meiji Restoration which followed this event marked the initiation of large-scale introduction of European and American cultures to Japan.

The present-day exchange world is generally characterized by the high development of specialization of labor, especially in industrial fields. By contrast, Asia is generally thought of as the world of subsistence agriculture and nomadism, with few industries other than those of a household nature. Some think that this difference is a product of contrasts between so-called "Occidental" and "Oriental" cultures, which will never conform basically to each other. Others think that the diffusion of the exchange economies is possible only by migration of Europeans and their descendants. In extreme cases, the difference between exchange and subsistence organization is attributed by some to biological differences.

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[7] M. Kajinishi, Nihon Keizai-shi (Economic History of Japan). 2nd edit. (Ochanomizu Shobo, Tokyo, 1959), 92.

Industrialization of Japan has been accomplished almost exclusively by the efforts of the Japanese themselves, a non-European people in Asia. The fact that the Japanese learned how to do this by studying the European or American ways of life may signify the dispersal of culture from European-type to non-European-type countries, but this does not in any way alter the fact that in the case of Japan the initiative toward Westernization was always Japanese. Subsistence economy has lost its original form and importance to a very considerable degree. Today, Japan may be regarded as a nation with an exchange economy, although subsistence-type economy has not disappeared completely.

The United States has altered many of its original European traditions. Successive innovations and modifications have been common there. Consequently, the United States today, in many ways quite different from Europe, has developed a distinctively American culture. This fact, however, does not deny the European background of many customs and traditions. In a like manner, Japan still maintains its traditional culture traits and values in many respects, in spite of its western orientation in more recent years. Existence of a so-called "Oriental" image of Japan held by Westerners is mainly attributable to early Chinese influence and, following that, to the pre-Meiji seclusion from the rest of the world. The feeling of difference may come in part from the variation in traditional art forms and biological

characteristics of the people. But a great many American-style buildings, means of transportation, garments, and other western culture traits exist in Japan. Therefore, the question arises: What kind of culture does Japan have--Asiatic or European-type? Is it "Oriental" or "Occidental"? In reality, Japan has mingled the two cultures to an almost inseparable degree.

Areal Functional Organization

How are the patterns of functional organization in the two study areas expressed in their areal settings? What kinds of similarities and differences are found between them regarding functional organization? Functional organization of areas is an aspect of any culture. Special emphasis by geographers on functional organization in an areal setting springs from the desire to understand the operational, i.e., functional aspects of society in regions. Human regions can be understood better by considering them functionally. This means, in the first place, the functioning of establishments and settlements composed of establishments as individual units. It also means, in the second place, the interconnection of places by the movement of people, goods, and ideas, which fashions larger units of areal and regional organization through the combining of smaller ones.

The world is becoming, more and more, one functional unit, although an internally complicated one. In other words, all places in the world are rapidly becoming interconnected with each other on the basis of certain specific

functions, although there may be a few places not yet functionally joined to others. Two extreme theoretical cases will be cited. One is a city or a village, in which people get their food, clothing, raw materials for their factories, and many other items from various distant and foreign places. At the same time, they ship out practically all the goods which they produce there. This would be an extreme case of an exchange economy.

The other theoretical case is a small village where people's whole lives are narrowly restricted to the surrounding area. Existence of a great many such purely subsistence villages (which in theory might be located without any mutual contacts) even in a small area would not form one functionally organized region, because those villages are separated from each other by the lack of functional ties. Such an area, therefore, would be understood as one that consists of a great many independent micro-regions, rather than a single larger region, in terms of a functional approach. It would be merely a large uniform region, in which each village has a separate subsistence economy.[8] Between these two theoretical extremes,

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[8]Many of R. S. Platt's articles and books cited in Chapter II and III, and also the same author's "Environmentalism versus Geography," American Journal of Sociology, 53 (1948), 351-358.

Derwent Whittlesey, "The Regional Concept and the Regional Method," Chapter 2 of American Geography, Inventory and Prospect (Syracuse University Press, 1954), 19-68.

Richard Hartshorne, Perspective on the Nature of Geography. (Rand McNally and Co., Chicago, 1959), 134-137.

all developmental stages are recognized in actuality.

"Human occupance is focal in character" (after Philbrick), although its focal character (called here "focality") varies considerably according to the functions performed. Metropolises have much larger and more diversified functions than small villages. Even among small settlements of the same size, however, there may be differences in functional activities. Our society is areally organized through various functional units of occupance. Functional units, i.e., areas of human occupance with which geography is essentially concerned, are based upon recognition of a hierarchy of functions. The lowest order, or the simplest function, is that of the consumer in the economic areal functional organization. The basic areal unit is the consumer establishment, which may be any establishment from the smallest to the largest, from farms to large factories, from simple households to federal capitols. These are classified as follows: economic establishments (farms, retail stores, wholesale companies, utility companies, railroad stations, factories, stock exchanges, etc.), political establishments (federal, national, state, prefectural, city, town, village government institutions and agencies, etc.), social establishments (churches, temples, shrines, clubs, private schools, etc.). Non-farm residences in the sense that they are the location of basic family units may be classified as social establishments. In terms of a hierarchy of basic functions which will be discussed later, interconnected

establishments are hierarchically arranged in the pattern of society. The focal nature of occupance, as well as the hierarchical character of society from single establishments through complex settlements, are important characteristics of areal human organization.[9]

There are qualitative differences among establishments according to the function each performs. In economic organization, the hierarchy of functions is as follows: consumers are served directly by retailers, retailers by wholesalers, wholesalers by brokers for wholesalers, and so on. In the areal pattern of economic organization, some settlements have clusters of retailing establishments and farm or non-farm residences only. These serve local consumers, the residents of the surrounding rural areas, and possibly those in a certain number of other neighboring settlements.

Others are multi-functional. They have wholesale companies as well as retail stores and farm or non-farm residences. The retail stores in the "wholesaling" settlements perform essentially the same functions as those in the purely "retailing" settlements. However, these "wholesaling" settlements have another function as well. Their functions are two-fold: (1) retail services, and (2) wholesale services

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[9]Allen K. Philbrick, "Principles of Areal Functional Organization in Regional Human Geography," Econ. Geo., XXXIII (1957), 299-336. And also, "Areal Functional Organization in Geography," Papers and Proceedings of the Regional Science Association, III (1957), 87-98.

for the retailers in both their own and other settlements.

A. K. Philbrick has systematized and described this kind of hierarchical organization in an areal setting and proposed certain principles of areal functional organization in regional human geography.[10] In his work, the hierarchical scheme established is as follows:

First order ----- Consumer or equivalent functions.

Second order ---- Retail or equivalent functions.

Third order ----- Wholesale or equivalent functions.

Fourth order ---- Transshipment or equivalent functions.

Fifth order ----- Exchange (without physical handling or ownership) or equivalent functions.

Sixth Order ----- Control (concentration of economic power through common ownership, common control, interlocking directorates, or the like, of a given major regional economy as a whole) or equivalent functions.

Seventh order -- Leadership (primary leadership) functions.

The above-mentioned hierarchy of functions are equated with the hierarchy of functional areas as follows:

First order ----- Functional areas of single consumer or equivalent establishments such as

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[10]A. K. Philbrick, "Principles . . .," op. cit., and "Areal Functional Organization . . .," op. cit.

individual farms, residences, stores, stations, etc.

Second order ---- Functional areas of centers having retail or equivalent functions.

Third order ----- Functional areas of centers having wholesale or equivalent functions.

Fourth order ---- Functional areas of centers having transshipment or equivalent functions.

Fifth order ----- Functional areas of centers having exchange or equivalent functions.

Sixth order ----- Functional areas of centers having control or equivalent functions.

Seventh order --- Functional areas of centers having leadership functions.

This hierarchical scheme was established on the basis of ten principles proposed by Philbrick; for example, each higher-order center performs, in principle, all successively lower-order functions. The ten principles will be explained more fully in Chapter III.

The author has applied this scheme and its basic principles to a comparative study of the Lansing and the Shizuoka areas. In practice, distinction between the orders of the hierarchy based upon secondary sources rather than field work when necessary is difficult in some cases. This may also be a question of classification, because many settlements are transitional, i.e., either "embryonic" in the

case of places evolving toward a higher order, or "retrogressing" in the case of places declining toward a lower order. For example, a second-order settlement becomes an "embryonic" third-order one if it has only a single wholesaler but is apt to become the site of additional ones; a second-order settlement may lose that status if it abandons most of its stores and becomes almost purely a residential community. Thus, the notion of "sub-orders" is proposed for these transitional functional centers.

Many geographers have studied differences and similarities in settlement forms. Definitions such as "nucleated" or "isolated" settlements are based on the distributional patterns of establishments. From a morphological viewpoint, this difference is very significant. However, from the viewpoint of area organization, many morphologically distinctive settlements are equivalent in principle from the standpoint of their order in the hierarchy of functions.

The Physical Environment

The understanding of a region cannot be attained without incorporating nature or physical environment into human occupance. Regarding the facts of physical environment, the major emphasis in this study is placed on those which have significant relationships to human occupance. This applies particularly to the use of natural resources or physical environment of the respective areas. The physical

environments of the two study areas differ very considerably. This fact, however, does not imply that the differences in physical environment have been the major factors for differentiating the human occupance of the respective areas. In the course of time, the physical environments of the two areas have not changed significantly. Nevertheless, the human occupance patterns have changed greatly. The reason is simple. It is "culture" or "man" that has changed the occupance patterns almost exclusively. For example, technological development has made possible the widespread drainage of wet lands in the Lansing area, and the construction of a multiple-purpose dam in the high, rugged mountains of the Shizuoka area.

Summary

An area covering about 1,400 square miles around Lansing, Michigan, was chosen as an example of the American Midwest. This area is to be compared with one of about the same size around Shizuoka in Central Japan, as an example of the Japanese culture region. In the broad sense, it can be assumed that the pattern of occupance in the Lansing area is typically "American," and that of the Shizuoka area is typically "Japanese." Japan has been naively considered as an "Oriental" culture region by most of the people in the world, primarily because of proximity to the continent of Asia, intensive paddy cultivation, traditional Japanese

art forms, and Mongoloid racial characteristics of the people. By contrast, to a considerable number of Japanese, present-day Japan is thought to be quite different from any other so-called "Oriental" nation. The question is posed: What are the differences between the two sample areas? How do they differ in culture, in nature, and in the human organization of area?

The two study areas will be compared in terms of the three aspects of geography as follows: (1) Cultural differences and similarities in an areal pattern. (2) Areal functional organization. This approach will be especially emphasized, because it provides significant guidelines to the character of each region as a whole. (3) Nature or physical environment. Interrelation of the three aspects may lead to the ultimate goal of a systematic regional study. A detailed theoretical framework of the above-mentioned three aspects will be described at the beginning of Chapters II, III, and IV. Understanding of the two areas will be made more strictly comparable if criteria of comparisons used in common for both areas are based on such a theoretical framework. It is expected that use of these three aspects of geography as a man-centered discipline (culture in areal setting, areal functional organization, and nature) will contribute to the systematic understanding of the two sample areas.

Another contribution, the author hopes, is the

accumulation of geographic knowledge about the two particular areas as examples from the American (Midwest) and the Japanese culture regions. This contribution is largely limited to the present time. Only a little attention is paid to the reconstruction of past human occupance of the respective areas.

CHAPTER I.

OVERVIEW OF THE TWO AREAS

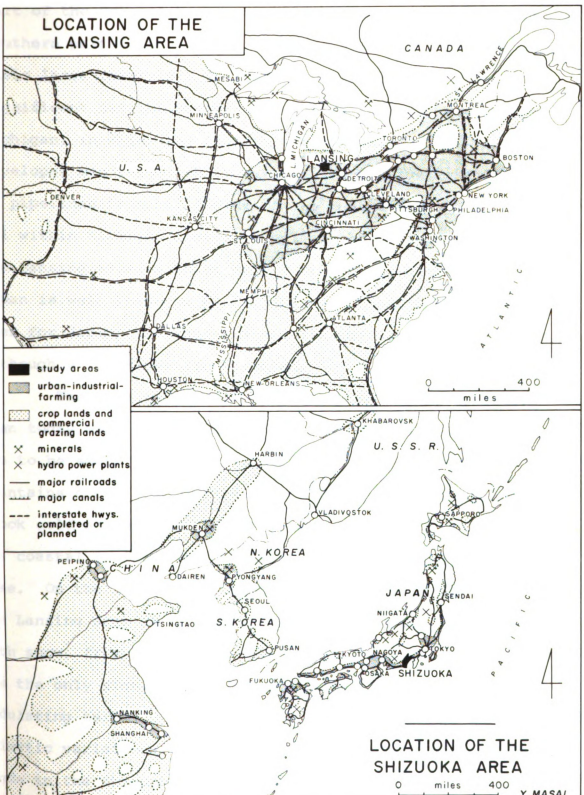
Location and Physical Environment

The Lansing area is located in the vast continent of North America at about 43°N. and 85°W. The Shizuoka area is located in the large island of Honshu, Japan, at about 35°N. and 138°E., facing the Pacific. The Shizuoka area is accessible to the open sea. Lansing is nearly 100 miles from the nearest Great Lakes shores, whence access to the open sea is via the St. Lawrence River (Fig. 2).

Successive completion of important canals and the construction of railroads in this part of North America during the nineteenth century facilitated the westward expansion of manufacturing industries out from the East Coast to the Midwest. The Lansing area constitutes part of the American Manufacturing Belt thus created. The St. Lawrence Seaway, recently constructed, is expected to affect tremendously the future of the Midwest.

The Shizuoka area is located between the Tokyo-Yokohama urban-industrial zone to the east and the Kyoto-Osaka-Kobe, as well as the Nagoya, urban-industrial zones to the west (Fig. 3). In addition to the Pacific Ocean, the Shizuoka area is supplied with a good land transportation network. The area is part of the Japanese manufacturing belt, which stretches from Tokyo to North Kyushu through Shizuoka.

Figures 2 and 3



Metallic mineral resources are found in the northern part of the Great Lakes Region and energy resources in the southern part of it. Both resources are well known for their large reserves. Centrally located between these two magnificent natural resource-producing regions, southern Michigan, in which the Lansing area is found, has well-developed manufacturing industries. Extensive establishment of pipelines from oil fields of the Southwest, as well as oil within Michigan itself, supplies the region with petroleum. The Lansing area is not itself a mineral producing region. Japan is well known to be deficient in mineral resources. Even for Japan, the Shizuoka area is poor in minerals, although a few mines are operated.

The Lansing area used to be quite poorly drained. Even today many small lakes of glacial origin and swamps are to be seen. In the Shizuoka area, however, steep mountains cover most of the area. These high mountains block cold northwesterlies of monsoon in winter, thus making the coastal lowlands of the Shizuoka area virtually frost-free. On the other hand, reflecting its continental position, the Lansing area is characterized by low winter temperatures, with snow, frost, and ice. Low morainic hills and eskers are the only significant relief features in this gently undulating terrain. None of these features causes much climatic variation. The mild climate of the coastal low-lands in the Shizuoka area can be contrasted with the harsh,

snowy winter in the mountains of the same area. Precipitation in these mountains is very high, so they are thickly forested. Many short rivers flow from these mountains to the sea, but several of them discharge a large quantity of water. These rivers are contrasted with the slow, meandering Grand River and its tributaries in the Lansing area, whose outlet to Lake Michigan is some ninety miles west of Lansing.

In the Lansing area, local relief seldom exceeds 100 feet. In the Shizuoka area, by contrast, about 90% of the area is mountainous or hilly. The highest point is Mt. Fuji (12,461 feet), and many other mountain peaks are higher than 10,000 feet. Even low hills have steep slopes in general. Aside from the lower slopes, use of mountains is quite limited.

Land Use Patterns: Simplicity vs. Complexity

The gross land use maps for both areas (Figs. 4 and 5) are significantly different at first glance. The major land uses in the Lansing area are dairy farming and cities, including widespread sprawls of urbanization. The Shizuoka area, however, consists of many very different types of farming, urbanization, forests, and fisheries. In short, the Lansing area may be characterized by its simplicity and the Shizuoka area by its complexity in terms of land use patterns.

Figure 4

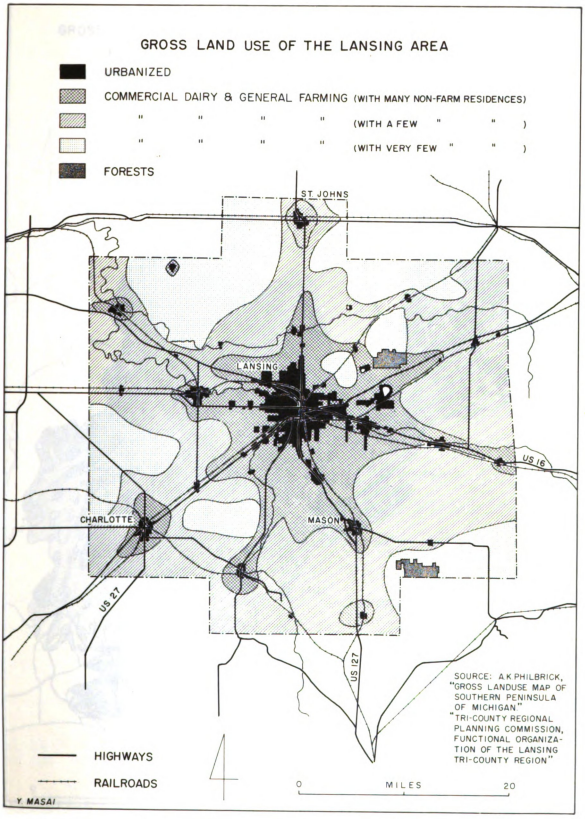
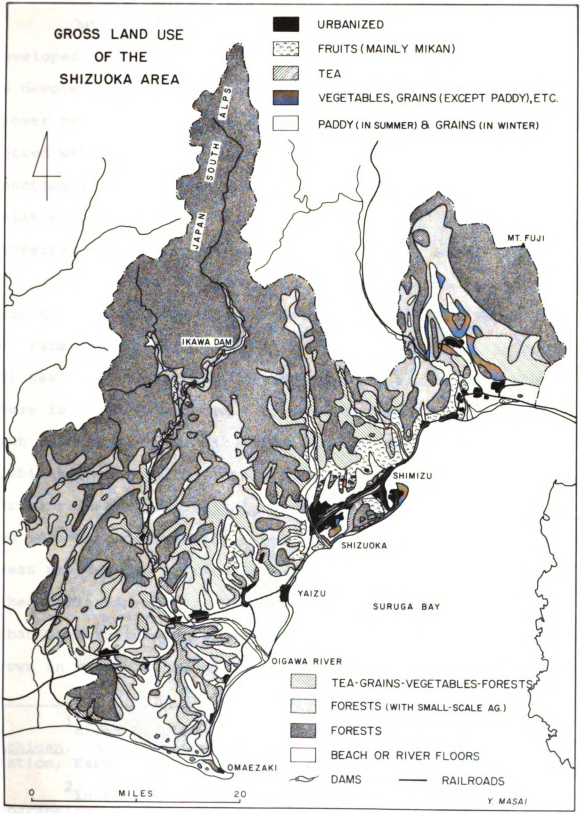

GROSS LAND USE OF THE LANSING AREA
URBANIZED
COMMERCIAL DAIRY & GENERAL FARMING (WITH MANY NON-FARM RESIDENCES)
" " " " (WITH A FEW " ")
" " " " (WITH VERY FEW " ")
FORESTS
ST JOHNS
LANSING
US 16
CHARLOTTE
MASON
US 27
US 127
SOURCE: A K PHILBRICK, "GROSS LANDUSE MAP OF SOUTHERN PENINSULA OF MICHIGAN." TRI-COUNTY REGIONAL PLANNING COMMISSION, FUNCTIONAL ORGANIZATION OF THE LANSING TRI-COUNTY REGION"
HIGHWAYS
RAILROADS
0 MILES 20
Y. MASAI

Figure 5


GROSS LAND USE
OF THE
SHIZUOKA AREA
URBANIZED
FRUITS (MAINLY MIKAN)
TEA
VEGETABLES, GRAINS (EXCEPT PADDY), ETC.
PADDY (IN SUMMER) & GRAINS (IN WINTER)
4
SOUTH JAPAN ALPS
MT. FUJI
IKAWA DAM
SHIMIZU
SHIZUOKA
YAIZU
SURUGA BAY
OIGAWA RIVER
TEA-GRAINS-VEGETABLES-FORESTS
FORESTS (WITH SMALL-SCALE AG.)
FORESTS
BEACH OR RIVER FLOORS
DAMS
RAILROADS
OMAEZAKI
0
MILES
20
Y. MASAI

Farming Areas

Outside the urban centers and the adjacent intensively developed suburban areas, practically all the Lansing area is devoted to dairy farming, with some general farming.[1] Closer observation reveals that the farming area is also dotted with a considerable number of non-farm residences functionally related to the urban pattern of the area. Two relatively small-size forests are to be seen. These are preserved either for wild-life studies or for hunting.

On the contrary, farming in the Shizuoka area can be said to have at least four different major types; that is, (1) rice (paddy) with other grains and vegetables, (2) fruit, (3) tea, and (4) farming in the mountains including yakihata.[2] There is no clear-cut areal division of crops. Rather, each functional farm unit tends to repeat certain crop combinations in which certain specialty crops are characteristic for certain areas. Yakihata means "burned field cultivation" and is a kind of shifting cultivation. Most of the farming areas are devoted to rice in summer and wheat or barley or naked barley in winter. Vegetables are raised for local and urban markets in summer, but even in winter vegetables are grown in warmer parts of the area.

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[1] Elton B. Hill and Russel G. Mawby, Types of Farming in Michigan. Michigan State College, Agricultural Experiment Station, East Lansing, Special Bulletin 206 (1954), 25.

[2] In classifying the four types, land use maps of the Geographical Survey of Japan (1955-1958) were used. Classification depends entirely on the author.

The Shizuoka area is famous for its citrus industry. Mikan (mandarin orange) is the most important one, and it is grown on artificially-made terraces by using low-altitude steep slopes of mountains. Many other fruits are also raised, such as pears, grapes, figs, persimmons, strawberries, etc. Shizuoka Prefecture ranks at the top in the nation's production of tea. Tea grown in the study area is usually found on low diluvial plateaus, at the base of volcanoes, or on steep and moist mountain sides. Small-scale farming of tea, rice, and other crops is sporadically carried out in the mountain areas below 2,500 feet. Mountain farmers occasionally practice yakihata.

Almost all Shizuoka farmers participate to some extent in both commercial and subsistence farming. The proportion will vary widely within short distances. Virtually all farmers in the Lansing area practice commercial farming exclusively. Subsistence farming gave way to commercial a few decades after the first pioneer farmers came into the territory in the middle nineteenth century. Farm holding in the Lansing area averages slightly more than 100 acres.[3] This average farm size includes woodlots (small forests by

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[3]The figure 100 was estimated from the following data: the average farm size of 8 counties around Lansing is 113 acres in 1950 (after E. B. Hill and R. G. Mawby, op. cit., p. 33); it seems that the average size may not have changed significantly.

Japanese standards) which are often used for pasture. This contrasts with the farm size of less than two acres (not including forests which are very little used for agriculture) in the Shizuoka area.[4] In 1954, 40% of the farmers in Shizuoka Prefecture earned more cash income from non-farm occupations than from agriculture. Another 30% gained some cash income from non-farm occupations.[5] In the Lansing area, also, a considerable number of farmers participate in part-time work.[6] Owner farmers prevail in both areas.

In short, the Lansing area is characterized by large-scale commercial farming. Dairy and general farming is practiced throughout the area. The Shizuoka area, by contrast, consists of a great many small-scale farmers, ranging from primarily subsistence to primarily commercial farmers. To be sure, the term "primarily commercial" does not necessarily mean that this type of farmer is more prosperous than the primarily subsistence. Many poor farmers of the mountains are more commercial farm-oriented than some primarily subsistence farmers of the plains, who, while not well to do, are better off than the mountain farmers.

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[4]The average size of cultivated lands per farmer in Shizuoka Pref. is 1.6 acres, according to Outline of Sizuoka Pref., op. cit.

[5]Shizuoka Pref. Office, op. cit., p. 17.

[6]According to E. B. Hill and R. G. Mawby, op. cit., p. 33, about 30 to 40% of the farms in 8 counties around Lansing were classified as part-time and residential farms in 1949.

Forests, Waters, and Mountains

Evenly scattered distribution of small woodlands in the Lansing area are the remnants of the once thickly forested condition of the entire area. Today, these woodlands are incorporated into the functional farm units as pasture or idle land. On the contrary, practically all the mountains in the Shizuoka area are still covered with forests, as shown in Fig. 5, since much of the territory is yet untouched by man. Today, a part of these forested mountains is used for lumbering, hydro-electric power generation, water conservation, recreation, and mining.

Lakes and rivers were used for power and transportation in the Lansing area during the pioneering years. At present, however, river banks and lake shores are primarily used for residential purposes. Rivers and lakes themselves are also used for recreational purposes. Large quantities of water from lakes and rivers, as well as groundwater, are used for manufacturing, business, and domestic consumption. Use of water resources in the Shizuoka area is quite different. Sea-side location affords coastal, offshore, and deepsea fishing, as well as recreational opportunities. One large multiple-purpose dam was constructed, using a short stream of high velocity and high discharge rate. In general, water resources in the Shizuoka area are primarily devoted to productive activities or recreational purposes, rather than as an amenity connected to the location of residential properties.

Urban and Suburban Areas

In the Lansing area, cities and villages have geometric plans based usually on a gridiron pattern. Distribution of relatively few urban settlements is quite widely spread. Most of the cities are located on relatively large rivers, which used to be utilized for access and power. Although there are transitional semi-urban settlements such as a number of unincorporated places, contrast in the landscape between urban and rural is quite sharp.

In the Shizuoka area, practically all large urban settlements are found along the Tokaido Railroad. Small urban settlements tend to be found alongside other railroads as well as the Tokaido Railroad. The primarily linear distribution of urban settlements in the Shizuoka area is in contrast with the almost even distribution of urban settlements in the Lansing area. The contrast is clearly shown in Figs. 4 and 5. Urban settlements in the Lansing area occupy more space but have smaller total population than the Shizuoka area. The largest urban development in the Shizuoka area is the Shizuoka-Shimizu urban complex, which corresponds to the Lansing-East Lansing urban complex. Both urban complexes form the functional foci of their respective areas.

The historical development of urban settlement in the two areas reveals additional differences. This is reflected well in urban land uses when examined in greater detail.

America never experienced a feudal period. Cities and villages of the white settlers in the Lansing area have developed without reference to castles of nobility. The central part of Shizuoka, however, retains remnants of a huge feudal castle. The present road network commonly follows the patterns set in olden times.

In modern society the proportion of urban population to the total population tends to be large. Due to technological and social developments, a new type of urbanization is taking place beyond congested urbanized areas. For geographers, this is a most interesting phenomenon.

In the Lansing area, a remarkably dispersed suburban development is to be seen around the central city and to a lesser degree around smaller ones. This is primarily due to the mobility of the American family based upon use of many automobiles. In the Shizuoka area, suburbanization is not conspicuous except for the Shizuoka-Shimizu urban complex. The outer urban fringe (open-country non-farm residential development), which is so striking in the Lansing area as well as other parts of the United States, has not yet developed. However, many daily commuters come from rural residences to cities for work.

Population Distribution

Comparatively speaking, the Lansing area is characterized by a low population density. A large part of the Shizuoka

area is void of population because of the mountains. An extremely high density characterizes cities and towns (shi and machi) of the Shizuoka area. Even rural areas have a very high density also.

Rural Population

Density of rural population is estimated to be 30-50 per square mile in the Lansing area.[7] Density for cultivated lands would be somewhat higher. In the Shizuoka area, density of rural population is very much higher. It is about 1,000 per square mile, when tabulated by administrative units.[8] For cultivated lands, however, the density is still higher--about 2,400 persons per square mile.[9] Actually, a considerable number of people engaged in urban occupations belong to rural

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[7]According to the U.S. Population Census, 1950, density of the rural population (incl. non-farm residents) for Ingham, Eaton, and Clinton Counties was 51 per sq. mile. Population density for 10 primarily rural townships (Wheatfield, White Oak, Onondaga, Locke, and Aurelius--Ingham Co.; Riley and Victor--Clinton Co.; Danby--Ionia Co.; Bennington--Shiawassee Co.; Chester--Eaton Co.) was 30 per sq. mile.

[8]Ishida, R, edit. Geography of Japan. Published for the Regional Conference in Japan, International Geographical Union (1957), 29. (The figure used is after Inoue, et. al.) The administrative units concerned incl. large forests.

[9]According to Outline of Shizuoka Pref., the average size of a farm is 1.6 acreas for cultivated lands. Then, 1 sq. mile is occupied by 400 farms in average. The no. of the average farm household members is 6.1. So, the population per sq. mile is about 2,400 for cultivated lands.

households. Then, the density of real farm population (farmers and their dependent family members) is lower than this figure. If we include people of urban occupations in farm areas and in small towns of rural areas as well, the average density of population per square mile for farming areas (excluding mountain forests) is much higher than 2,400.

Urban Population

The majority of the inhabitants in the Lansing area live in urbanized areas. In 1950, 64% of the people in Ingham, Eaton, and Clinton Counties lived in urbanized areas.[10] However, a considerable number of non-farm residents live in rural areas also. The labor force engaged in urban occupations within the Lansing area was 91.4% out of the total labor force in 1950.[11] In the Shizuoka area, people living in shi (cities) counted 55% in 1955, and the percentage of total population engaged in urban occupations was 56% in 1956.[12]

Urban population density for the Lansing area is much lower than that for the Shizuoka area. The average density for 27 cities and villages in Ingham, Clinton, and Eaton Counties is 2,572 persons per square mile, when tabulated by administrative units. Lansing's density is 5,059 in 1960.

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[10] U. S. Population Census, 1950, op. cit.

[11] U. S. Population Census, 1950, op. cit.

[12] Outline of Shizuoka Pref., op. cit.

These figures,[13] however, were taken from the data based on administrative units. So, the actual density for city blocks would be considerably higher. Population density per square mile for the urbanized areas of Shizuoka is about 50,000.[14] Most other cities and towns (shi and machi) seem to have about the same density in their respective urbanized areas.

Relation to the Administrative Boundaries

The administrative units do not adequately fit either urban or rural areas. In the Lansing area, urban areas extend beyond the boundaries of urban administrative units. The situation is the reverse for the Shizuoka area. Urban administrative units are much larger than the actual urban areas. At the same time, one or more small urban settlements are to be found in each rural administrative unit. This situation seems to be somewhat equivalent to an American township having a village and many farmsteads.

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[13] Tri-County Regional Planning Commission. Functional Organization of the Lansing Tri-County Region. Lansing (1959).
U. S. Population Census, 1950, op. cit.
For the estimated population of some larger cities, data from Standard Oil Company's Road Map of Michigan (1957) were used.
For the population of the City of Lansing, the figure was taken from the 1960 Population Census (preliminary report).

[14] According to Outline of Shizuoka Shi, urban population of the city is 249,033. It is estimated roughly that about 200,000 people live in the central urbanized area of the shi which is about 4 sq. miles. Therefore, pop. density is about 50,000 per sq. mile.

Communication Network:
An Even-Grid and Radial Pattern
vs.
Uneven and Primarily Linear Alignment

The communication network of a region represents the lines of movement of goods, people, and ideas, linking different places together. Figs. 6 and 7 show that the two areas have significantly different patterns of transportation.

Individual Transportation

The Lansing area is characterized by an abundance of automobiles and motorable roads at regular intervals. Individual mechanized transportation is regarded as commonplace. Large trucks can go along most roads. Several cities now have small airports primarily for private use. In the Shizuoka area, individual transportation is usually performed on bicycles or by a fairly large number of motor vehicles, such as trucks, automobiles, autobicycles, scooters, etc. Many narrow roads are not negotiable by cars, however. In the remote mountain villages, very few means of mechanized transportation are available. The tremendous mobility in the Lansing area is primarily due to incessant use of individual automobiles.

Public Transportation

Due to the predominance of individual transportation, the Lansing area now has a relatively poorly developed public transportation network. Only two cities, Lansing and Charlotte, have railroad stations for passengers. In the

Figure 6

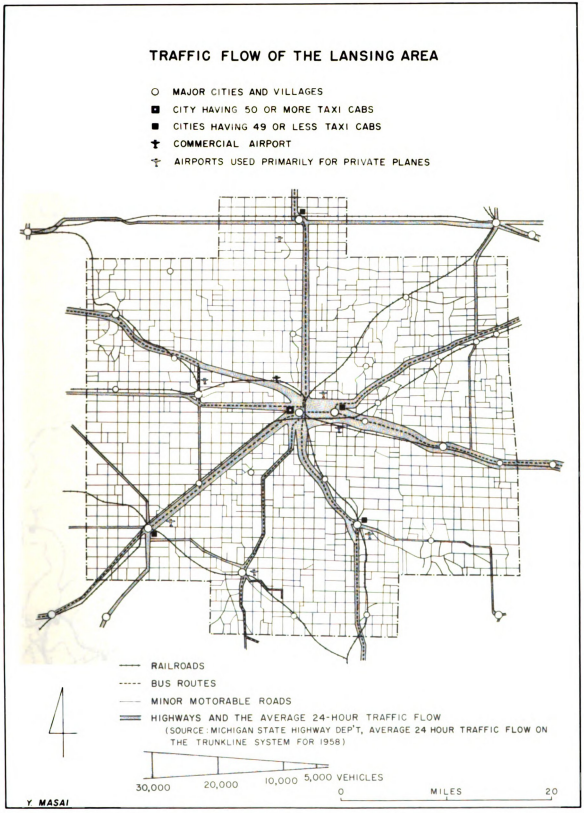
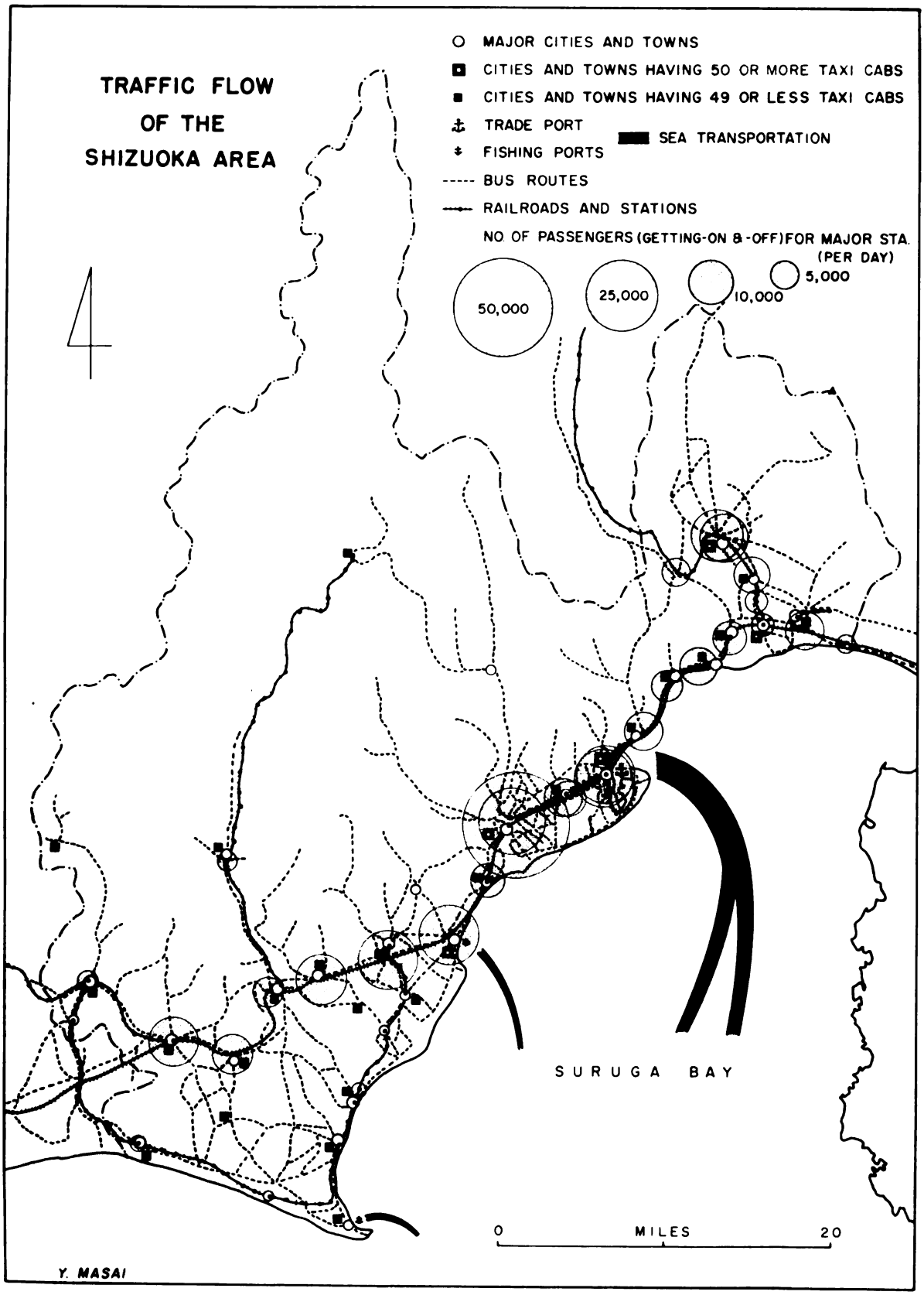

TRAFFIC FLOW OF THE LANSING AREA
MAJOR CITIES AND VILLAGES
CITY HAVING 50 OR MORE TAXI CABS
CITIES HAVING 49 OR LESS TAXI CABS
COMMERCIAL AIRPORT
AIRPORTS USED PRIMARILY FOR PRIVATE PLANES
RAILROADS
BUS ROUTES
MINOR MOTORABLE ROADS
HIGHWAYS AND THE AVERAGE 24-HOUR TRAFFIC FLOW
(SOURCE: MICHIGAN STATE HIGHWAY DEP'T, AVERAGE 24 HOUR TRAFFIC FLOW ON THE TRUNKLINE SYSTEM FOR 1958)
30,000
20,000
10,000
5,000 VEHICLES
0
MILES
20
Y MASAI

Figure 7


TRAFFIC FLOW
OF THE
SHIZUOKA AREA
4
MAJOR CITIES AND TOWNS
CITIES AND TOWNS HAVING 50 OR MORE TAXI CABS
CITIES AND TOWNS HAVING 49 OR LESS TAXI CABS
TRADE PORT
FISHING PORTS
SEA TRANSPORTATION
BUS ROUTES
RAILROADS AND STATIONS
NO. OF PASSENGERS (GETTING-ON & -OFF) FOR MAJOR STA. (PER DAY)
50,000
25,000
10,000
5,000
SURUGA BAY
0 MILES 20
Y. MASAI

Shizuoka area, however, 96 stations (excluding those of streetcars) are actively used for passengers and freight. Shizuoka and Shimizu have streetcars and these two cities are connected by an inter-urban line, the Tokaido Trunk Railroad, and a few bus lines.

Even scheduled bus services in the Lansing area are not frequent, except for a few inter-urban bus lines. The Shizuoka area now has a fairly well-established mass transportation network of trains and buses. The bus service network is very dense, as Fig. 7 shows. Frequent railroad service between relatively distant places is especially important. It is known that many places have taxi companies, but no airports are presently used in the Shizuoka area. The Lansing-East Lansing urban complex has a commercial airport, which is used fairly frequently. In addition to that, there are seven small airports.

Tele- and Mass-Communication

Here again the difference in frequency of tele- and mass-communication media between the two areas is significant. Especially is this evident in the thorough distribution of telephones in the Lansing area. The Shizuoka area has not developed such extensive telephone service, but every establishment is within at least relatively easy reach of some modern tele-communication services, either by telephone or by telegraph.

Practically all families in both areas subscribe to one or more newspapers and own radio sets. Television, which is already very common in the Lansing area, is becoming popular in the Shizuoka area. Books are read and movies are seen by a great many people in both areas. A majority of the books sold in the Shizuoka area are based on modern ideas, technology, politics, economics, sociological affairs, and translated foreign literature (in most cases European and American). Books based on traditional Japanese culture number much less than half. In the Lansing area, however, most of the books sold and read deal with topics directly or indirectly related to America or Europe. Chapter II will compare the cultural aspects of the two areas more fully.

CHAPTER II

CULTURES IN AREAL SETTING

Methodological Introduction

The term "culture" has already been defined comprehensively as "human ways of living." Culture thus defined changes through innovation, adaptation, and modification. These kinds of alterations generally result in areal differentiation of cultural patterns. In some cases, similarities between cultures may occur without mutual contacts, by independent invention. However, in fact, exact duplication never occurs.

Culture is transmitted by man or through some means which man has invented. Dispersal of culture from its original place must be given the major credit for the similarities between cultures in different places or areas, although such dispersed culture tends to be modified by contact with people of indigenous culture. Various processes of cultural mixing or change are those of acculturation.

Friedrich Ratzel conducted geographic research on the origin and dispersal of culture in the late nineteenth century.[1] Since then, many geographers have studied culture from this standpoint, especially in Germany. The origin and spread of culture in American geography was fostered in a

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[1]Friedrich Ratzel, Anthropogeographie, 2 Bde (1891).

modified form by Carl Sauer around 1930.[2] He explained areal patterns of human occupance in terms of the anthropological-historical concept of cultural process. Robert Hall contributed to the development of this concept in his study on the Japanese settlement forms in 1931.[3] Of late, many geographic studies have dealt with occupance patterns along the line of approach described as culture origin and dispersal.[4]

It is possible to say that in the world today, the United States, Western Europe, and European U.S.S.R. are the primary centers of the dispersal of the ideas and know-how of scientific and industrial culture. In some parts of the world, in-coming cultures coexist with indigenous ones with little assimilation. In the case of Japan, however, the in-coming European and American cultures have been mixed inseparably with Japanese culture. To the average Japanese,

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[2]Carl O. Sauer and D. Brand, "Pueblo Sites in Southeastern Arizona," University of California Publication in Geography, Vol. 3 (1930), 415-448.

[3]Robert B. Hall, "Some Rural Settlement Forms in Japan," Geographical Review, Vol. 25 (1931), 94-122.

[4]C. O. Sauer, "Foreword to Historical Geography," Annals of the Assn. of American Geographers, Vol. XXXI (1941), 2-24.

Preston E. James, op. cit., pp. 5-16.

Toshio Noh, Shuraku Chirigaku (A Geography of Rural Settlements: Morphology of rural settlements as an element of cultural landscape). (Kokon Shoin, Tokyo, 1952), 137-144.

Wilbur Zelinsky, "The Log House in Georgia," Geo. Rev., 43 (1953), 173-193.

G. E. Cater, "Man, Time, and Change in the Far Southwest," A.A.A.G., Supplement, Vol. 49 (1959), 8-30.

the introduced cultures are no longer foreign or exceptional.

Robert S. Platt analyzed the origin and dispersal of some cultural traits in Tierra del Fuego from a comprehensive viewpoint. He included the concepts of areal functional organization, relation to physical environment, areal uniformity and diversity, and other aspects of culture in his study.[5] Platt points out that a culture region is not only an area in which similar cultural traits are recognized throughout, but also an area which is organized internally and externally in terms of function.

This chapter will deal with the differences and similarities between the two study areas in terms of the areal patterns of their cultures. Culture as expressed in area is embodied in the areal units of functional organization and in the uses of resources derived from nature. Areal organization is an integral part of culture as a whole. This specific interrelation is the subject matter of Chapter III. Interrelation of culture with nature will be discussed in Chapter IV. The present chapter is primarily concerned with circumstances accompanying the evolution of cultural patterns in the Lansing and the Shizuoka areas. The concept of culture origin and dispersal will be utilized where appropriate.

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[5]Robert S. Platt, "Reconnaissance in Dynamic Geography: Tierra del Fuego," Revista Geografica do Instituto Pan Americano de Geografia e Historia. Rio de Janeiro, Vols. 5-8 (1949), 3-22. Also Field Study in American Geography: The Development of Theory and Method Exemplified by Selections. Univ. of Chicago, Department of Geography, Research Paper No. 61 (Chicago, 1959), 352-355.

Comparison of the Two Study Areas in Terms of Cultures

Areal Patterns of the Two Cultures in the Past

A historical survey was first made to reveal successive cultural stages of the two study areas. The people of the Lansing area have participated in a series of cultural stages characteristic of a much larger territory, that is, the Great Lakes Region of North America. By the same token, the culture of the Shizuoka area is part of the larger culture of Japan as a whole. These two areas developed without contact with each other for many centuries, until recent times. American culture evolved in the New World primarily as an outgrowth of successive waves of a single culture from Europe, together with additional innovations and modifications. The culture of the Lansing area is part of this development. The people of the Shizuoka area, however, have been under the significant influence of two distinctively different cultures. First, ancient Chinese culture was introduced in the sixth century. Since 1868, modern culture of Europe and America has been adopted, adapted, and integrated by the Japanese people into the present-day cultural patterns of Japan. The culture of the Shizuoka area is part of this development.

The cultural development of the respective areas, in relation to areal functional organization and nature, is

shown in outline form by Tables 1 and 2. The headings in the tables are of two types. One type is identifiable under each of the three aspects of geography; culture, physical environment, and patterns of occupance areally organized. The other type headings identify the stages of cultural evolution.

The criterion for classifying cultural stages was recognition of the existence in the past of major differences in the areal pattern of each of the two cultures. Three cultural stages are established for the Lansing area. The first stage is that of the primitive American Indians. These people had lived in the area for many centuries before the white settlers came in. In the last years of the Indian stage, during the eighteenth and early nineteenth centuries, European as well as American explorers and soldiers left little imprint.[6] The over-all pattern of Indian culture was not markedly changed by them either. The Indians had no large functional centers. Small villages, mostly not permanently sited, were the only functional centers of the Indians who engaged in primitive farming, especially of corn. They also collected and hunted food and other items.[7] Transportation was by walking along trails or by canoe along

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[6] B. Darling, City in the Forest: the Story of Lansing (New York: Stratford House, 1950), pp. 1-8.

[7] G. R. Willey, "New World Prehistory - The main outline of the pre-Columbian past are only beginning to emerge," Science, Vol. 131 (1960), pp. 76-78.

TABLE 1. Relation between culture, areal functional organization, and nature for the Lansing area.

Cultural stage	Primitive American Indian (before early 19th cen.)	Euro-American (early 19th to the turn of 20th century)
Place of culture origin	(Asia?)	New England, Mid-Atlantic states, N.W. Europe. (with in-migration of people)
Place to which culture was dispersed	Very primitive Am. Ind. culture; hunting ground, camping places.	Primitive Am. Ind. culture replaced by white settlement.
Major functional center	None.	Lansing as the state capital (political, economic, social center).
Local functional centers	A few small farm villages	County seats, collection centers, E. Lansing--college town, mill towns.
Transportation and communication	Walking, canoe; trails, rivers.	Railroads, walking, horses, wagons; unsurfaced roads. Postal system, newspapers, tele-communication, books.
Other cultural characteristics	Subsistence farming of corn, hunting, gathering, fishing, Very small villages and tepees. Animism.	From subsistence to commercial ag., dairying, forestry. Dispersed individual farmsteads. General Land Office survey. Small mfg. Isolationism, community bldg. movement, growth of general and higher education (Michigan State Univ., 1855). Recreation growing. Many immigrants. Rapid population growth.
Major uses of natural resources	Very little use of land and water.	Extensive use of land for farming, forestry, hunting, quarrying. Rivers for textile and flour mills. Reclamation of wet lands.

TABLE 1 Continued

Cultural stage	American (20th century)
Place of culture origin	The Lansing area became part of the region in which Am. industrial culture is evolving with little foreign influence.
Place to which culture was dispersed	Euro-American culture of the Lansing area which was evolving into distinctively American.
Major functional center	Lansing or Lansing-East Lansing urban complex. (political, economic, social center)
Local functional centers	County seats, retail centers, collection centers.
Transportation and communication	Automobiles, buses, trucks; surfaced roads, 4-lane hwys, interstate hwys. Railroads, airplanes. Postal sv., telephone and other tele-communication systems. Newspapers, radios, television, books, movies.
Other cultural characteristics	Large-scale commercial ag.; dairy and general farming, problem of over-production. Forestry virtually disappeared. Urban-industrialization; skyscrapers, extensive suburbanization, large-scale mfg. establishments--mass production. Urban and regional planning. Centralization of schools. Expanding recreational industries. Rapid population increase.
Major uses of natural resources	Extensive use of land for farming and widespread urbanization. Intensive use of some land for urban and suburban sites. Lakes and rivers for recreation and housing. Large consumption of water for mfg., business, residences.

TABLE 1 Continued

Source: Arensberg, "American Communities," Am. Anthropologist, Vol. 57 (1955).
R. H. Brown, Historical Geography of the U.S., (New York: Harcourt, Brace and Co., 1948).
Darling, City in the Forest: the Story of Lansing, (New York: Stratford House, 1950).
W. B. Hinsdale, Archaeological Atlas of Michigan, (Ann Arbor: Univ. of Michigan Press, 1931).
B. Hudgins, Michigan: Geographic Backgrounds in the Development of the Commonwealth (Ann Arbor: Edwards Bros., Inc., 1958.
L. K. Mathews, The Expansion of New England (Boston and New York: Houghton Mifflin Co., 1909).
C. O. Paullin, Atlas of the Historical Geography of the U.S. (Carnegie Inst. of Washington and American Geog. Soc. of N.Y., 1932).
Tunnard and Reed, American Skyline (New York: The New American Library of World Literature, Inc., 1956).
USDA, Yearbook of Agriculture, 1940, esp. E. E. Edwards, "American Agriculture--the First 300 Years," (Part I of the yearbook).
G. R. Willey, "New World Prehistory," Science, Vol. 131 (1960), 76-78.

rivers. Use of natural resources was very limited by today's standards.

The second stage is that of Euro-American culture. This stage is characterized by European traditions with some American-style modifications. It begins with the white settlement in the early nineteenth century in the Lansing area. These people were farmers who came from New England, Middle Atlantic states, and Northwestern Europe, each group with their own cultural heritage. The great turning point which marks the beginning of this second stage was the establishment of the General Land Office Survey. By the middle of the nineteenth century, the Lansing area became a white man's territory almost exclusively. Lansing was selected as the site for the state capital in 1847.

Frontier subsistence farming changed to commercial agriculture as soon as transportation became available. B. Darling wrote of the 1870's, "Farming, by this time, had come up from the status of the self-sufficient pioneer to that of a big business. The farmer no longer raised everything he needed, by the 1870's. He was both a producer and a customer, looked up to and regarded as one of the most independent of men. This transition occurred within the space of a few years, since a large proportion of Ingham County's farm population had migrated here with the inception of the Homestead Act of 1862, which permitted the head of a family

to 'take out' 160 acres from the Government, after a five-year residence."[8]

Railroads were built connecting most of the relatively large farm market centers. The first Lansing railroad was completed from a hamlet called Amboy in Hillsdale County in southern Michigan on December 24, 1860--the Amboy, Lansing and Traverse Bay RR.[9] Horses and buggies were the major means of transportation from farms to railroad stations. These were replaced by automobiles and trucks in the twentieth century. Using the knowledge of milling, farming, and other small-scale manufacturing techniques derived from Europe and the Eastern Seaboard after the Industrial Revolution, a considerable number of small factories were built at various places in Lansing and smaller towns of the area.

The economy of the American Midwest grew as urban-industrialization proceeded, backed by the growing productivity of commercial agriculture and an increase in population. Sites of the present cities and villages in the Lansing area were approximately fixed by the middle or late nineteenth century. Various traditions were brought into Michigan from the Eastern Seaboard as well as from Europe by in-migrants. Michigan adopted the "town-meeting" which is most like that of Massachusetts. In this meeting, people gathered to discuss

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[8]B. Darling, op. cit., p. 195.

[9]B. Darling, op. cit., p. 53.

the business of the township.[10] Michigan's state-county-township governmental hierarchy originated largely in New England and New York state, its public school system in Massachusetts.[11] Even today, the majority of the farmers in the Lansing area are of Old American stock who migrated into the area from New England and New York state in the nineteenth century. The territory around Westphalia, a village in the northwestern part of the study area, is one exception. Here the farmers are predominantly of German origin, as the name of the settlement implies.[12]

Using the same criterion as for the Lansing area, four major cultural stages were established for the Shizuoka area. They are as follows: Primitive Japanese, Sino-Japanese, Feudal Japanese, and Euro-Americanized Japanese.

The primitive stage was characterized by an occupance pattern similar to that found in the Lansing area before white settlement, in that both were subsistence economies of hunting, gathering, and primitive agriculture. It is thought that the primitive Japanese culture was primarily formed by

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[10] L. K. Mathews, The Expansion of New England (Boston and New York: Houghton Mifflin Co., 1909), p. 235.

[11] Hudgins, op. cit., p. 102.

[12] J. F. Thaden, The Farm People of Michigan According to Ethnic Stocks: 1945 (Map), Agricultural Experimental Station, Section of Sociology and Anthropology, Michigan State College, East Lansing.

TABLE 2. Relation between culture, areal functional organization, and nature for the Shizuoka area.

Cultural stage	Primitive Japanese (before 6th cen. A.D.)	Sino-Japanese (6-12th century A.D.)
Place of culture origin	Mongolia, Korea, China, Malaysia, etc. (with in-migration of primitive people.	Ancient civilized China, esp. from North China (with very little in-migration of people).
Place to which culture was dispersed	Land of Proto-Japanese people.	Primitive Japanese.
Major functional center	None.	Shizuoka as the kokufu (prov. capital, in 8th cen.), (political and social center).
Local functional centers	Small villages.	Manors (political, social, and agricultural centers). Many small market and a few castle towns.
Transportation and communication	Walking, small boats.	Walking, small boats, horses, wagons, carts, sedan-chairs, palanquins.
Other cultural characteristics	Subsistence farming of paddy and other crops, hunting, gathering, fishing. Very small villages and thatched roofs. Ancient tombs, sea-shell mounds, Bronze and stone culture. Animism.	Subsistence paddy and other crop culture develops. Hunting, gathering, fishing continues. Nucleated ag. villages. Rural and town planning (grid-pattern) "jori" system; kokufu-kokubunji (centers of established religion--Buddhism).
Major uses of natural resources	Little use of land and sea.	Use of land and sea became intensive to some extent.

TABLE 2 Continued

Cultural stage	Feudal Japanese (13-19 cen., incl. Tokugawa Period).	Euro-Americanized Japanese (20th cen.)
Place of culture origin	Very little influence from outside.	U.S.A., Europe (Eng., Germany, France, It., Russia, etc.) through Tokyo. (without in-migration of people)
Place to which culture was dispersed	Sino-Japanese culture in isolation or near isolation.	Feudal Japanese (Incipient capitalist society).
Major functional center	Shizuoka (then called Sumpu), (political, commercial, social center).	Shizuoka-Shimizu urban complex (political, econ., social center), an international port.
Local functional centers	Many small market (wholesale and retail) towns, castle and religious towns, also station towns along Tokaido Hwy.	Many medium or small-size urban-industrial centers. A few fishing towns with wholesale markets. Relative importance of religious towns declines.
Transportation and communication	Walking, boats and ships, horses, wagons, carts, sedan-chairs, palanquins. Tokaido Hwy. Postal system. Shimizu became a port. Books.	Railroads (with many tunnels), ships and boats, walking. Wagons and carts disappearing. Many bicycles. Motor vehicles increasing. Long bridges. Telecommunication, postal system. Newspapers, books, movies, radios, television.

TABLE 2 Continued

Other cultural characteristics	Intensive ag. (paddy, other crops), fishing, gathering. Commercial ag. starts (tea, mikan). Large nucleated ag. settlements. Handicraft (wooden goods). Growth of capitalism in midst of feudalism. Slow population increase.	Very intensive ag. (double or more crops a year; a variety of crops), fishing and small-scale gathering. Transition from subsistence to commercial ag. More mechanized farming techniques. Urban-industrialization. Modern multi-storied bldgs. Small-scale suburbanization. Large-scale mfg. establishments, as well as household mfg. Recreation ind. growing. Rapid population increase.
Major uses of natural resources	Intensive use of flat land. Some mt. slopes for ag. Irrigation of water-poor lands. Coastal seas for fishing, sea-weed and shell gathering.	Very intensive use of flat land for ag. and urban-industrialization. Extensive use of mts. for forestry, power, recreation, as well as some ag. Seas for coastal, deep-sea fishing. Reclamation of swamps, seas, and mts.

Source: Beardsley, Hall and Ward, Village Japan (Univ. of Chicago Press, Chicago, 1959).
S. Ize, Tozai Bunmei no Koryu (Interchange of the Eastern and the Western Civilizations) (Kokon Shoin, Tokyo, 1956).
Japan Anthropological Association, ed., Nihon Minzoku (The Japanese Nation) (Iwanami Shoten, Tokyo, 1953).
Kiuchi, Fujioka, and Yajima, Shuraku Chiri Koza (Lectures on Settlement Geography), Vols. 1, 2, and 3 (Asakura Shoten, Tokyo, 1957-1958).
Nihon-shi Seizu (Concise Atlas of Japanese History) (Teikoku Shoin, Tokyo, 1956).
T. Noh, Shuraku no Chiri (Geography of Rural Settlements: Morphology of rural settlements as an element of cultural landscape) (Kokon Shoin, Tokyo, 1952).

TABLE 2 Continued

Source (continued):

E. O. Reischauer, Japan: Past and Present, 2nd. ed., (Charles E. Tuttle Co., Tokyo, 1953).

T. Sakamoto, Kodai Nihon no Kotsu (Transportation of Ancient Japan) (Kobundo, Tokyo, 1955).

Shizuoka City Office, Shizuoka Shisei Yoran (Outline of Shizuoka City) (Shizuoka, 1958).

And many other books and articles.

mixture of various primitive cultures in East and Southeast Asia; such as primitive Chinese, Mongolian, Korean, Malayan, and others. Ainu influence may be considered negligible.[13] Rice culture was practiced as early as the second or third century A.D., as established by the carbon 14 dating technique, at Toro, two miles south of Shizuoka City.[14] Hunting and collecting were also practiced commonly. Transportation was exclusively by walking and small boats.

A more advanced culture was introduced from China in the sixth century (Column 2, Table 2). All economic, political, and social structures were greatly affected by this new culture. This "Sino-culture" became Japanized in the course of time. The Sino-culture before Japanization will be called "the Sino-Japanese culture" and after Japanization "the Feudal Japanese culture" in this dissertation. Change from the Sino-Japanese culture to the Feudal Japanese culture was very gradual from the sixth to the twelfth or thirteenth centuries.

The embryo of the Japanese Nation first came into being in the Nara area, south of Kyoto, before the time when the ancient Chinese civilization was introduced. However, after Chinese culture was introduced, this small Japanese Nation expanded rapidly over a much wider territory within

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[13] Japan Anthropological Assn., edit., Nihon Minzoku (The Japanese Nation) (Iwanami Shoten, Tokyo, 1953).

[14] Shizuoka City Office, op. cit., p. 1.

a relatively short period, covering most of present-day Japan except Hokkaido. A nationally organized political system and many provincial capitals, called kokufu, were established. These were connected by a road network built by the central government.[15] The kokufu performed central functions of a social nature, also. Numerous manors were established also under the control of the kokufu. In the Shizuoka study area, one kokufu was founded at Shizuoka City. A few small castle towns and many small religious (Buddhist) towns were built. Gridiron land allotments together with a gridiron road pattern were introduced relatively extensively.

Commercial activities increased, promoted by increased agricultural and handicraft production and a variety of new products. Shizuoka grew to a small but lively market town by 703 A.D.[16] The importance of rice culture increased. Many other crops also began to be grown. However, hunting and collecting, including primitive fishing, were still practiced on a day-to-day subsistence basis.

Feudalism began with the establishment of the first shogunate (feudal government) in the late twelfth century. Cultural influences from outside Japan declined. Consequently, modification or Japanization of the culture which had been

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[15] T. Sakamoto, Kodai Nihon no Kotsu (Transportation of Ancient Japan) (Kobundo, Tokyo, 1955), pp. 34-57.

[16] Shizuoka City Office, op. cit., p. 1

introduced from China proceeded with relatively little interruption from outside. Kyoto, located about 150 miles west of Shizuoka, was the capital of Japan and the center of its culture at that time. Kyoto's supremacy was reduced after Edo, present-day Tokyo, became the center of feudal Japan in 1603.

The feudal period reached its apogee after the establishment of a strong, centralized government by the Tokugawa Family at Edo in that year. This regime was characterized by a long period of almost complete seclusion from the rest of the world which lasted for about two hundred years, until the Meiji Restoration took place in 1868. During this centralized feudal period, however, many varieties of towns were developed--such as market, castle, transportation, religious, and port towns. Some of them grew quite large. Shizuoka, then called Sumpu, was one of the most influential castle towns in Japan, and served important economic and social functions also. The entire study area was hierarchically organized during this seclusion period, with Shizuoka as the primary center. Commercial agriculture was started, based primarily upon tea cultivation. Shimizu was growing as a port town. Nation-wide commerce was developing, stripping away the prevailing provincialism.

A primarily pedestrian highway was opened during the Tokugawa period. This was called the Tokaido. It passed through and connected the Shizuoka area to the two economic, political, and social centers of Japan, Edo to the east and

Kyoto-Osaka to the west. Shizuoka was one of the most important stations along the highway. Fourteen stations along the highway were opened in the study area alone.[17] All of these are now local centers. Most of the travelers, however, had to walk all the way. Horses, wagons, and palanquins were used by a small number of select people only--the elite. No bridges spanned the wider rivers for reasons of flooding and defense. Travelers had to hire sedan-chairs carried by men in order to cross the wider rivers.

Commodore Perry's arrival in Japan (1853) gave a strong stimulus to the epoch-making Meiji Restoration (1868), which is commonly thought of as the beginning of modernization or Euro-Americanization of Japan. In the Shizuoka area, Euro-Americanization was not so drastic as it was in Michigan, where white settlers displaced the American Indians virtually completely within 65 years.[18] Euro-American acculturation began taking place in Japan without any significant migration of Westerners, and without the actual application of force from outside.

As described above, in summary, the Lansing area experienced two major cultural stages by the turn of the century; the Primitive American Indian and the Euro-American.

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[17] Nihon-shi Seizu (Concise Atlas of Japanese History) (Teikoku Shoin, Tokyo, 1956).

[18] C. O. Paullin, Atlas of the Historical Geography of the U. S. (Carnegie Institute of Washington and American Geographical Society of New York, 1932), Plate 47a.

On the other hand, three successive stages were recognized for the Shizuoka area even before the Meiji Restoration: the Primitive Japanese, the Sino-Japanese, and the Feudal Japanese.

Some Characteristics of the Present Cultures

At the turn of the twentieth century, the human occupance pattern of the Lansing area again changed significantly. The "Automobile Age" began. It initiated a continuing period of very extensive construction of motorable roads. Urban-industrialization also proceeded on a large scale. Skyscrapers and extensive suburbanization were added to the urban landscape. Mass production pioneered by the automobile industry spread to manufacturing industries generally. Productivity of farm lands also increased further due to extensive mechanization and large-scale production of farm machinery.

The corresponding cultural stage in Japan is the modernization or Euro-Americanization of Japanese culture. Although it started after the Meiji Restoration (1868), the formation of Japan as a "modern" nation was not attained until after the turn of the twentieth century. Urban-industrialization proceeded rapidly during the period of successive wars against China (1894-1895), Russia (1904-1905), and Germany (1914-1918). The national organization of area turned toward an exchange type economy as a whole, although agriculture lagged somewhat behind both manufacturing and commerce in general. Today most of the farmers in Japan produce

commercial crops but at the same time feed themselves from a part of their efforts devoted to subsistence agriculture. This is very different from the situation in America. In Japan, the farmer has one foot, so to speak, in the subsistence form of organization from the past and the other in the exchange organization of the present. In America, the farmer has both feet in the exchange system.

Of late, especially after World War II, influence from American culture upon Japan has been more significant than that from Europe. American culture has been introduced into Japanese city life in large part. Tokyo is most important as an agency fostering diffusion of imported foreign ideas and ways of doing things throughout Japan.

Transportation

The Lansing area changed rapidly from a frontier subsistence society to a more modern economy which had experienced the Industrial Revolution. Growth of the means and systems of transportation in this area is a good example of this drastic change. Narrow Indian trails were replaced by roads which could be used for horse-drawn wagons. Many such roads were built in a checker-board pattern laid down by the township and range land survey of the General Land Office. The railroad era swiftly followed. Literally every major settlement became connected by railroads within two generations. Horse-drawn wagons were still commonly used for short-haul traffic. The railroads performed the major

functions of linking cities and villages internally within the area and of connecting the area as a whole with the outside.

The automobile was invented in both Europe and America practically simultaneously at the turn of the century. However, it was first put into mass production in Detroit, Michigan. Henry Ford is generally given the major credit for initiating, in the first decade of the present century, the assembly-line production of automobiles on the principle of the interchangeability of parts. R. E. Olds began the custom-made production of automobiles in 1894 at Lansing.[19] This was about a decade before Henry Ford started mass-producing them. Lansing has been and still is the primary center of "Oldsmobile" production. The increase in number of automobiles was very rapid. The importance of railroad transportation for passengers began a decline which is still continuing. Trucking has also made heavy inroads upon railroad freight transportation. At present, railroads perform best by carrying bulk-freight over long distances.

Practically every family in the Lansing area has at least one automobile and many have two. A great many trucks are used also. Public transportation is limited to a relatively small number of buses, taxis, trains, and airplanes. The tremendous mobility of people and goods is made possible

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[19] B. Hudgins, op. cit., p. 89.

by the automobiles, trucks, railroads, and airplanes. Although there is only one commercial airport in the study area, there are seven other small ones that are largely for private use. This implies that the airplane is used quite frequently.

The road network is a combination of a grid and a radial pattern. All highways are hard-surfaced and form a generally radial pattern. Most of the local roads are either hard-surfaced or surfaced with gravel, and form a grid pattern at one-mile intervals or closer. Well-established road signs and signals facilitate traffic movement. A highway building program nearing completion connects all cities over 50,000 population by limited-access four-lane highways. Many of these are parts of an interstate system for the entire country.

The advent of the "Industrial Revolution" came suddenly from Europe and America to Japan, less than a century ago. It brought about a significant change in the pattern of transportation within a generation. The first railroad in Japan was constructed in 1872, three years after the Meiji Restoration, between Tokyo and Yokohama. In 1889, the Tokaido Railroad was completed between Tokyo and Osaka, connecting Shizuoka to those cities for the first time.[20] This became the symbol of the newly introduced "civilization." Capitalism, which had started during the Tokugawa period, now

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[20]Shizuoka City Office, op. cit., p. 4.

developed rapidly by government subsidy and assistance. This inevitably resulted in massive internal and external movements of goods and people. The functions of the railroads became more important to the area. The port of Shimizu was enlarged and became an international trade port. Several other railroads were built connecting Shizuoka with other major cities and towns. Steam locomotives have now been replaced by electric and diesel engines.

Hand-drawn carts and wagons were used for the short-distance tranportation of goods and men. These have been replaced gradually by trains, buses, automobiles, motorbicycles, and bicycles. Today, hand-drawn means of transportation which tended to perpetuate the Western image of Japan as a so-called "Oriental" nation are virtually a thing of the past. Hand-drawn wagons for the transportation of men, i.e., rikishas or rickshaws (in Japanese, jinrikisha), have disappeared completely, save for a very limited tourist trade. All settlements of importance, such as mura, machi, and shi centers, are interconnected by bus or by railroad. The road network is irregular but extremely dense. Fig. 8 shows two types of road systems for the Shizuoka area in comparison to the geometrical pattern of American roads. All identifiable roads on airphotos, including narrow paths or ridges separating patches of cultivated fields, are traced on the Figure.[21]

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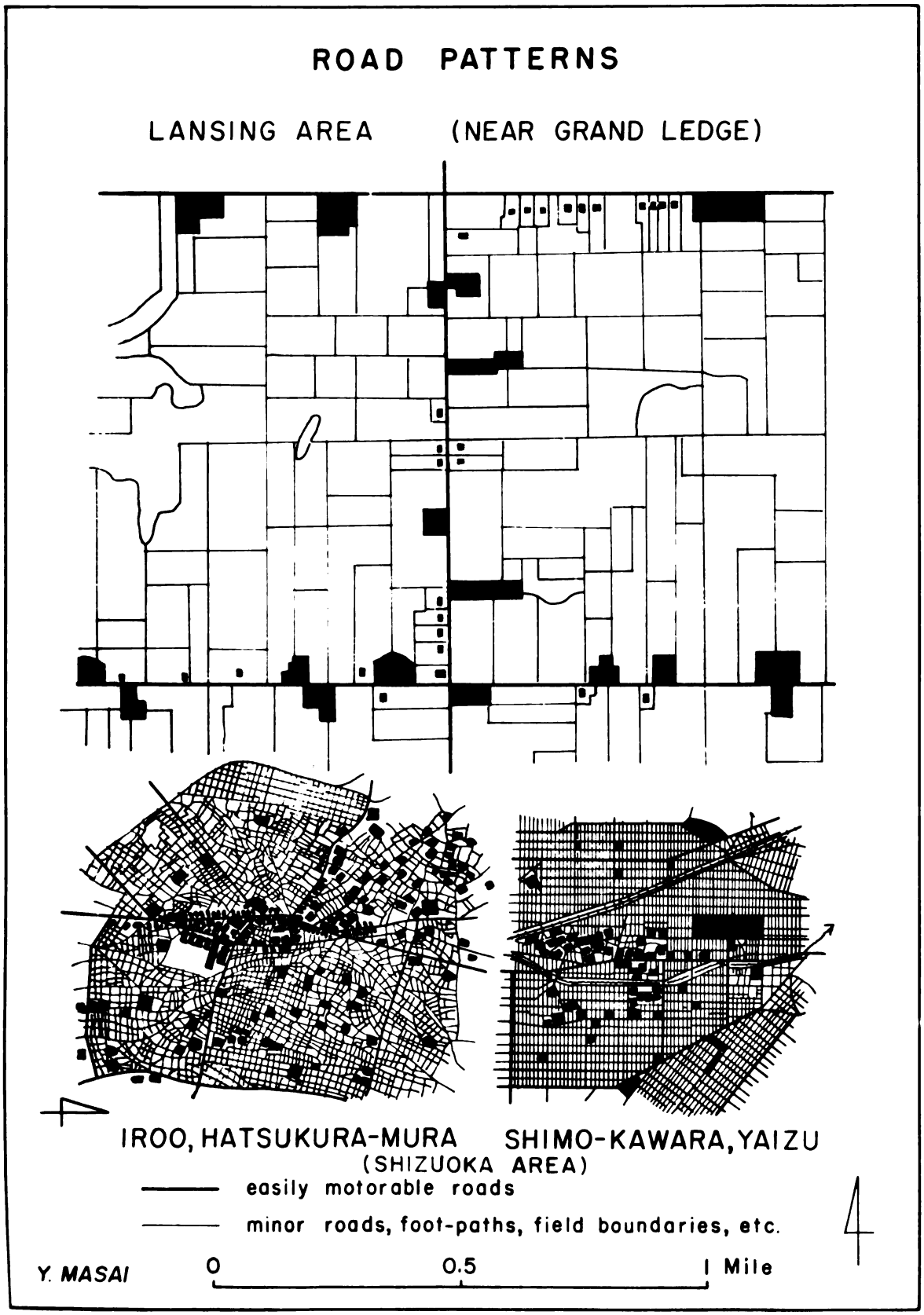
[21]For the Lansing area, 1:20,000 airphoto (near Grand Ledge) of Abrams Areal Survey Corp., Lansing, Michigan.
For the Shizuoka area, 1:15,000 airphoto (near Yaizu) of the Geographical Survey Inst., Tokyo.

Figure 8


ROAD PATTERNS
LANSING AREA (NEAR GRAND LEDGE)
IROO, HATSUKURA-MURA
SHIMO-KAWARA, YAIZU
(SHIZUOKA AREA)
easily motorable roads
minor roads, foot-paths, field boundaries, etc.
Y. MASAI
0
0.5
1 Mile

Thirty-five places in the Shizuoka area have taxi companies, each of which services a local area as shown by the map in Fig. 8. The total number of taxicabs is 835 in the entire study area.[22] In the Lansing-East Lansing urban complex, there are three taxi companies, having about 60 taxicabs in 1960.[23] Two other cities, Mason and Charlotte, have a few each. The use of trucks is common in the Shizuoka area, although it is usually limited to local deliveries. Unlike the Lansing area, individually owned passenger automobiles are not numerous, although their number is increasing. Instead, the use of bicycles is very common, as the pictures in Fig. 27 show. Modern means and systems of transportation are much less developed in the mountain areas. It is easily recognized that there is a sharp contrast between plains areas and remote mountain villages regarding transportation. This fact is one of the fundamental differences between the Lansing and the Shizuoka areas.

Urban-industrialization

Specialization, or division of labor, in the United States is well recognized in terms of urban-industrialization. Growth of cities has been fantastic in the twentieth century. Manufacturing and service industries have become increasingly

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[22]Land Transportation Agency, Shizuoka Pref. Office (unpublished statistics as of March 31, 1960).

[23]Inquiry at the taxi companies concerned.

predominant. Many specialty stores came into being, and manufacturing establishments were enlarged and have become more specialized in their products. Promoted by the improvement of transportation, the division of labor has increased the number of geographical localities in which individual tasks are performed. The Lansing area specializes in automobile industries, wholesaling, university education, and government.

In 1847, Lansing was selected for the state capital and in 1855 Michigan State University was founded at East Lansing.[24] Since then, Lansing and East Lansing have been steadily growing. In 1847, Lansing was merely an hamlet having 87 people, and its area covered only several blocks in each direction.[25] Recently, Lansing and East Lansing have become contiguous in terms of their formal political boundaries and built-up areas and thus an urban complex has emerged, having at least 137,873 in 1960.[26] All three county seats have grown considerably in size. In 1940, the total population of the three cities was 11,811. By 1960, however, it grew to 17,765, an increase of 51%.[27]

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[24] Michigan State University Catalog, 1960-1961. (East Lansing, Mich.: Michigan State Univ., 1960).

[25] Jahan A. Malik, The Historical Geography of Ingham County (unpublished Ph.D. dissertation in geography, Michigan State University, East Lansing, Michigan, 1960).

[26] U.S. Population Census, 1960 (unpublished preliminary report for Lansing and East Lansing), Inquiry at Tri-County Regional Planning Commission, Lansing, Michigan.

[27] Ibid.

In twentieth-century American culture, many urban developments are of geographical significance. Among them, two are very characteristic. These are vertical extension in terms of skyscrapers, and horizontal expansion in terms of suburbanization. The Lansing area has experienced both, although vertical extension has been limited to a small number of buildings. The attached photo shows the downtown area of Lansing (Fig. 29-1).

By contrast, horizontal expansion has been so extensive that the definition of "urban fringe" hitherto used is quite inadequate. In the literature, the term urban fringe is used almost interchangeably with "suburbs,"[28] but this term tends to be used for the outer edges of suburban development rather than the inner parts. Some use "exurbia" to refer to the remote development of suburbs,[29] but this is not yet generally accepted. The term "open-country suburbanization" may be coined appropriately for such development as the dispersed non-farm residential areas in which each residence or small clusters of residences are found in open farm country.

In the Lansing area, this kind of "open-country suburbanization" has expanded widely into the rural areas. Now a large area of non-contiguous suburban development

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[28] H. M. Mayer and C. F. Kohn, edit., Readings in Urban Geography (Chicago: Univ. of Chicago Press, 1959), pp. 531-532.

[29] A. C. Spectorsky, The Exurbanites (New York: Berkley Publishing Corporation, 1955).

is seen as well as large contiguous suburban areas. The boundaries of contiguous and non-contiguous open-country suburban areas are not clearly marked between areas around old established suburban centers and outlying settlements around the central city of Lansing.[30] Together they comprise a gigantic belt of what Jean Gottmann calls "megalopolis."[31]

The twentieth century Shizuoka area is characterized by urban-industrialization, although to a lesser degree. Fig. 23 shows the urbanized area of Shizuoka around 1600,[32] and of Shimizu in the Tokugawa period. The urbanized area of Shizuoka was already quite large both around 1600, and in 1889 when it became a legal shi (city) administratively. The population of Shizuoka was 37,681 in 1889.[33] In 1957, the population was 308,703 within the shi limits, but the central urbanized area of this shi is estimated to have about 200,000 people.[34] In the case of Shimizu, the present urbanized areas are much larger than those before the modernization period.[35]

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[30]A. K. Philbrick, "Gross Land Use Map of the Southern Peninsula of Michigan," a map presented at the 55th meeting of the Assn. of Amer. Geographers at Pittsburgh, (Spring, 1959).

[31]Jean Gottmann, "Megalopolis, or the Urbanization of the Northeastern Seaboard," Econ. Geo., Vol. 33 (1957).

[32]Old cadastral map "Sumpu at the time of Tokugawa Ieyasu," published in 1859. Courtesy of Mr. S. Yamamoto.

[33]Shizuoka City Office, op. cit., p. 11.

[34]See footnote 14 in Chapter II.

[35]Yukio Asaka, "Shimizu-Shi no Rekishi-chiriteki Ken-kyu, No. 1 (A Historical-Geographical Study of Shimizu City), Papers of the Otsuka Geographical Society, (1936).

Population of these two cities increased very rapidly as the economy grew. Many other towns and villages also developed into cities as commerce and industrialization advanced. Establishment of modern transportation facilities, such as the port of Shimizu, railroads, and highways, has promoted urban-industrialization. Large factories began to be established. The number of small-size factories, often of household-type, increased greatly. Adoption of the European and American-type school systems in 1879 gave great impetus to development in the fields of technology, administration, literature, political thought, and many other subjects.

Agriculture

Before the white settled in the Lansing area, Indian agriculture was very primitive. It was sedentary farming, supplemented by hunting, fishing, and food collecting. Cultivated lands were limited around small villages. Most of the area was thickly forested or swampy. White settlement introduced a completely different type of agriculture. Although subsistence frontier agriculture was practiced for a certain period, commercial agriculture became prevalent throughout the area by the 1870's.

The distributional pattern of farmsteads in the Midwest is a division of each section (one square mile) of land into four 160 acre farms originally, allowing for further subdivisions. The spacing of farmsteads varies from

contiguity to nearly one mile. This may be described on the average as widely dispersed farm settlement. The picture in Fig. 1 shows a typical American rural landscape. This is significantly contrasted with the nucleated farm village in the Shizuoka area (Fig. 1).

Commercial agriculture started in the late eighteenth century both in America and England. After the Civil War (1861-1865), commercial agriculture became quite common in the east coast region of America and began expanding westward. During the nineteenth century, the techniques of American agriculture changed considerably from hand labor to mechanized farming. Successive inventions and popularization of farm implements and machinery resulted in large-scale commercial agriculture. Among the developments which led to the formation of a dairy belt in the northeastern United States were the following: Establishment of a better transportation network such as railroads and the completion of the Erie Canal in 1825; the invention and popularization of farm implements and machinery such as mechanization of dairying between 1850 and 1875 and the invention of centrifugal cream separators and testers before 1910; increasing demand for dairy products in growing urban markets after the Industrial Revolution; the establishment of agencies for promoting better, more scientific knowledge about dairying, etc.[36]

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[36]Everett E. Edwards, "American Agriculture--The First 300 years," in Farmers in a Changing World, Yearbook of Agriculture, 1940. (United States Department of Agriculture), 171-276, esp. 206, 221, 231.

The dairying industry in the Lansing area seems to have followed this general trend in America.

At the present stage, as in many other parts of the United States, farming techniques are highly mechanized in the Lansing area. Suburban development has been tremendous in agricultural lands, so much so in some places commonly called rural areas that there are more non-farm establishments than farms.

The Shizuoka area, by contrast, retains even today an inclination toward subsistence agriculture which has long been common among farmers. Tea cultivation came from China, and now the Shizuoka area produces more tea than any other part of Japan.[37] Mikan (mandarin orange) was also introduced to the area a few centuries ago.[38] The mikan industry is prosperous.

The specialization of crops in Japan generally, and especially in southern Japan, of which the Shizuoka area is a part, is of a very different kind from the specialization of agriculture in the Midwest of the United States, or of the United States generally. As already pointed out, the specialization of agriculture in the Lansing area is in dairying, beef cattle production, grain, and certain other

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[37]S. Yamamoto, "On the Relation of the Tea-Market in Shizuoka City to its Market Region," Geographical Review of Japan, Vol. 26, No. 12 (1953), p. 522.

[38]Shizuoka City Office, op. cit., p. 40.

specialty crops such as vegetables. This can be characterized as intensive development of several main crops and types of livestock in combination. In Japan, on the other hand, the diversity of crop variations numbers in the hundreds within a small area. This is particularly true of rice culture, in which a very great many varieties have been specifically developed to fit a very great many tiny variations in the physical characteristics of agricultural resource.[39] So many varieties of so many different kinds of crops are grown (as well as several or more types of livestock, though small in number) in the Shizuoka area today that, in effect, the intensive extremely-small-field agriculture of this area is the equivalent of a garden-type horticulture rather than of field-crop agriculture as it is understood in America.

In truck-farming areas, the size of the farm is very small. A village called Nishi-Hiramatsu is a good example of this extremely small-size type. It is located three miles southeast of Shizuoka, facing the sea. In 1955, the village had 71 farm households, of which 53 possessed only 3 or less tan (1 tan equals 0.245 acres), 15 possessed 3 to 5 tan, and only 3 possessed 5 to 7 tan. Out of the total of 71 households, 67 gained more cash income from non-farm occupations. From this village's tiny cultivated lands (less than 50 acres),

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[39]Fukuo Ueno, Land Utilization in Japan, (Agriculture, Forestry and Fisheries Productivity Conference, Ministry of Agriculture and Forestry, Japan, 1960), pp. 53-54.

at least 16 different kinds of agricultural products, excluding minor varieties, were shipped out to urban markets (Tokyo, Osaka, Shizuoka, etc.), either individually or through agricultural cooperative associations. They were daikon (a kind of radish), turnip, spinach, green onion, green pepper, cucumbers, egg-apples, kidney beans, green peas, ginger, tomatoes, white melons, strawberry, flowers, chickens and eggs, swine, and cow milk.[40]

The Euro-Americanization of Japan afforded opportunities for farmers to increase their productivity by introducing better techniques and by response to the growing demand for food in consumer markets. New crops were also brought in. Some examples are cabbage, onion, tomato, lemon, strawberry, etc. A new tendency is mechanization. Although the per capita consumption of electricity is low, electrification of farms is now practically complete. This affords the farmers higher efficiency and a consequent increase in productivity. The better transportation media today serving the area promote better commercial farming.

Some Characteristics of Political and Social Systems

As mentioned above, the present political system of Michigan owes much to the people who migrated from New England

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[40] S. Yamamoto and Y. Masai, "Agriculture in the Suburbs of Shizuoka City," Symposium on Reclamation and Suburbs, Assn. of Japanese Geographers (1955), 68-74.

into this part of the Midwest in the nineteenth century. A county may include villages, cities, townships, and special districts as political forms of organization. Since suburban development is very rapid, boundary change of cities and villages is a chronic problem in the twentieth-century Lansing area. In general, Michigan, as other parts of the United States, has a republican form of government, in keeping with the democratic ideals of the English political system modified by the innovations represented by the Declaration of Independence and the American Constitution.

After the Meiji Restoration, the Shizuoka area came under the control of the centralized government of Tokyo. This centralized authoritarian governmental system in a modern sense represented a compromise of many elements from abroad with its traditional past. The Meiji government was superimposed upon the former governmental system, which consisted of many local provincial feudal governments. Many of these provincial governments were hostile to each other, although they had been effectively controlled by the Tokugawa shogunate in Edo (Tokyo). The Meiji government was a constitutional monarchy, modeled also after the British system in general. The Emperor re-established his position on the model of the European emperors as well as traditional Japanese imperial worship.

Legal political units of Japan today are relatively simple. Ken (prefectures) are immediately subordinate to the

national government in Tokyo. Ken are in turn subdivided into shi (cities), machi (towns), and mura (villages). No distinction between incorporated and unincorporated areas exists in Japan.[41] Although they are no longer legal or administratively used, special areally demarcated units called buraku perform important functions in rural areas. These functions organize the people in the buraku socially, often economically, and in some cases politically in an informal way.

The Lansing area is predominantly Protestant. A considerable number of people, however, follow Catholicism. Judaism is also represented. Both urban and rural landscapes are decorated by the spires of many churches. Churches and temples in the Lansing area perform functions of religious services, education, and social activities.

In the Shizuoka area, each buraku is supposed to have a Shinto shrine. Buddhism is actually the most popular religion. Shinto is next. Christianity is followed by a small number of people. In actuality, the separation of Buddhism from Shinto is quite difficult, for most of the people belong to both, at least nominally. In general, despite the presence of organized religions, religious services are comparatively limited. People do not actively participate in religious activities in Japan as they do in America by attending church services. Buddhist and Shinto services are usually limited to

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[41] R. K. Beardsley, J. W. Hall, and R. E. Ward, Village Japan (Chicago: Univ. of Chicago Press, 1959), 350.

special occasions such as festivals, ceremonies, and so on. Most of the families, however, have both Buddhist and Shinto altars in their houses. Relatively few people worship daily those family altars as well as temples and shrines. Instead, the precincts of these temples and shrines supply recreational facilities such as green open spaces as playgrounds or parks, especially for urban people. These precincts are also used for religious but quite recreational festivals for both urban and rural people. Some temples have kindergartens.

Many social ideas sprang up in Europe and America after the Renaissance and Reformation. In present-day America, some of these social ideas are strongly represented. For example, democracy, individualism, the frontier spirit, idea of community zoning and planning, and so on. The ideals of Christianity have played an important role in the inception and development of these ideas, directly or indirectly. There is a general tendency to classify things into two, usually good and bad. Habits of logical thought are considered to be a desirable attribute.

In Japan, the long influence of Mahayanist Buddhism, together with Shinto, both of which are basically poly-theistic, have given the people the idea of viewing the world as a very complicated unity consisting of an inseparable mixture of all kinds of things. Confucianism has long been maintained, with some modification, as the basis of Japanese ethics. Logical thought has not been considered in many cases to be a desirable

attribute.

To Western students of Japan, present-day Japan may appear to be extremely mixed in various fields, and Westerners' observations about Japan tend to lead to confusion. To most of the Japanese, such extreme mixtures of ideas from everywhere and anywhere do not cause confusion. This fact may be a reason why Japanese people could introduce foreign cultures without abolishing their own traditional culture, or being concerned particularly about the relation of multi-cultural traits to one another. This is well represented in the case of religion. All Japanese people are members of Shinto, and at the same time most of the Japanese people are Buddhists. For such bi-religious people, the two religions perform different functions in many cases. Most such people hold wedding ceremonies at Shinto shrines, and funeral ceremonies at Buddhist temples. Here is a clear-cut division of function. This contrasts with American religious activities. In America, both wedding and funeral ceremonies, as well as many other religious activities of a person, tend to be confined to his own single denomination.

In modern Japan, the influence of Christian ideals, even its ethics, upon Japanese thought and life is much more profound than one might assume from the fact that less than one percent (0.7%)[42] of the population have become professing Christians. Christian ideals and ethics were first introduced

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[42] Japan Statistical Yearbook, 1957, op. cit.

largely by missionaries from America, and then through Japanese people influenced directly and indirectly by Christianity.[43]

Summary

It may well be said, in summary, that the two areas are significantly different in their traditional cultures. Culture in the Lansing area was transformed from primitive subsistence activities of the American Indians to a European-type culture region through the agency of European settlement. On the other hand, the Shizuoka area evolved a distinctively Japanese culture from a primitive level to the feudal but internally (as well as externally to some extent) organized region, through a long period of Chinese cultural influence and Japanization which followed without significant in-migration of people from outside.

The Lansing area evolved further from a combination of European and American types of culture in the nineteenth century to a distinctively American culture in the twentieth century. Today, this area is characterized by a highly developed urban-manufacturing economy, as well as large-scale mechanized commercial farming on the basis of a relatively few major kinds of products. In the Shizuoka area, Japanese leadership adopted, adapted, and developed Euro-American

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[43]Edwin O. Reischauer, Japan, Past and Present (Charles E. Tuttle Co., Tokyo, 1952), 143.

ways of doing things, especially after the turn of the twentieth century, although contributions of foreigners to the modernization of Japan cannot be neglected. This meant that the "Industrial Revolution" was introduced to the Shizuoka area by the Japanese. The over-all pattern of the Japanese economy changed to an exchange-type with a division of labor between urban-manufacturing and commercial population and rural farm population by 1920, when more than half the population lived in urban areas. Political organization was also affected considerably by that of Europe and America.

Differences are recognized between the two areas in many cultural traits such as settlement forms, agricultural products, land use patterns, religion, ideas about ethics and politics, ways of thinking, attitude to the physical environment, and many others. These differences are primarily attributed to their distinctively different historical backgrounds--European-American versus Chinese-Japanese. Today, the people of the Lansing area tend to possess similar cultural traits throughout, despite the fact that they are a composition of a great many different ethnic and racial groups. On the contrary, ethnically the people of the Shizuoka area are Japanese exclusively today, although several different sources of cultural and racial traits can be distinguished.

At the same time, many cultural patterns are more

or less similar to each other today. Urban-industrialization, modern means of transportation, and governmental systems are examples. Actually, a great many cultural traits in Japan are inseparable mixtures of traditional Japanese and Euro-American cultures. In general, however, the similarities between the cultures of the Lansing and the Shizuoka areas tend to be that aspect of culture which reflects the organization of economic areal patterns. The social and religious aspects are, however, quite different.

In this chapter, we have seen the general cultural backgrounds of the two areas, using the concept of culture origin and dispersal. It may be possible to say, in general, that the two areas are quite different in terms of goods and ideas which are produced, consumed, and preserved. At the same time, the two areas are quite similar with respect to <u>how</u> these goods and ideas are transported, communicated, or functionally related to the areal setting. The next chapter will show how the pattern of occupance is organized by means of functional relationships, transportation, and communication among many different places.

CHAPTER III

AREAL FUNCTIONAL ORGANIZATION

Methodological Introduction

Settlements have nodality (nodal function or centrality) of different magnitudes. In principle, orders of nodality do not necessarily coincide with particular population sizes of settlements. Herein lies the necessity of investigating the hierarchy of functions corresponding to the orders of nodalities among settlements or places. Human occupance is a geographic unity consisting of various human activities. The existence of a hierarchy of settlements has been observed by many geographers in different countries to be essential to the understanding of regional characters.[1] Some geographers

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[1] W. Christaller, Die Zentralorte in Suddeutschland (Jena, 1933).

R. E. Dickinson, City, Region and Regionalism (New York and London; 1947).

A. E. Smailes, "The Analysis and Delimitation of Urban Fields," Geography, 32 (1947), 151-161.

A. E. Smailes, The Geography of Towns, 2nd ed. (London: Hutchinson Univ. Library, 1957).

F. H. W. Green, "Urban Hinterlands in England and Wales, An Analysis of Bus Services," Geographical Journal, 116 (1950), 64-88.

H. Carol, "Das agrargeographische Betrachtungssystem. Ein Beitrag zur landschaftlichen Methodik, dargelegt am Beispiel der Karru in Sudafrika," Geog. Helvetica (1952), 17-66.

J. E. Brush, "The Hierarchy of Central Places in Southwestern Wisconsin," Geo. Rev., 43 (1953), 380-402.

Y. Watanabe, "The Central Hierarchy in Fukushima Prefecture: A Study of Types of Rural Service Structure," Science Report of the Tohoku Univ., 7th Series, Sendai (1955), 25-46.

have dealt with functional interconnection of settlements in association with a more comprehensive view of regions.[2]

According to A. K. Philbrick, the hierarchy of functional areas is produced by a hierarchy of functions in terms of the double hierarchical approach under the heading of areal functional organization.[3] The principles applicable to this dissertation upon which this type of analysis is based will be explained and applied to the study areas in detail in this chapter. (In this dissertation, areal functional organization will be abbreviated as "a.f.o." in most cases.) The simplest functional unit of occupance is the "single establishment, occupied by a person or a group of persons such as farms, residences, stores, factories, etc." There are many small economic, political, and social establishments which operate out of structures which appear to serve quite separate and different functions. For example, the road-side stand of a farm where home-grown fruits or vegetables are sold is a commercial facility classified as part of a farm; a farmhouse or a non-farm residence where the leader of a prominent social organization lives may well be the focus of that social organization but appear only to be a residence.

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[2]E. Ullman, "Trade Centers and Tributary Areas of the Philippines," Geo. Rev., Vol. L, No. 2 (1960), 203-218.

[3]A. K. Philbrick, "Principles of Areal Functional Organization in Regional Human Geography," op. cit.
A. K. Philbrick,"Areal Functional Organization in Geography," op. cit.

The hierarchical nature of settlements, according to Philbrick, can only be classified clearly through the classification and recognition of this hierarchy of functions in the activities of the pattern of occupance. When so recognized the resulting classification can be used for comparative analysis between any two regions.

The elementary idea of focality, but without the system of analysis of a.f.o., was first introduced by R. S. Platt in his pioneering work, "A Detail of Regional Geography: Ellison Bay Community as an Industrial Organism," published in 1928.[4] His idea being man-centered like that of many other geographers resulted, however, in viewing areas or regions as organized focal units. Many successive works have been produced by geographers along this general line, which can be called functional studies.[5]

Philbrick, in his "Principles of Areal Functional Organization in Regional Human Geography" published in 1957, combined the major idea of focality on a principled basis with the double hierarchy of functions and functional areas. His paper was primarily couched in terms of economic criteria,

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[4] R. S. Platt, A.A.A.G., Vol. 18 (1928), 81-126

[5] R. S. Platt, "Field Study of Republic, Michigan: A Community in the Marquette Range," Scot. Geogr. Mag., 44 (1928), 193-203.

R. S. Platt, "Problems of Our Time," A.A.A.G., 34 (1946), 1-43.

E. M. Bjorklund, Focus on Adelaide, Univ. of Chicago, Research Paper of Geo., No. 41 (1955).

although a more comprehensive viewpoint was the objective. R. H. Brown applied Philbrick's idea to a study of political areal functional organization.[6] This work revealed the possibility of detailed investigation applied to other than specifically economic activities from the standpoint of the same principles. Another study by A. E. Larimore on multi-cultural African settlement patterns in relation to a.f.o. demonstrates the applicability of these principles to the study of occupance from the standpoint of culture. Her primary concern in methodology was to study a region in terms of cultural differences and a.f.o.

Philbrick proposed ten principles of areal functional organization in his "Principles of Areal Functional Organization in Regional Human Geography." These principles are quoted or briefly summarized as follows:

1. Human Choice--It is man who creates the pattern of human occupance (and also functional organization of occupance) by his creative choice or creativity. Nature or physical environment is receptive to the human choice.[7]
2. Focus--Human occupance is focal in character."
3. Localization--"Establishments constituting in

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[6]R. H. Brown, Political Areal Functional Organization, Univ. of Chicago, Research Paper of Geography, No. 51 (1957).

[7]R. S. Platt, Field Study in American Geography, Univ. of Chicago, Research Paper of Geography, No. 61 (1959) 140-141.

the aggregate the pattern of human occupance are individually localized in specific and unique places."

4. Interconnection--A region is organized through certain means of interconnection (or functional ties), primarily focusing upon certain places having larger nodality (both centripetal and centrifugal forces). The simplest unit of interconnection is one-step bi-polar.
5. Parallelism and Nodality--In areas of relative homogeneity or between like establishments, functional relationship may be said to be parallel. Between unlike establishments or between areas or places having mutually different functions, there often occurs a nodal functional relationship in which one or more such establishments, areas, or places have greater nodality than the others.
6. Nested Hierarchy of Areal Units--Areal units, which vary in size according to the kinds of functions, are hierarchically arranged in a nested areal pattern, in which larger unit areas are multiples of repeated smaller ones.
7. Establishments--These are the simplest and basic units of occupance. The functional areas of establishments are delineated by ownership, control, or jurisdiction and constitute the inner internal organization of each unit.

8. Higher-ordered Units--Higher-ordered larger areal units originate through the functional interconnection of lower-ordered smaller areal units. This occurs in turn on the basis of the interconnection of functional cores for such areal units serving one another hierarchically according to a hierarchy of functions, such as consumption, retailing, wholesaling, transshipping, exchange without physical handling or ownership, control, and over-all leadership. The service direction from higher toward lower order represents outer internal organization within any higher order areal units. The direction from lower toward higher order represents external organization.
9. Pyramiding of Functions--"Every order of areal functional organization possesses the characteristics and interconnections of all its lower-ordered components."
10. Basis for Higher Orders--"Activities which in association characterize the higher-ordered functions of a particular place and which are the primary focus for other places with respect to that higher ordered function may be the basis for recognizing areal units of functional organization of higher order. When so recognized, the lower-ordered places and their respective service areas become the peripheral portion of the internal area of the higher-ordered areal unit of functional organization."

In the Introduction, theoretically extreme cases were mentioned regarding exchange and subsistence economies. In the Lansing area, subsistence organization has disappeared almost completely, whereas in the Shizuoka area, it is still maintained to some extent. Transition is in progress within the latter place. The patterns of a.f.o. in the two areas are formed by the character of their modern economic development, which is fundamental to their present-day cultures.

As mentioned in the previous chapter, the two study areas have significantly different past cultural development. European-type culture introduced to the Lansing area replaced American Indian culture virtually completely. Successive American innovations and modifications in technological, social, and other fields have changed the pattern of occupance in the Lansing area to what is to be called an "American" cultural pattern today. A.f.o. of the Lansing area belongs to this pattern. In the Shizuoka area, Euro-American culture was introduced in recent times (especially in the twentieth century) and its influence is still increasing today. Modification to Japanese-style culture occurs in the larger cities especially. The result is that Euro-Americanization is more conspicuous in cities than in rural areas. A great many variations, which may be regarded as transitional stages, may be observed between outright American culture traits, Japanized American ways of doing things, and Japanese traditional culture. These are distributed in general in descending amount

outward from the cities.

Establishments in urban areas are quite different from rural ones. Relative homogeneity of function in rural areas is replaced by relative heterogeneity in urban areas. In the urban areas of both countries, many different kinds of establishments are to be seen--a wide range of economic, political, and social enterprises. There is also a very great range in size and impact of individual enterprises located in cities. Michigan State University and the Oldsmobile assembly plants in the Lansing area; and Shizuoka University and several large-scale factories around the port of Shimizu in the Shizuoka area are good examples. It is through such enterprises, as well as a host of smaller ones, that urban areas act as agents in the impact and dispersal of culture.

The primary purpose of this chapter is the systematic comparative analysis of the Lansing and the Shizuoka areas by applying the ten principles of areal functional organization.

Hierarchical Organization

Land use maps generally show various uniform regions. Such uniform regions can be related to one another in terms of a.f.o. A uniform land use region may be thought of as the repetition of many parallel-type establishments such as farms in a farm region, residences in a residential area, etc. In other words, there would not exist a hierarchical relationship within a uniform land use region between the repeated

establishments of the same type function. Between different uniform regions representing different functions, there may be a hierarchical relationship if they are interconnected through a hierarchy of functions, as consumer and retailer, retailer and wholesaler, and so on. Between commercial farms and a local business center there is a hierarchical relationship, because commercial farmers must buy commodities and provisions at the business center. Such a hierarchical relationship is also found between an urban residential section and a near-by shopping street for a similar reason. Although it is a little different qualitatively, functional hierarchical relationship can be recognized between political establishments and business centers, manufacturing plants and residential sections, religious establishments and residences, etc. Since the above-mentioned hierarchical functional relationships exist in reality, use of land use pattern for examining a.f.o. of larger units is justifiable.

In general, both rural and urban nucleated settlements have more intensive land uses than the surrounding areas of extensive use such as farmlands and forests. Larger settlements tend to have more intensive and more diversified land uses than smaller ones. In such larger settlements, one or more land uses out of the total functions of the settlement may have hierarchical functional nodality for the surrounding areas and places. This nodality varies according to the character of the function. Quality of

function, i.e., kind of function and degree of functional intensity, was classified into several hierarchical functional categories by Philbrick, as listed briefly in the Introduction.[8] Based primarily on his classification, but with some additions, the areal functional organization of the two study areas is presented on the maps in Figs. 9 and 10.

Hierarchy of Settlements in Both Study Areas

Figs. 9 and 10 were made for the Lansing and the Shizuoka areas respectively to show the patterns of central and focal places hierarchically arranged. The Lansing map is based primarily on field work by the author. The Shizuoka map is based on several sources such as (1) literature and statistics, for fourth order, (2) field work done for the author by other people[9] and statistics, for third and sub-third orders, and (3) the same as (2), and map and air-photo interpretation, for second and sub-second orders. Locations of most of the second and sub-second-order focal places were decided upon by map and airphoto interpretation, by analogy with the second and sub-second-order focal places surveyed in sample areas by field work.

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[8] A. K. Philbrick, "Principles . . .," op. cit., p. 335.

[9] Field work was done by Messrs. S. Yamamoto, T. Ito, and M. Kitagawa.

Figure 9

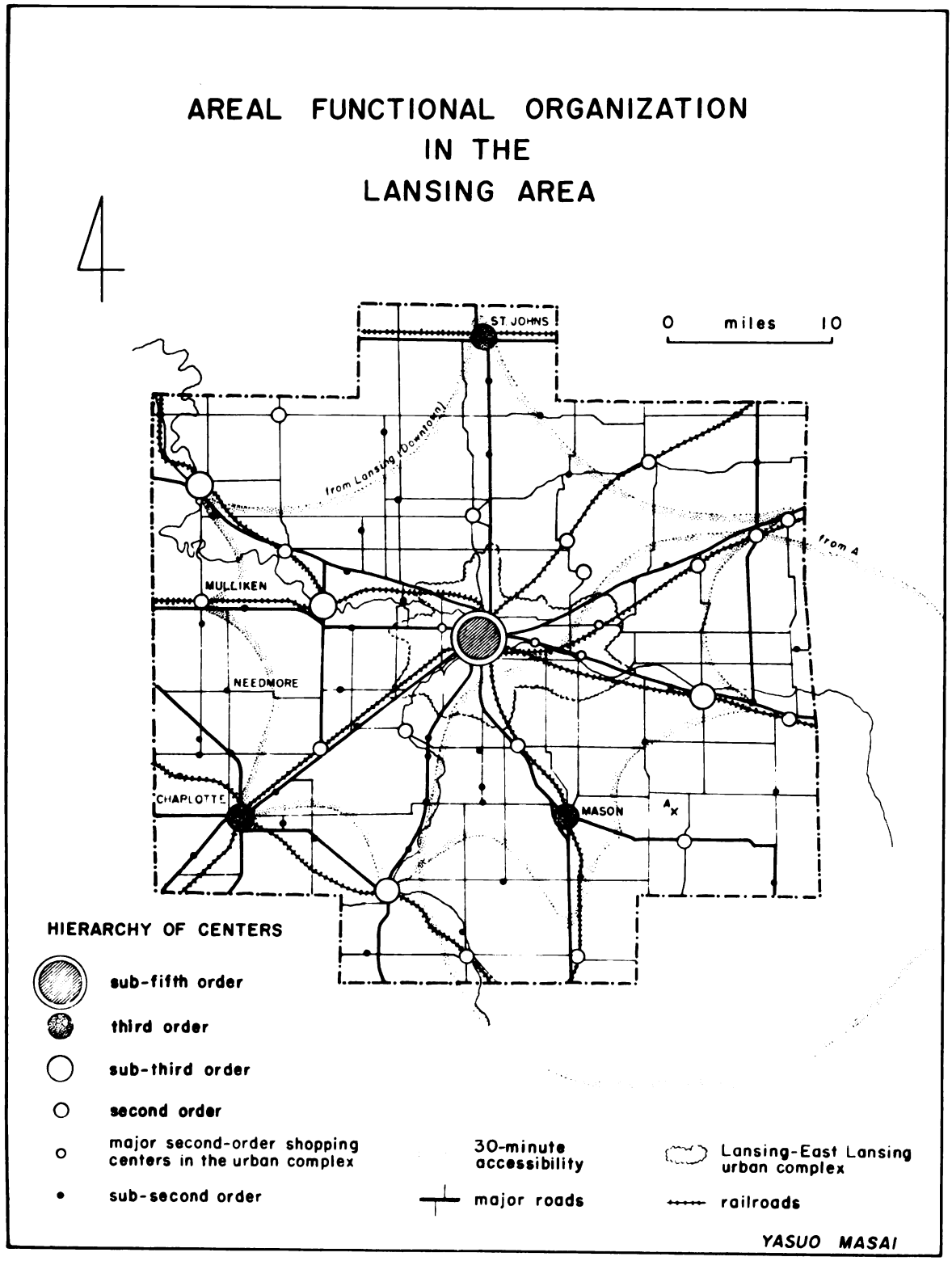
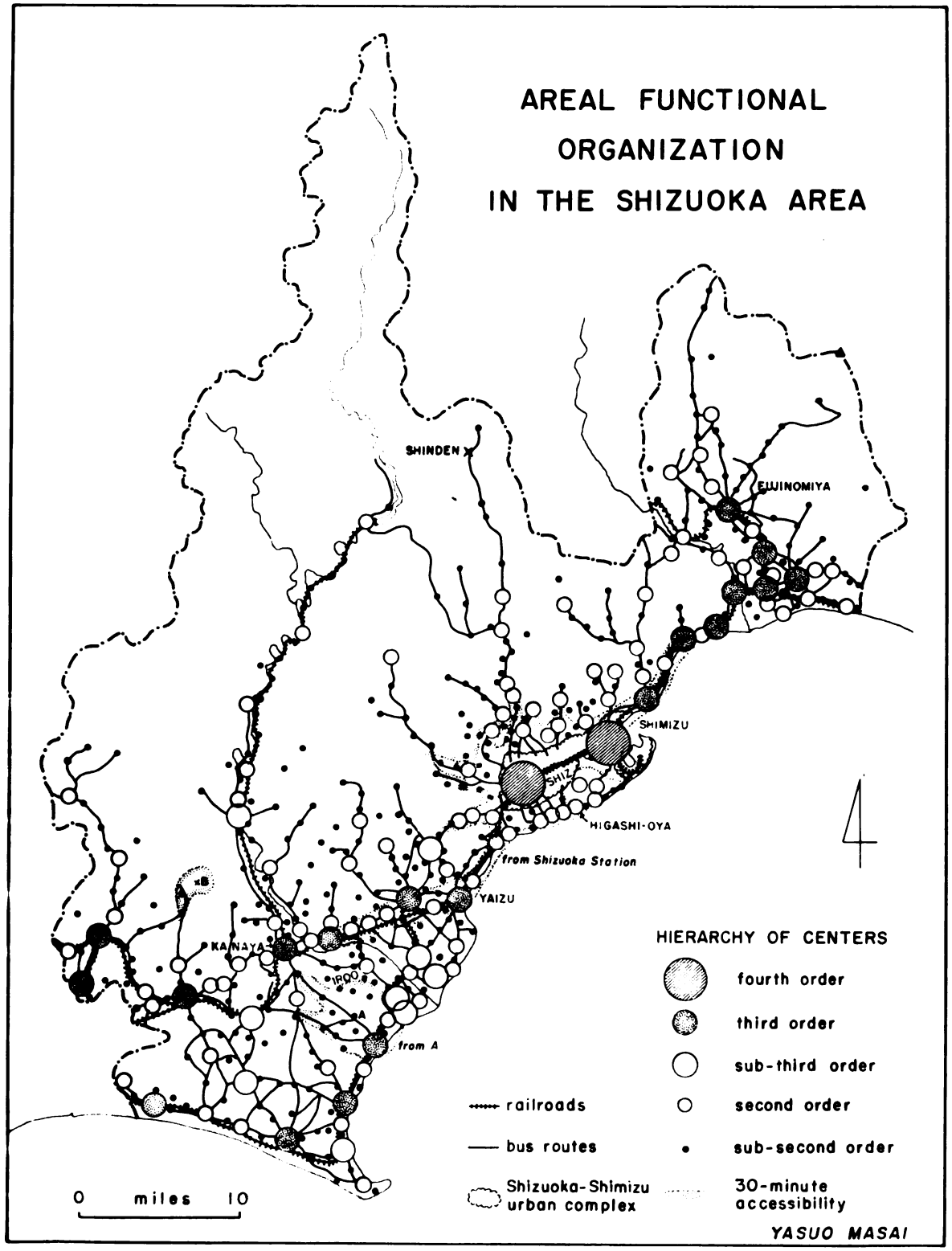

AREAL FUNCTIONAL ORGANIZATION
IN THE
LANSING AREA
4
ST. JOHNS
0 miles 10
from Lansing (Downtown)
from A
MULLIKEN
NEEDMORE
CHAPLOTTE
MASON
HIERARCHY OF CENTERS
sub-fifth order
third order
sub-third order
second order
major second-order shopping centers in the urban complex
sub-second order
30-minute accessibility
major roads
Lansing-East Lansing urban complex
railroads
YASUO MASAI

Figure 10


AREAL FUNCTIONAL
ORGANIZATION
IN THE SHIZUOKA AREA
SHINDEN
FUJINOMIYA
SHIMIZU
SHIZ
HIGASHI-OYA
from Shizuoka Station
YAIZU
KANAYA
IROO
A
from A
4
HIERARCHY OF CENTERS
fourth order
third order
sub-third order
second order
sub-second order
30-minute accessibility
railroads
bus routes
Shizuoka-Shimizu urban complex
0 miles 10
YASUO MASAI

The settlements shown in these two maps are defined hierarchically. These do not show the settlements defined administratively or by population size. What is significant on these maps is the nodality which each focal or central place possesses. The fact is that such nodality is defined on a principled basis.

The general patterns of the two maps are significantly different from each other. The Lansing area has relatively few dispersed focal places. The pattern is also characterized by more or less radial distribution of focal places. By contrast, the Shizuoka area shows a great many focal places which are relatively compactly distributed near the sea coast. Comparatively, this area tends to have a linear pattern of distribution of focal places.

Figs. 9 and 10 also show isochronic lines of accessibility from selected points within 30 minutes. In the case of Lansing, the accessibility is measured by the distance which automobiles can reach within 30 minutes.[10] In the case of Shizuoka, distances by train or by bus or by walking are shown. Two significant differences are noticeable. (1) The areas demarcated by the 30-minute isochronic lines of the Lansing area are a few to several times larger in radius than those for the Shizuoka area. (2) In the Lansing area, starting

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[10] Average speed on highways--60 miles per hour.
Average speed on country roads--40 miles per hour.
Average speed in urban areas--30 miles per hour.

point does not control accessibility as much as it does in the Shizuoka area, as shown on the maps. It is apparent that interconnection between places in the Lansing area is much more convenient than it is in the Shizuoka area. This inevitably means that mobility in the Lansing area is greater, making the area's functional organization very dynamic.

Table 3 was made from data collected by intensive field work conducted in the fall of 1959 and in the spring of 1960 for the Lansing area. All economic establishments were tallied in the study area. Table 4 was made to show the number of focal establishments in communities of the Shizuoka area. In these two tables, settlements are classified according to the hierarchy based on principles. Numbers of settlements are given by functional hierarchical orders.

Comparison of the two tables reveals striking differences only in numbers of both settlements and establishments. The hierarchical relationships themselves are very similar. Dominance of the two urban complexes, Lansing-East Lansing and Shizuoka-Shimizu, in the economic hierarchical organizations is apparent. Third-, sub-third, second-, and sub-second order focal places and first-order establishments are shown in descending subordinate relationship to those two core centers.

In the Lansing area, the Lansing-East Lansing urban complex belongs to the sub-fifth order, and ranks at the top of the hierarchy of the area. The Shizuoka-Shimizu urban

TABLE 3. Functional centers in the Lansing area.

Order & Name of Settlement	No. of Econ. Establishments by Order 2nd order	3rd	4th	5th	Vacant
Sub-5th order					
Lansing-E.L.	c.2,000	140	several	1	?
3rd order					
Charlotte	286	7			13
St. Johns	210	4*			8
Mason	122	4*			1
Sub-3rd order					
Grand Ledge	138	4			4
Eaton Rapids	146	4			1
Portland	115	2			3
Williamston	124	2			7
2nd order					
Holt	84				0
Leslie	50				3
Perry	48				1
Laingsburg	45				7
DeWitt	40				3
Dimondale	24				3
Potterville	18				2
Webberville	33				4
Morrice	31				1
Westphalia	25				3
Dansville	10				2
Mulliken	18				11
Bath	13				4
Onondaga	8				7
Park Lake	13				0
Shaftsburg	5				6
Eagle	10				3
Sub-2nd order					
Wacousta	3				1
Bennington	2				1
Aurelius	3				2
Eden	3				0
Round Lake	4				0
Delta Mills	2				0
Kingsland	2				0
Pittsburg	2				0
Riley	1				0
South Riley	1				0
Needmore	1				1
Gresham	1				0
and 32 other places having 1 to 4 economic establishments each.					

*See Third-order Centers and Their Functions in this chapter.

TABLE 4. Functional centers in the Shizuoka area.

Order & Name of Settlement	No. of Econ. Establishments by Order 2nd order	3rd*	4th
4th order			
Shiz.-Shim.	10,000	1,400	several
3rd order			
Yoshiwara		110	
Yaizu		74	
Fujieda	1,101**	209	
Fujinomiya		96	
Shimada		67	
Fuji		65	
Kakegawa		81	
Sagara		44	
Haibara		34	
Kikukawa		41	
Mori		55	
Hamaoka		18	
Kambara		33	
Okitsu		19	
Yui		25	
Kanaya	399**	17	
Takaoka		26	
Fujikawa		19	
Osuga		28	
Yamanashi		13	
Sub-2nd order			
Ogasa		8	
Okabe		9	
Yoshida (Yoshida)		7	
" (Kando)		7	
Oigawa (Kami-Shinden)		7	
" (Munetaka)		7	
Omaezaki		5	
Kawane		3	
2nd order			
About 100.			
Sub-2nd order			
A few hundred.			

*Including primarily second-order wholesalers to some extent, and enumerated by administrative units.

**Based on field work.

complex is classified as fourth order, and ranks at the top of the hierarchy of the Shizuoka area. Politically, the Lansing-East Lansing urban complex belongs to the fifth order, since it contains the state capital. The Shizuoka-Shimizu urban complex is presumed to be lower in political hierarchy than the Lansing-East Lansing urban complex, since it is a prefectural capital.

One of the very significant differences between the two areas is found in the number of focal places. Although some may actually be sub-third order, the number of third-order focal places counted in the Shizuoka area is 20. Sub-third-order focal places counted are 8 in number.[11] These numbers contrast with 3 for third order and 4 for sub-third order in the Lansing area. It is clearly shown on the map in Figs. 9 and 10 that the Shizuoka area's many third-order focal places are spaced relatively closely. In the Lansing area, all "wholesale" settlements are either very small or sub-third order, and relatively dispersed. Large third or higher-order centers are located 30 to 60 miles away from Lansing outside the dissertation area. Such cities are Grand Rapids, Kalamazoo, Battle Creek, Jackson, Ann Arbor, Pontiac, Flint, Saginaw, Bay City, and Midland. Detroit is 75 miles away. All of these cities are presumed to be at least third order, and most of them are important in this function.

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[11] Shizuoka Prefectural Office (unpublished statistics, as of July 1, 1958).

It is presumed that third-order functions are concentrated in these larger third-order centers, and small competitive third-order centers are decreasing in relative importance in third-order functions. This is due to the mobility of the automobiles and trucks characteristic of America.

A second more striking fact is the difference in the number of second and sub-second-order focal places between the two areas. Seventeen second-order and 44 sub-second-order focal places in the Lansing area are far outnumbered by those of the Shizuoka area, which number about 100 for second order and at least a few hundred for sub-second order. The reason for being indefinite on this point will be apparent later.

The Shizuoka-Shimizu urban complex (urban population, 300,000) has about 10,000 second-order economic establishments, including four thousand small-scale manufacturing establishments. Note that the Lansing-East Lansing urban complex (urban population, 150,000 in the compactly urbanized area) has only 2,000 of that sort.[12] This discrepancy implies that enterprises are large-scale in Lansing, whereas in Shizuoka a great many household-type manufacturing establishments

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[12]In 1954, Lansing had 1094 retail establishments within the city limits (U.S. Business Census, 1954). The city also has at least a few hundred other second-order economic establishments. In addition, East Lansing had 210 such establishments in 1959, and Okemos-Haslett area had 60.

still are found.[13]

First-order Establishments and Their Functions

Farms or equivalent establishments such as residences are considered as first order. In general, a farm in the Lansing area consists of several to many parcels of cultivated fields and a farmstead (houseyard or farmyard), often together with small forests or unused lands. Fig. 11 shows an example of typical farms in the Lansing area. Usually a few to several farms occupy a "section" (one mile square). Boundaries of farms are rectilinear in most cases. Contiguous land holding is common, although some parcels are separated from the main farm by a road. Farmers live and work on their land most of the time. Their daily livelihood activities are primarily focused there.

A close-up view of a farmstead (Fig. 11, insertion) shows that even a farm or farmstead is nodal in character. Farmers' activities focus upon their dwelling house and barn areas primarily, rather than farmstead orchard or individual fields. Each barn has nodality, in that it is a concentration center of hay or cattle produced on the farm. Strictly speaking, a farmstead orchard as well as any other field has

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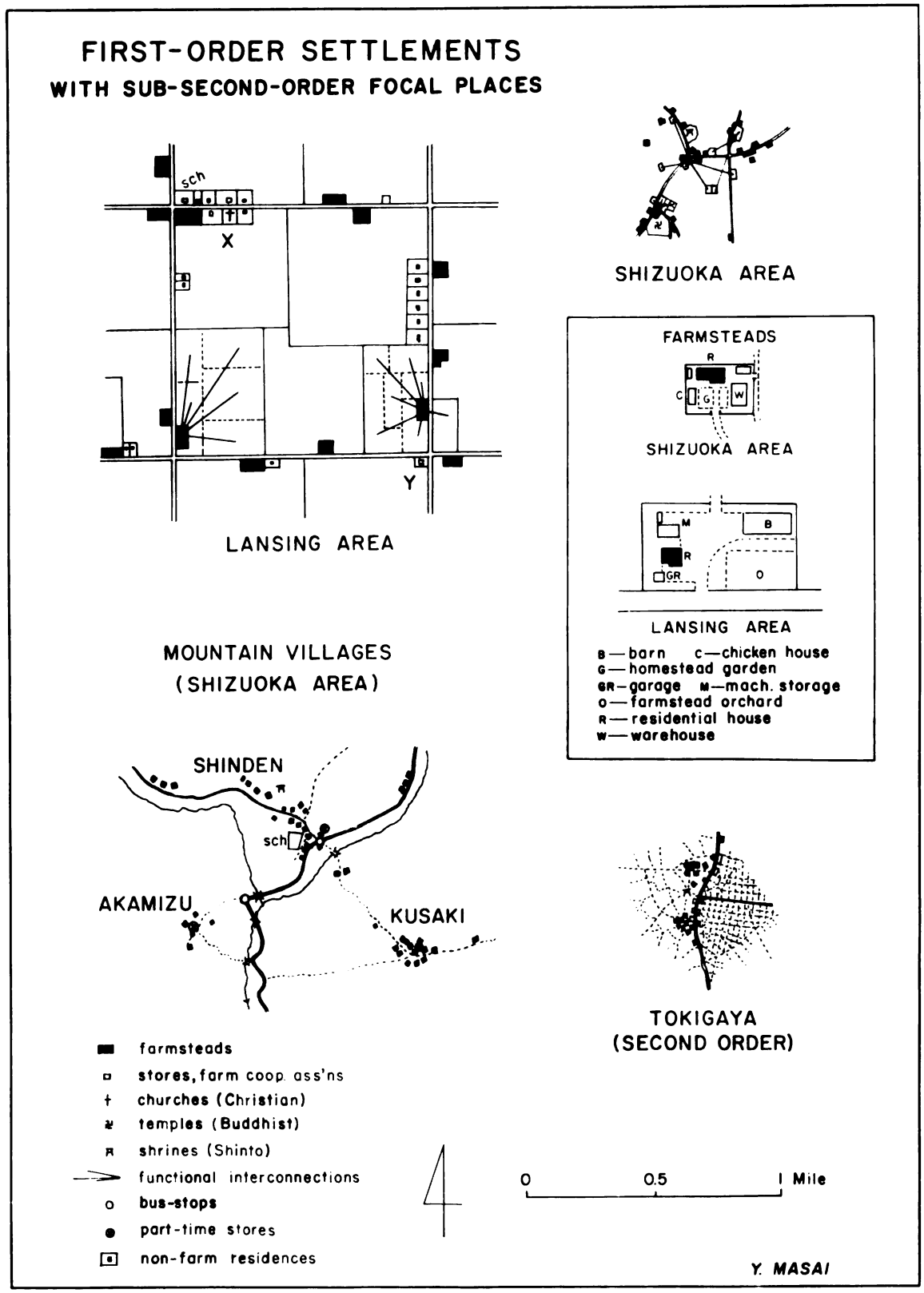
[13]Even for the figure 4,000 for small-scale manufacturing establishments is much larger than the average. The reason is that Shizuoka is the largest manufacturing center of wooden products such as furniture, wooden clogs, chests, wardrobes, etc. in Japan. These factories generally maintain traditional apprenticeship system and, in addition, household-type enterprises are predominant even today.

Figure 11


FIRST-ORDER SETTLEMENTS
WITH SUB-SECOND-ORDER FOCAL PLACES
sch
X
Y
LANSING AREA
SHIZUOKA AREA
FARMSTEADS
R
C
G
W
SHIZUOKA AREA
M
B
R
GR
O
LANSING AREA
B—barn C—chicken house
G—homestead garden
GR—garage M—mach. storage
O—farmstead orchard
R—residential house
W—warehouse
MOUNTAIN VILLAGES
(SHIZUOKA AREA)
SHINDEN
sch
AKAMIZU
KUSAKI
TOKIGAYA
(SECOND ORDER)
farmsteads
stores, farm coop. ass'ns
churches (Christian)
temples (Buddhist)
shrines (Shinto)
functional interconnections
bus-stops
part-time stores
non-farm residences
0
0.5
1 Mile
Y. MASAI

a certain degree of nodality, also, because farmers, for example, go to the orchard for work. Nodality is always expressed in the form of interconnection. It is not one-way connection. Major differences between the farm dwelling house and the orchard, for example, are found in the degree or primacy of function. In other words, the dwelling house has a higher degree of nodality than peripheral parts of the farmstead such as the orchard. More functional connections are focused upon the dwelling house than upon the orchard. The farmer's house has a different function from any other establishments on the farm, in that it is the management center of the farm. In principle, therefore, even first-order establishments are nodal.

Since most of the farmers in the Lansing area operate commercial farms, they have interconnections with other places. Their activities outside their farms are usually oriented toward the establishments having larger nodality, such as stores, churches, county courthouses, schools, etc. This kind of interconnection is especially common in areas where areal division of labor is well developed. Even in areas where areal division of labor is much less developed, a certain degree of such interconnection is usually recognized.[14]

The same considerations may be applied when we observe the farms in the Shizuoka area. Fig. 11 shows the most

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[14] A. K. Philbrick, "Principles . . .," op. cit., p. 306.

common types of farms there. Two samples have four and five separate, non-contiguous patches of fields, respectively. From a morphological viewpoint, the land-holding pattern of the Shizuoka area is very different from that of the Lansing area. In principle, the morphological contrast is not as significant as it appears to be, since functionally farms in both areas accomplish exactly the same purpose. As clearly shown on the map, whether or not farmsteads are located in a nucleated settlement is not fully meaningful in terms of the internal a.f.o. of farms. Both farmsteads in Fig. 11 perform the same functions upon their fields. A farmstead also constitutes a nodal unity in itself in the Shizuoka area as in the case of the farms in Michigan. The dwelling house is the nerve center of a few to several sub-units, such as barn, warehouse, stable, and garden, as well as cultivated fields.

In the Lansing area, as in many other parts of the United States, a considerable non-farm suburban development is to be seen, as already mentioned in Chapter I. In terms of number, occasionally more people of urban occupations live in so-called rural areas than do rural people. Suburbanization is usually accompanied by residential development in this area. This relatively recent trend has been made possible primarily by technological development, especially by very frequent use of automobiles and improvement of roads. Fig. 11 also shows an example of "open-country" residential development.

In terms of acreage, the farm portion of the square mile "section" shown in the map is overwhelmingly the largest. But in terms of number of occupance units, more of them are non-farm than farm. Thus, it is classifiable as urban in terms of the number of occupance units. Such a development may be thought of as a transitional stage. The function of each non-farm residential establishment is different from that of the surrounding farm lands. It does not have significantly large areas for which this residence performs a nodal function as does a farm. The functional relationship among the non-farm residences is parallel in type and that between non-farm residences and the surrounding farms is also parallel, because neither of them has a higher-order nodal function in relation to the other.

Another important geographic phenomenon in the Lansing area is the considerable number of small-sized nucleated settlements in the rural areas, which are quite different from recent suburban development. These consist mostly of one or a few community service establishments, such as general stores, along with a limited number of non-farm residences. Some examples of such settlements are Bell Oak, Aurelius, Kinneville, Eden, Needmore, Riley and Bennington. These settlements, important before the automobile in the railroad era, have been losing importance as focal places steadily in recent years. There are many dilapidated establishments in such settlements. The larger non-farm settlement marked "X" on the map in Fig. 11

undoubtedly has nodal function, because four establishments performing focal functions for other establishments are located there. The smaller one (Y) has similar focality as well, although it is smaller in intensity. Fig. 13 shows the service area (outer internal a.f.o.) of Needmore, a small settlement, as an example. There are three presently used establishments performing higher focality than the surrounding farms. They are a general store, a school, and a church. There is a vacant building also. It is an unused garage. The primary economic service area of this settlement is restricted to only about two miles in radius. Many other small centers of this category, though not all, also show a similar declining trend. Their general appearance may be said to be neither rural nor urban,[15] but neutral.

In the Shizuoka area, a great many rural settlements are to be seen. Even small nucleated settlements tend to have either economic (other than farms) or political or social establishments. However, these economic, political, and social establishments, such as stores, community centers, and shrines, are operated part-time in many cases. To reveal this, a detailed field study of three settlements in the mountainous area was conducted. The three settlements are Shinden, Akamizu, and Kusaki. They are located half a mile a part as shown in Fig. 11. These settlements are

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[15] G. T. Trewartha, "The Unincorporated Hamlet, One Element in the American Settlement Fabric," A.A.A.G., 33 (1943), 32-81.

a little over 20 miles away from Shizuoka by air-distance. Altitude of Shinden and Akamizu is about 2,100 feet and that of Kusaki is about 2,200 feet. Each settlement constitutes a community (buraku). Only Shinden is directly served by bus. People of Kusaki and Akamizu must walk about half a mile to reach the nearest bus stop. It takes about two hours and thirty minutes by bus from Shinden to Shizuoka.[16] The surrounding mountains are several thousand feet high and are covered with thick forests. Major sources of income are derived from construction works and forestry. Agriculture is on a more or less subsistence level. However, each settlement has one part-time commercial establishment. Shinden, the largest buraku, has an elementary school and a Shinto shrine in addition. Are these settlements to be considered as first order or second order?

A little different example is Tokigaya in Shizuoka-Shi. (Fig. 11). About one-fourth of the establishments are of an urban nature. There are two confectionary stores (with variety goods), one electrical appliance store, one liquor store, one fish store, one clothing store, and one agricultural cooperative association. Besides, there is a Shinto shrine whose internal functional area (area in which proteges are found) covers only the settlement of Tokigaya. Should this settlement belong to the same category as a

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[16] Bus Time Table, 1959 (Shizuoka R.R. Co., Shizuoka).

much larger settlement having thirty or fourty retail-level establishments? Or should it be classified as of the same order as Bell Oak or Needmore, which have one or a few retail establishments?

A distinction between settlements having many economic establishments and those having a few is necessary. Empirically, settlements having 1 to 4 economic establishments on a retail level are to be considered as "sub-second" order in economic a.f.o. In other words, settlements having 5 or more such establishments are classified as second order. According to this numerical "threshold," Tokigaya belongs to second order, since it has more than 5 such establishments. Needmore is considered as sub-second order. Needmore's general landscape is neutral, neither rural nor urban. However, its qualitative function is on a retail level. It serves a finite number of lower-order establishments. Difference in function between second order and sub-second order is quantitative. In the cases of Shinden, Akamizu, and Kusaki, commercial establishments are operated part-time in farm houses, and only tobacco and a few commodities are sold. Thus, it will be assumed in this dissertation that such settlements are first order in rank. In other words, these are mere concentrations of nucleated farm residential neighborhoods in the country, composed of first-order establishments in parallel organization, serving only themselves. Therefore, they are very different from the dispersed farms in Michigan. But by the principles

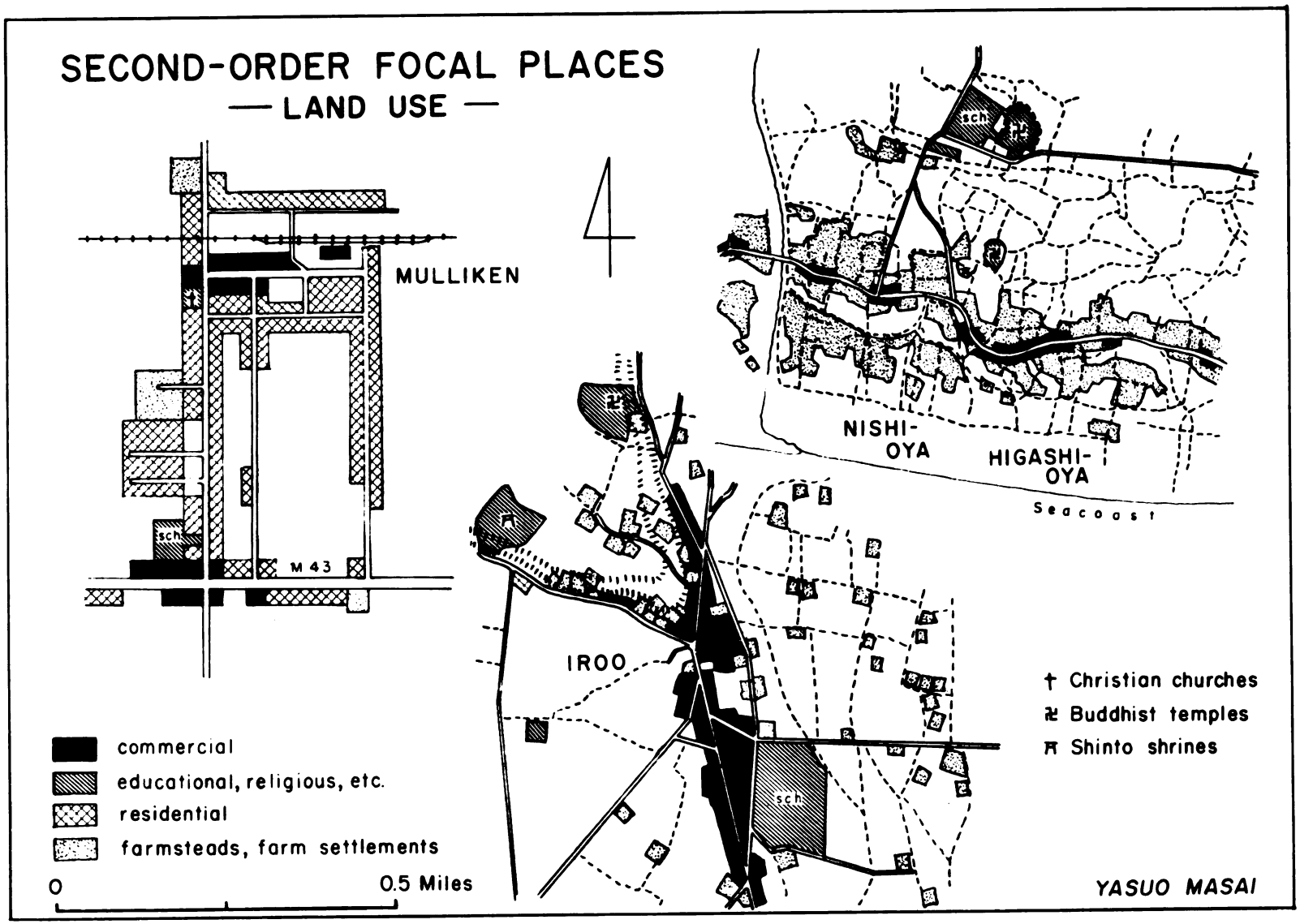
of a.f.o., they are identical.

Second-order Centers and Their Functions

Land use maps for second-order settlements (Fig. 12) show some differences as well as similarities between the two study areas. An example from the Lansing area was selected at Mulliken Village, Eaton County. This village has about 500 people within its limits. As shown on the map, its area is divided among several different land uses. A business district just south of the railroad is older than another business district half a mile to the south along the highway (M 43). A recent housing development is found near the newer business district. A new elementary school was also built there. Business establishments are located at wider intervals in the newer section. This contrasts with the older section where business establishments are much more closely located.

In the fall of 1959, out of a total of 24 establishments, 8 (one-third) were empty in the once-prosperous business section. Even the 16 presently used seemed not to be very prosperous. In the relatively new business section, out of 10 establishments, other than residences, 3 were vacant. All other 7 seemed to be doing well. A location along a highway is a relatively advantageous position for business in present-day America. A large percentage of vacant establishments in Mulliken may be due to relative ease of access to

Figure 12


SECOND-ORDER FOCAL PLACES
— LAND USE —
4
MULLIKEN
M 43
sch
NISHI-
OYA
HIGASHI-
OYA
Seacoast
IROO
sch
commercial
educational, religious, etc.
residential
farmsteads, farm settlements
0
0.5 Miles
† Christian churches
卐 Buddhist temples
⛩ Shinto shrines
YASUO MASAI

Grand Ledge, a larger town nearby.

With 23 active economic, political, and social establishments, Mulliken functions as a second-order focal place. Where should the boundary of Mulliken's service area (internal a.f.o) be drawn? To answer this question, a "50% service area" method[17] was employed. As shown on Fig. 13, the 50% service area of this settlement's second order functions is somewhat eccentric in shape. Its radius varies from 3 to 8 miles. Four sub-second-order focal places are found within the 50% service area.

Two examples were taken from the Shizuoka area; Higashi-Oya with 21 second-order economic establishments, and Iroo with 66 second-order economic establishments. Higashi-Oya is composed of at least several first-order farm residential sub-settlements. It is a loosely-nucleated village as clearly shown on the map in Fig. 12. No significant non-farm or urban residential sections have developed. A contiguous business district is located almost in the center.

The other example of a second-order focal place is Iroo in Hatsukura-Mura (Fig. 12). This settlement is located on the edge of an alluvial deltaic fan of the Oigawa River. This fan is almost exclusively used for grain cultivation, paddy being the most important crop. The rural settlement

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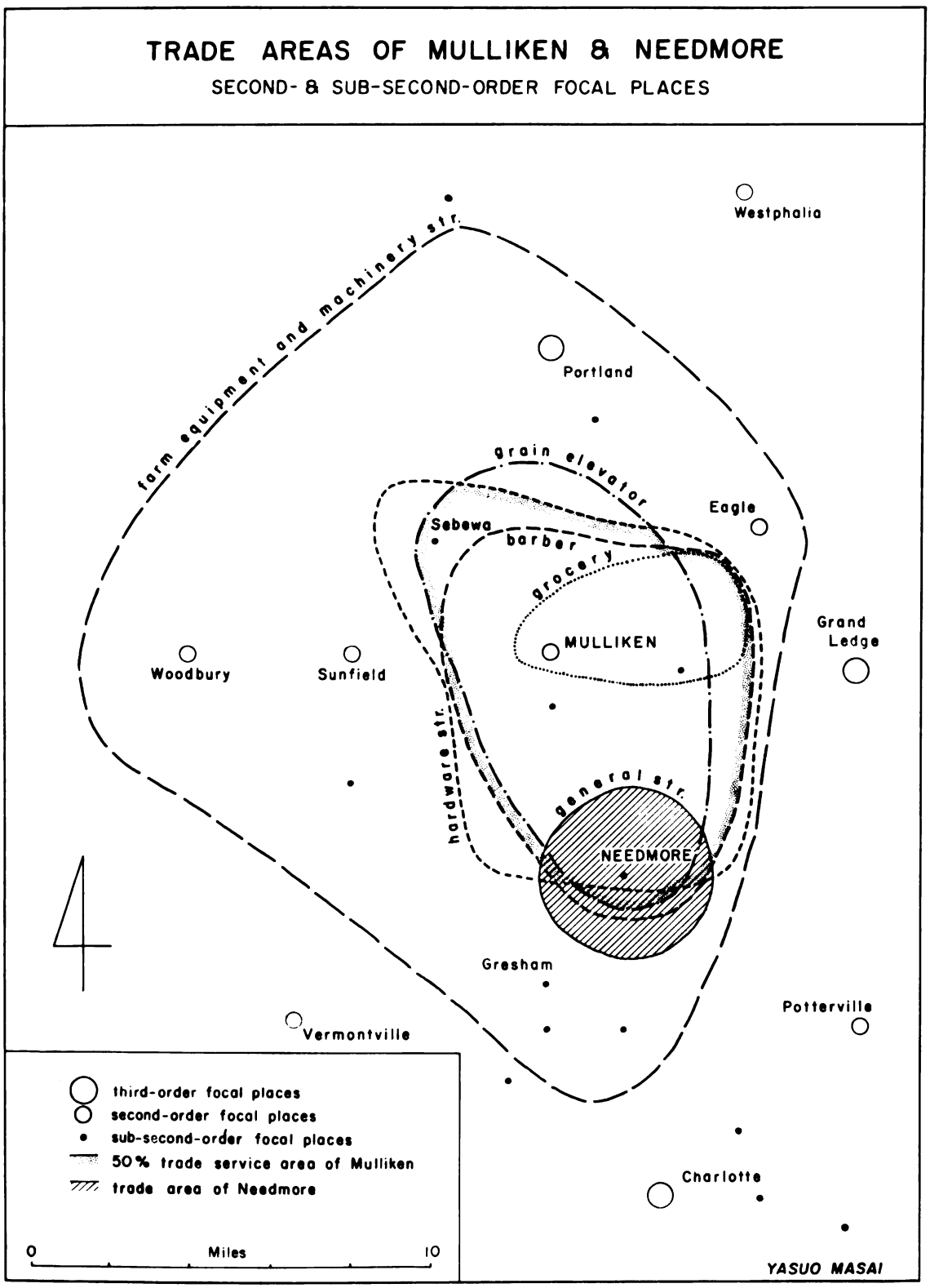
[17] A. K. Philbrick, Contents of Field Technique course, Geo. 415, Spring, 1958, Michigan State University, East Lansing. The 50% service area line is that composite service area line, which is half the number of lines from the outermost to the innermost service area lines.

Figure 13


TRADE AREAS OF MULLIKEN & NEEDMORE
SECOND- & SUB-SECOND-ORDER FOCAL PLACES
Westphalia
Portland
farm equipment and machinery str.
grain elevator
Eagle
Sebewa
barber
grocery
Grand Ledge
MULLIKEN
Woodbury
Sunfield
hardware str.
general str.
NEEDMORE
Gresham
Potterville
Vermontville
Charlotte
third-order focal places
second-order focal places
sub-second-order focal places
50% trade service area of Mulliken
trade area of Needmore
0
Miles
10
YASUO MASAI

pattern on this fan is different from most other parts of the Shizuoka area. Here, isolated farmsteads are common. Only along the foot of the low diluvial plateaus are small-sized farm residential strassendorfs to be found, one of which is shown on the map. Iroo, however, is primarily urban in nature, being the center of Hatsukura-Mura. No other places in this Mura have developed such a degree of urbanization as Iroo. This center today has 66 second-order economic establishments, including one taxi company (2 cars) and a bank. There are a hospital and a kindergarten, both mura-operated. One elementary school and one middle school are also located here. This settlement has several tea-processing factories on a family or cooperative-type first or second-order level.

Both Higashi-Oya and Iroo are typical Japanese farm service centers. A morphological comparison of these two settlements leads to the conclusion that they are significantly different in form, because the business core of Higashi-Oya is surrounded by contiguous nucleated farmsteads, whereas that of Iroo is practically without a farm residential section except for dispersed farms. There is little difference, however, between the two business cores serving the surrounding areas in terms of their functions. In fact, both of them service the surrounding farms (farmsteads), isolated or nucleated, aside from their purely internal reciprocal services among the operators of the business establishments and their families in the cores.

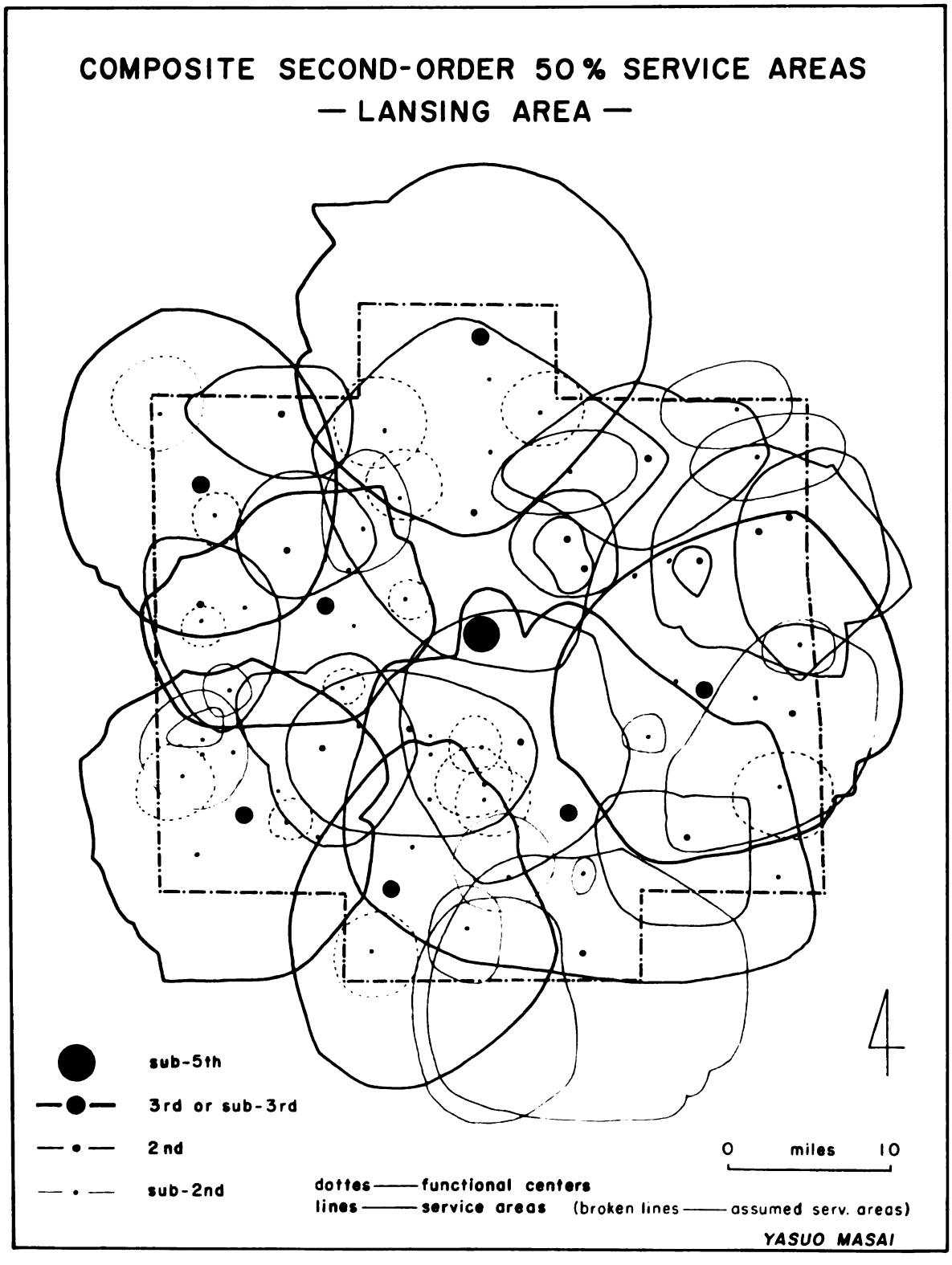
A functional comparison of the above-mentioned two Japanese settlements, therefore, leads to these conclusions: (1) The urbanized areas of the respective settlements (in these cases, commercial sections only) are the focal places, or service centers, and (2) contiguous or non-contiguous to the business sections, rural areas are to be served by the urbanized business sections as their focal places. While different in form, the two farm service centers are identical in function. The above observation will be applied later to higher-order nodal places as well.

One of the major differences between American and Japanese settlements of this hierarchical order (second order) appears in land use. Mulliken, as an example of an American second-order focal place, has a significant development of urban residential area. Practically all other second-order focal places in the Lansing area also have such a residential development. By contrast, those in the Shizuoka area do not have significant non-farm or urban development. This contrast is due to the more developed separation of residence from place of work in the Lansing area than in the Shizuoka area.

Composite Second-order Service Areas

Based on an intensive field work, a map of composite second-order 50% service areas was made for the Lansing area (Fig. 14). Some establishments have smaller or larger service

Figure 14

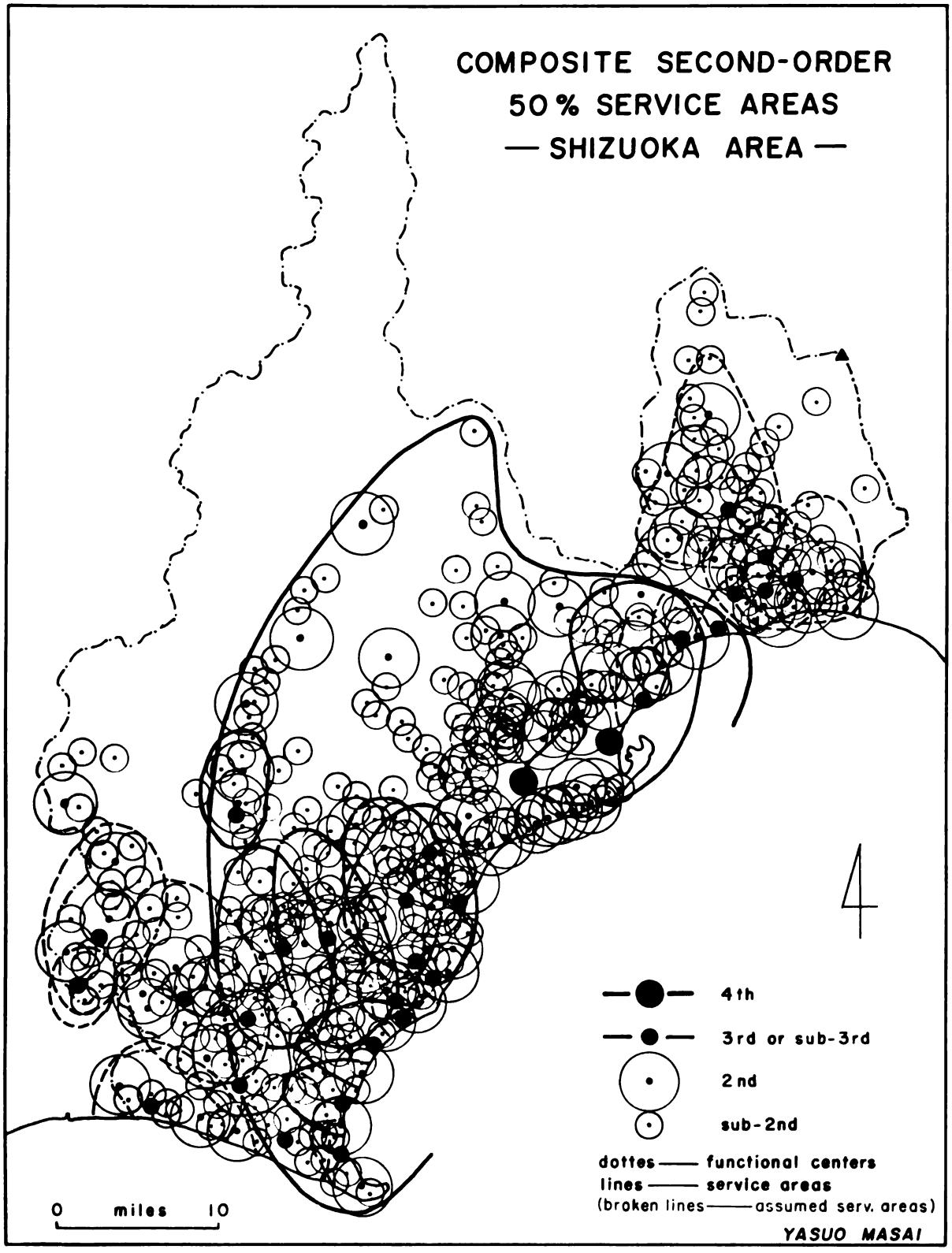

COMPOSITE SECOND-ORDER 50% SERVICE AREAS
— LANSING AREA —
4
sub-5th
3rd or sub-3rd
2nd
sub-2nd
0 miles 10
dottes —— functional centers
lines —— service areas (broken lines —— assumed serv. areas)
YASUO MASAI

service areas than the 50% service areas, of course. The second-order 50% service area of the Lansing-East Lansing urban complex is assumed to be larger than the study area. It is possible to recognize the general relationship between the size of service areas and the hierarchical functional orders of settlements.

Fig. 15 was made for the Shizuoka area to be compared with that of the Lansing area. However, the techniques of making this map are different from those of the Lansing area. For third-order focal places and fourth-order central places having bus terminals, the bus service areas were made. The criteria for delimiting the boundaries of bus service areas are as follows: Since bus routes are bi-terminal, a certain point between two centers is presumed to be the approximate contacting point of the average service areas of the two centers. Presuming that larger settlements have a larger drawing force of people, intermediate contacting points were interpolated in proportion to the populations of the settlements concerned. For a few third-order centers which have no or only one terminus of bus route, or which lack data, the average service areas were made by analogy with those of other third-order centers of the same population size having data. The bus service areas were constructed in this way, with minor adjustments.

For second and sub-second-order focal places, more generalized, rather abstract, service areas were made by drawing circles. Radii of these circles were decided upon to

Figure 15


COMPOSITE SECOND-ORDER
50% SERVICE AREAS
— SHIZUOKA AREA —
4
4th
3rd or sub-3rd
2nd
sub-2nd
dottes —— functional centers
lines —— service areas
(broken lines —— assumed serv. areas)
YASUO MASAI
0 miles 10

be 2 miles for second-order and 1 mile for sub-second-order centers. Since both second- and sub-second-order focal places in the Shizuoka area generally lack professional services or others which require relatively high-grade skills, their primary functions are such services as farm services, and food and commodity dealings for local people. Therefore, people do not use buses and trains, nor taxis, when they go to those second and sub-second-order centers in general. Two miles is a little too long for pedestrians, but it is not too long for bicycles and motor-bikes. A one-mile radius for sub-second-order centers was made by presuming that it is the approximate limit for general pedestrian shoppers.

The service area of the Shizuoka-Shimizu urban complex was adjusted greatly by using F. Takano's data.[18] This adjustment seems to be more logical than the original service area made by the average bus service area, because frequent service of the Tokaido Railroad, as well as buses using the Tokaido Highway, affords ease of access to the urban complex to the people living along these lines.

Sub-second-order focal places in the Lansing area (Fig. 14) have relatively small service areas. Most of them are composed of one or two general stores with gasoline filling facilities. Some of the sub-second-order focal

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[18] F. Takano, "Structure of Regional Cities," in Lectures on Settlement Geography, Vol. 2 (Asakura Shoten, Tokyo, 1957), 210-227.

places are almost purely highway-oriented, such as small clusters composed of a restaurant, a filling station, etc. It is unknown how large their service areas are at the present moment.

Many sub-second-order centers have been abandoned in the Lansing area. These abandoned centers are not shown on the map. Some second-order focal places are also "retrogressing" in functional order. For example, Shaftsburg, a small unincorporated place in Shiawassee County, now has only 5 second-order establishments. However, it has 6 vacant units. If it loses one more, it becomes sub-second order. This settlement is becoming a non-farm residential area for the people who commute to Lansing.

In the Shizuoka area (Fig. 15), a tremendous number of small service areas of sub-second-order focal places are to be seen. This fact provides evidence that the area still retains a distribution pattern of such focal places which was made long ago. Existence of such a pattern is possible today partly because it serves the people's needs and partly by reason of historical inertia.

Third-order Centers and Their Functions

Economic a.f.o. of third-order focal places may be visualized in terms of internal and external functioning of wholesale establishments. Theoretically speaking, the establishments indirectly servicing first-order consumers

through second-order establishments are to be classified as third order in function, whether of an economic nature or not. Wholesalers service retailers. Wholesale centers service retail centers, but the reverse is not true. This is so because retail centers are on the receiving end of the relationship which makes them, in principle, the next-lower order in relation to wholesale centers.

In the Lansing area, there are seven cities having some wholesale functions, aside from the Lansing-East Lansing urban complex. As mentioned before, second-order focal places have 4 or less second-order focal establishments have been classified as sub-second order. By the same token, third-order focal places having 4 or less third-order (wholesale) focal establishments will also be classified as sub-third order. Only one city, aside from the Lansing-East Lansing urban complex, clearly has more than 5 third-order economic establishments. This is Charlotte, which has 7 third-order establishments. All others having less than 5 belong to the sub-third order economically. However, St. Johns and Mason, as well as Charlotte, are county seats. The additional political and social functions, and to some degree economic functions, of the county seats raise all such centers to third-order status. Therefore, in the Lansing area there are, aside from the Lansing-East Lansing urban complex, three third-order focal places--the county seats at Charlotte, St. Johns, and Mason, and four sub-third-order

focal places as listed in Table 3.

In 1958, the Lansing-East Lansing urban complex had 140 business establishments which devote 50% or more of their operations to wholesaling.[19] In addition to these, there are many other establishments performing third-order functions in the urban complex. For example, some of the community service establishments, such as the State Journal Newspaper and radio and television stations, serve second-order focal places through advertising.

Fig. 16 shows the third-order 50% service areas (internal a.f.o.) of the Lansing-East Lansing urban complex--Charlotte, St. Johns, and Mason--against a background of the second-order 50% service areas of all second, sub-third, and third-order focal places in the study area. The third-order 50% service area of the Lansing-East Lansing urban complex extends far beyond the third-order service areas of Charlotte, St. Johns, and Mason combined. The northward extent of this service area is longer than any other directions. This is possibly because there is less competition for third-order supremacy to the north of Lansing.

For Charlotte, St. Johns, and Mason, county boundaries were used for delineating the 50% service areas. This was done since they are county seats and the service areas of many of their third-order establishments (such as county

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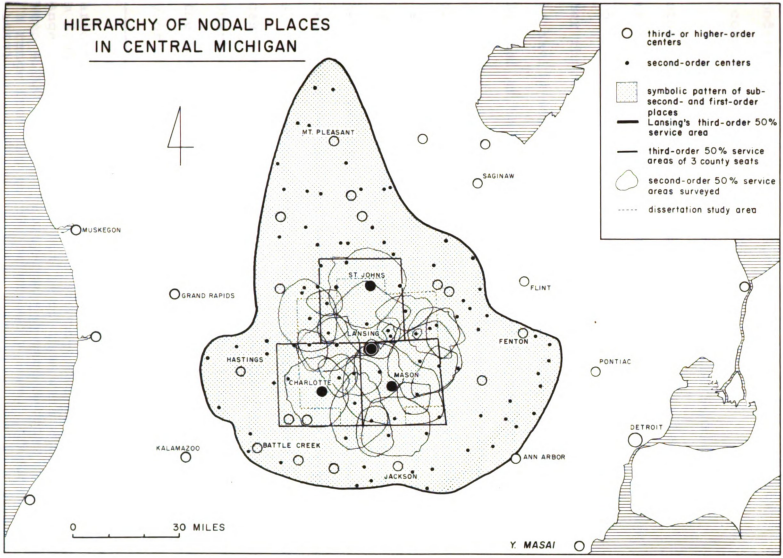
[19]Greater Lansing Chamber of Commerce, Wholesale Buyers Guide and Directory (Lansing, 1958).

Figure 16


HIERARCHY OF NODAL PLACES
IN CENTRAL MICHIGAN
4
third- or higher-order centers
second-order centers
symbolic pattern of sub-second- and first-order places
Lansing's third-order 50% service area
third-order 50% service areas of 3 county seats
second-order 50% service areas surveyed
dissertation study area
MT PLEASANT
SAGINAW
MUSKEGON
GRAND RAPIDS
ST JOHNS
FLINT
LANSING
FENTON
HASTINGS
CHARLOTTE
MASON
PONTIAC
DETROIT
KALAMAZOO
BATTLE CREEK
ANN ARBOR
JACKSON
0
30 MILES
Y. MASAI

court houses, county hospitals, newspapers servicing many second-order establishments, etc.) tend to coincide with the county boundaries.

The third-order service area of the Lansing-East Lansing urban complex includes many cities, villages, and farms outside the study area. The settlements shown on the map outside the study area were classified by analogy into either third or second order. All county seats and settlements having more than 5,000 population are arbitrarily classified as third order; settlements having more than 250 but less than 5,000 population were classified as second order. Therefore, the reader should realize that outside the study area, classification of order of settlements in the functional hierarchy is not on a principled basis but rather is an estimate only.[20] All the third-order focal places except Jackson and Battle Creek are small in population size. It is presumed that these small-sized third-order focal places have small third-order service areas similar to those of Charlotte, St. Johns, and Mason. The third-order functions of the Lansing-East Lansing urban complex very possibly serve many of the second-order focal places, as well as

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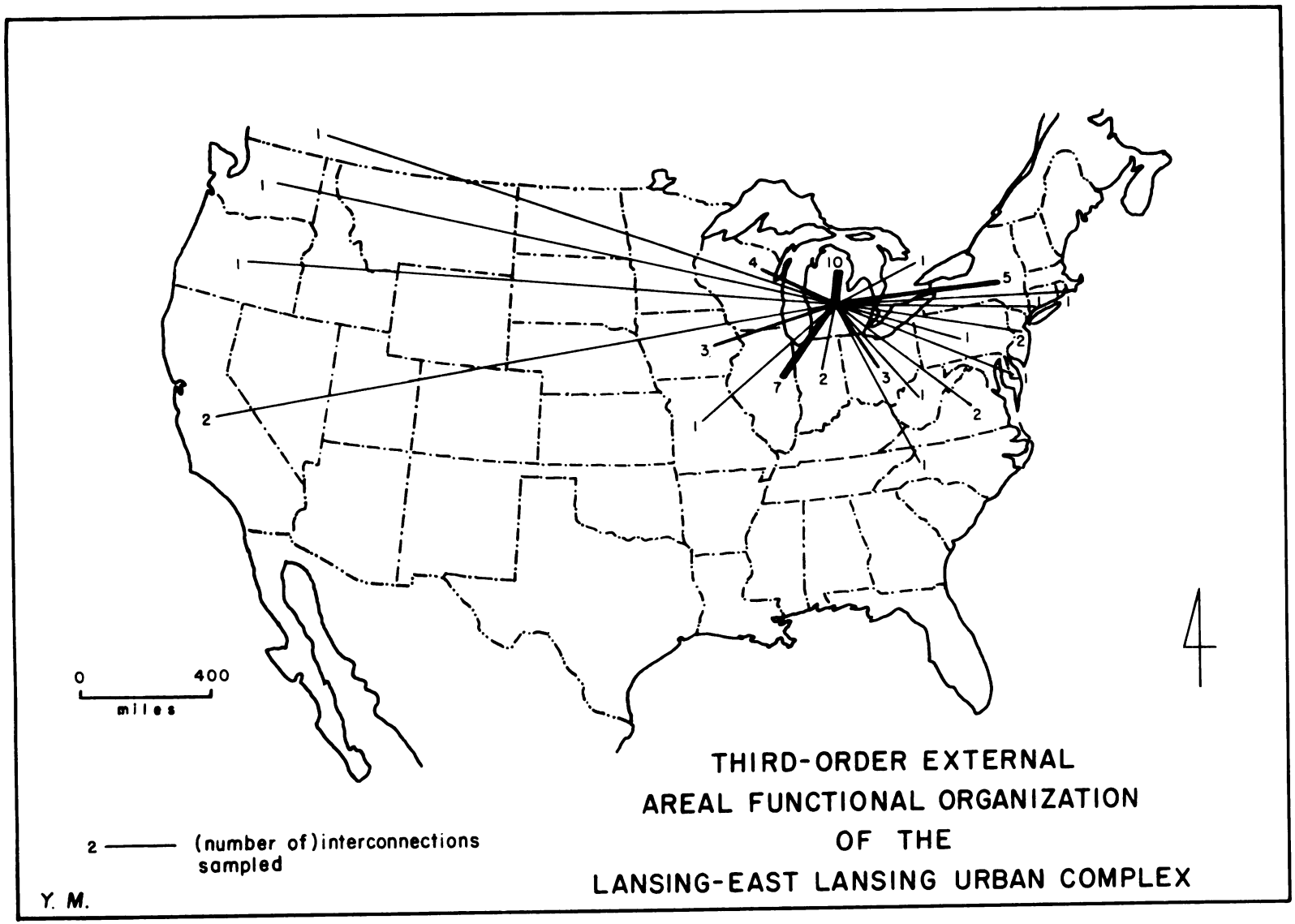
[20] In the study area, the three third-order focal places (Charlotte, St. Johns, and Mason) had a range of population from 4,000 to 7,600. Seventeen second-order focal places had a range from 5,400 to 145; but 14 of them were within the range between 4,000 and 400. Forty-one sub-second-order focal places had a range from 200 to 50, or probably less. (Figures are for 1957).

second-order establishments in the third-order focal places.

The second-order 50% service areas of all second-order settlements in the study area except for the Lansing-East Lansing urban complex are shown on the map also (Fig. 16). Mason has the largest retail service area of this second-order category. It is about the same size as Mason's third-order service area. A few other settlements also have relatively large-sized retail 50% service areas. These service areas of second-order focal places are subordinate lower-order units within the nested hierarchy of larger third-order units of a.f.o. In this case, the third-order service area of the Lansing-East Lansing urban complex includes the second-order units subordinate to it. These second-order units of the dissertation area are also subordinate to the much larger wholesale (third order) service areas of Michigan's major metropolis, Detroit, as well as the overlapping service areas of several other cities. The detailed visualization of this complex total picture is beyond the scope of the present work.

Fig. 17 shows the external third-order a.f.o. of eight wholesalers sampled in the Lansing-East Lansing urban complex. It is recognized that the urban complex has external interconnection with the Midwestern states, the Eastern Seaboard, and Pacific Coast states. The heavier interconnections are with the Midwestern states and New York State. It is assumed that the actual external connections of the urban

Figure 17


0
400
miles
2 —— (number of) interconnections sampled
Y. M.
THIRD-ORDER EXTERNAL
AREAL FUNCTIONAL ORGANIZATION
OF THE
LANSING-EAST LANSING URBAN COMPLEX
4

complex would extend to virtually all the states in the United States if more wholesalers were sampled.[21]

The author was unable to acquire comparable data for the third-order functions in the Shizuoka area. But data from two articles on wholesale functions of other Japanese cities can be used in order to make the assumption. According to Y. Sakaguchi, Takamatsu-Shi, a city having an urban population of slightly over 100,000, has 787 wholesalers.[22] The service area of this city's third-order establishments extends over all of the island of Shikoku (about 8,000 square miles) and even to part of Honshu. The 50% service area of third-order functions of Takamatsu would be reduced in size to some extent, but may be estimated to cover a relatively large area in which many smaller second-order focal places are located. Since the Shizuoka-Shimizu urban complex has about twice as many wholesalers as Takamatsu and also has many wholesalers of special products such as tea or mikan, it possibly has a larger average service area than does Takamatsu.

According to H. Kanasaki, the external a.f.o. of Nanao, a city having an urban population of 16,000, extends

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[21]For example, in an interview with the author, Mr. C. Randall, the manager of the Lansing Wholesale Grocery Co., stated that this company has external interconnection with practically all the states in the U.S. (June 10, 1960).

[22]Y. Sakaguchi, "Urban Hierarchy and Hinterlands in Kagawa Prefecture," Memoires of the Faculty of Liberal Arts, Kagawa Univ., Vol. 12 (1959), 1-18.

widely to cover practically all of Japan.[23] The external a.f.o. of the Shizuoka-Shimizu urban complex is therefore presumed also to be nation-wide in extent.

According to prefectural statistics, 30 shi and machi had wholesale functions in 1958. Among them, three shi having such functions are found in the Shizuoka-Shimizu urban complex.[24] These statistics do not differentiate establishments devoting 50% or more of their operations to wholesaling from those primarily on a retail level. So the "threshold" differentiating third from sub-third was arbitrarily placed at 10 establishments, instead of 5, in the case of the Shizuoka area. That is, settlements having 10 or more wholesalers including some retail-wholesale establishments were classified as third order. One settlement has only one such establishment. For convenience, this settlement was considered as second order.

Many third-order focal places in the Shizuoka area are larger in population size than Nanao (an urban population of 16,000) which was used as an index. These focal places are assumed to serve second-order centers in the immediate surrounding areas, as does Nanao. According to H. Kanasaki, three second-order settlements (Iida, Udetsu, and Takahama)

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[23] H. Kanasaki, "Nanao-Shi no Kankei-ken (Nanao City's Sphere of Relationship)," Jinbun Chiri (Human Geo.), Vol. 11, 1959), 20-36.

[24] Shizuoka Pref. Office (unpublished statistics as of July 1, 1958).

located about 40 miles north of Nanao are primarily served by the wholesalers in Kanazawa and other large cities. Kanazawa is a larger city than Nanao located 40 miles to the south. Nanao's third-order functions are accordingly not dominant for the three second-order settlements. It is assumed that the third-order focal places in the Shizuoka area also have similar internal a.f.o. to that of Nanao. Shizuoka, or the Shizuoka-Shimizu urban complex, and other large cities such as Tokyo and Nagoya, are more important in their third-order functions for the second-order focal places in the Shizuoka area than the small third-order centers of the area. The author expects in the future to collect more definite information on the service areas of Japanese cities, including Shizuoka, upon his return to Japan.

Two smaller third-order centers, one each from each study area, can be taken to represent the patterns of land use characteristic of American and Japanese focal places of that order. St. Johns was taken for the Lansing area. This city has 5,636 people within the city limits (2.7 square miles).[25] Rural population is very small within the city limits. The land use map of St. Johns (Fig. 18) as a small third-order focal place in the Lansing area shows a widely expanded residential section. The old commercial district,

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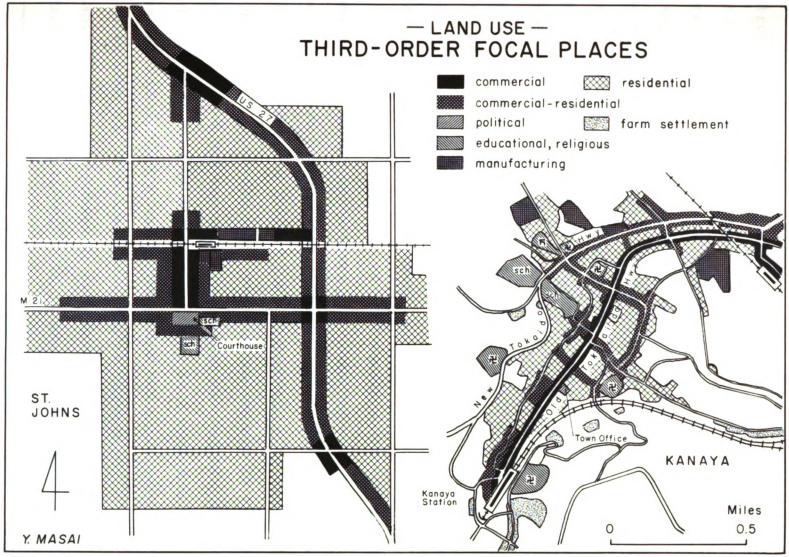
[25]Tri-County Regional Planning Commission, op. cit., p. 47, and 1960 U.S. Population Census (preliminary report).

Figure 18


— LAND USE —
THIRD-ORDER FOCAL PLACES
commercial
commercial-residential
political
educational, religious
manufacturing
residential
farm settlement
M. 21
Courthouse
ST.
JOHNS
4
Y. MASAI
Tokyo
New
Old
Town Office
KANAYA
Kanaya
Station
Miles
0
0.5

downtown, is found between the county court house and the railroad station, which is no longer used for passenger traffic. Although it is small, a more recent development of a retail center is found along US 27 about half a mile to the east of the downtown. The newest business districts are to be seen to the north and south of the Downtown also along US 27. These two newest ones are located on the boundaries of the compactly urbanized area of St. Johns. Most of the manufacturing establishments are located close to the railroad. Mixed commercial-residential sections are found along some of the major roads.

Kanaya-Machi was taken as an example for the Shizuoka area. Kanaya-Machi as a political unit had a population of 13,906 and covered an area of 5.26 square miles in 1955. Urban activities are concentrated in urbanized Kanaya. The urbanized Kanaya has an elongated shape, extending about one mile and a half along the old Tokaido Highway, with several projecting ribbon developments as shown on the map in Fig. 18.

The land use map of the urbanized part of Kanaya (Fig. 18) made from an airphoto is shown as a corresponding example to that of St. Johns. St. Johns has a population of 5,636 in 1960 and is a small third-order focal place. The urbanized section of Kanaya is estimated to have an urban population of about 7,000.[26] It is also a small third-order

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[26]According to 1955 Population Census, 58% of the population in the political unit were classified as urban in terms of occupation. Total population is 13,900. So, approximately 7,000 people are estimated to live in the urbanized section.

focal place. Commerical districts have developed in Kanaya along the old Tokaido Highway. However, there are considerable sections of mixed commercial-residential establishments to be found along other roads. A few relatively large-scale manufacturing establishments are also to be seen, but their locations, unlike those of St. Johns, are highway-oriented rather than railroad-oriented. A recently developed business section along the new highway contains several establishments servicing automobile and truck transportation.

We have observed that the second-order focal places in the Shizuoka area, such as Iroo and Higashi-Oya, do not have significant residential development. In urbanized Kanaya, however, residential areas have developed. Other settlements on a third-order level have urban residential areas also, as in Kanaya. Therefore, it may be said that third-order focal places in the Shizuoka area have developed significant residential areas.

The land use patterns (inner internal a.f.o.) of St. Johns and Kanaya differ from each other. In St. Johns, specialized land uses are more characteristic. Kanaya, by contrast, is more mixed. Kanaya has a long contiguous development of commercial land use in which shopkeepers and their families live. Only large-scale manufacturing establishments tend to have a distinctly separate specialized character. Between the two stations along the old Tokaido Highway, wholesale and household-type manufacturing enterprises

are scattered among the prevailing retail commercial and residential establishments.

Fourth and Fifth-order Centers and Their Functions

In principle, fourth-order establishments and centers are characterized by the presence of "transshipment" functions. In theory, fourth-order establishments directly serve third-order establishments in other third-order centers by transshipping goods, people, and information to other external places. Second-order establishments, such as retail stores, receive goods transshipped by fourth-order establishments at specialized centers from third-order establishments, such as wholesalers, located in still other places. First-order consumers are, therefore, served by the transshippers indirectly through the step between the wholesalers and retailers. By the same token, the highest-order function of third-order focal places is served by the highest-order of fourth-order central places. In theory, individual consumers are served by fourth-order centers in two steps, wholesale and retail centers.[27]

The Lansing-East Lansing urban complex is a relatively

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[27]Philbrick states, "Transshipment is the transfer from one form of transport to another. It may involve a 'break of bulk.' It may involve the grouping of a train of cars in freight classification yards. It may include, also, an intervening phase of storage. Thus warehousing and storage facilities allied to transportation are often indices of the transshipment specialization." Papers and Proceedings of the Regional Science Association, Vol. 3 (1957), p. 91.

large transportation center as Fig. 6 shows. Six railroads with two passenger stations, five federal and three state highways, and many other transportation media converge in this urban complex. A commercial airport and many trucking companies are found also. However, the degree to which the transshipment function, as defined above, operates in the urban complex is quite small. The Grand Trunk Railroad Freight Station, for example, one of the two railroad systems here, handles only 200 car-loads a month for transshipment (gateway or interchange) purposes. Much of the goods handled for such purposes are lumber from California, Oregon, and British Columbia (through Chicago as a larger transshipment place) to Williamston, a small sub-third-order focal place in the study area. This lumber is the raw material for the mobile home or trailer manufacturing which is located in that city. Passenger traffic of this function is minimal.[28] Of course, the transportation function is much larger than the transshipment function, because of the large size of the urban complex and the presence of large-scale factories in its internal area. The other railroad, the New York Central system, also has a small transshipment function similar to that of the Grand Trunk Railroad. Two trucking companies out of the 16 (ca. 8,000 trucks [29]) in the Lansing-East Lansing urban

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[28] Interview at the Grand Trunk Freight Station (June, 1960).

[29] Estimate by Chamber of Commerce of Greater Lansing (1960).

complex sampled indicated only a small amount of transshipment function. Thus, economically, the urban complex can be said barely to qualify as a fourth-order center. It will not, however, be classified as a sub-fourth-order center because there are more than five establishments engaging in some transshipment at Lansing for other third-order centers.

General Motors is America's largest corporation, with its headquarters in Detroit. The Oldsmobile Division is a subsidiary located in Lansing, which is part of a nation-wide network of manufacturing and commercial establishments. This type of enterprise may be defined as a multi-unit establishment, of which there are several. The dealers to whom Oldsmobile sends cars do business with regional sales offices located in New York City, Detroit, Chicago, Atlanta, Dallas, and Oakland (California).[30] The regional sales offices listed above act as "wholesalers," as does the Lansing head-quarters of the Oldsmobile Division. The central plant of Oldsmobile has arrangements with specialized automobile carriers which truck the new cars directly from Lansing to the individual dealers. This is a fourth-order function of Oldsmobile.

This raises the question: are the third-order and fourth-order service areas of Lansing the whole of North America in effect, because of the operation of this one important manufacturer? The answer is that Oldsmobile's

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[30] By an interview at the Sales Department, Oldsmobile Division of General Motors Corp. (Aug. 18, 1960).

one-step wholesale relationship to its regional sales offices defines Oldsmobile's third-order service area as a multi-unit establishment. In the case of transshipment, the pattern of dealerships of North America is Oldsmobile's transshipment service area. Such multi-establishment enterprises controlled from higher-order centers, such as Detroit, also have still higher-order functions performed hierarchically within these individual enterprises. This makes a very different kind of regional relationship than that which would exist if General Motors were a very large number of separately owned and controlled establishments.

The analysis of regional organization is complicated by the fact that both individually owned and controlled establishments and multi-unit establishments exist in many regions. The multi-unit establishments have an element of jurisdiction and control which is almost political in nature, in that centralized control of General Motors, for example, limites the freedom of action of and assists the subsidiary parts in their competitive relationships with smaller individually owned units.

The fourth-order function of General Motors does not involve common carriers. No other concern may use this privately developed system of transshipment. This is not the case with the railroads, bus lines, airlines, and trucking companies which are licenced as common carriers. Therefore, the fourth-order function of Oldsmobile must be considered

separately from the common carriers, fourth-order function of the transshipment establishments. This situation is true for any multi-unit establishments and their higher-order functions above fourth order. Since these are few in number in the economies of either Lansing or Shizuoka, the general problem to a.f.o. posed by the distinction between multi-unit-establishment and single-establishment organization of area will not be discussed in detail in this dissertation.

Fifth-order central places are the next higher-order functional centers. They are characterized by the presence of "exchange" function. In the pattern of areal organization, fifth-order central places are hubs served by several trans-shipment centers. A basic difference between fifth and fourth orders is in their relationship to goods. The operators of fifth-order establishments do not handle goods physically, nor own them, but act rather as agents to bring the buyers and the sellers of goods together in order to do business.[31]

The author found only one purely fifth-order economic establishment in the Lansing-East Lansing urban complex.

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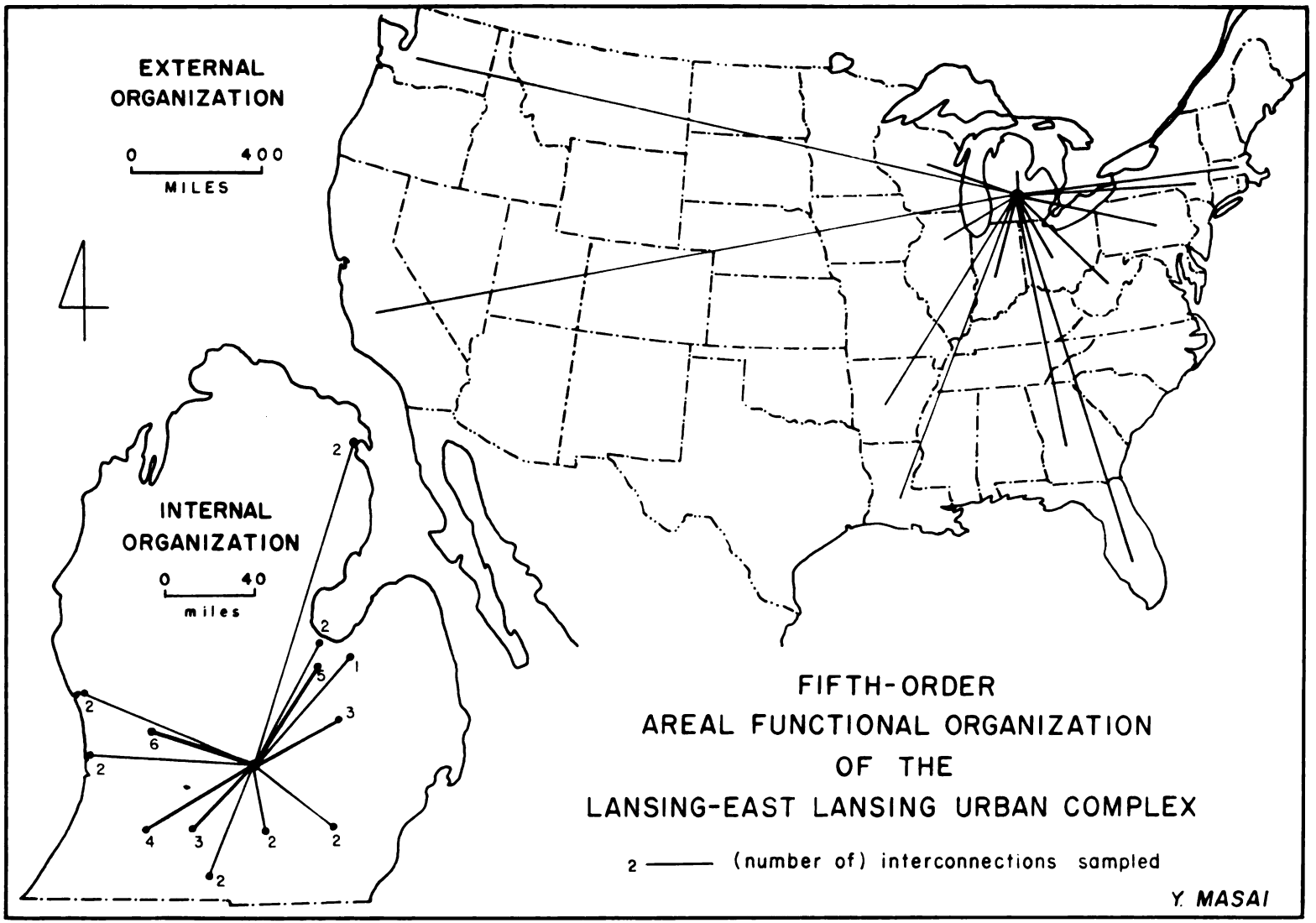
[31]Philbrick states, "The term exchange is used here to mean the bringing together of buyers and sellers without the physical handling of the items bought and sold. In many cases the establishments performing this function do not even take legal possession or title to the merchandise or item which is the subject of exchange. Examples are stock and commodity exchanges, the operations of agents and brokers in the interests of others, negotiating sales or purchases in domestic or foreign trade." Papers and Proceedings of the Regional Science Assn., op. cit.

It is D. H. Wallace Food Brokers, Inc., located near the downtown business district. Their brokerage function is only for wholesalers and chain stores (direct buying chains), such as A. & P. or the Kroger Grocery Company. Since the number of fifth-order establishments does not exceed 4, this urban complex is classified as sub-fifth-order, economically. Fig. 19 shows the (sub-)fifth-order internal and external a.f.o. of Lansing. The internal a.f.o. connects Lansing with 14 third- or higher-order centers. These interconnections are actually performed by transshippers located in various cities including Lansing. We have observed that the fourth-order economic function of Lansing is also small in quantity. Fifth-order function is very small, accordingly. Therefore, it is presumed that fourth-order functions in the area into which Lansing's fifth-order function reaches are primarily performed by transshippers in some other cities than Lansing, such as Detroit or Chicago. The external a.f.o. extends widely, even to the West Coast and Florida.

Does the Shizuoka area also have such transshipment or exchange functions? The map of traffic flow (Fig. 7) shows that the Shizuoka-Shimizu urban complex is a large transportation center. It has a large port, the port of Shimizu. Bulky goods are shipped in and out through this port. The total exports and imports in 1958 was 1,315,448 tons and total value was 43,626 million yen (138 million dollars). The major export items were processed or manufactured

Figure 19


EXTERNAL
ORGANIZATION
0 400
MILES
4
INTERNAL
ORGANIZATION
0 40
miles
2
2
5
1
3
2
6
2
4
3
2
2
2
FIFTH-ORDER
AREAL FUNCTIONAL ORGANIZATION
OF THE
LANSING-EAST LANSING URBAN COMPLEX
2 —— (number of) interconnections sampled
Y. MASAI

goods and the major import items were raw materials or unprocessed food stuffs.[32] These imported goods are transshipped by railroads and trucks to the cities and towns in Shizuoka Prefecture and its vicinity to be processed or manufactured. At the same time, goods and products are collected from different third-order and other nodal places, and sent to the port of Shimizu, where they are exported--that is, transshipped from land transportation to ocean transportation.

In 1958, the freight stations within the urban complex handled over 5,000 tons per day on the average.[33] An unspecified part of this quantity represents the transshipment function. But the urban complex performs a small transshipment function between various forms of land transportation as a whole. In sum, the Shizuoka-Shimizu urban complex is to be considered as a large transshipment center.

The question arises: Does the Shizuoka-Shimizu urban complex have higher-order functions--that is, exchange functions--since the port of Shimizu handles a great amount of export goods? It is known that all 15 exporters of Shizuoka tea in Shizuoka-Shi were third order, rather than fifth order, at least in 1950. They were a kind of wholesaler, buying

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[32]Shimizu City Office, Shimizu Shisei Yoran (Outline of Shimizu City) (Shimizu, 1959), p. 33.

[33]National RR. Shizuoka Management Bureau, Tetsudo Yoran (Outline of Railroad) (Shizuoka, 1958), p. 56.

tea from second-order small-scale processing factories as shown below. Domestic wholesale establishments handling tea for the retailers in Japan are also third order.[34]

(after S. Yamamoto)

1st order	2nd order	3rd order
Unprocessed tea producers	Tea processing factories	Wholesalers (for domestic market) Exporters (for foreign market)

Other kinds of small exporters such as mikan exporters are similar to the tea exporters. Goods from large-scale factories or concerns are handled by the branch offices of large exporters in metropolises such as Tokyo. In short, the Shizuoka-Shimizu urban complex is regarded as a large fourth-order transshipment central place and does not have any fifth-order functions.

Political a.f.o. of the United States is hierarchically arranged, according to Brown, from first to seventh order.[35]

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[34] S. Yamamoto, "On the Relation of the Tea-Market in Shizuoka City and its Market Region," Geo. Rev. of Japan, Vol. 26 (1953), 522-534.

[35] R. H. Brown, op. cit., p. 110. The hierarchy is briefly shown as follows:

1st order . . . . Single political institution.
2nd order . . . . Village, town, city, township, multi-purpose special district.
3rd order . . . . County.
4th order . . . . State and federal state-district.
5th order . . . . State, federal state-area.
6th order . . . . Federal region.
7th order . . . . Federal.

Since Lansing is the state capital, it is fifth order politically. Michigan State University, one of the three largest employers in the Lansing-East Lansing urban complex, is also a fifth-order institution, quasi-political in its constitutional status, because its primary internal a.f.o. extends all over the state of Michigan.

The American political system derives from the federal constitution, and cannot be changed except by procedures established within that constitutional framework. The Japanese political system, however, is unitary, not federal. This means that the central government can more easily modify the number of units and hierarchical pattern of political a.f.o. The political a.f.o. of Japan before the Meiji Restoration contained a great many very small units called buraku. Buraku corresponded quite well to the units of subsistence societeis which prevailed during that period. These are, however, no longer legal.

The political a.f.o. of Japan today may be shown in terms of a hierarchy, as follows:

1st order . . . . Single political institution.

2nd order . . . . Elementary school district.

3rd order . . . . Mura (village), machi (town), shi (city).

4th order . . . . Ken (prefecture).

5th order . . . . National district.

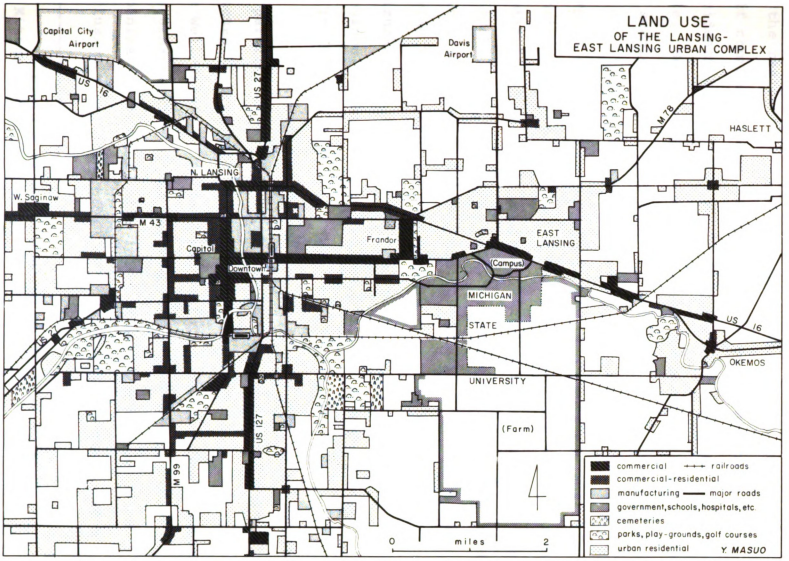
6th order . . . . National.

Shizuoka's political order in the hierarchy of political a.f.o. is fourth in rank. Its a.f.o. is composed of a number of third, second, and first-order units in the study area.

Land Use and Areal Organization of the Cores of the Two Urban Complexes (Lansing-East Lansing and Shizuoka-Shimizu)

Lansing was merely a tiny village of 87 people when it was selected as the site for the state capital of Michigan in 1847. However, city growth in the past 100 years has been remarkable. At present, it is estimated that about 200,000 people live within urbanized areas in and around Lansing. Fig. 20 shows the major land uses in this urban complex. There are no clear outer boundaries of the urbanized areas. In all directions outward from the central city, a pattern of non-farm residences gradually thins out to uniformly agricultural surroundings. Commercial sections extend along the major roads. In general, they extend from the downtown area in the four major directions, north, south, east, and west. Relatively recently developed large-scale shopping centers such as the Frandor Center and the West Saginaw Center are specially designed for greater efficiency of shopping, better accessibility and esthetic environment. Most of the major manufacturing establishments are located along the railroads, especially along a loop or belt line which surrounds the older part of the central city. To be sure, all these manufacturing establishments are also served by a well-developed road network. Another significant urban land

Figure 20


LAND USE
OF THE LANSING-
EAST LANSING URBAN COMPLEX
Capital City Airport
Davis Airport
US 16
US 27
M 78
HASLETT
N. LANSING
W. Saginaw
M 43
Capitol
Downtown
Frandor
EAST LANSING
(Campus)
MICHIGAN
STATE
UNIVERSITY
US 16
OKEMOS
(Farm)
US 127
M 99
4
0
miles
2
commercial
railroads
commercial-residential
manufacturing
major roads
government, schools, hospitals, etc.
cemeteries
parks, play-grounds, golf courses
urban residential
Y. MASUO

use is that of parks and playgrounds which are located mainly in the residential sections. The larger parks, including golf courses, are on the edges of the city where newer residential developments and larger amounts of land are available. Several of the smaller parks are strategically located at scenic spots in the downtown area and on the Grand River.

Land uses of the urbanized Shizuoka-Shimizu urban complex are shown on the map in Fig. 21. This map was constructed from the land use maps of the Geographical Survey Institute of Japan, by airphoto interpretation and field work.[36] Shizuoka is a prefectural capital, whereas Shimizu is a trading port. These specialized functions date back to the feudal period before the Meiji Restoration. During that period, Shizuoka long functioned as the political center of the province. Shimizu, on the other hand, was a trading port as it is today.

Four major roads and two railroads make up a bundling of parallel connecting lines between Shizuoka and Shimizu. Intense interconnection between the two might be expected. The well-developed public transportation network has promoted the urbanization of the intermediate area. Before modern urbanization started, this intermediate area was occupied exclusively by farms. The old Tokaido Highway connected a

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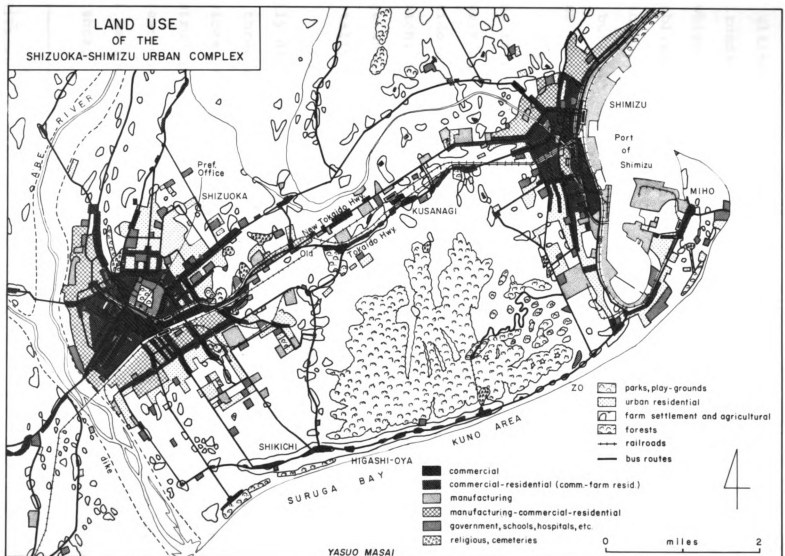
[36]Field work was conducted by Messrs. S. Yamamoto, M. Kitagawa, and T. Ito primarily.

Figure 21


LAND USE
OF THE
SHIZUOKA-SHIMIZU URBAN COMPLEX
ABE RIVER
Pref. Office
SHIZUOKA
New Tokaido Hwy
Old Tokaido Hwy
KUSANAGI
SHIMIZU
Port of Shimizu
MIHO
ZO
KUNO AREA
SHIKICHI
HIGASHI-OYA
SURUGA BAY
parks, play-grounds
urban residential
farm settlement and agricultural
forests
railroads
bus routes
commercial
commercial-residential (comm-farm resid.)
manufacturing
manufacturing-commercial-residential
government, schools, hospitals, etc.
religious, cemeteries
0
miles
2
YASUO MASAI

number of nucleated farm settlements with Shizuoka and Shimizu, and ultimately with Tokyo and Osaka-Kyoto. Then came the railroads. Two railroads were established in the area, one of which was a short-distance inter-urban passenger line. Establishment of the new Tokaido Highway before the Second World War gave much further stimulus to urbanization. This was built in order to accommodate the increasing number of motor vehicles and a demand for greater speed and accessibility.

Intensive field work was conducted along three different roads to enumerate or tally all economic focal establishments.[37] These roads are as follows: (1) New Tokaido Highway, (2) Old Tokaido Highway, (3) the road along the sea coast between Shikichi and Zo (cf. Fig. 21). Since New and Old Highways merge or almost merge in the western half of the survey area, the tally for this part was done as if they were one route.

Table 5 was made to show the results. There are easily distinguishable differences between the areas along the three roads. Along the New Highway, many automobile services (garages and filling stations), manufacturing and construction service establishments are located. In contrast, recreation, professional services, and banking services, as well as food and personal services, are found in a larger percentage along the Old Highway. It is possible to recognize

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[37]The field work was conducted by Messrs. S. Yamamoto, M. Kitagawa, T. Ito, and many others.

TABLE 5. Economic establishment (excl. farms) along the three roads between Shizuoka and Shimizu.

Types of establishments	A* No.	%	B* No.	%	C* No.	%	D* No.	%	E* No.	%
Farm	9	5.6	8	4.3	5	2.5	22	4.1	17	13.3
Auto, truck services	13	8.1	1	0.5	34	17.0	48	8.8	4	3.1
Bicycle, auto-bicycle services	6	3.7	8	4.4	5	2.5	19	3.5	5	3.9
Food	38	23.6	66	36.1	52	26.0	156	28.7	59	46.1
Clothing	4	2.5	7	3.8	5	2.5	16	2.9	2	1.6
Hardware	9	5.6	9	4.9	6	3.0	24	4.4	6	4.7
Home furnish.	-	-	3	1.6	-	-	3	0.6	1	0.8
Recreation	-	-	1	0.5	1	0.5	2	0.4	-	-
Personal sv.	19	11.8	38	20.8	27	13.5	84	15.4	28	21.9
Professional services	2	1.3	12	6.6	4	2.0	18	3.3	1	0.8
Construction	13	8.1	6	3.3	14	7.0	33	6.1	1	0.8
Banking serv.	-	-	2	1.1	-	-	2	0.4	1	0.8
Utilities	2	1.2	3	1.6	1	0.5	6	1.1	-	-
Community serv.	-	-	-	-	1	0.5	1	0.2	1	0.8
Business serv.	4	2.5	4	2.2	2	1.0	10	1.8	2	1.6
Wholesale	2	1.2	1	0.5	2	1.0	5	0.9	-	-
Manufacturing	32	19.9	5	2.7	30	15.0	67	12.3	-	-
Transportation**	8	5.0	8	4.4	8	4.0	24	4.4	-	-
Unclassified	-	-	1	0.5	3	1.5	4	0.7	-	-
Total	161	100.1	183	99.8	200	100.0	544	100.0	128	100.2

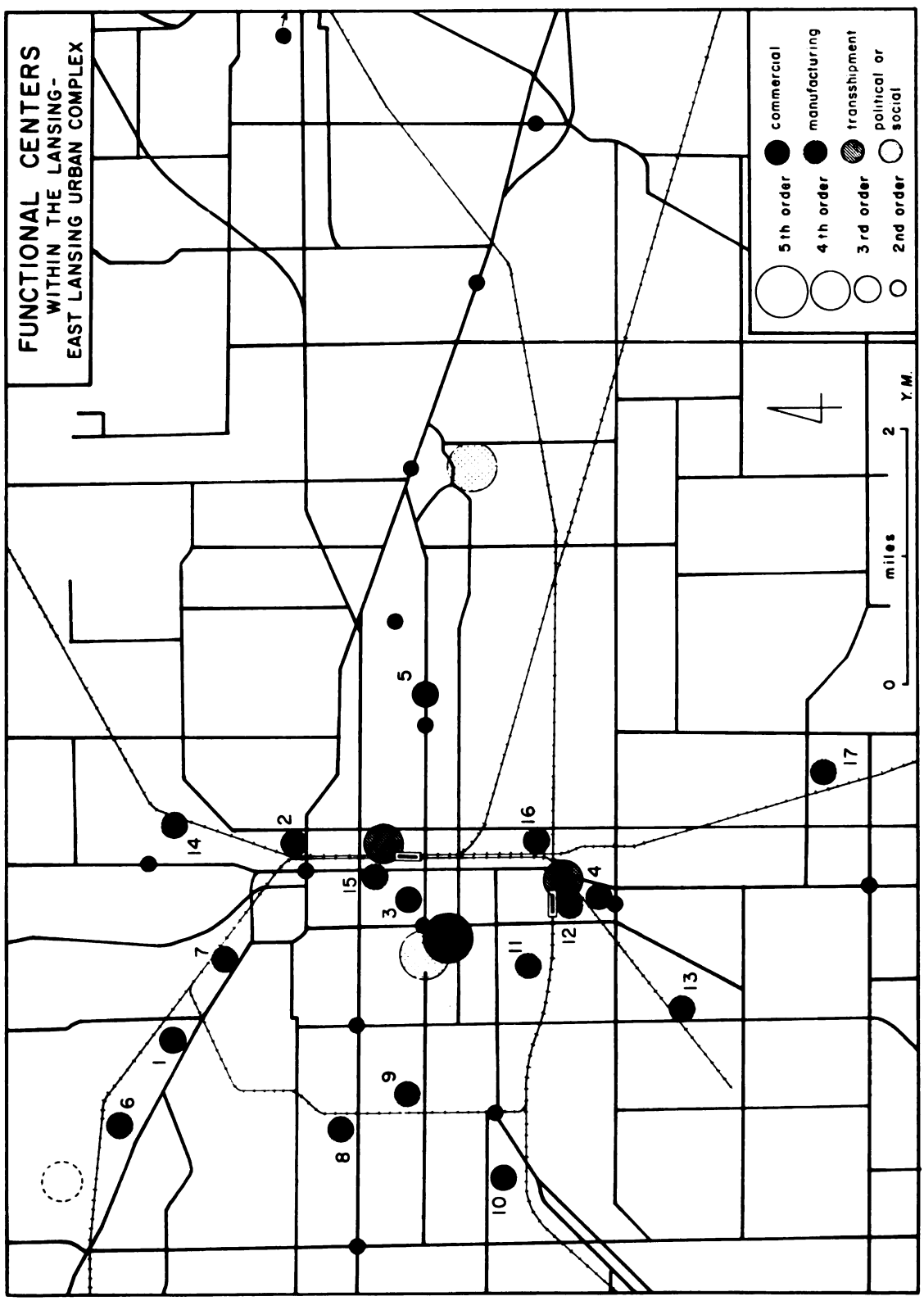
* A --- along New Hwy.
B --- along Old Hwy.
C --- along New and Old Hwys., excl. A and B areas.
D --- along New and Old Hwys., A, B, and C combined.
E --- along the road on the sea coast.
**excluding bus stops.

that specialization of activities characterizes the two areas. A comparison of the types of establishments along both New and Old highways, together with the establishments along the road in the coastal area, is striking (compare colum D with E in Table 5). The former area has many more establishments requiring high-grade technical and professional skills than does the coastal one.

We have seen that even small settlements often consist of two or more different land uses which are hierarchically arranged in both function and area. In larger settlements such as the two urban complexes under analysis, this trend is more accelerated as shown in Figs. 22 and 23. These two maps, generalized to some extent, show locations of the major economic functional centers classified by hierarchical orders of function in relation to the major transportation systems.

The major political center of fifth order in the Lansing-East Lansing urban complex consists of the state capitol building and related buildings, as well as regional offices of the federal government, the Lansing City Hall, and so on. A secondary center is located in East Lansing. This is composed of Michigan State University, including many regional offices of both federal and state governments, and the East Lansing City Hall.

The economic establishments comprising fifth-order and a large proportion of fourth-order functions are located in or near the downtown area. Third-order functions are of


FUNCTIONAL CENTERS
WITHIN THE LANSING-
EAST LANSING URBAN COMPLEX
5th order
4th order
3rd order
2nd order
commercial
manufacturing
transshipment
political or social
0
miles
2
Y.M.
1
2
3
4
5
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7
8
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10
11
12
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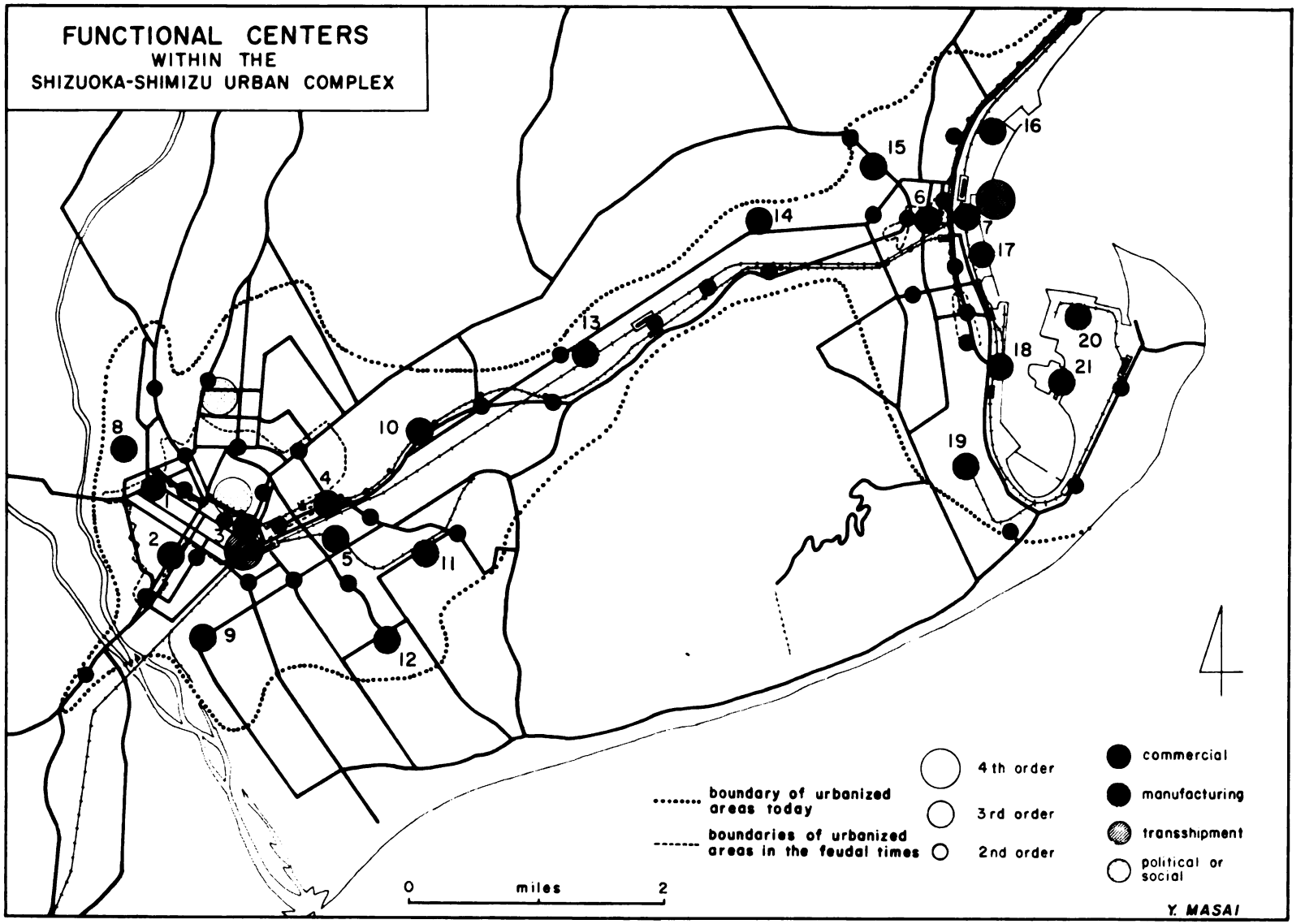
17

Figure 22

Figure 23


FUNCTIONAL CENTERS
WITHIN THE
SHIZUOKA-SHIMIZU URBAN COMPLEX
1
2
3
4
5
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7
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12
13
14
15
16
17
18
19
20
21
4
boundary of urbanized areas today
boundaries of urbanized areas in the feudal times
4th order
3rd order
2nd order
commercial
manufacturing
transshipment
political or social
0
miles
2
Y. MASAI

TABLE 6. Character of concentrations of third-order establishments in Fig. 22.

Commercial wholesale centers

1. Farm service, hardware, lumber, oil, etc.
2. Food, oil, chemicals, clothing, building materials, etc.
3. Food, electric appliances, paper, farm services, automotive, building materials, hardware, business supplies, lumber, variety, etc.
4. Food lumber, business supplies, electric appliances, etc.
5. Miscellaneous.

Manufacturing wholesale centers

6. Dies and fixtures, etc.
7. Forging, etc.
8. Automobiles (Oldsmobile Plant 3 and Forge Plant, General Motors).
9. Automobiles (Fisher Body, General Motors).
10. Metal products, etc.
11. Automobiles (Oldsmobile Assembly Plant, General Motors).
12. Trucks (Reo Division of White Motor Co.).
13. Forging, bakery, etc.
14. Motor wheel, etc.
15. Power plant, etc.
16. Stamping, etc.
17. Building materials (blocks), etc.

TABLE 7. Character of concentrations of third-order establishments in Fig. 23.

Commercial wholesale centers

1. Tea, wooden products (furniture, wooden clogs, etc.), etc.
2. Coal, gasoline, steel materials, etc.
3. Hardware, clothing, variety, etc.
4. Coal, gasoline, steel materials, etc.
5. Vegetable-fruit (Shizuoka Vegetable-Fruit Wholesale Market).
6. Miscellaneous.
7. Fish (Shimizu FishWholeslae Market).

Manufacturing wholesale centers

8. Tea, paper, wooden products, etc.
9. Concrete tile, etc.
10. Textile (Nittobo), iron foundry, plywood, etc.
11. Chemical fertilizer (Riken Denka Kogyo), aluminum, textile, electric appliances, coal gas, etc.
12. Foundry, paper, etc.
13. Printing (Ministry of Finance Printery), canning, cosmetics, foundry, etc.
14. Electricity transmission station, electrical appliances (Koito Denki), chemical, cardboard, etc.
15. Chemical, plywood, etc.
16. Petroleum refinery (Toa Nenryo), chemical, fertilizer, etc.
17. Vegetable oil (Honen Seiyu), etc.
18. Canning (Toyo Seikan), flour, sugar, iron foundry, plywood, etc.
19. Electric appliances (Hitachi Seisakusho).

TABLE 7 Continued

20.	Aluminum (Nihon Keikinzoku), power plant, ship building.
21.	Ship building (Nihon Kokan), ceramics.

Source: 1:10,000 Shizuoka-Shimizu Urban Planning Maps, 1:50,000 Land Use Maps.
Field work by S. Yamamoto.

two types, wholesaling and manufacturing wholesaling. Commercial wholesaling establishments are located primarily in the downtown area, but to a minor degree also in North Lansing, South Lansing, toward the eastern border of the city, and to the northwest along US 16 toward the Capital City Airport. Manufacturing wholesaling establishments are located along all of the radial railroads, except in the direction of East Lansing. They are also significantly arranged in linear alignment around the loop or belt line referred to earlier. This contrasts with a more dispersed pattern of outlying second-order retail centers. The latter are highway-oriented for the most part. The map shows five commercial wholesaling concentrations, 13 manufacturing-wholesaling districts, and 13 major outlying retail business centers in addition to the central business district. The downtown area, and one of the outlying retail centers, Frandor, are shopping centers of local or regional importance. The rest are of significance to sections of the city in which they are located. Newer centers of both commercial wholesale and retail business tend to develop where major thoroughfares cross the boundaries of compactly urbanized areas. In addition, there are many small economic, political, and social functional centers at a sub-second-order level. Fig. 27-11 shows one such neighborhood focus with a retail store in a residential area.

Interconnection of these centers within the urban complex is almost exclusively performed by street transportation.

That with outside places is performed by road and highway transportation, together with railroad and air transportation. Tele-communication also should be mentioned as an important interconnecting medium.

The hierarchy of economic functional centers within the Shizuoka-Shimizu urban complex is shown in Fig. 23. Urbanized Shizuoka has 5 principal manufacturing and 5 wholesale concentrations, all of which are third order. Urbanized Shimizu also is composed of several third-order centers. The urban complex as a whole has 21 third-order foci. The major transshipment center can be identified at and around the Port of Shimizu.

The third-order centers within the Shizuoka-Shimizu urban complex can be divided into two categories--commercial and manufacturing. Shizuoka is more important regarding commercial wholsaling than is Shimizu. Shizuoka-Shi had 1074 wholesale establishments (including manufacturing wholesaling) within the shi limits in 1956. The number of wholesale establishments within the shi limits of Shimizu in 1958 numbered only 279. A large-size vegetable-fruit wholesale market is located in Shizuoka, but Shimizu has a large-scale fish wholesale market. Shizuoka is the largest tea wholesale center in Japan.[38] The principal character of each wholesaling foci is labeled in Table 7.

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[38] S. Yamamoto, "Tea Market in Shizuoka . . .," op. cit., p. 522.

Manufacturing function shows a reverse tendency. Superiority of Shimizu in manufacturing is apparent in terms of the number of employees and annual value of products shipped out.[39] Shimizu is characterized mainly by large-scale factories producing machines, chemicals, and food stuffs. Shizuoka is characterized by smaller but more numerous factories producing food stuffs, wooden products, and machines. Many of them are household industries on a second-order level. The above specialization in items, therefore, can be recognized between them. In the process of cultural evolution, more specifically in industrialization, Shimizu tends to resemble the more recent pattern of other Japanese cities but Shizuoka is rather old-fashioned.

In the Shizuoka-Shimzu urban complex, a considerable number of retail shopping streets--that is, second-order economic centers--are to be seen. They are symbolized on the map by 35 small dots. In reality, however, these streets form an almost continuous web of interlaced commercial frontage, fragmented into a few thousand small shops. Trains, street cars, and buses interconnect these centers with residences of shoppers. Use of a great many bicycles is very

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[39] Shizuoka City Office, op. cit., p. 49, and Shimizu City Office, op. cit., p. 53. The average number of employees per factory in Shzuoka was 6.6 persons, and the average value of products shipped out was 7.9 million yen in 1956. Those for Shimizu were 30.5 persons and 85.7 million yen in 1957.

characteristic in Japanese cities, especially in medium and relatively large-sized cities. Shizuoka is a good example (Fig. 27-6). It is estimated today that well over 100,000 bicycles are registered within the shi limits of Shizuoka and Shimizu. Within the same area, 20,000 motor vehicles are used, half of which are two-wheeled ones.[40]

Spacing of the major retail centers differs significantly between the two urban complexes. In the Lansing-East Lansing urban complex, the approximate interval between the retail centers is slightly more than one mile in the compactly urbanized areas and nearly 2 miles in the outer areas. In the Shizuoka-Shimizu urban complex, by contrast, the interval between retail centers is half a mile usually, although there are many sub-second-order retail establishments scattered all over the urbanized areas of complexes. This significant difference in the spacing of second-order centers may be explained by the difference in transportation media for the most part. Almost every family unit owns a car, and many own two cars in the Lansing-East Lansing urban complex. These automobiles allow people to go shopping at the retail centers which are located beyond easy walking distance for shoppers. Shopping in the Shizuoka-Shimizu urban complex is done both more

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[40] Shizuoka City Office, op. cit., p. 38 and Shimizu City Office, op. cit., p. 135. No. of motor vehicles registered in the Lansing-East Lansing urban complex is estimated to be at least 70,000.

frequently than in the Lansing-East Lansing urban complex and on foot. Relatively dense distribution of retail centers there offers greater access to pedestrians. Most of them can reach one of the centers by walking less than half a mile.

It has already been mentioned that the Lansing-East Lansing urban complex has developed new retail centers at the places where highways cross the boundaries of compactly urbanized areas. In the Shizuoka-Shimizu urban complex a similar tendency can be seen to a certain extent along the new Tokaido Highway. These embryonic second-order centers have evolved as a new type of business center. These are largely for truck and automobile drivers on business. A motel, a typical American highway-type establishment, has been recently established between Shizuoka and Shimizu designed primarily for the increasing tourist drivers.

CHAPTER IV

THE PHYSICAL ENVIRONMENT

Methodological Introduction

Culture and areal functional organization of the two study areas have been analyzed spearately as well as in close relationship. A more comprehensive understanding of the study areas, however, cannot be completed without considering the physical environments concerned. Human occupance in the two study areas is related to the physical environments in each to a varying degree.

Every aspect of physical environment may be used by man. At the present time, many items of the physical environment are used by man, but some are not used at present and are considered to be of no use even in the future. Innovations and dispersals of new technologies, for example, change peoples' attitudes concerning natural environment. Things not used at all become significant and used a great deal. Although the point is debatable, cultural development of man seems to widen the scope of usable natural resources, so that eventually it may well involve practically every kind of natural environment in the future. Use of natural resources varies according to three major factors: (1) technological basis for using the natural resources, (2) specific need for the natural resources, and (3) variation in the

quantity, quality, and accessibility of natural resources both at present and in the future.

Use of Physical Environment and Its Relation to Culture

Human occupance patterns today have been formed by cultural development in association with the interrelated natural phenomena. These will be discussed under the following four headings: atmosphere, biosphere, lithosphere, and hydrosphere.

Atmosphere and Its Relation to the Cultures

Climatic conditions of the two study areas differ from each other considerably. Table 8 shows some major climatic data for East Lansing and Shizuoka-Shi.[1] East Lansing has a wider range of maximum and minimum monthly temperatures than has Shizuoka--44 vs. 35°F. The winter half of East Lansing is characterized by snow and ice. The first freezing temperature in the fall is recorded in the first ten days of October.[2] Consequently, the growing season is limited to about 150 days. This fact contrasts with a much longer growing season in Shizuoka (320 days) where frost and snow are rare.

Shizuoka is characterized by considerable precipitation, especially in the summer half from April to September. No

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[1] Source of information, see Table.

[2] E. B. Hill and R. G. Mawby, op. cit., p. 14.

TABLE 8. Climatic data.

Temperature Month	East Lansing* Fahrenheit	Centigrade	Shizuoka** F	C
Mean	47.3	8.5	60.4	15.8
J	23.8	-4.6	45.1	7.3
F	24.2	-4.3	45.7	7.6
M	33.2	0.7	49.1	9.5
A	45.3	7.4	59.9	15.5
M	56.5	13.6	64.2	17.9
J	67.4	19.7	67.3	19.6
J	71.1	21.7	73.4	23.0
A	69.0	20.6	80.2	26.8
S	61.8	16.6	75.6	24.2
O	50.5	10.3	61.9	16.6
N	37.9	3.3	55.8	13.2
D	27.1	-2.7	47.7	8.7
Precipitation	Inches	mm.	Inches	mm.
Annual	31.08	789.4	112.6	2859.4
J	1.87	47.5	3.7	94.9
F	1.81	46.0	6.4	163.0
M	2.57	65.3	5.6	141.5
A	2.83	71.9	16.0	407.5
M	3.75	95.3	12.7	322.8
J	3.37	85.6	18.5	470.8
J	2.28	57.9	8.5	215.9
A	2.68	68.1	9.8	247.9
S	3.05	77.5	20.2	513.3
O	2.45	62.2	3.5	88.2
N	2.30	58.4	3.7	92.8
D	2.12	53.8	4.0	100.8
Days with precipitation	143 days		159 days	
Growing season	c. 150 days		c. 320 days	

Source: for E. Lansing, U. S. Department of Commerce, Weather Bureau, Climates of the States, Michigan (May, 1959). B. Hudgins, Michigan, Geographic Backgrounds in the Development of the Commonwealth (Ann Arbor: Edwards Bros., Inc., 1958).
For Shizuoka, Prime Minister's Office, Bureau of Statistics, Japan Statistical Yearbook, 1957.

utterly dry months are recorded. East Lansing, like the whole Lansing area, has a much more even distribution of precipitation. However, the precipitation in the winter half falls in the form of snow almost exclusively. The driest month in Shizuoka (October) has 3.5 inches of precipitation. This is about the same as the wettest month in East Lansing (May) which averages 3.75 inches. Numbers of rainy days do not show a large difference between the two places. This fact may imply that Shizuoka tends to have heavier or longer rains than East Lansing. Typhoons bring a great deal of precipitation to Shizuoka. In the case of some rainy typhoons, 10 to 20 inches of rainfall have been recorded within 24 hours especially in the mountains. Around Lansing, tornadoes occur, though rarely, bringing about destruction to restricted localities.

The climatic conditions characteristic of East Lansing prevail over a considerable territory with little variation. They are almost homogeneous throughout a region considerably larger than the study area. This larger region is characterized by a continental climate. The only noticeable differences in the study area are micro-climatological in type between urban and rural places. In the Shizuoka area, maritime location and mountainous topography offer a considerable climatic range from place to place. Almost frost-free southern coasts are in sharp contrast with high mountains in the winter half of the year, where strong monsoon northwesterlies prevail. In the summer, alpine flora is characteristic in

these high mountains. As a matter of fact, transitional conditions of climate may be recognized between the high mountains and the sea coast. Micro-climatological phenomena are very important in such an area where irregular topography is prevalent.

Cold temperature in the winter half of the Lansing area does not afford farmers opportunities to grow crops in this period. By contrast, for most of the low places of the Shizuoka area, double cropping is common in any year. In some places, it is possible to have even three or more crops of vegetables in a year. Tea, mikan, and other special crops are grown. In this warm climate, there is very little cold-weather damage. On some low slopes of mountains, several hundred to a few thousand feet high, high-quality tea is produced commercially by utilizing hazy or misty climatic conditions as well as abundant manpower.[3] The climate around Lansing is suitable for growing pasture grass, corn, and other crops in the summer half of the year.

For most of the people in the Lansing area, the cold winters of the continental climate are a serious problem. Houses are planned in order to minimize the winter climatic difficulties. For example, windows are usually small in order to keep the indoor temperature high. Central heating facilities

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[3] S. Yamamoto, "Tea Industry in the Mountains of Central Shizuoka Prefecture," Chirigaku Kenkyu Hokoku, IV. (1960), 57-86.

also are almost universal. In the Shizuoka area, houses are usually planned in order to meet summer heat and moisture, quite characteristic of monsoon summer. The south-facing side of houses is often open to the outside, although sliding doors are used to protect indoor temperature from colder air outside during the winter nights.

Biosphere and Its Relation to the Cultures

The biosphere can be divided into two--plant and animal phenomena. Relationship between zoo-environment and human occupance is less significant today than formerly. When primitive livelihood activities prevailed in the past, wild animals, fish, sea-shells and many other animals were hunted or collected. After the whites settled in the Lansing area, wild animal life was reduced to an almost insignificant status except for insects or micro-biotic disease germs and viruses. Wild life has been accultured or tamed to some extent, and is preserved primarily for recreational or educational purposes in some cases. Gradual devaluation of hunting, fishing, and collecting of wild life resources among livelihood activities is still taking place in the Shizuoka area. Very little commercial hunting is practiced today. The decreasing fresh-water fish population has been supplemented partly by artificial propagation. At present, fresh-water fishing is primarily for recreational purposes. In the Lansing area, fishing and hunting are practiced almost solely by recreationists.

Plant-life environment can be well expressed in the form of vegetative cover. Originally, the Lansing area was thickly covered with hardwood forests. Climax association was oak-hickory.[4] These natural forests have been cut extensively and are now diminshed to remnants only. Commercial forestry has virtually disappeared. Only small quantities of forest products such as maple syrup and a small amount of lumber come from the forests of the Lansing area.

By contrast, the Shizuoka area practices commercial forestry. The lumber produced here is used largely for construction work and woodcraft industries for which Shizuoka is famous. Many diversified species are found in the area. Heterogeneous distribution is characteristic. No natural vegetation is left now in the low flat lands which are used for agricultural and urban land uses. On the relatively low-altitude slopes of mountains, afforestation is common, together with remnants of natural vegetation. Planted coniferous forests are replacing natural deciduous or mixed forests in general. Most of the afforested conifers are hinoki (Japanese cypress) and akamatsu (Japanese red pine).

On the middle-altitude slopes of mountains, a few to several thousand feet high, natural broadleaf deciduous

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[4] F. J. Marschner, compiled, "Original Forests of Michigan," map by A. Perejda, in Hudgins' Michigan: Geographic Backgrounds in the Development of the Commonwealth, op. cit., pp. 59-60.

forests and natural mixed forests prevail. These natural forests are partly used for lumbering and charcoal burning. Considerable afforestation of conifers is also in progress, gradually replacing natural stands. Mountain slopes several thousand feet in height are covered with coniferous or mixed forests. The major species are karamatsu (larch), momi (fir), hinoki, tsuga (hemlock), buna (beech), etc. High mountains over ten thousand feet in height are exclusively alpine in their flora. Haimatsu (pinus montana), dakekamba (creeping birch), and many herbs of an alpine nature are plentiful.[5]

The alpine flora is contrasted with subtropical flora found along the sea coast, such as sotetsu (cycad) and hamayu (a kind of subtropical orchid). These two completely different vegetation classes offer excellent opportunities for recreational and educational purposes within a small area.

In short, the Shizuoka area is characterized by diversity of natural as well as domesticated vegetation, ranging from subtropical to an alpine flora surrounded by perpetual summer snow. Both lumbering and forestry are practiced there. By contrast, the forests in the Lansing area are little used at present.

Lithosphere and Its Relation to the Cultures

Geomorphologic and geologic phenomena, including soils,

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[5]Geographical Survey Institute of Japan, 1:50,000 Land Use Maps (Tokyo, 1955-1958).

will be discussed under the heading of lithosphere. Surface configurations of the two study areas are strikingly different. The Lansing area is almost flat or gently rolling. Low hills of recessional moraines and eskers and meandering rivers of low velocity characterize the surface configuration as shown on the diagram in Fig. 24. The diagram also shows a radial pattern of highways, focusing upon Lansing. Railroads have a similar pattern also. These patterns attest to the ease of route construction in reference to topography.

The corresponding map for the Shizuoka area (Fig. 25) shows very different surface configuration and some human occupance patterns in relation to that difference. About 90% of the area is mountainous or hilly. The highest point is Mt. Fuji (12,395 feet). Many peaks in the northern part of the area rise over ten thousand feet. They are sometimes called "Japanese South Alps" in the vernacular. Mountains which are extremely dissected by erosion and broken by faulting cover most of the study area.[6] These mountains are linked by a great many trails, which afford accessibility for hikers and wood cutters. In the southern part, as shown clearly on the diagram, dissected diluvial plateaus of low elevation are characteristic. The plateau tops are planted with tea bushes for the most part. Lower parts of volcanic

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[6]Shizuoka Prefectural Office, Geological Map of Shizuoka Prefecture, compiled and surveyed by Department of Earth Science, Shizuoka University (1956).

Figure 24

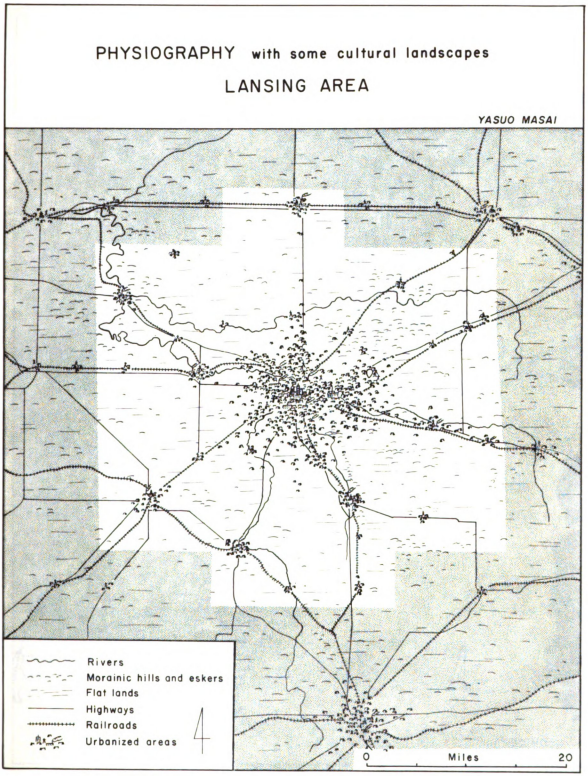
PHYSIOGRAPHY with some cultural landscapes
LANSING AREA
YASUO MASAI
Rivers
Morainic hills and eskers
Flat lands
Highways
Railroads
Urbanized areas
N
0
Miles
20

Figure 25


Rivers
Mts. and dams
Flat lands
Highways
Railroads
Urbanized areas
Ports
PHYSIOGRAPHY
with some cultural landscapes
SHIZUOKA AREA
4
0
20 Miles
YASUO MASAI

slopes are also used for farming, usually of tea, vegetables, and grains other than paddy. Steep mountain slopes of low altitude are used for farming of various grains, other than paddy, citrus, and tea. The picture in Fig. 1 shows mikan growing on a steep slope of the basaltic hogback; and tea is also grown under the shade of mikan. Railroads and major roads tend to follow the coast line and river valleys.

In the Lansing area, many moraines and eskers have been excavated for gravel and stone production. These excavated glacial deposits are primarily used for road construction. In the Shizuoka area, rivers transport a great amount of eroded materials from the mountains because of large precipitation and high velocity of runoff. River beds of several rivers have widths of more than half a mile at or near their mouths. Gravels and sands quarried here are also used primarily for construction work.

The top-soils found in the Lansing area are grey-brown podzolic almost exclusively. Soil series are Miami-Conover for the most part. Some are Bellefontaine and organic.[7] Agriculture in the Lansing area uses most of the ground surface of these soils. In the Shizuoka area, soils are quite heterogeneous. Soils from decomposed rocks prevail in the mountains, and are occasionally used for farming.[8] Most of

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[7]E. P. Whiteside, I. F. Schneider and R. L. Cook, Soils of Michigan (Agricultural Experiment Station, Michigan State University, Special Bulletin 402, 1956). The attached map.

[8]F. Ueno, op. cit., p. 15.

the soils in the cultivated lands are either alluvial or diluvial, together with soils of volcanic origin. All the soils used for agriculture contain a great amount of organic substances artificially added (chemical fertilizer, night-soil, animal manure, and compost).

Hydrosphere and Its Relation to the Cultures

In the Lansing area, the present uses of water are for recreation, domestic supply for residences, industrial supply for manufacturing and business establishments, and supplemental irrigation for some farms. Lakes and rivers are directly used for recreation. Many residences are built along rivers and on lake shores.

Use of water in the Shizuoka area is different in many respects. Maritime location affords direct access to the sea. Coastal, offshore, and deepsea fishing flourishes. Some kinds of productive activities are practiced all along the sea coast, such as small-scale fishing, sea-weed gathering (primarily for manure), or sea-shell collecting. Sea bathing and other kinds of recreational activities are also practiced today. There are three large fishing ports, Shimizu, Yaizu, and Omaezaki.

River water utilization was exclusively devoted to irrigation and subsistence fishing in the past, but now its scope has been widened through development of industrialization. New uses include hydro-electric plants (e.g., Ikawa Dam,

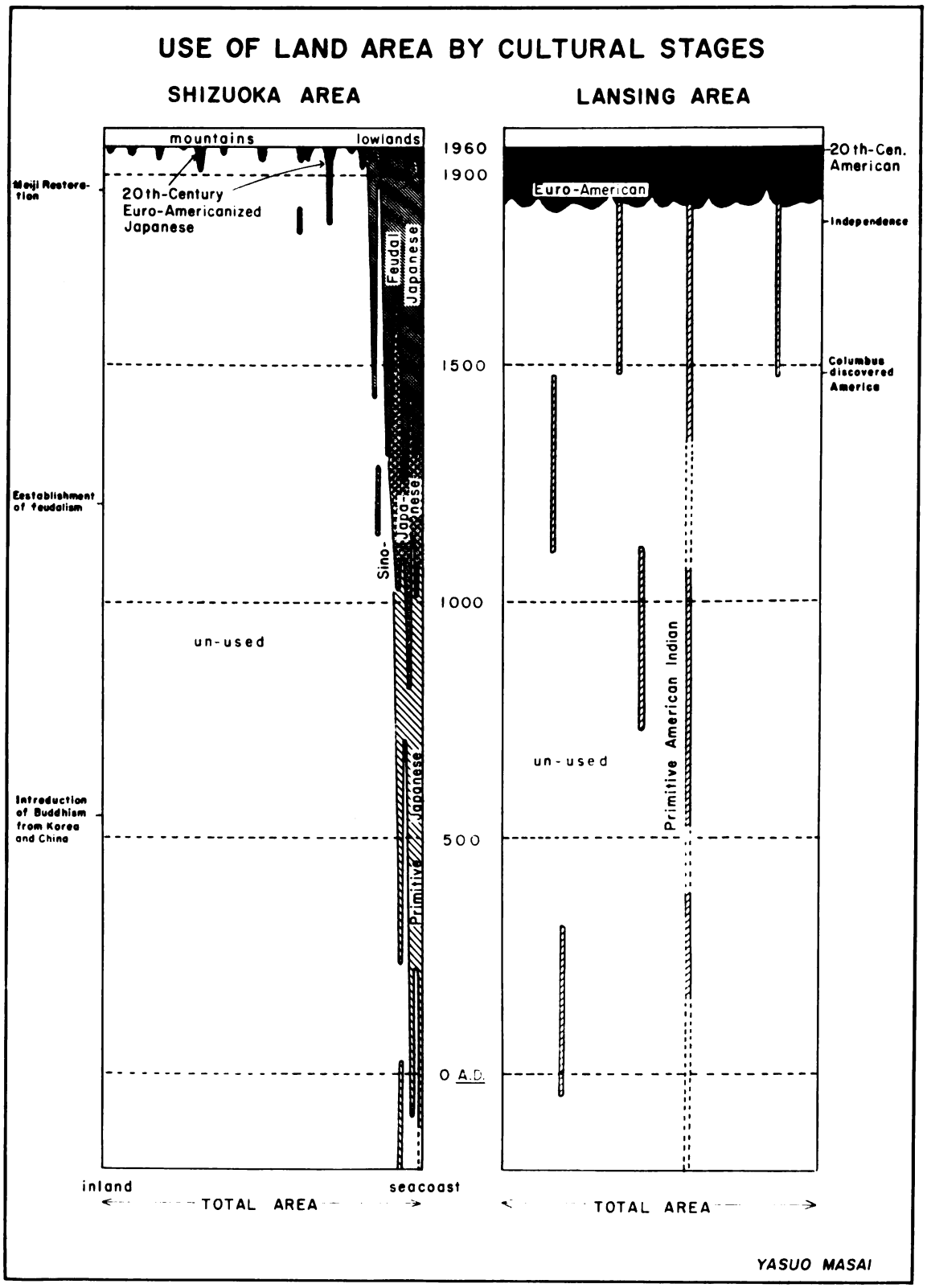
maximum output 136,000 kw), recreational facilities for the general public such as picnicking, fishing etc. Several miles west of the study area is the second highest dam in the world, Sakuma (maximum output 350,000 kw; height of dam, 150 m or 457 feet). Existence of large-scale paper and pulp mills at the southwestern foot of Mt. Fuji has been made possible by utilizing abundant groundwater there. Several hot and mineral springs are used primarily for recreation and support resorts. A typical example is Umegashima Hotspring twenty miles north of Shizuoka.

As described above, relative homogeneity of all four phases of the physical environment--air, life, land, and water--characterizes the Lansing area. By contrast, the Shizuoka area shows relative heterogeneity in all four phases.

A Diagrammatic Summarization of Physical Environments and Cultural Stages

Fig. 26 shows the amount of land area used during successive cultural stages of the two study areas. Width of each column shows the size of area. Cultural stages are shown chronologically in the vertical dimension. Since the two study areas have about the same area in square miles, the widths of the two columns were made the same. Any horizontal cross-section is supposed to equal the approximate amount of land area utilized during any particular period. The more unused (white) area the cross-section involves, the less was or is the use of land area. In the diagram, very

Figure 26


USE OF LAND AREA BY CULTURAL STAGES
SHIZUOKA AREA
LANSING AREA
mountains
lowlands
1960
1900
1500
1000
500
0 A.D.
Meiji Restoration
20th-Century Euro-Americanized Japanese
Feudal Japanese
Sino-Japanese
Establishment of feudalism
un-used
Introduction of Buddhism from Korea and China
Primitive Japanese
Euro-American
20th-Cen. American
Independence
Columbus discovered America
un-used
Primitive American Indian
inland
seacoast
TOTAL AREA
TOTAL AREA
YASUO MASAI

scattered and therefore small uses of land over wide or extensive territories are excluded; for example, use of forests by primitive people for relatively sporadic hunting.

In the primitive stage of the American Indians, most of the Lansing area was not utilized or was used extremely extensively in the sense referred to above. The Indians' influence upon natural landscape was restricted to a small number of spots, rather than very large areas. White settlement in the area brought about a drastic change within a short period of time, from sporadic to virtually 100% use of land area. Around the turn of the century, twentieth-century American culture, which is different from the preceding Euro-American culture began to change the pattern of occupance still further.

At present, the Lansing area is characterized by twentieth century American culture almost exclusively. Nineteenth century-type activities have virtually disappeared. Farming is virtually completely mechanized and suburbanization is very extensive. An excellent road network covers the whole area. Exploitation of natural resources in the sense of wasteful use, which used to be very common, has now changed to a spirit of conservation of resources in many respects, particularly with regard to soil and wildlife.

Use of land in the Shizuoka area shows a considerably different pattern. Through successive cultural stages, use of land area continued to widen, but very slowly. In the

primitive stage, the pattern was similar to that of the primitive stage of the American Indians. High, rugged mountains, however, were inaccessible to the people for many centuries until quite recent times. Therefore, most of the land area was not used, despite the fact that population density was quite high in the narrow plains area even before the Meiji Restoration. Change from the preceding culture to a new one has been rather gradual in each successive stage. No drastic sudden changes have been recorded.

After modern civilization was introduced from Europe and America, which had experienced the Industrial Revolution, much more area in the mountains began to be used. Such use is for hydro-electric power plants, large-scale afforestation, and recreation for the people who have gained more leisure time than ever before. However, shortage of land is a chronically serious problem, both for rural and urban people. To meet this problem, some farmers use very steep slopes (even over 45^{o}) for citrus growing.[9] Establishment of many cables for transportation of harvested fruits on steep slopes facilitates the greater intensification of use of such steep slopes. This fact sharply contrasts with the existence of a so-called "soil bank" in the Lansing area, through which overproduction was expected to be checked by paid withdrawal of farmland from production.

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[9]S. Yamamoto, "On the Regional Pattern of Tea Industry in Shizuoka Prefecture," op. cit., p. 109.

We have briefly observed that people in the two areas have worked with and have done different things in relation to their surrounding physical environments. The possibilities of the use of natural resources depend upon human perceptibility and choice. The creativity of the present and transmitted and dispersed culture of the past and present are responsible for the cultural process of society's evolution into the future. In the concluding chapter, it will be seen how the greatly different elements of past cultural evolution and significantly contrasting natural resources are similarly organized in area. Under the impetus of modern technology, there is developing a similar international pattern which seems to be characteristic of modern mankind without regard to race, traditional culture, natural resources, or nationality.

FIGURE 27 Photographs

Urban Complexes

1. Lansing . . . . . Downtown-C.B.D.
2. Shizuoka . . . . . Downtown-C.B.D.
3. Lansing . . . . . Behind the main shopping street.
4. Shizuoka . . . . . Behind the main shopping street.
5. Lansing . . . . . New shopping center, Frandor.
6. Shizuoka . . . . . Newly rebuilt shopping center, Gofukucho.
7. Lansing . . . . . A trucking company.
8. Shimizu . . . . . The Port. Mt. Fuji in the background.
9. Lansing . . . . . Wholesale section.
10. Shimizu . . . . . A manufacturing area.
11. Lansing . . . . . A cross-roads general store.
12. Shizuoka . . . . . A road-side restaurant.

Third-order centers

13. St. Johns . . . . . Main shopping street.
14. Shimada . . . . . Main shopping street.
15. St. Johns . . . . . Railroad station and a grain elevator.
16. Kanaya . . . . . Bus terminal in front of the station.
17. St. Johns . . . . . A new suburban residential area.
18. Fujieda . . . . . Urban fringe.

Second-order centers

19. DeWitt . . . . . Shopping street.

20. Iroo . . . . . Shopping street.

Sub-second-order centers

21. Wacousta . . . . . Hamlet center.

22. Unidentified . . . . . Village center.

Farming areas

23. Merle Beach . . . . . Mechanized large-scale farming.

24. Kuno area . . . . . Extremely intensive farming.

Four pictures in Fig. 1 also are expected to supplement this pictorial presentation, which is arranged according to the hierarchical order of each place in relation to physical environment and cultural backgrounds.

(1) Lansing. Skyscrapers characterize the downtown-C.B.D. area of this economically sub-fifth-order central place. The domed State Capitol Building, a fifth-order political establishment, has a traditional European (Roman) architectural design.

(2) Shizuoka. More or less American-style buildings characterize the downtown-C.B.D. area in most of the Japanese fourth- or higher-order centers. The tallest building in the picture is a department store in front of Shizuoka Station.

(3) Lansing. One of the numerous parking lots behind the main shopping street.

(4) Shizuoka. Behind the main shopping street are many congested residences of shopkeepers. The domed building is the Prefectural Office Building. Mt. Fuji can be seen in the distance.

(5) Lansing. The Frandor Shopping Center. A recently developed type of American urban landscape. Immense parking lots and low buildings are characteristic.

(6) Shizuoka. Newly rebuilt main shopping street. Bicycle parking is a problem. Automobiles are not allowed to enter. Continuous folding eaves are equipped to protect pedestrians from rain and sunshine.

(7) Lansing. One of the 16 trucking companies. Some of them perform transshipment function. Large-sized trucks are characteristic. Average loading capacity of the largest ones is 32,000 lbs., or 14.5 tons per truck (Norwalk Truck Line Company).

(8) Shimizu. The Port. Ninth largest port of Japan in 1955. Total exports and imports were 1,315,448 tons and 43,626 million yen (121 million dollars) in 1958. Mt. Fuji in the distance. Low mountains along the coast are mostly planted with mikan.

(9) Lansing. Two of the many wholesalers near downtown. At least 50 wholesalers are found within a several-block radius of this place. Lansing has large third-order economic functions.

(10) Shimizu. One of the many large-scale factories in the Shizuoka-Shimizu urban complex. This factory is located between the two cities' centers, and produces cardboard. Small-sized trucks go along the New Tokaido Highway.

(11) Lansing. A cross-roads general store in a residential area of Lansing (sub-second order). Residences are relatively old-style around here.

(12) Shizuoka. A restaurant in a residential area. Houses are quite traditional, but the restaurant is a little westernized.

(13) St. Johns. Downtown area of a small third-order focal place. The courthouse of Clinton County is in the middle of the picture. Numerous automobiles are to be seen.

(14) Shimada. Main shopping street of a small third-order focal place. Bicycles and autobicycles are many. No multi-storied buildings.

(15) St. Johns. Railroad station (freight only) and a grain elevator. There is a relatively large-scale factory behind the station.

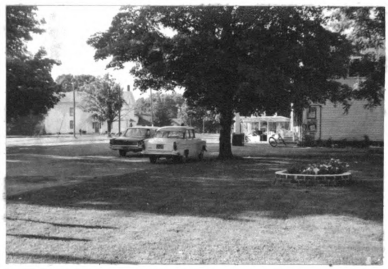
(16) Kanaya. In front of the railroad station of a small third-order focal place. Public transportation is important. A building on the top of a hill is a recreational center for farmers, utilizing the artificially pumped-up mineral water for bathing.

(17) St. Johns. A new suburban residential development. One storied houses with wide lawns prevail.

(18) Fujieda. Urban fringe of a third-order focal place. Most of the houses in the picture are non-farm residences. Isolated farmsteads are to be seen in the distance. The white-walled building is a community health center.

(19) DeWitt. Shopping street of a second-order focal place in the Lansing area. Business establishments are either one or two storied in most cases. Many automobiles are used. Storekeepers and employees live outside the business section usually.

(20) Iroo. Part of the shopping street of a second-order focal place in the Shizuoka area. Bicycles are many. The tallest building in the picture is a farmers' cooperative association. Practically all stores are also used as residences of storekeepers and their families.



(21) Wacousta. A sub-second-order focal place in the Lansing area. Has only 3 business establishments. Number of non-farm residents is about 200. This unincorporated hamlet has become a non-contiguous suburb of Lansing.

(22) Nekoya, a village along the sea coast southeast of Shizuoka. This second-order focal place services the immediately surrounding area. Distinction between business and other sections is not clear. General appearance of this small second-order center looks somewhat like that of a sub-second-order focal place.

(23) Merle Beach. Mechanized large-scale farming is common in the Lansing area. A farmer is harvesting wheat by a combine in July. Topography is almost flat throughout the Lansing area. An elementary school in the picture is still used. Many others of this kind have been abandoned, however.

(24) The Kuno area southeast of Shizuoka along the sea coast. Very intensive commercial farming is common. Strawberry is planted on man-made terraces and tomatoes and cucumbers are grown in greenhouses. Most of the farmers here earn more income from non-farm occupations than from farming.

CHAPTER V

A SUMMARY AND CONCLUSIONS

The major objective of this study has been the systematic analysis of the two study areas, Lansing and Shizuoka, in terms of a comparison based on the three apsects of geography (culture, areal functional organization, and physical environment). Special emphasis was placed on the areal functional organization, because it deals directly with the pattern of occupance of the two areas which it was designed to compare. It is expected that this comparative study could reveal some of the major points of comparison between the patterns of human occupance in the Midwestern United States and Japan, in which the two areas are located respectively. It is also expected that this study could add to the criticism directed toward the loose use of the terms "Occident" and "Orient" in geographic writings. At the same time, the author hopes that some specific geographic knowledge about the two study areas has been accumulated. In this chapter, these expected contributions will be summarized.

Systematic Analysis

The major part of this study has been devoted to systematic analysis of the two areas. The criteria of comparisons were based on the principles and theory of areal functional organization in relation to culture and physical environment.

In terms of economic areal functional organization, the two study areas do not show basic differences in character on the whole, as one might expect from the differences in traditional culture forms, racial characteristics, or geographic locations including natural environment. Both areas are interconnected with many other places outside their own territories. All the places in both study areas exist today in functional relation to other places. Internally also, all the places in both areas are interconnected functionally. A considerable interchange of goods, people, and ideas inevitably takes place in such a situation.

The major differences were found in the degree of development of exchange economies and resultant occupance patterns, as regards specific orders in the hierarchy of places characteristic of each territory. In the Lansing area, as in other parts of America, automobiles and trucks are used in great numbers for the purpose of interconnecting establishments and places. Railroads and airplanes also play an important role in accomplishing this purpose. In the Shizuoka area, as in most other parts of Japan, interconnecting media are trains, buses, bicycles, ships, and trucks, as well as walking. Varying degrees of efficiency pertinent to each transportation medium are good indicators of the type of economy, such as exchange or subsistence, since without well-developed means of transportation the exchange economy cannot exist.

Table 9 was made to summarize the interrelation between areal functional organization and present culture. The table shows the number of settlements classified according to their hierarchical functional orders, as well as some major cultural phenomena such as land uses. Considerable differences in the number of focal places between the two areas occur because of differences in (1) degree of development of the competition between places of the same order, which in turn is related to the development of means of interconnection in the two exchange economies, and (2) population, both in total numbers and in concentration in relation to available land or other resources.

In the Lansing area, a tendency toward the concentration of economic, political, and social functions in the Lansing-East Lansing urban complex is apparent. This tendency is more marked in the cases of third- or higher-order functions. Relatively smaller development of other settlements, especially small villages and hamlets, is conspicuous in terms of the hierarchy of functions. Some of the second- and sub-second-order focal places show absolute loss of establishments through abandonment and dilapidation of focal establishments. Thus, a considerable number of "retrogressing" focal places are to be seen. However, non-farm residences show a reverse tendency. They are becoming decentralized, forming very extensive suburban or "open-country" suburban development among highly mechanized commercial farms.

TABLE 9. Some cultural characteristics by hierarchical orders of settlements.*

Hierarchical orders	Some characteristics of the cultures in the two areas			
	No. of units	Lansing area	No. of units	Shizuoka area
1st order establishments**	ca. 100,000	Dispersed mechanized large-scale farms; and non-farm and urban residences, scattered and nucleated, in any order of places.	ca. 200,000	Very intensive small-scale farms, nucleated and scattered; urban residences usually in 3rd or higher-order centers.
Sub-2nd order focal places	43	Occasional dev't of small non-farm residential areas. Cross-roads type or highway oriented.	A few hundred	Generally located in nucleated farm settlements, surrounded by farmsteads. A few are highway-oreinted.
2nd order focal places	17	Development of urban residential areas. Small suburban and open-country non-farm resid. dev't.	ca. 100	Generally located in nucleated farm settlements, surrounded by farmsteads. Very little or no urban resid. dev't. Small public transportation centers.
Sub-3rd order focal places	4	Development of suburban and open-country resid. areas. A few mfg. establishments	8	Dev't. of small urban resid. areas. Small-scale mfg. est. Small public transportation centers.

TABLE 9 Continued

Hierarchical orders	No. of units	Some characteristics of the cultures in the two areas: Lansing area	No. of units	Shizuoka area
3rd order focal places	3	No tall buildings Dev't. of suburban and open-country resid. areas. A few large-scale mfg. est.	20	No tall buildings. Dev't. of urban resid. areas. A few large-scale but many small-scale mfg. est. Relatively large public transportation centers.
4th order central place	0		1	(Shizuoka-Shimizu urban complex) Modern multi-storied bldgs. Limited suburban development Relatively many large-scale mfg. est. and a great many small-scale mfg. est. Politically, 4th order (?) A large public transportation center, as well as a large port.
Sub-5th order central place	1	(Lansing-East Lansing urban complex) Skyscrapers. Very extensive suburban and open-country resid. dev't. Large-scale mfg. est. A relatively large public transportation center. Politically, 5th order.		

*Hierarchical orders are based on those of economic areal functional organization.

**Farms, as well as non-farm and urban residences. The figures exclude establishments in which stores and residences are combined.

In the Shizuoka area, concentration of fourth-order functions in the Shizuoka-Shimizu urban complex is obvious. However, third-order functions are shared by many other cities and towns, although the urban complex's supremacy is apparent (see Table 4). There are very many second and sub-second-order centers. These small centers do not show retrogression in function as is true of the Lansing area. They are only stagnant. Especially, the presence of a great many sub-second-order centers located close to each other is a good manifestation of the fact that the Shizuoka area still occupies an early stage in the development of exchange economy. This is particularly true in the rural areas. Most of the farmers are experiencing transformation from subsistence to commercial agriculture. Practically no purely subsistence farmers are found today. At the same time, practically no purely commercial farmers are found either among the farmers.

Functional analysis of settlement forms revealed that many morphologically distinctive settlements have similar functions. At the same time, many other morphologically similar settlements have distinctive functions. Examples are as follows: isolated farmsteads prevail in the Lansing area, whereas in the Shizuoka area, nucleated farm settlements are common. However, both Lansing and Shizuoka farmers function as farmers. Some Shizuoka farmers live in isolated farmsteads as in Michigan. Their functions are the same, too. Dispersed second-order establishments, such as stores, are

functionally equivalent to such second-order establishment within second-order focal places. Dispersed open-country type residences are functionally equivalent to residences in compactly urbanized areas. All these establishments serve parallel functions. In terms of culture in an areal setting, specificially in form, these morphologically distinctive settlements should be considered as an important element of geographic analysis. In terms of areal functional organization, the functions and functional areas are more significant than morphological differences. Synthesis of these two approaches is necessary in order to analyze the reality of regions.

Functionally, second-order focal places in the Shizuoka area are most like "villages" in the Lansing area, and sub-second-order focal places are similar to "hamlets" in the United States. Strictly speaking, it is the business section of rural settlements or towns that perform second-order business functions. This consideration is applied to any order of settlements in both areas. For example, third-order functions are performed by third-order (wholesale) sections primarily, not by the cities as a whole in which the third-order sections are located. Retail sections in wholesale centers are functionally equivalent to retail sections in retail centers.

We have seen that both study areas had similar purely subsistence economies in their primitive past. This stage lasted in the Lansing area until after the pioneer stage of

white settlement had passed. Introduction of the ancient Chinese civilization to Japan in the sixth century gave much impetus to the people, and it resulted in a more advanced cultural stage, although subsistence economy was common. After the late eighteenth century, Western Europe and America began to change from a subsistence to an industrial society. In the Lansing area, this new tendency, characterized by commercial agriculture and urban-industrialization, first took place in the late nineteenth century. For the Shizuoka area, this new trend is primarily a product of the twentieth century. The Lansing area turned into a more distinctively "American" type of society (i.e., less European) after the turn of the century. Automobiles are probably the most important and characteristic media of interconnecting places and establishments within the region. In the Shizuoka area, however, public transportation is the most important for such purposes.

The transmitted culture of the Lansing area is characterized by the evolution from Euro-American (with little influence of Primitive American Indian culture) to twentieth-century American culture. For the Shizuoka area, it is characterized by the course of Primitive Japanese, Sino-Japanese, Feudal Japanese, and the twentieth century Euro-Americanized Japanese. From such deep-rooted cultural traditions there remain many differences between the two areas. Although Japan was developing capitalism before the contact with Europe and America in the late nineteenth century,

its modern economic organization is primarily attributed to the dispersed culture from America and Europe.

The in-coming modern industrial culture has resulted in different occupance patterns between the two areas where the physical environments are extremely different. In the Lansing area, people have had to overcome distance and swamps in many cases, whereas in the Shizuoka area, their efforts have been devoted either to the use of mountains or to more intensive use of the land already used in many cases. In the Lansing area, a geometrical or almost geometrical network of roads laid out in accordance with the General Land Office survey is found throughout the area, where the terrain has no mountains or large lakes. The primarily radial pattern of highways and railroads also has not encountered great natural barriers except for sheer distance itself and swamps.

Transformation of the Shizuoka area from a subsistence to a modern industrial society has been described and analyzed already. Many power plants have been built on the rivers in the mountain areas. Tunnels have connected many physically separate plains and valleys, making access possible without detour or climbing. Thus, larger functional areas have been created. Mountains were long excluded in the past from the functionally organized regions of the people in the Shizuoka area. At present, however, more areas in the mountains have become integral parts of human occupance as natural resources for power production, mining, forestry, or recreation.

Establishment of natural and prefectural parks show this tendency well. It is still apparent, however, that the use of physical environment in the Shizuoka area is largely restricted to plains areas and nearby low slopes of mountains. This fact contrasts with the near 100% commitment of land to one particular functional unit of areal organization or another in the Lansing area.

Raw materials for the factories in both areas are supplied from other places almost exclusively, since they cannot rely on local resources to any considerable extent. Food and other commodities are transported into the areas in great quantities. In these respects, the two areas are quite similar. However, there are differences, also, concerning availability of raw materials. For example, the Lansing area is largely dependent on domestic raw materials, but the Shizuoka area relies mostly on foreign sources. Such differences affect directly the income of workers and entrepreneurs, and in turn the entire pattern of occupance.

The Lansing area is characterized by a relatively sparse distribution of functional centers over a gently rolling plain of galcial origin. This contrasts with a very dense distribution of functional centers along the sea coast and in the valleys for the Shizuoka area. In the Lansing area, larger centers tend to be located on major rivers because they used to be a primary source for power and access in the pioneering period. In the Shizuoka area, larger centers tend

to be located along the line marking the southern or south-eastern ends of many mountain spurs and ridges. Some are located on the sea coast. Development of these functional centers de novo or from small villages to the present status has occurred virtually in the same particular physical environments in each of the two areas. This fact implies that it is "culture" or "man" that has modeled the present locational pattern of functional centers.

The two culture regions, American and Japanese, are similar in many respects, but different in many others. As far as the pattern of areal functional organization is concerned, these two culture regions have many common characteristics, since they have exchange economies and resultant hierarchically arranged patterns of settlements.

In cultural backgrounds or in traditional cultures, the two study areas are significantly different. Physical environments of the two areas also show sharp contrasts. However, even in art forms, languages, ideas or thinking methods, differences seem to be narrowing. Some of the attached photos (Fig. 27) well show Euro-American cultural influence upon Japanese architectural forms. Both languages, English and Japanese, perform functions of communicating semantically similar ideas and information in many cases, despite their morphological distinctions.

Photos in Fig. 27 are expected to let the reader visualize more fully the real appearances of the two areas, at

least to some extent. These are arranged according to the hierarchy of economic areal functional organization of the two areas. The physical environments are reflected also in the pictures, of course. In other words, the three aspects of geography introduced at the beginning of this dissertation were used in selecting these pictures. Synthesis of the three aspects of geography, summarized in written as well as tabular, map, and pictorial forms, is the ultimate objective of this dissertation.

An International Style of Areal Functional Organization

Many maps, diagrams, tables, and photos as well as analyses and description in this comparative study have shown the similarities and differences between the Lansing and the Shizuoka areas. One of the major characteristics of the so-called "Occidental" world is its urban-industrilization. This has resulted in considerable areal division of labor and in significant interconnection of places through the movement of people, goods, and ideas. It is a dynamic society in which such tremendous mobility has developed. The Lansing area falls into this category. The Shizuoka area also belongs to this category, although it still maintains a subsistence nature to some extent. Practically every settlement in both areas is interconnected functionally with other places, both in the respective areas and outside. The two areas belong quite firmly to an international style of

areal functional organization of world human occupance.

We have seen that art forms are considerably different between the two areas at the present moment. Introduction of the western art forms to Japan is already conspicuous. In the past several centuries, Chinese cultural influence has not been prominent. The Chinese culture introduced many centuries ago was Japanized, and now it is being modified or transformed once again by the Japanese in response to European and American cultures. In the opposite direction, the influence of Japanese culture upon American art should not be ignored.

If one avoids the ambiguous terms "Occident" and "Orient," one can escape the unnecessary confusion of such a question as "Is Japan an Occidental nation, because her areal functional organization, and her culture as a whole, is now quite similar to that of Occidental world?" Rather one may conclude that American and Japanese cultures and natural landscapes remain distinctive, while their two peoples develop patterns of areal functional organization which are genuinely international.

Synthesis of the three aspects of geography (culture, areal functional organization, and physical environment) directly concerns the reality of human occupance as a whole. In the future, the world may become one dynamic functional region, irrespective of different traditional cultures and physical environments, to which the term "international areal functional organization" could be applied realistically.

Mankind now faces a tendency toward such a functional unification of the world which heretofore has been characterized by a great many separate relatively more self-contained regions.

* * * *

A great many facts about the Lansing and the Shizuoka areas have been described fragmentarily in the preceding chapters. The author expects that these facts may ultimately be utilized by other students interested in the respective areas.

It is the author's hope that this study will forward by one step the greater understanding of the two culture regions--the United States and Japan. Other culture regions also should be studied in terms of an objective comparison based on principled criteria, so that one may understand regions in truly mutual perspective. At the same time, the author feels that additional quantitative as well as historical comparisons are needed. Areal functional organization of political and social establishments has scarcely been touched in the study of the two areas. Since these two kinds of establishments are essential in understanding the two areas more fully, the author regrets that it has not been possible to analyze these in greater detail.

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