THE DELINEATION, DEMOGRAPHIC COMPARISON AND POPULATION STABILITY OF SELECTED TYPES OF LOCALITY GROUPINGS IN THE CENTRAL DISTRICT OF TURRIALBA CANTON, COSTA RICA: 1951

Thesis for the Degree of Ph. D.

MICHIGAN STATE UNIVERSITY

Norman W. Painter

1956

This is to certify that the

thesis entitled

The Delineation, Demographic Comparison and
Social Solidarity of Selected Types of Locality Groupings
in the Central District of Turrialba Canton, Costa Rica: 1951

presented by

Norman W. Painter

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Sociology & Anthropology

Major professor

Date September 10, 1956

O-169

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by

NORMAN W. PAINTER

AN ABSTRACT

Submitted to the School for Advanced Graduate Studies of
Michigan State University of Agriculture and
Applied Science in partial fulfillment of
the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology and Anthropology

Year 1956

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NORMAN W. PAINTER

ABSTRACT

The purposes of this study are: (1) to test techniques of delineation developed in the United States in another cultural milieu; (2) to delineate locality groups in the Central District of Turrialba Cantón, Costa Rica; (3) to make demographic comparisons of these groups; and (4) to indicate degrees of population stability of such locality groups.

Following a summary of the history and development of techniques of delineation in the United States, a technique is designed for carrying out delineation under the concrete conditions of the new cultural milieu. Specific problems encountered are outlined. Results are presented graphically.

Two variables comprise the cross-classificatory system for determining locality place-groups. They are: (1) time-distance--time to traverse distance; and (2) land tenure--small independent owner-operators and owners of large haciendas. This system converted forty-five locality groups into seven conceptually homogeneous locality place-groups: the urban trade-center; those whose residents can reach the trade-center within fifteen minutes (all large haciendas); those whose residents travel to the trade-center in from sixteen to ninety minutes (subdivided into small land-holdings, large land-holdings, and mixed type holdings); those whose residents require more than ninety minutes to

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reach the trade-center (subdivided into large- and small-holdings groups).

The following results are outstanding:

Education: The younger age groups are more literate than the older. The urban people are more literate than the rural. Men are slightly more literate than women, although literate women achieve higher grade levels than literate men. People living nearer the trade-center, whether on large or small holdings, are more literate than those who live farther from school facilities. Small owner-operators and their children are more literate than people living on large haciendas.

Marital Status: There are more single men than single women. There are more married women than married men. There are very few divorced or separated individuals, and fewer than five per cent "free unions." Slightly more than five per cent are widowed. Rural-urban differences in marital status are negligible.

Occupational Composition: The Turrialba District is predominantly agricultural. Most of the working population is engaged in either agricultural or domestic activities, the men tending to the former and the women to the latter. Only 15.4 per cent of male agricultural workers are owners. There are more paid female employees in the large-holdings

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place-groups. Non-paid domestic workers are more prevalent in the rural than in the urban zone.

Place of Birth and Migration: About one-half of the people in the Turrialba District were born there. The small-holdings place-groups demonstrate higher proportions of "native" inhabitants than the large-holdings place-groups. Internal in-migration is counter-balanced by internal out-migration. There are very few foreign-born in Turrialba.

Population stability is greater for the small-holdings than for the large-holdings place-groups. This is true when the average length of residence is taken as the criterion--because of the attachment the small operators have to the land and the landlessness of the day-wage workers on the large haciendas. It is again true when the homogeneity of place of last previous residence is the criterion; homogeneity of origin seems to contribute to more landless people coming to the haciendas and more land-seeking people to where land can be settled.

One hacienda (Aquiares) constitutes an exception to the above generalization. This is because of a sharecropping system which gives the workers some attachment to the land.

Graphic presentation is used extensively. A graphic method of evaluating and presenting data on population stability is offered.

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ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation to Dr. Charles P. Loomis and Dr. J. Allan Beegle of the Department of Sociology and Anthropology. Dr. Loomis guided the field work in Costa Rica and was exceedingly helpful in the orientation stage of that work and in the analysis of the demographic data. He made many valuable suggestions at various stages of the work which were most helpful to the author. Dr. Beegle was most helpful in the early stages of interpretation of the results of analysis, and suffered his patience to be tried in subsequent stages where attention to detail was time-consuming.

Dr. Paul C. Morrison deserves special mention for his untiring companionship on the roads and trails of the rugged terrain of the Turrialba District during the delineation of the locality groups in that District. He further encouraged the author during the preparation of the first draft of the manuscript.

Dr. Olen E. Leonard assisted in the development of graphic presentation of those data which lent themselves to this form of presentation.

Finally, Dr. Duane L. Gibson helped more than he may realize throughout the various stages of the project on those aspects related to methodology and field techniques.

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CHAPTER I

INTRODUCTION

Background of Study

This study reports work done under the auspices of the Area Research Center of Michigan State College in cooperation with the Inter-American Institute of Agricultural Sciences located at Turrialba, Costa Rica, Central America.[1] In the Fall of 1950 three Area Research Assistants accompanied by Dr. Charles P. Loomis, Director of the Area Research Center, went to Costa Rica to expand the research program begun in 1948. The present writer was one of these Assistants.[2]

The three Assistants were assigned to the Department of Economics and Rural Life at the Institute to become parts of the "research team" composed of members of that department and of Michigan State College personnel. The present investigator, in addition to assisting in carrying out other studies underway and still others subsequently

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[1]This Institute is a branch organization of the Pan American Union.

[2]The other two were Thomas L. Norris and Charles H. Proctor. Another earlier Assistant, who helped in the initiation of the program in 1948, was Reed M. Powell.

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initiated, was assigned the task of delineating "locality groups"--and, later, of making demographic comparisons of such groups--in the primary study area, the Central District of Turrialba Canton, Cartago Province.

One of the problems of previous studies at the Institute had been the difficulty of research teams in accurately determining and defining their areal units of investigation. The areal units previously studied had been more or less arbitrarily determined, supplemented by the subjective judgment of some of the long-time residents of the District. But no verification had been made of the accuracy of the units do determined. In the application of "social system" as a unit of investigation, there was need for a concrete areal unit as a source of data in order that groups might be studied and compared. Further complicating the overall research program was the requirement of interdisciplinary team research; the investigations needed to be in agreement on such basics as definition of units of study. There was a recognized need for the determination of <u>common</u> units of study in order that sociologists, anthropologists, economists, health specialists, nutritionists, and others could work together so that data and comparisons might be made of results. It was felt that team research could be advantageously utilized only if a <u>major problem</u> (e.g., raising the level of living of a population

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group) could be systematically attacked. For these reasons the task of delineating the localities of the Central District of Turrialba became an important part of the research program. The present study is restricted, therefore, to this aspect of the entire program. Subsequently, the demographic comparison of these groups made another fundamental contribution to the larger study in the form of basic data relevant to health, level of living, and, on the theoretical side, to the detailed study of social systems.

Purpose and Scope

The purposes of this study are: (1) to delineate the locality groups in the Central District of Turrialba; (2) to make demographic comparisons of these groups on the basis of a cross-classificatory system (to be described later); and (3) to describe some of the organizational and interactional patterns of such groups.

Supplementary to these three basic purposes is that of the description of the locality groups and their respective members following delineation. This description will be in terms of the settlement patterns, forms of tenancy, daily life patterns, etc., of the various locality groups.

Certain assumptions are implicit in these purposes, viz., that awareness of attachment to a locality implies some kind of group feeling or group consciousness; and,

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that this group consciousness or group feeling gives the inhabitants of a locality esprit de corps and some degree of solidarity, thereby permitting them to be sociologically labeled as "groups."

Locality groups are defined herein in terms of a socio-psychological conceptualization since the concept of "identification" is basic to the determination of such groups. This will be clarified along with the discussion of the technique used in delineation in Turrialba.

The criteria for combining the locality groups will be restricted to (1) time-distance (average distance in terms of time, on the part of members of respective groups, to reach the trade center of Turrialba City), and (2) size of land holding--localities composed of small independent operators will be combined, as will those coinciding with large plantations. A cross-classification of these two variables will ultimately result in seven "place-groupings," or "population-groupings." For example, all the large plantations in a given time zone will be combined into one "place-group."

The demographic comparisons of these groupings will be restricted to the census data available on them plus a limited supplement by a previous investigation at the Institute.

The basic interest herein is in the overall effects which certain ecological characteristics have on peoples in

diverse types of localities. Certain questions may be asked regarding the factors of distance from the trade center, and size of land holding.

What is the effect of distance from the community trade center on the life of people in the various neighborhoods? Does nearness to the trade center contribute to the general welfare of a people? Is the demographic composition of a locality affected by variation in distance from the trade center--marital status, for example? Is the life of people who live in localities composed of small, independent owner-operators affected thereby? Is it different from the pattern of life on large haciendas? If so, in what respects is it different? Further, how is the demographic composition of such population groups affected by this factor of size of land holding?

The present state of ecological theory does not lend itself readily to the derivation of a frame of reference for the study of locality groups. In this respect, it may be helpful to discuss briefly some of the major points of argument among human ecologists. And a brief description will be made of what human ecologists actually do, the things they study and write about (that is, "constant"). From the nebulous state of ecological theory it is hoped that a satisfactory point of departure can be derived for this study.

An Approach: based on present literature

The word ecology " was coined in 1869 by the biologist Ernst Haeckel from the Greek word OIKOS, which means house, abode, dwelling."[3] The main point seems to be that what is observed is studied in consideration of where it is located.

Historically plant life received the first attention of ecologists. Later animal life was studied ecologically. And human ecology is only now beginning; it does not yet have a consistent, established, and accepted frame of reference. It is, however, often considered to be a part of the field of sociology.[4]

But ecological study has come to be restricted primarily to the study of the relationships existing between organisms and, or in, their environments. As one authority states it, "human ecology centers in the study of relations between man and environment."[5] This constitutes a basic

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[3]A. B. Hollingshead, "Human Ecology," Part Two, in A. M. Lee (ed.), New Outline of the Principles of Sociology (New York: Barnes & Noble, Inc., 1946), p. 67.

[4]See, in this regard, E. B. Reuter, Handbook of Sociology (New York: The Dryden Press, 1941), pp. 29, 114.

[5]J. A. Quinn, Human Ecology (New York: Prentice-Hall, Inc., 1950), p. 3. Quinn emphasizes that "environment" refers only to material and spatial aspects and not to cultural and social elements.

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definition. And no one seems to disagree with this conception of human ecology--as far as it goes.

"Human ecology deals with the spatial aspects of the symbolic relations of human beings and human institutions."[6] This definition introduces the idea of the unconscious nature of relations between men. Indeed, this conception has not only been consistent in most of the writings in the past thirty years since "the term human ecology made its appearance in 1921 in the volume, An Introduction to the Science of Sociology by R. E. Park and E. W. Burgess,"[7] but still persists today in some of the important treatises of quite recent date. For example, Quinn states in his opening chapter that his work was going to place "much greater emphasis on the impersonal, sub-social aspects of areal structure and change than on the distinctively social aspects of human relations."[8] He had already stated that "one important view pictures human ecology as the study of those sub-social aspects of areal organization that arise and

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[6]R. D. McKenzie, "Human Ecology" in Encyclopedia of the Social Sciences (New York: The MacMillan Co., 1931), Vol. V, p. 314.

[7]Pages 161-216, referenced in Amos H. Hawley, Human Ecology: A Theory of Community Structure (New York: The Ronald Press Col, 1950), p. 8.

[8]J. A. Quinn, op. cit., p. 11.

change through 'competition.'"[9] The use of the term "symbiosis" has also been traditional. This term means "living together" but includes also the idea of "mutual dependence between unlike organisms," according to Hawley,[10] and refers to the "impersonal coexistence aspect of ecological relations" according to Quinn.[11]

But it seems to this writer that sociologists have little use for ecology if it cannot be made human to a greater extent than is indicated by the above. Hawley defines human ecology as "the study of the form and the development of the community in human population," and then proceeds to discuss "man's extensive control over his surroundings,"[12] and further says that

> the elements of human culture are therefore identical in principle with the appetency of the bee for honey, the nest-building activities of birds, and the hunting habits of carnivora . . . . Ecology is not concerned with how habits are acquired--that is a psychological problem; it is interested rather in the functions they serve and the relationships they involve.[13]

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[9] Ibid., p. 7. Quinn clarifies "sub-social" as "those aspects of human interrelations . . . that do not involve interaction through symbol communication" and defines "competition" in the tradition of Park and Burgess, "who picture it as a sub-social form of interaction 'without social contact.'"

[10] A. H. Hawley, op. cit., p. 36.

[11] J. A. Quinn, op. cit., fn. 10, p. 8.

[12] A. H. Hawley, op. cit., p. 68.

[13] Ibid., p. 69.

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Hawley insists that this is the thing "that constitutes man an object of special inquiry and makes possible a human as distinct from a general ecology."[14] But, Quinn says that the "social-cultural conception of human ecology seems inadequate as a means of defining the field, . . ."[15] And so it goes.

But this writer prefers to go along with the need of and the insistence upon certain major changes in order that human ecology may be put to use. Boskoff[16] says that the "mystic sub-social spatial determinism" must be removed, and that "competition . . . must face the reality of socially structured spatial distribution." He adds that "orthodox" human ecology is inadequate. He thinks, however, that human ecology "can provide a needed spatial frame of reference for sociology to aid in the location of the social phenomena with which it is concerned," and introduces the term "sociological ecology" which he defines as "the description, analysis, and explanation of the spatial and temporal adjustment of social organizations (groups and functions) through social behavior and relationships in the

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[14] Loc. cit.

[15] J. A. Quinn, p. 9.

[16] Alvin Boskoff, "An Ecological Approach to Rural Society," Rural Sociology, XIV (December, 1949), 306-316.

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pursuit of cultural values."[17] This agrees, more or less, with McKenzie's classification of human ecology into three categories one of which is "ecological organization" which he says "represents the spatial arrangements of population and institutions at any given time either within a local community or within a larger constellation of communities."[18]

These latter conceptions are essentially those aspects of human ecology which will be utilized in the present study, that is to say, this study will describe the spatial arrangements and the spatial and temporal adjustments of the populations of delineated localities in the community of Turrialba, Costa Rica.

All aspects of human life are affected by the places where people live. The places where they live, work, and meet their daily needs through institutional and associational agencies are, for the people, their worlds.

Space is a requirement for human activities. As the characteristics of spatial areas vary, so varies the life of the people living therein. Not only are the characteristics of an area determinant of the composition, structure and action of population groups but the characteristics of

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[17] Ibid., p. 308.

[18] R. D. McKenzie, "Human Ecology," Encyclopedia of the Social Sciences (New York, 1931), p. 314. The other two categories are ecological dominance and ecological succession.

other areas, especially nearby ones, are also influential. Furthermore, the relationships between areas are determinant of life patterns in a locality.

Some of the basic concepts to be utilized in this study need to be defined. Demography is the scientific study of human populations; it is the quantitative study of the composition and vital processes of population aggregates. Such populations can be geographically located. The composition of populations is usually concerned with such factors as age, sex, residence, education, marital status, occupation, and nationality. The vital processes include births, marriages, migrations, and deaths.

Traditionally the concepts of community and competition have been utilized by ecologists. Community, in the ecological sense, refers to the "living together" in a common habitat of like organisms. It assumes also a relatively stable order among members of the same species. This implies a static approach; an ecological study would then be a study of the situation as it exists at a given time in a particular space.

Competition, as used by the ecologists, refers to the fact of a competitive struggle for existence among the members of the species. This competition acts as a regulator of the number of individuals which a given locale will support. Of course, many factors enter here to help determine

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the number; for example, natural resources, climate, technology, custom and tradition, . . .

> Reduced to its elements then, the human community may be considered to be ecologically the product of five interacting factors: a population (1) living in an area, (2) possessing artifacts (technological culture), and (3) customs and beliefs (nonmaterial culture), which determines (4) the use of the natural resources, and (5) the functions performed in the social division of labor.
>
> In the human community these factors operate to produce its (1) spatial distribution, (2) functional organization, (3) position in a constellation of communities, and (4) changes, within the community, both ecological and social.
>
> Human ecology deals with society in its biological and symbiotic aspects, that is, those aspects brought about by competition and by the struggle of individuals, in any social order, to survive and to perpetuate themselves. The social order includes that in which individual freedom is limited by the rules of a political society, or by the customs and conventions of a purely personal and moral order such as exists in the family. Human ecology is, therefore, concerned with (1) population in all its vital aspects; (2) aggregation; (3) ecological organization; (4) the position and function of dominance; (5) migration; and (6) succession.[19]

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[19] A. B. Hollingshead, op. cit., p. 70.

CHAPTER II

THE STUDY AREA

Geography

Costa Rica is located in the central part of the isthmus between the two American continents. It is one of the six Central American countries. Among these only El Salvador is smaller than Costa Rica. It has an area of about 19,238 square miles (approximately the size of the state of Maryland) and in 1950 had 800,875 inhabitants, which results in a population density of 41.63 per square mile.[1]

In spite of its diminutiveness, it is commonly believed to have the most stable of Latin American governments, to be among the most progressive and most democratic of Hispanoamerican countries, and to have the largest proportion of whites (about 90 per cent) of such countries.[2]

Politically, Costa Rica is composed of seven provinces which are themselves divided into cantones (counties).

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[1]Preston E. James, Latin America (New York: The Odyssey Press, 1942), p. 705. Censo de Población de Costa Rica (22 de mayo de 1950), (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 7.

[2]Preston E. James, op. cit., p. 706.

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[3] Ibid

Each cantón is further subdivided into districts--the smallest political units. It is one of these districts which comprises the primary area of investigation for the present study--the Central District of Turrialba in the Province of Cartago.

Geographically Costa Rica is located south of Nicaragua and north of Panama. It is bounded on the east by the Caribbean Sea and on the west by the Pacific Ocean. The geologic backbone of the country is a segment of the Rocky Mountain, Sierra Madre and Andean chain which extends from Alaska to Tierra del Fuego, or Cape Horn. The highest peaks reach elevations of more than 12,000 feet above the sea, just south of Cartago Province.[3]

The general climatic condition of Costa Rica can be classed as humid. The annual mean rainfall for the country as a whole is approximately 100 inches. While the temperature along the coast lines may be considered hot and uncomfortable--even unhealthy--that in the Central Plateau is commonly thought of as being rather ideal. In this more densely settled plateau the temperature averages from 68 to 74 degrees F.

The average annual rainfall in Turrialba is between 95 and 100 inches. The rainy season (which the natives

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[3] Ibid., p. 707.

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sometimes refer to as "winter") lasts from May to December, and the "dry" season lasts from January to April.

Temperatures in Turrialba range from 68 to 76 degrees around the calendar. The coolest months are usually January and February (which the people paradoxically call "summer" because these months are relatively "dry" ones). Temperatures during these months range from 68 to 71 degrees. The warmest months are usually May and June when the temperatures range from 73 to 76 degrees.

The topography of Costa Rica is very irregular; mountains and plateaus cover a great proportion of the country, but there are also some plain areas. Topography is often highly determinant of neighborhood and community boundaries. Much of the political boundary of the Central District of Turrialba is marked by rivers. Within the district, mountain ridges, quebradas (creeks), rivers, and other physical features of the land often coincide with the accepted geographic limits of a locality group.

The Turrialba River heads on the slopes of the Volcano Turrialba. It flows downward in a southeasterly direction. The Turrialba Valley is bounded on the north by one ridge of mountains, and on the south by another, both running from northwest to southeast. Two other small rivers, parallel to the Turrialba River and to these ridges, form the boundaries of the District on the northeast and southwest.

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Within the Turrialba Valley can be found variations other than in altitude, which varies from 2000 to 4000 feet above sea level. For example, to the southeast of the City of Turrialba lies a rather extensive and unusually level area of land, at about 2000 feet elevation. This land is of unusually high quality, for the most part. Most of it is included in the holdings of the Inter-American Institute of Agricultural Sciences. But to the northwest of the City the Turrialba Valley has a rather rough and stony surface. Some of the numerous short slopes range up to 45 degrees or more in steepness. The elevation at Aquiares is about 3200 feet.[4]

Economy

The major products of Costa Rica are coffee, bananas, cacao, sugar cane, cattle, and lumber. One of its major industries is sugar refining. Much of this is done on a small scale, however, and most of it is for local consumption. The per capita imports of Costa Rica exceed the exports in terms of dollar value.

Coffee and sugar cane are the two major products of the Turrialba Valley. Some of the small farmers lean rather

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[4]Paul C. Morrison and Jorge León, "Sequent Occupance, Turrialba Central District, Costa Rica," Turrialba, Vol. I, No. 4, pp. 185-189.

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heavily on their milpa (subsistence crops, especially "maize" or corn) but most of the neighborhoods will produce both coffee and sugar cane, even though each neighborhood tends to emphasize the one or the other. Uncleared or untillable land is usually given over to pasture. There is very little beef or dairy production in the District, but the major source of power on the farms and plantations is the oxen. Thus a certain amount of pasture land is vital to successful farming.

With the coming of the railroad in 1890 the city of Turrialba was founded. Agriculture, which had declined, was revived and sugar and coffee became cash crops. The prosperity of the sugar industry contributed greatly to the economic and population growth of Turrialba.[5]

Such was this growth in the Valley that Turrialba was made a county in 1903. The present Central District covers about 30 square miles of the southwest portion of the county.

The United Fruit Company began contracting for bananas in the Turrialba Valley in 1916. The production of bananas increased steadily until at its peak between 1926 and 1928 an average of nearly 900,000 stems were shipped annually. The booming of this new industry contributed

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[5] Ibid., p. 191.

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substantially to the additional growth of population in Turrialba. But from the start there was evidence of disease among the banana trees. And by 1935 the banana industry for the Turrialba area was a matter of history.

However, the city fathers had begun to plan for this event as early as 1922. In that year they began to offer coffee seedlings for free distribution. Thus the local economy was sustained, although not without some problems of adjustment. At least, no serious decline in population was evidenced.

According to Arthur W. Peterson, Costa Rica has been divided into fifteen principle agricultural regions. These regions differ according to the manner in which farmers make use of the land for agricultural purposes. These differences result from variations in climate, distance to market areas, and geological characteristics. The average size farm per family varies according to agricultural regions. For example, in the coffee region there are about seven manzanas[6] per family as compared with 267 in the northern cattle region. However, the coffee region produces a higher income per manzana which permits a family of of this region to live on approximately the same level as a family of the cattle region. Other agricultural regions of

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[6]A manzana equals 1.727 acres or 0.70 hectares.

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the country range between these two extremes with respect to size of farm per rural family and income per manzana.

Turrialba lies within one of several zones classified by Peterson as having "cultivos varios" (mixed crops). These several zones, for the country as a whole, are made up of 2,349 fincas with a total surface area of 262,386 manzanas, which gives an average of 69 manzanas per "rural family."[7]

In 1948, there were about 420 farms of one manzana or more in size in the Turrialba district. Of these some 95 were operated by colonos (share croppers) and 65 by parásitos (squatters on lands that were part of the large haciendas). In addition, most of the 959 rural families with less than one manzana of land at their disposal lived on the large haciendas where the workers were employed as day laborers. Thus, almost 80 per cent of the rural families of the Central District are dependent upon the big haciendas for their livelihood.[8]

Early Settlement

The primary study area was determined in part by the fact that demographic data were available only for the Cen-

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[7]Arthur W. Peterson in Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), pp. 74-75.

[8]Paul C. Morrison and Jorge León, Ibid., p. 195.

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tral District of Turrialba Canton. The entire Canton was, however, surveyed for purposes of determining the limit of influence of the trade center of Turrialba City. The method of determining this "trade community" will be discussed later.

The first center of settlement in Costa Rica was in the Central Plateau, 3000 to 4000 feet above sea level. What is today the city of Cartago was established in 1564. Prior to that time the Turrialba Valley had been inhabited by Indians; they were a branch of the Caribes known as Guetares. But because of plague (and other factors) these Indians had either died out or migrated from Turrialba. It was not until late in the nineteenth century that white expansion from the Central Plateau reached down through the Reventazon Valley to one of its major tributaries--the Turrialba Valley, which varies from 2000 to 4000 feet above sea level, and is located on the Caribbean slope side of the isthmus.

In 1838 there were only 26 houses in the Turrialba Valley. (Coffee had been introduced about 1835.) Cacao was still the major crop of the valley. The establishment of a church congregation in 1841 did not enhance the growth of population. Disease was a serious problem, and there was a plague of cholera in 1856. An attempt at colonization was made by a group of Germans about 1850. This at-

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tempt was a failure, however, primarily because of the extreme isolation, very bad roads, and the resultant near-impossibility of transporting products to market. The colony disappeared about 1880.

By 1887 most of the cultivated land in the Turrialba Valley had reverted to pasture. But when the railroad came in 1890, it gave considerable impetus to population expansion. By rail, Turrialba is about forty miles from the national capital of San José and sixty miles from the port of Limón on the east coast. With transportation now provided to both the national and the world markets, agriculture was quickly developed.

Several earlier attempts at settlement failed, primarily because of disease. The present population of the Turrialba Valley is a result of settlement occurring mostly during the past sixty years. The population density of the Central District in 1950 was 471 per square mile, and of the rural area alone it was 284 per square mile. (This compares with a population density of forty-two for the country as a whole.) Morrison concludes that "the successful occupance of the Turrialba Central District gives every indication of permanence."[9]

In 1883 there were only 869 people around Turrialba in the Valley. By 1888 there were even less, 792. But

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[9]P. 197.

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four years later, in 1892, there were counted 2163 (after the railroad came in). The 1920 Census gave the population of the Central District of Turrialba as 5227; the 1930 Census gave it as 10,496; and the 1940 Census gave a population of 14,140. It thus appears that the population threshold, or saturation point, has been reached (under the present state of technology), since the 1950 Census gives practically the same ifgure, 13,584.[10] And since there are no known problems attributable to over-population, some degree of population stability is indicated.

Of the present inhabitants, 5,449 reside in the town of Turrialba and the remaining 8,135 live in the rural sections.

Today the pattern of settlement in the Turrialba District is as varied as a crazy-quilt. The populations occupying the large plantations are usually agglomerated; the workers' dwellings are concentrated around the central buildings, or headquarters, of the hacienda. Note the localities of La Isabel, La Dominica, La Doris, La Roncha, Aquiares, Pavas, and Florencia (Figure 1, p. 55).

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[10]Figures taken from the annual volumes of (1) Informe de la Dirección General de Estadística, and (2) Annuario Estadístico (for 1920 to 1940). The 1950 figure is from Censo de Población de Costa Rica (22 de mayo de 1950), p. 52.

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On the other hand, the inhabitants of localities composed primarily of small independent owner-operators are dispersed upon the land. Note San Juan Sur and San Juan Norte. In Jesús María the dispersed population is that of parásitos or squatters. And the dispersed settlement noted on a part of the community of Aquiares is that portion of the plantation which is assigned to the colonos. The colono system is a form of tenancy similar to share-cropping. The patrón (owner) of the plantation cedes to the colono from two to twenty acres each (with a mode of about five acres) of land on which they must produce the major crop of the plantation. They are provided with a house and with fuel (wood). In addition, they are granted a small plot for the cultivation of garden crops; this is for their subsistence but any surplus may be sold. They must sell the major crop produced to the patrón at a contracted price.

Thus, in addition to the railroad, reduction in the rate of human mortality, establishment of certain services (hospital and schools), production of cash crops, and improvement of other conditions of agriculture, in the Turrialba District, plus an increasing birth rate and resultant population pressure in the original settlement on the central plateau, and a general improvement in overall conditions for the country as a whole, the present system of land tenancy also influences population characteristics and

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The present population and settlement pattern seems to have stabilized, and the economy offers hope of healthy permanence.

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CHAPTER III

TECHNIQUES OF DELINEATION

Introduction

The localization of human groups is common knowledge, but the reasons for aggregation are not always apparent. Population grouping is a common phenomenon determined in part by the unequal distribution of conditions favorable for living.[1]

Most human beings prefer to live in groups. Thus the group, rather than the individual, is the important unit in the discussion of human distribution. The family is usually considered to be the smallest and the most basic group of social significance. The members of a family generally live together in one particular and very small area, a house which is known to them as home. But the isolated house, or family, is exceptional; a cluster or conglomeration of houses is the rule.

The consequences of the great irregularity of distribution of mineral resources and other favorable quali-

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[1]See R. E. Dodge and S. D. Dodge, Foundations of Geography (New York: Doubleday, Doran & Co., Inc., 1937), pp. 261 ff.

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ties of land is that people find it advantageous to live in unequally spaced groups of varying sizes. The influence of the physical features of the land upon the size and composition, as well as the location, of a settlement group is often pronounced. There is another factor which adds to the tendency of people to group together, namely, economic necessity.[2] This latter factor is directly related to the way in which people gain their livelihood.

When a population group is of sufficient size, or covers a large enough territory, it has a tendency to divide itself into sub-groups. These sub-groups are no less important for being so. They may be analysed and compared on the basis of size, density, relative location, and so on. For example, a clique may be composed of the members of an extended family whose residences are interspersed among those of other cliques and families. The study of these groups is possible by the application of certain techniques which will receive only limited attention as such in this work.

Beyond the family, the next locality group considered of significance by sociologists is the "neighborhood." The neighborhood is the smallest of the locality groups beyond the family. The final grouping in this continuum is

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[2] *Ibid.*, p. 264.

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the community. Both the neighborhood and the community are capable of further classification. The community is usually thought of as consisting of a congeries of neighborhoods and the neighborhood as being "composed of two or more friendship or clique groups."[3]

In order to study any group it is necessary to determine its units. In the case of the family we would want to know who its members are; then we might determine and study the relationships between these members, and finally, we might arrive at some understanding of its structure--the social organization of the family. This procedure can be applied to the study of locality groups. Our interest at the moment is limited to the determination of the area of influence of social institutions or social groups which, as a result of this determination, are called locality groups. This process of determining boundaries is called <u>delineation</u>.

As implied above, the determining of the units of a study group is seldom an end in itself. A study of the family is often directed toward the understanding of its structure. The study of cliques may be directed toward the determination of "leaders" or of interaction patterns. Likewise, the study of locality groups usually involves

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[3]See C. P. Loomis and J. A. Beegle, <u>Rural Social Systems</u> (New York: Prentice-Hall, Inc., 1950), p. 187.

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structure and relationships; it is often an attempt to determine the lines of communication and understand the relationships between a cluster of smaller locality groups (neighborhoods) and a larger one (the community).

Sometimes a failure to properly determine the limits or the area of influence of a locality group leads to false conclusions on the part of an investigator regarding the structure of a community. If some units are omitted or if some are included which do not belong, then the study consists not of what the investigator thought he was studying but of an "unknown universe." No conclusions of such a study can be valid.

Thus, the application of "good" delineation techniques are well worth while. Such "good" techniques (those techniques which give the highest degree of precision in a given situation) will vary according to the circumstances of the situation. The importance of delineation lies in the basic control which it gives an investigator in the study of locality groups.

Origin and Development of Delineation Techniques

Delineation may be defined as the process of determining the geographical limits of social groups, or of determining the limits of the basic areas of interaction of such groups. The result of this process of delineation is

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a congerie of social groups, based on the criterion of space, which we call "locality groups."

As far as can be determined by this writer, the first "delineator" was Charles Josiah Galpin. In 1908, when a student pastor at the University of Wisconsin, graduate students used to engage him in the discussion of a favorite topic, what he called "service stations." A service station, according to Galpin, was a center at which the basic needs of a group of people were fulfilled. People in a given area bring their produce to sell at this "service station" and buy the necessities of life. The area serviced by these stations Galpin called "social basins." The "station" was the center of a "social watershed."[4]

Galpin went still further in the elaboration of his ideas and said that beyond this (primary) area people flow into larger "social basins." The first of these has come to be called the "neighborhood"--an area of relatively limited services; and the second is generally thought of as a community--an area with a "service station" which meets a major portion, if not all, of the needs of its people. Galpin believed that the economic concept of communities should be broadened to include more social aspects.[5] This

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[4]C. J. Galpin, Rural Life (New York: The Century Co., 1918), p. 181.

[5]He did not consider political boundaries as very influential in regard to these social areas.

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may have been the forerunner of the idea of neighborhoods being areas of high frequency social contacts and relatively intense social interaction.

Galpin is usually credited with the so-called "road-turnings" technique of delineation. (This could not be verified by the present writer in the available literature.) This is more a tentative or checking technique than it is a basic one. Actually Galpin did not rely altogether on road-turnings just as no one today relies alone on "traffic-flow" or any other short-cut method.

The road-turnings technique consists of traversing the main artery between two trade centers and noting the direction in which the wagon and buggy tracks (in Galpin's day) turned. When the point was reached at which the tracks from the lanes and side roads turned away in the opposite direction, Galpin knew that he was on the periphery between the two centers.

Two methods were described by Galpin for finding the "bounding lines" of a rural community.[6] Both relate to the delineation of "trade areas." In the first of these he records the following steps: (1) Begin with an up-to-date atlas of the county in which the community lies. This map

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[6] Ibid., pp. 338 ff. It should be noted that Galpin did not use the term "delineation." He used "finding the bounding lines" and "obtaining the trade areas," etc.

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[7] Ibid.

should show the location of every farm house in the county. (2) Trace a portion of the map in such a manner so as to locate at the center the trading village or small city which is to be the trade center of the community. Include so much of the contiguous farming territory as will reach nearly to each adjoining business center in every direction. This will constitute a "trial map" which is obviously larger than the area of the community in question. (3) A card index of the present occupants of each farmstead should be made. This should be very complete. (4) The next step is to take the trial map and card index to the principal merchants of the business center and ask, for each card, whether this farmer's family trades regularly in this business center. Repeat the process with bankers on the subject of banking, with the school principal regarding schooling, with the clergymen on the subject of church participation, and so on. When this is completed the "essential facts for making the final map of the rural community" will have been gathered. (5) The last step is mechanical.

> For determining the trade map, stick a pin in every farmstead dot which you find checked in the card index. Run a thread around the outside pins. Draw your boundary along the thread. The result will give you the trade community. Repeat the process for the banking community, shipping community, paper community, library community, high-school community, church community, etc.[7]

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[7] Ibid., p. 339.

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[8] Loc.

[9] Ibid

After indicating that the economic concept of communities should be broadened to include more aspects of a *social* nature, and actually including such non-economic aspects as religion and education, Galpin comes back to the strictly economic aspect when he concludes as follows. "As business is the basic principle of the borough, the trade community map will be accepted as the basic community area."[8] This can probably be justified, however, on the basis of the coincidence of the areas of social activities with those of economic activities.

The second method of making the final map involves altering the technique under step four (4) above. Instead of interviewing businessmen and others in the trade center, talk directly with each farmer living in the "area of the trial map." Ask them where they trade, and so on. Galpin asserts that "the two methods produce approximately identical results. Tradesmen know their customers."[9] This point could be argued.

In the forty years since Galpin began expounding on the topic many others have seen the importance of delineation as a requisite to the further study of communities. With further study the units so determined are usually an-

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[8] *Loc. cit.*

[9] *Ibid.*

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alyzed in regard to social structure, leadership, patterns of interaction, and so on. Carl C. Taylor agrees that "accurate description is the first step in analysis."[10] The point has already been made that delineation is only a first step, not an end in itself. It is rather a means of determining units of study after which they can be more properly described and better understood.

By 1920 Dwight Sanderson had begun to publish his studies of rural neighborhoods and communities. One of the earliest of these was "Locating the Rural Community."[11] His methods have been described in numerous bulletins published by the Cornell University Agricultural Experiment Station and in his books.[12] He leaned rather heavily on Galpin's methods and utilized also the "team haul" concept of Warren H. Wilson. This concept is used in limiting the community whose nucleus is a town or village trade center to the "team haul radius" of that center. Wilson had said that "social customs do not proceed farther than the team haul. Imitation, which is an accepted mode of social organiza-

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[10]Carl C. Taylor, et al. Rural Life in the United States (New York: Alfred A. Knopf, 1949), p. 5.

[11]"Cornell Reading Course for the Farm," Lesson 158, 1920, p. 417.

[12]See especially, Dwight Sanderson and Warren S. Thompson, "The Social Areas of Otsego County," Cornell University Agricultural Experiment Station, Bulletin 422, July, 1923, pp. 9 f. And Dwight Sanderson, Rural Sociology and Rural Social Organization (New York: John Wiley & Sons, Inc., 1942), pp. 275-278.

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tion, does not go any farther in the country than the customary drive with a horse and wagon. . . . Intimate knowledge of personalities is confined to the community and does not pass beyond the team haul radius."[13]

As Galpin had done, Sanderson delineated on the basis of individual "agencies" or institutions and drew lines on the map for each of them. "The area for each agency was determined by asking each resident where he went for the satisfaction of that particular need."[14] He also interviewed business men and church and school leaders. (Banking and hardware areas were found to be somewhat larger than grocery trade, church, and village most often visited. The latter were almost identical among themselves.) Then a composite of the areas described was said to approximate the boundary of the community. There was a tendency for the communities to overlap along the periphery. This strip of territory between two communities which cannot be claimed for either of them with certainty Sanderson recognized as a "neutral zone."[15] And that was it; the community was delineated.

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[13]Warren H. Wilson, The Evolution of the Country Community (Boston: Pilgrim Press), quoted in Sanderson, D., ibid., p. 275.

[14]Dwight Sanderson and Robert A. Polson, Rural Community Organization (New York: John Wiley & Sons, Inc., 1939), p. 32.

[15]Dwight Sanderson, Rural Sociology and Rural Social Organization, pp. 283-84.

It might be interesting to compare Sanderson's description of the method of delineating in 1920 with that in 1942. In the Cornell Bulletin No. 422 he handles the neighborhood and the community separately as regards "method of investigation"; they were also treated separately in Rural Sociology and Rural Social Organization, but he did discuss the method of delimiting the neighborhood in the latter work.

In 1920 the "method of investigation" of the neighborhood was described as follows:

> The cooperation of the rural school teachers was enlisted in the study, and their assistance, as well as that of the district superintendents, is gratefully acknowledged. Through them cards were taken by the school children to the farm homes of each district, bearing the question, "What is the locality in which you live ordinarily called among the people? (This name does not refer to the village, town, or city within a few miles of you, but rather to your country neighborhood, such as 'Robert's Corners,' 'Taylor Settlement,' 'Blue Valley,' etc. If your locality has no such local name, please indicate how you would describe your location.)" This card was filled out by some one on each farmstead, with his postoffice address. A map of the school district was sent to each teacher, and on it she drew the approximate boundaries of the district, and located the houses by numbers corresponding to those placed on the cards. In this way the locality names were obtained for the whole county, with the exception of a few districts along the county boundary whose schools are located in adjoining counties.
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> These local maps were then transferred to a map of the county and a line was drawn around each group of farms using the same locality name. As no maps of the individual farms are available and as their boundaries do not run on section lines, it is impossible to map the exact boundaries of the farms using the same locality name, and the areas shown in figure 3 are only ap-

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proximate, so as to include the farmsteads using the same locality name. Localities in which less than five farms used the same name were omitted, ...

. . . Sections of this map for each township were sent to the township clerks and supervisors, for correction.[16]

And the "method of location" of the community stated that:

The location of community areas is based on the returns from questionnaires received from the farm homes. The following questionnaire was sent to each farm home in the county, with a franked envelope for its return: ((prose form copied from the questionnaire)) Town, School District No., Your name, Your post-office address, (1) At what place is the store at which you do most of your local buying of groceries? (2) At what place is the store where you do most of your local buying of hardware? (3) At what place is your bank located? (4) If you sell milk, where do you deliver it, or to what point is it hauled for you? (5) Where is your nearest railroad station for shipping or receiving freight? (6) At what place is the church or Sunday School located which your family attends? (7) At what place is the grange located to which any member of your family belongs? (8) At what place is the lodge located to which any member of your family belongs? (9) Do you have any children attending high school? If so, where is it located? (10) To what village or community center do you and your family go most frequently?

. . . the replies were sufficiently well distributed to give a fairly accurate basis for mapping the areas of the different institutions. The replies to questions 1, 2, 3, 5, 6, 7, 9, and 10 were transferred to large maps, so that symbols placed at each farm home replying showed the location of the institutions or services which it utilized. Boundary lines were then drawn showing the areas of each of these institutions or services, . . . The community areas were then determined by making a composite of the boundaries of the areas for local trade, for the church, and for the village or the community center visited the most frequent-

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[16]Cornell Bulletin 422, pp. 9-10.

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> ly. Where the boundary of two communities was in doubt, owing to lack of information or to conflicting information, facts were ascertained several times by a personal visit, and at other times the boundary line was so obviously due to topography that the lines of the watersheds were used.[17]

In 1942 Sanderson omitted discussing the method of delimiting the neighborhood but did treat the method for "locating the rural community":

> The exact mapping of the approximate boundary is a technical matter, but for practical purposes it may be determined by making inquiry of merchants and business men as to the farms farthest from the village which habitually trade with them and marking these on a map. In the same way the number of church attendants may be obtained from the ministers, school patrons from the school principal, and members of leading organizations, such as the grange or a lodge, from their officers, and marked on a map. A composite of the areas thus described will approximate the boundary of the community, but very probably will be somewhat larger than may be safely claimed for the community area, ... Usually there will be a strip of territory between two communities which cannot be claimed for either of them with certainty and which must be recognized as a neutral zone. If it is desired to determine the community area more exactly it may be necessary to visit the families on the outer border of the community and to inquire as to which village they visit most frequently, for it has been found that a boundary mapped from the replies received to this question is practically identical with that obtained by more elaborate procedures.[18]

Sanderson distinguished between primary and secondary community areas on the basis of types and amounts of services provided by the centers. He stated that "the

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[17] Ibid., pp. 28-30.

[18] Rural Sociology and Rural Social Organization, pp. 283-84.

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areas of primary communities are determined by the majority of the open-country families obtaining a majority of the available services at the local village center, whereas the secondary communities are defined by the patronage areas of such services as high schools, banks, motion picture theaters, etc., which cannot be maintained in the smaller communities."[19]

Sanderson further demonstrated that the proportion of the services obtained from a given center declined steadily as distance from the center increased.[20] For example, in villages of from 1000 to 2499 inhabitants, those living with the first mile from the village obtained 80 per cent of "all services used and offered at the primary area centers" in that center. But those living six miles or more from the center obtained only 56 per cent of such services in that center.[21]

Again, it was demonstrated that the size of the center influenced the proportion of services utilized. This proportion decreased steadily in the cases of short dis-

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[19] Ibid., p. 281. See also his "Rural Social and Economic Areas in Central New York," Cornell University Agricultural Experiment Station, Bulletin 614, June, 1934, pp. 63 ff. and 79 ff.

[20] The present study utilized "distance" by special definition of "time to traverse distance."

[21] Cornell Bulletin 614, Table 61, p. 78.

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tances from the center and not so steadily in distances of four miles or more from the center. Within the first mile from the centers, this proportion decreased from 97 per cent in the case of cities of 10,000 or more population to 64 per cent in the case of hamlets of 50 or less population.[22]

Like others, Sanderson used delineation as a technique of determining the geographic limits of his units of study and not as an end in itself. He usually studied the social organization or various interaction patterns or, sometimes, leadership.

By 1940 Douglas Ensminger had published his study of Chilton County, Alabama.[23] It was pointed out at this time that the "local school" and "nearness" are the most common reasons given for the neighborhoods' feeling of attachment to Maplesville (the trade center). This concept of nearness will receive attention later, along with size of a locality group, as a factor in frequency of interaction.

In 1949 Ensminger's chapter on "Rural Neighborhoods and Communities" was included in Rural Life in the United

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[22] Loc. cit.

[23] Douglas Ensminger, and Irwin T. Sanders, Alabama Rural Communities--a Study of Chilton County, Bulletin No. 136, Alabama College, Vol. XXXIII, No. 1A, July, 1940.

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States.[24] The rural community was defined therein as "the geographic area with which most of the community's members identify themselves."[25] And the rural neighborhood was defined as "that socio-geographic unit consisting of a small group of families to whom the area is a symbol of personal identity." Both the neighborhood and the community are "locality groups" and are similar in being socio-geographic units "to which people express a feeling of belonging."[26] One difference is that the community encompasses a larger area and frequently includes several neighborhoods. "The essential differences between neighborhoods and communities are in size of area, population, in services provided, and in the degree of intimacy of relationships."[27]

It is within the confines of the neighborhood or community that the rural dweller spends the greater part of his time. "The neighborhood stands first and the community second as modes of intensive common life beyond the common life of the family itself."[28] Definite integrated systems

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[24]Carl C. Taylor, et al. (New York: Alfred A. Knopf, 1949), pp. 55-77.

[25]Ibid., p. 55. The concept of identification will be utilized in the present study for purposes of delineation.

[26]Ibid., p. 57.

[27]Loc. cit.

[28]Ibid., p. 59.

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of social interaction are formed through the associations of individuals and families within particular areas.

Ensminger describes two methods of delineation: the individual method and the group method. He says this process is easily carried out because rural people have psychological and physical attachments to their neighborhoods and communities. And "this delineation is a preliminary step in understanding neighborhood and community relationships."[29] The individual method involves asking "informed community leaders" to indicate on a map of the area the last families in all directions which belong to their neighborhood. Then a line connecting these points will constitute an "approximate boundary line" for the neighborhood. And the community, too, can be so determined by asking the leaders to name the last families along the various roads leading away from the trade center who have the most frequent associations, and identify themselves most closely, with the community. And discrepancies along the peripheries between the communities can be "adjusted" by learning from the families in the disputed area the name of the community to which they profess the greater "loyalty."

The group method used by Ensminger entails getting a group of people together who are well informed about commu-

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[29] *Ibid.*, p. 62.

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nity matters. Get them to focus their attention on communities--the places with major towns or centers. Such places are indicated on a map of the area. Specific farms or landmarks considered as the outer bounds of the community should be located. The group must agree on which families live on these outer limits. The following questions are used in arriving at agreement on the limits: (1) "If community meetings were called at two centers on the same night, and all families were equally interested, where would the line that separated the areas of attendance fall?" (2) "If community-wide programs were planned, for recreation or education, for example, what is the farthest point at which one might expect family interest and response?" Mark such limits on the map, connect all outer points, and the community will be delineated. Ensminger says that experience has indicated that the group method is more precise in bounding communities than in bounding neighborhoods. Refinement of the lines can be carried out in one of the following ways. (1) Place the map in a frequently visited office and have the rural dwellers assist in refining it when they stop by; (2) Talk with representatives from each of the neighborhoods in the community; or (3) Go into the neighborhoods and visit people who can advise and make needed refinements.[30]

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[30] Ibid., p. 63.

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Modern Techniques

As time went on and more and more was learned about the delineation of neighborhoods and communities, emphasis came to be placed on time-saving devices. When a more rapid technique was found to give the same, or approximately the same, results as a more laborious one the former was often used. This was especially true if a high degree of precision was not required in defining the spatial limits of the locality groups to be studied.

John F. Thaden of Michigan State University has had a great deal of experience in delineating neighborhoods and communities. His communities usually result from a composite of numerous service areas. He determines the median line of all those lines which form the clothing, hardware, newspaper, banking, high school, post office, church, and other boundaries between community centers and this composite boundary is then labeled as enclosing the trade and service community.

After much experience and observation of trade center communities, Thaden noted that the position of a boundary line where it crossed a main artery of transportation often stood in an inverse relation to the size (population) of the trade centers which it divided. This line was not only delimiting the first trade center but also the adjoining one. Thaden observed that this line often was located

at a proportionate distance between the two trade centers. Thus a line could be pre-determined on the basis of knowledge of the relative sizes of the two population centers. Later study by tried and proven techniques showed a close resemblance to lines determined by the rapid technique of such calculations. This process could be carried out along all the main arteries of transportation. Then a line connecting all points so determined would enclose the trade center community.

Although it was obvious that the results of this rapid technique quite often coincided, more or less, with the results obtained by more precise techniques, there was still some doubt of the overall validity of the method in a region enclosing numerous trade center communities. Geographical features sometimes entered into the picture and upset the general pattern. And it can be assumed that there are other hidden factors which could upset or influence the pattern. So, before recommending the procedure as a valid one, the present writer wanted to know to what extent claim of precision and validity might be made for the method. For the purpose of testing the validity of this procedure the statistical technique of rank order correlation was applied to two cases.

There are certain assumptions involved, however, in applying rank order correlation to this problem. It is ob-

vious that concern here is with a relationship which is similar to that between the area of a circle and its radius. This relationship is known to be constant. But a circle means perfection in that the line which forms it moves in a constant arc. But because of topography and certain man-made alterations no trade community is likely to approach such perfection, although in some cases an approximation is apparent. Further, there is no direct substitute for the population size of the trade community. The distance along a transportation artery may correspond to the radius of a circle, and the area of a circle may correspond to that of the trade community. But things which equal the same thing are equal to each other. So if (1) radius corresponds to area, and (2) population size also corresponds to area (the hypothesis to be proven), then (3) radius would also correspond to population size. If (2) is true then (3) logically follows; that is, if rho is "high" then we may conclude that a line or point can be located the reciprocal and proportionate distance between two trade centers, such proportionate distance being determined by the relative population sizes of the two trade centers.

Data were obtained on two separate studies. The first was a study made in Wisconsin about 1923.[31] The raw

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[31] J. H. Kolb, "Service Relations of Town and Country," Agricultural Experiment Station, Research Bulletin 58, University of Wisconsin, December, 1923. Data from Table III, p. 19.

data for computing rho were available in tabular form. The populations of the subject centers were already arrayed. The present author proceeded to array the areas of the related communities and then assign ranks to both columns. He further carried out the calculation of rho and found that the population sizes of the trade center communities correlated with their areas plus .94 (N = 23).

It was felt, however, that this coefficient was unusually high. It was doubted that more modern conditions, wherein transportation facilities are so much improved and so many factors in modern living influence each other, would permit the demonstration of such a high correlation. So a study made in central Michigan by John F. Thaden in 1940 was chosen as the second case.[32] It was to be considered fortunate if rho substantiated the hypothesis to the extent of a plus .70. We were thus pleasantly surprised when the calculation was made and the correlation between the population sizes of the trade centers and their respective areas came out to a plus .78 (N = 37).

It may therefore be concluded that if a high degree of precision is not necessary in determining the study

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[32]John F. Thaden, "The Lansing Region and its Tributary Town-Country Communities," Agricultural Experiment Station, Special Bulletin 302, Michigan State College, March, 1940. Population data taken from Table 4, p. 30; areas computed from original work maps by Dr. Thaden.

units, this rapid means of delineation may be carried out in the office with a map of the area and census data on population sizes.

But if precision is required by a given study, the method used in the present case (described in the following chapter) is to be recommended. Briefly, this technique involves the direct interviewing of people along the peripheries of neighborhoods and communities, employing interview items which will stimulate responses indicating orientational direction of such respondents.

A consistent attribute of all the techniques of delineation presented in the foregoing pages is that they are never ends in themselves; they are always means which facilitate the further and more accurate study of the localities delineated.

Another feature noted is that most of the techniques presented add a method of refinement. But if precision and accuracy are to be valued, why not use the refinement itself as the basic technique--if time allows? Such procedure gives maximum precision in the first place. The present study began with an aim for a high degree of accuracy.

CHAPTER IV

DELINEATION AND DESCRIPTION OF LOCALITY GROUPS IN TURRIALBA

Delineation in Turrialba

The spatial determination of meaningful social units is a task in itself. For North American sociologists, this is neither a new nor an esoteric process. But, as far as is known, this is the first attempt to carry out the process in Latin America.[1] Furthermore, it is expected that the comparatively precise technique used insures a higher degree of accuracy of results than is sometimes the case in other studies. The accurate determination of the units of study lends to the quality of results obtained in their further analysis and comparison. The results of any study are no better than the data themselves. For example, if data were collected for two or more social groups without having clearly defined the groups or determined their sizes,

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[1]Neither Taylor nor Smith, in Argentina and Brazil respectively, actually delineated the locality groups which they subsequently analyzed and described. See Carl C. Taylor, "Rural Locality Groups in Argentina," American Sociological Review, Vol. IX, No. 2, pp. 162-170; and T. Lynn Smith, Brazil: People and Institutions, Baton Rouge: Louisiana State University Press, 1946.

comparisons would not be possible. Some members of one group might be inadvertently included in another, or might unknowingly be left out altogether.

A locality group has been said to be "any group which is defined chiefly by its geographical or spatial boundaries."[2] But this does not go far enough to properly characterize a locality group as such. Quinn agrees that the delimitation of locality groups (or, as he says, of "neighborhoods") "depends on tests of consciousness of local area unity or on spatial extent of a web of social relations."[3] This implies that there is some kind and degree of social cohesion among the members of locality groups; locality groups are, then, social groups.

One of the important factors which gives people this feeling of attachment to a locality is their conscious identification with the name of the area. The people of Florida are called "Floridians" and those of California, "Californians." Likewise, the people of Turrialba are called "Turrialbeños and those of Aquiares, one of the localities in the Turrialba District, are called "Aquiareños." It is submitted that the smaller the locality group, the

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[2]Dwight Sanderson in H. P. Fairchild (ed.), Dictionary of Sociology (New York: Philosophical Library, 1944), p. 134.

[3]J. A. Quinn, Human Ecology (New York: Prentice-Hall, Inc., 1950), p. 53.

more meaningful will be such identification in the daily life of the people.

This socio-psychological concept of "identification" was chosen as basic to the delimitation of locality groups in Turrialba because it was felt that (1) it was an accurate and precise way of determining the boundaries of spatial groups, and (2) it would permit establishing the identity of the smallest of such groups. Thus, locality groups with as few as five families within their boundaries were identified if their members responded to the schedule items by giving a distinctive name for the place in which they lived.

For the purposes of this study "identification" is defined merely as a psychological awareness of belonging--such belongedness having reference, in this case, to a spatial area with a specific name. Group cohesion or group solidarity is found among the members of locality groups, however, only if at least some part of the needs and required services of the people can be met or fulfilled within the area. If goods and services are provided within the area there must, of necessity, be some degree of organization present. Such inter-participation is what gives the group its cohesion. And, at the same time, such organized activities supplement and strengthen group "identification."

The basic schedule items by means of which socio-psychological groups were spatially delimited in the Central

District of Turrialba were as follows: (1) "What is the name of this place?" (2) "If you were in _____ (a nearby neighborhood name was supplied here) and someone were to ask you 'Where do you live?', what would you say?" (3) "If you were in Turrialba and someone were to ask you 'Where do you live?', what would you say?" And finally, (4) "If you were in Cartago or San José (the provincial and national capitals, respectively) and someone were to ask you 'Where do you live?', what would you say then?" There were additional and supplementary items on the schedule, but these were not used as bases for delimiting the various localities. They did, however, act as checks on the other data, assisted in the matter of establishing rapport with the interviewee, provided information on certain types of interaction among people of the District, and helped in the general orientation of the investigator.[4]

It should be noted that the investigator always talked to the respondents at, or near, their dwelling

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[4]Other items of the basic schedule included: Who is the head of this family? Where does the head of the family work? Where do you (plural, referring to the family) go to church? Where do you send your children to school? Where do you buy most of your groceries? Where do you buy clothing? What means of transportation do you most commonly use to go to Turrialba? How long does it take you to go to Turrialba? What places do you (plural--the family) visit more frequently?

Full analyses of all the other items were not made, however, as such information was not considered essential to the basic purposes of the present study.

places. Thus the first question above was kept in context, was made meaningful to the respondent, and provided accurate information relative to surrounding localities. It might also be added that such an opening question appeared logical to the informants in that the interrogator was obviously a stranger in the land. Prior to asking the next three basic questions above, other general information was derived and rapport established.

Rapport was seldom a problem in carrying out this study. In the first place, the Institute was in good standing throughout the District. Furthermore, local interviewers who were well known to the people of the District most often gathered or assisted in obtaining data for other studies; these persons were held in high esteem in the various neighborhoods. Mention of their names[5] was usually sufficient to remove any doubt a prospective informant might have regarding the sincerity of the present investigator. And again, attempt was always made to avoid giving the appearance of being in a rush. It was desired to give the impression that the investigator was sincerely trying to get acquainted with the people in the area. If someone asked him for information about the Institute, or

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[5]The two most active interviewers in other studies were Antonio Arce M. and Edwin Murillo C. Both of these men had formerly held high positions in the local school system.

his study, or about himself, he tried to oblige them. He even went so far as to listen to the people's troubles if they were inclined to be talkative.

The following modes of transportation were used by the author in traversing the roads and trails of the study area (in order of extent of use): walking, jeep, horseback, and by train. The use of a jeep, and even a horse, required a lot of back-tracking which would have been unnecessary on foot due to the impassability of the roads and trails in certain areas. So most of the work was done on foot. The people themselves traveled mostly by foot. Since the study required talking with people, the investigator felt that he should go wherever the people were.

The basic technique, then, involved walking along the road or trail between two localities and administering the schedule to occupants of houses along the way. The object was to locate the approximate peripheral houses and then determine precisely the location of an invisible line which separated the people into the two separate spatial groups. Obviously it was not necessary to administer a schedule at each house. Many times the approximate, or even the precise, boundary was obvious even to a stranger. Even so, the first question ("What is the name of this place?") served well as an opener to further conversation and the establishment of general rapport in the neighbor-

hood, although no schedule was needed for a given conversant. It was considered profitable to "pass the time of day" with anyone encountered who appeared inclined to be talkative. (Sometimes the investigator knew in advance that he would have to pass that way again.) For the entire District, about 130 schedules were completed.

The final results of delineation are shown in Figure 1. There are about forty-five "locality groups" delineated in this chart by the technique described above. But, as is to be expected, not all of these constitute significant social groups. Some are entirely too small, as for example: La Maravilla, La Jovita, Los Baños, Poro. These are not necessarily sub-groups within larger spatial groups. They are usually peripheral to two or more other groups. Because they are not essential parts of other groups, they should not be included in any studies made of the other groups. And they are hardly worth studying as units in themselves.[6] The only instance in which they should be included in a given study is as parts of a larger whole, for example, along with a study of "rural Turrialba," or of the whole District.

Some outstanding errors of previous studies at the Institute, noted upon termination of the present study, in-

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[6]Possible exception: study all such groups as one unit, or as a type of group.

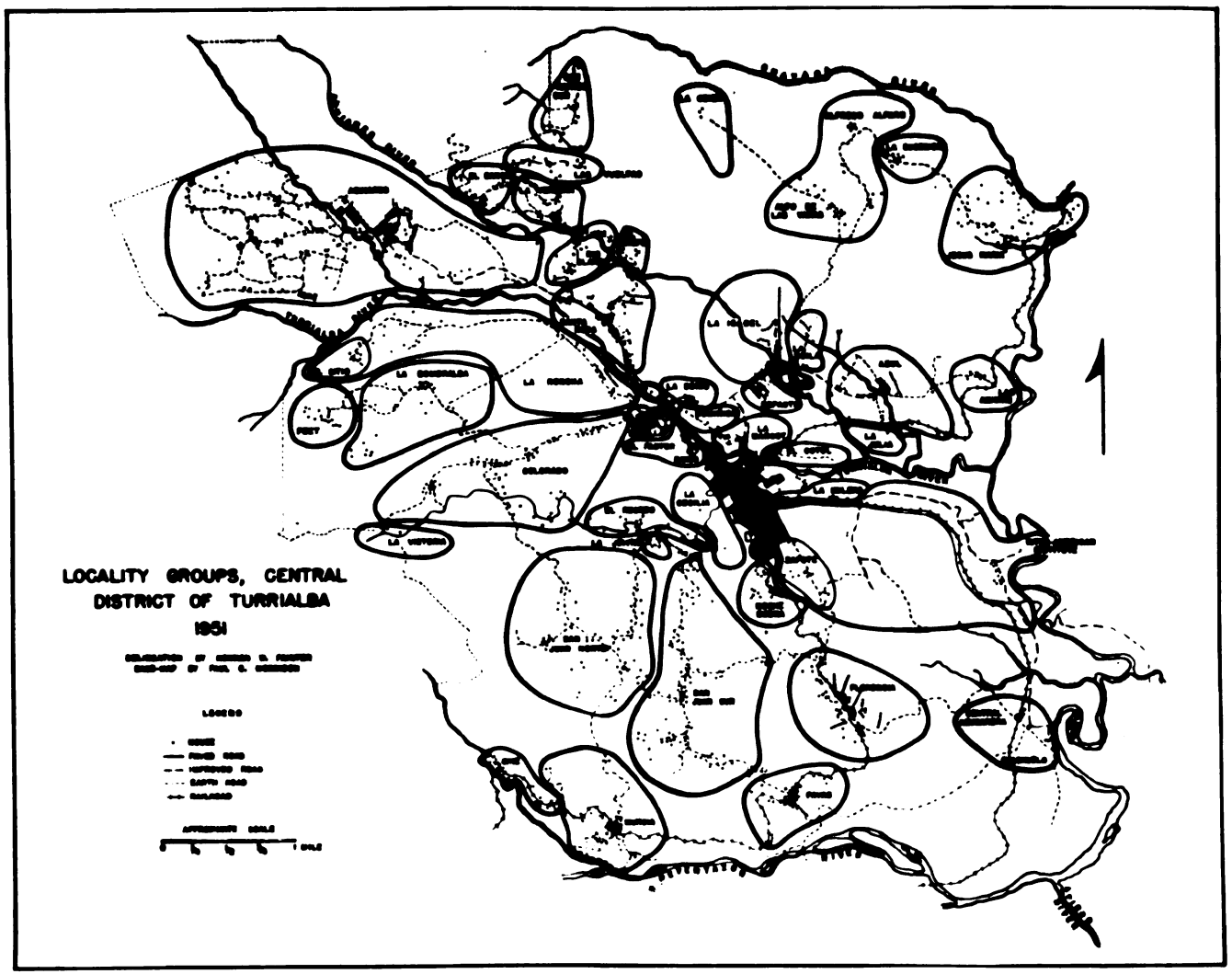

Figure 1

clude: (1) Those houses (families) along the main highway to San José which are included with "Colorado" in Figure 1 were originally studied as a part of "El Recreo," but not called El Recreo. (2) "La Sucesión" in the northeast part of the District was included originally with "Jesus María." And (3) "Las Vueltas," "San Rafael Sur," and part of "Santa Rosa" were originally included as one unit of study.

On the other hand, even without having been delineated previously, some of the localities were almost perfectly determined by the "judgment" technique. People well acquainted around the District reached a consensus on the basis of combined judgments regarding the spatial limits of certain localities. In general, people living on the large plantations agreed, by the technique used in the present study, that they belonged to the plantation. They "identified" with the plantation--by name, and otherwise. This is to be expected, of course, since most of the people who live on large plantations also work there; their lives are tied up more closely with the local area than people who live in the small land holdings areas. These latter sometimes work elsewhere. Of course, when the original "judgments" were made, it was simple and easy--even logical--to consider the large plantations as separate study units. Thus most errors occurred in the small land holdings areas, or in peripheral or mixed areas.

Some Problems Encountered

It may be worthwhile to point out some of the research problems encountered during delineation. One question arises with regard to the psychological self-identification ability of people. Are they really oriented to spatially determinable groups? In Costa Rica it developed that people do identify with spatial areas, and that this identification is capable of measurement by means of an interview schedule as described above. When the people of Turrialba trade-center community are at or near their homes, they identify with the local neighborhood in which they live (the smallest determinable locale). When they are in the trade-center itself, they still identify with the neighborhood. But, when they are farther away from home, outside the larger community of Turrialba, they have a strong tendency to identify with Turrialba City--rarely with the smaller neighborhoods.[7]

Transportation is often a problem in a region of rugged terrain. In such cases the time consumption for a study is greatly augmented, and other aspects are aggravated by this additional time consumption.

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[7]For this reason, in addition to its utility for determining the neighborhoods within a larger community, certain items of the present schedule are also useful for locating the limits of a trade community.

Furthermore, the people's conception of "time" and "distance" may aggravate the problem of identification--or perhaps more properly, the measurement of this identification. Whereas a distance of fifty miles or more may be relatively insignificant for the North American, such distance is traversed in regions of rugged terrain only to meet some dire need.

Topography also presented the following problem in Costa Rica--that of precision and refinement. Many researchers in the United States use some basic method of delineation (talking with well-informed merchants and officials in the trade center, for example) and then "refine" the resultant boundary--often by interviewing people along the peripheries. But if these peripheries happen to be located along virtually inaccessible sections of mountains or jungle, an obvious problem is recognized. Of course, in these areas of unusual topography, one definitely could not use the rapid technique of locating the boundary between two communities on the basis of the relative population sizes of their respective central towns.[8]

The Turrialba Central District is bounded almost completely by rivers: the Reventazón, the Aquiares, the Turrialba, the Chiz, and the Guayaba. But this case is a

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[8]This technique is described in the preceding chapter.

bit unusual; that is, seldom can one depend on this aid to delineation. Even so, community and neighborhood boundaries within the political unit offer a problem in this respect. Neighborhoods spread across rivers and over mountain ranges. And the larger community of Turrialba, as delineated, does not coincide with the political limits of the County, nor does it coincide with topographical features on all sides (see Figure 3, p. 76). People ignore both political and natural boundaries in forming neighborhoods and communities. It is common knowledge that many indigenous groups in all parts of the world ignore even national boundaries; Costa Rica is no exception.

The semantic problem was not particularly acute in Costa Rica as the researcher had dominance over that area of the Spanish vocabulary related to his work. With the assistance of local bi-lingual aid, the items of the schedule employed were made meaningful for the region in question. This problem can become acute in Latin America, however, in that there is a paucity of adequate concepts in the Spanish language, which may be further complicated by the regional lack of agreement of the meaning of the same concepts.

Another problem arose as a result of excellent cooperation on the parts of respondents who were not always correctly informed. Certain errors growing out of this phenomenon had to be rectified by expanding the sample un-

til agreement on boundaries was obvious. It is known that in the United States there is a tendency to overextend the area of influence of a trade center. In Costa Rica it was found that this was a two-directional error: respondents both over- and under-extended the boundary lines of their neighborhoods. Both the priest of the local church and some of the school officials in Turrialba inaccurately located their respective "official" boundaries, as compared with the actual patterns later determined by the schedule applied along the peripheries of the community.

A first look at the regional map seemed to offer a problem due to the tremendous expanse of the region. When it was noted that much of the out-lying areas were dense jungle, this constituted further cause for concern. However, it was subsequently learned that, in this region, man was pushing the jungle back but not penetrating beyond where he had pushed--that is, the jungle edge was the community boundary. (The indigenous Chirripó Indians live so far into the jungle that they can safely be omitted as members of the Turrialba community.)

General Description of Locality Groups in Turrialba

One way to classify locality groups is in terms of the number of services offered, or the proportion of needs which their members can fulfill within the local area.

Such a classification will be followed in this section in describing some of the activities of life in the various localities.

Those localities which can barely be called "groups" offer nothing to their members except some small degree of social interaction based on proximity. These very small localities were not analyzed following delineation; they were delineated separately in the first place primarily to separate them from other localities to which they did not rightly belong. These are La Maravilla, La Jovita, Los Baños, Poro, La Julia, La Ceiba, La Cecilia, and Las Colonias de La Roncha.

The next classification of locality groups consists of those which are somewhat larger than the first group, but still offer no services within their local areas. These localities are more widely known throughout the district than those in the first category which often are not known individually far beyond their own confines. This category includes: La Roncha, La Central, Chiz, Noche Buena, La Victoria, Peet, El Coyol, La Margot, La Doris, La Zoila, Las Animas, Jesús María, La Sucesión, Alfredo Alfaro, Las Vueltas, San Rafael Sur, El Banco, El Recreo, and Rio Claro.

Then there are those locality groups which offer limited services. Some localities have a church (though part-time); others have schools; some have both a church

and a school; and various combinations of these may or may not have a small grocery store or general store (called either a pulpería or a comisariato).

Only three localities (outside Turrialba City) have churches; these are Aquiares, Colorado, and San Juan Norte. The first has services semi-monthly; the others have services only intermittently. In the case of Aquiares religion plays an important role in the local lives of the people. It is a highly integrative factor in the locality; it adds to the degree of solidarity which this group displays. But in the other two cases the church (actually only a small building called ermita or "chapel") is more a symbol than an integrating force on the local level. Most of the people of these two localities attend church services frequently in Turrialba. Of course, the City of Turrialba offers complete services as a parish seat (see Figure 2, p. 63).

Most of the rest of the localities of the District have a local school. And their schools are matters of pride to them. The schoolhouse is often the very center of activity in the area. Any meetings held for any purpose are most likely to be held in the schoolhouse. Thus the school is a very important institution for the majority of the localities. Those localities with schools include: Aquiares, Santa Cruz, Alto de La Varas, La Isabel, La Domínica, Azul, Florencia, Pavas, Murcia, San Juan Sur, San

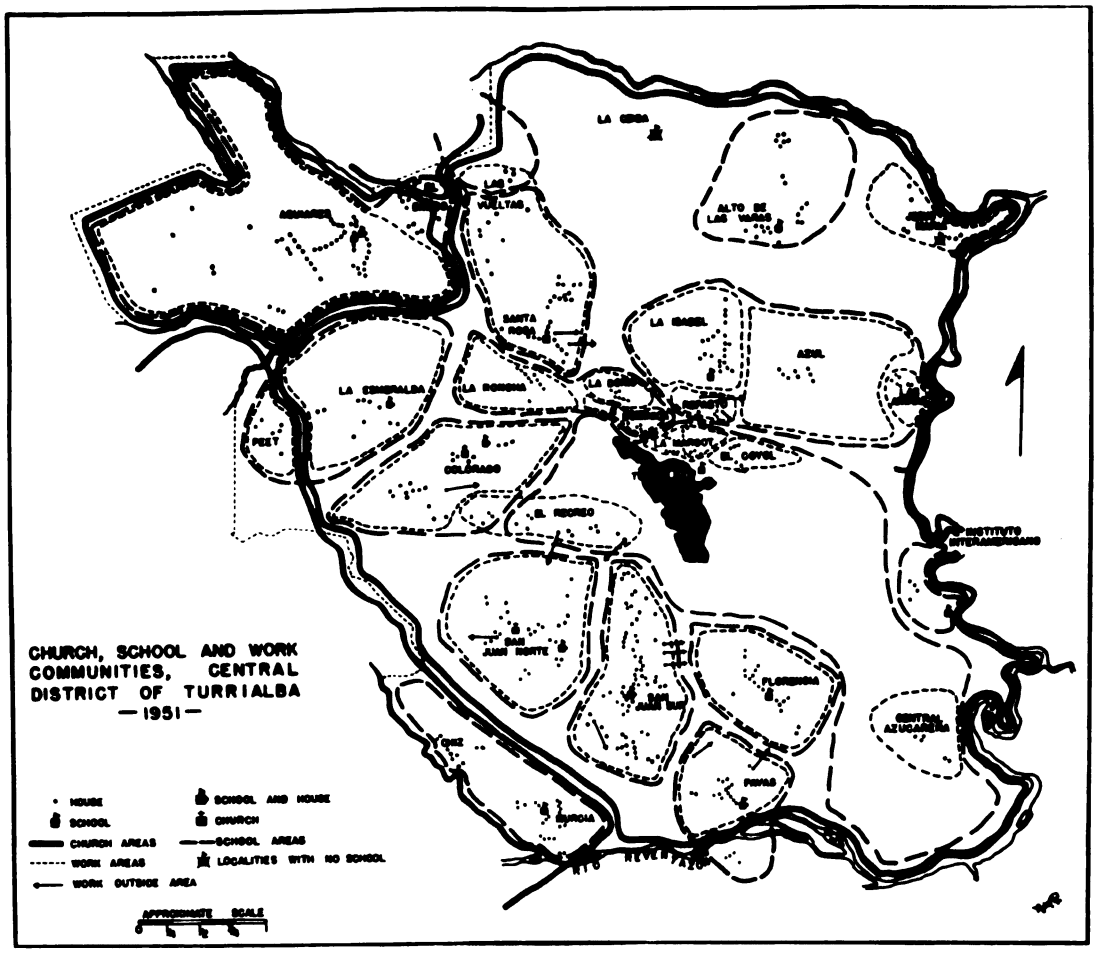
CHURCH, SCHOOL AND WORK COMMUNITIES, CENTRAL DISTRICT OF TURRIALBA
— 1951 —
HOUSE
SCHOOL
SCHOOL AND HOUSE
CHURCH
CHURCH AREAS
SCHOOL AREAS
WORK AREAS
LOCALITIES WITH NO SCHOOL
WORK OUTSIDE AREA
APPROXIMATE SCALE
LA GUIA
ALTO DE LAS VARAS
LAS JUNTAS
SANTA ROSA
LA ISABEL
AZUL
LA ESMERALDA
LA BONGA
PEST
COLORADO
EL COYOL
EL RECREO
INSTITUTO INTERAMERICANO
SAN JUAN NORTE
SAN JUAN SUR
FLORENCIA
CENTRAL AZUCARERA
CRUZ
PIRAS
MURCIA
RIO REVENTAZON

Figure 2

Juan Norte, Colorado, and La Esmeralda. Most of these places have schools with three and sometimes four grades; Aquiares has a five grade school.

Only Aquiares, Colorado, and San Juan Norte have both churches and schools. But as indicated in the preceding paragraphs this fact of having both of these services is not considered significant in the cases of Colorado and San Juan Norte.

Most of those places listed above as having schools also have at least one pulpería or comisariato. The significance of this fact for such places as have this added trade service is that the people of these localities need to go less often to Turrialba City for groceries. And, too, they do not have to be so careful to obtain all their needs for the coming week on their weekly trip (usually Sunday) to Turrialba; they can fill in during the week on the small items. Having a store in the local center provides a convenient meeting place for the people in the evenings after their work is done. Adult males are quite commonly to be found on the porches of these stores in the evenings exchanging the news of the day.

Four of the localities listed above as having schools do not have stores: Alto de La Varas, Azul, Colorado, and La Esmeralda.

The small barrio (suburb) of Turrialba called El Pastor has a pulpería but no other service. For all practical purposes its people belong to Turrialba proper.

The localities of La Hulera (the Rubber Station) and the Institute are shown on the charts as having separate identities. But these are populated largely by foreigners (mostly North Americans) and are not included in the analyses of the present study. La Hulera is the United States Department of Agriculture Rubber Experiment Station. The other case is that of the Inter-American Institute of Agricultural Sciences. These two localities are "X-ed out" in both Figures 1 and 4 (pp. 55 and 83, respectively).

The City of Turrialba comes at the very top of this classification schema in that it offers all kinds of goods and services, so that none of the people of the District ever have to leave the District to meet any of their needs. Besides the big Catholic Church, there is also a small missionary church of one of the Protestant faiths--the Evangelical. And its school carries pupils through the equivalent of the Tenth Grade. It has a hospital which operates under the Costa Rican Social Security plan, and a large dispensary also controlled by the government which provides certain types of services.[9] There are hardware stores, dry

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[9]See Antonio M. Arce, Socio-Economic Differentials Associated with Leadership in Turrialba, Costa Rica. A thesis: Michigan State College, 1952.

goods stores, grocery stores, butcher shops, all kinds of general stores, barber shops, drug stores, a club called El Rancho, restaurants, filling stations and garages, theaters, a bank, a depot, a soap factory, bakeries, jewelry shops, a leather shop, a photographer, a book store, a dental laboratory, a lumber yard, a saw mill, tailor shops, vegetable stands, bars, and warehouses.

Figure 2 also shows the extent to which people earn their livelihoods in their local areas. It will be noted that in the cases of the large plantations practically all of the residents work on the plantations themselves; almost none of them live on the plantations and work elsewhere. But in the case of the small operators there will sometimes be found members who work beyond the spatial limits of their own localities. These usually work in an adjoining locality; seldom do such workers travel great distances to their work. Those indicated in the locality of San Juan Sur as working outside their own area work at the Inter-American Institute of Agricultural Sciences in various capacities. Actually several of the houses included in the locality of San Juan Sur are on Institute property, which extends up the side of the mountain to the San Juan Sur road.[10]

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[10]See Figure 7, Paul C. Morrison and Jorge León, "Sequent Occupance, Turrialba Central District, Costa Rica," Turrialba, Vol. I, No. 4, p. 193.

The outstanding exception to the general rule of working where they live is the case of Repasto from whence the people move out daily to work in other parts. The biggest attraction for these people is the free land of an abandoned plantation in the northeast corner of the district--Jesus María. Here these people are attempting to homestead this abandoned land. When the owner of another plantation bought the land of Repasto, except the agglomerated settlement of houses itself, the people had to look elsewhere for a livelihood. The new owner did not retain the services of the people of Repasto for work on the plantation. Some of the Repasto people are employed in public works, primarily road construction and repair; others are employed on the railroad.

It is already apparent from the above that Aquiares rates high in terms of relative self-sufficiency among the rural localities in the District. It has the most active church. Its school offers more grades. Its commissary store is probably the largest and most used in the District outside Turrialba City (possible exception: Florencia). It has the largest population (1372) in the District, and covers the largest area (about 2350 acres).

Among all the rural localities, Aquiares is probably the only one which can be classified as a "community" in its own right. The others must in general be classed as

"neighborhoods." This classification is based upon the concept of "community" as a relatively self-sufficient and independent locality group. This fact of high self-sufficiency is further supplemented by Aquiares having the highest proportion of internal choices on a series of nine sociometric questions administered in an earlier study made by the Institute. Self-sufficiency based on use of local goods and services is discussed below, and in a subsequent section it is related to high internal versus external sociometric choice.

Table I shows the relative proportions of internal and external social contacts made by the people of Aquiares for purposes of fulfilling service needs in a one year interval.[11] The needs included are limited to those for which data were obtained in the earlier study. It will be noted that 89.58 per cent of all contacts for all purposes included were made within the confines of Aquiares itself. The individual services show high percentages also. With one exception, the individual proportions range from 79.77 to 96.00. Only health needs are met outside the local area. This is understandable in that there is only a small dispensary available on the plantation itself. The workers

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[11]The respondents were asked to reply for the year immediately preceding the interviewing which took place in the Summer of 1948.

TABLE I

CERTAIN CONTACTS MADE BY THE PEOPLE OF AQUIARES WITHIN AND OUTSIDE THE COMMUNITY FOR A ONE YEAR PERIOD, 1948*

Type Contact	Totals		Place of Contact					
			Aquiares		Turrialba		Other	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Service Center	36,693	100	32,441	88.42	4,133	11.26	119	.32
Social Activities	19,737	100	18,932	95.92	760	3.85	45	.33
Education	26	100	25	96.00	1	4.00	--	--
Health	613	100	58	9.46	551	89.89	4	.65
Religion	1,770	100	1,560	88.13	195	11.02	15	.85
Public Service	3,168	100	2,527	79.77	629	19.85	12	.38
Total	62,007	100	55,543	89.58	6,269	10.11	195	.31

*A twenty-five per cent sample was taken in Aquiares; a total of 48 families is represented.

1. Service Centers included: Dry goods, groceries, vegetables, and butcher shops; dairy, bakery, hardware, shoe and drug stores; and cantinas.
2. Social Activities included: Formal visits and other visits, meetings with friends, movies, soccer.
3. Education items included: Primary and secondary schools.
4. Health items included: Social Security Hospital, Turrialba Health Center, dentist, doctor, obstetric nurse, midwife, curandero.
5. Religion included: Church and Catholic Action Organization.
6. Public service items included: Bank, post office, telegraph, train, bus.

are insured under a plan of Social Security which permits them to be attended at a rather well equipped hospital in Turrialba. In case of an emergency an ambulance from the hospital can be called to pick up patients on the plantation.

The secondary attachment of Aquiares to the larger trade center of Turrialba is demonstrated by most of the remaining proportion of contacts being made in that center. Only 0.31 per cent of the contacts are made in "other" places.

Table II shows the points where certain generally high frequency needs are fulfilled. It will be noted that only such items as are not available in Aquiares are obtained in Turrialba. These include clothing, shoes, and most hardware articles, not items of very high frequency use or consumption. All dairy products are obtained locally. Practically all of both fresh vegetables and fresh meat consumed are bought locally. Most bakery items and even staple groceries are also purchased in the local area. Even in the case of drug purchases more than half of the contacts are locally made. (These are probably primarily "patent" medicines, since there is no pharmacist in Aquiares.)

The greatest number of contacts made for a single purpose are those made at the butcher shop. For localities

TABLE II

NUMBER OF CONTACTS MADE BY THE PEOPLE OF AQUIARES IN THE USE OF SERVICE CENTER FACILITIES FOR A ONE YEAR PERIOD, 1948

Service	Total Contacts		Place of Contact					
			Aquiares		Turrialba		Others	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Dry goods	158	100	--	--	137	87	21	13
Groceries	6,106	100	4,358	71	1,736	29	12	--
Vegetables	1,480	100	1,456	98	--	--	24	2
Butcher	13,336	100	13,104	98	108	1	52	1
Dairy	6,935	100	6,935	100	--	--	--	--
Bakery	6,518	100	5,506	84	1,012	16	--	--
Hardware	91	100	27	30	60	66	4	4
Shoes	71	100	--	--	65	92	8	8
Drugs	1,964	100	1,055	54	909	46	--	--
Totals	36,659	100	32,441	88	4,099	11	119	1

which have no refrigeration this is understandable. A beef or pork is butchered every day or two and the people, knowing in advance when fresh meat is available, come and buy on the spot. Obviously, such a point of high frequency contact and face-to-face interaction is of significant importance in the daily lives of such a people.

Looking at these selected needs as a whole, it is seen that 88.49 per cent of all contacts made in meeting such needs are made within the local area of Aquiares. And again, most of those needs not met locally are met in the Turrialba center. Only 0.33 per cent are met in "other" places.

CHAPTER V

THE LARGER COMMUNITY OF TURRIALBA

Douglas Ensminger (whose technique of delineation is described in a previous section), in addition to determining the boundaries of neighborhoods in a community, also located the boundary of the larger community. He did this by calculating the relative degree of orientation each neighborhood had toward the community trade centers in its vicinity. He began delineating neighborhoods at the core of a selected trade area, that is, the trade center itself, and continued outward until a delineated neighborhood indicated an orientation toward another Community trade center. Then all the neighborhoods which were oriented to the selected community center were encircled and this area was designated as the trade community. The congeries of neighborhoods within its boundaries constituted its principal socio-spatial elements.

The primary unit of investigation for the present study is a political area--the Central District of Turrialba Canton. It was known, on the basis of preliminary questioning around Turrialba, that the trade community definitely extended beyond the political boundaries of the District, especially to the east. Actually, the precise de-

termination of the limits of secondary influence of Turrialba was not a basic requirement of the present study. But the manner in which topography affects the spatial limitations of human activity, as well as the expected general coincidence of the political boundaries with these limits, is relevant to the study. It is considered desirable to show the relationship of the primary study area to the larger community.

The Central District of Turrialba is located in the southwest part of Turrialba Canton. It is nearer the more densely settled Central Plateau of Costa Rica than the other districts of the Canton. Transportation and communication between Turrialba and the Plateau is at a relatively high frequency because of available facilities. To the east, southeast and south settlement extends into the jungles but fades out before reaching the Province of Limón. The paved highway eastward from San José ends at Turrialba. The railroad goes on to Limón.

Where settlement thins out and then stops altogether against a jungle background, it is fairly simple to determine the orientation of the people to the only available trade center. The investigator visited these outposts and asked the key business people and political officials questions regarding their participation in various types of activities. As is to be expected, those settlements with

jungles at their backs naturally come out the only available route to meet their economic and other needs. In the present case, these people come to Turrialba. Two examples of this are Pejibaye and Moravia (see Figure 3). The case of the Santa Cruz area northwest of Turrialba is altered by the people having an outlet to the adjoining trade community of Juan Viñas in Jiménez Cantón--which they use with decidedly less frequency than they use Turrialba.

It is more difficult to determine the dividing line, however, along good communication routes. By asking the people of Peralta and Pascua, to the northeast, questions regarding their attachments it was estimated that the adjoining trade center, in that direction, of Siquirres did not begin to draw the people to itself until the approximate political boundary of Turrialba Cantón was reached.[1]

To the west, along the main highway to San José, the political boundary of the District (which is also of the Canton) follows the crest of a mountain ridge. The small settlement of La Victoria, located on both sides of the highway at this crest, can be truly called a peripheral locality. It offers no facilities to its people for meeting their daily needs--neither goods nor services. It is equi-

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[1]Precision in this case was not possible due to the extremely rugged terrain and the sparse and scattered settlement.

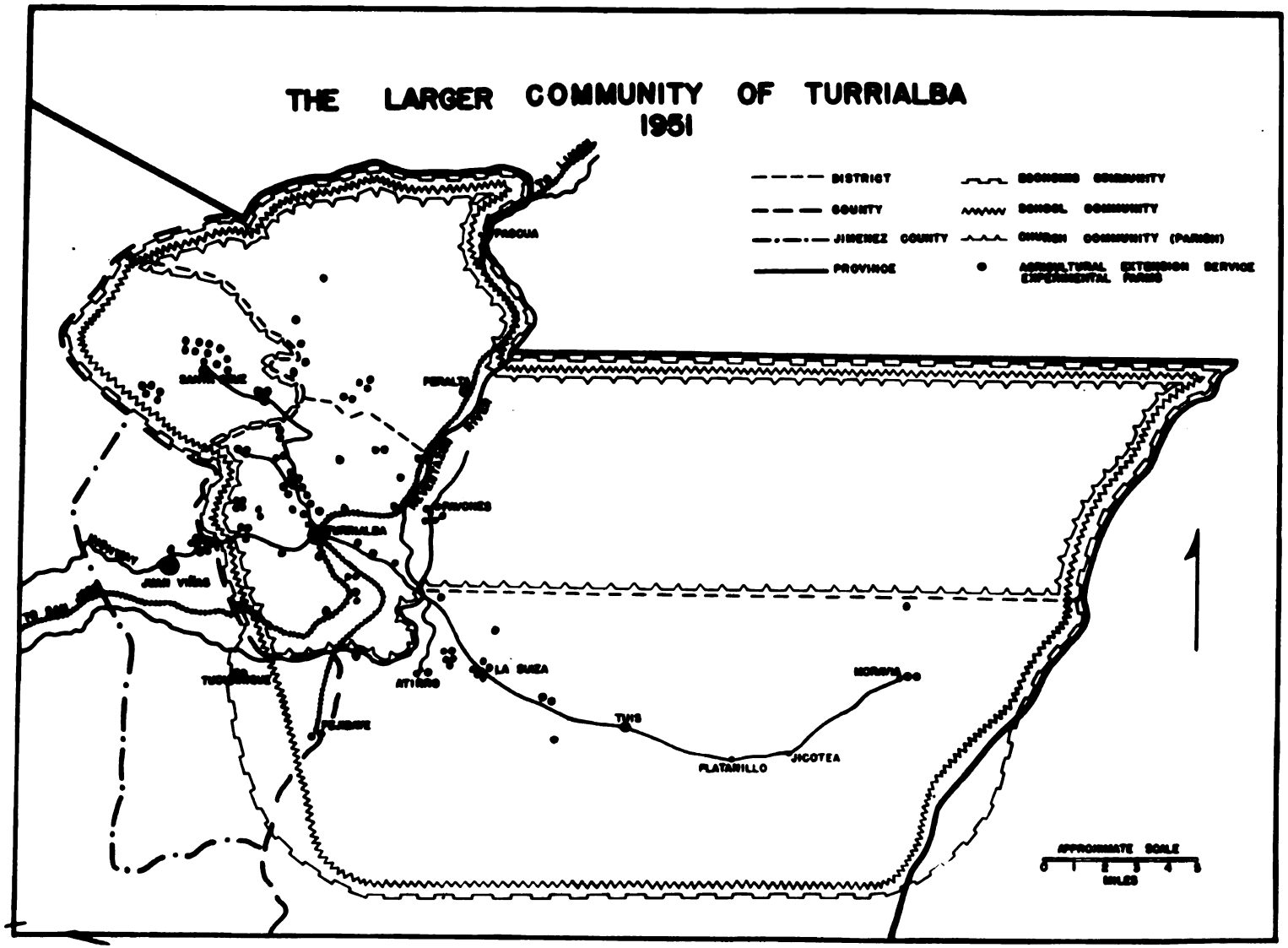
THE LARGER COMMUNITY OF TURRIALBA
1951
DISTRICT
COUNTY
JIMENEZ COUNTY
PROVINCE
SCHOOL COMMUNITY
CHURCH COMMUNITY (PARISH)
AGRICULTURAL EXTENSION SERVICE EXPERIMENTAL FARMS
PACUAR
PERALTA
TURRIALBA
JUAN VIÑAS
ATIRRO
LA SUIZA
TUIS
FLATARILLO
JICOTEA
APPROXIMATE SCALE
MILES

Figure 3

distant between the town of Turrialba and that of Juan Viñas. It belongs to neither community, but to both. With this slight margin of error the western limit of the trade community of Turrialba is thus determined to coincide with the political boundary.

In addition to the factor of "trade" the officials of the Catholic Church, the public school system, and the Inter-American Technical Service for Agricultural Cooperation (STICA, from the Spanish title) were interviewed to determine the limits of their respective areas of authority and influence. Information from these interviews is combined with data on economic activities and presented in Figure 3.

It will be noted that the Church Parish is confined to the Districts of Turrialba and Peralta. And a small section on the southwest corner of the Central District is also left out of the Turrialba Parish (Chiz and Murcia). The people of Santa Cruz are officially attached to the Parish of Juan Viñas in Jiménez Cantón. (These people have, however, petitioned to be reassigned to Turrialba.) The District of Tuis constitutes a separate Parish in the religious system.

The school system of Turrialba includes the entire Cantón. It reaches out and pulls a few pupils from across the Reventazón River on the south.

The extension service of "STICA" includes the entire Cantón also. In addition, and because there is no agency for this service in that Cantón, it includes the Cantón of Jiménez. The locations of experimental farms and projects are indicated in Figure 3 by symbol rather than by an encircling line.

It is to be noted, then, that the Central District is truly central to the rest of the Cantón in terms of most types of social activities: economic, religious, educational, political, and so on.

The economic situation for the Cantón as a whole is approximately equal to that of the Central District, which has been described earlier.

CHAPTER VI

A TAXONOMY OF LOCALITY GROUPINGS: DISTANCE FROM TRADE CENTER AND SIZE OF LAND HOLDING

It is reasonable to assume that proximity favors interaction. Members of localities close to a trade center can be expected to frequent the center more than members of other localities farther away from the center. And variations in the rates of interaction will further affect the life patterns of the people in the different localities. Being farther removed from educational facilities, the relatively isolated people might be expected to acquire less education than those who live closer to schools. They would also be expected to participate in fewer extracurricular activities than the people of localities with their own school systems. The same lowered rate of interaction would be expected in relation to various other participation systems, for example, religious systems.

In the Central District of Turrialba there are several localities near the trade center which do not offer any services. The primary reason for this lack of services is that all of them are provided within the readily accessible center itself. Some of these are El Coyol, La Margot and Noche Buena.

On the other hand there are small localities in relative isolation from the Turrialba trade center which also fail to provide their people with goods and services. The people of such localities may require several hours to reach Turrialba. One example of such a locality is Buena Vista.[1] This little neighborhood is within the trade area of Turrialba City. There is a smaller trade center, Peralta, near Buena Vista which offers a number of services. But a river separates the two localities. And although it is not apparent on any of the maps of the area, this river is deep, the current is strong, and the absence of a bridge makes any crossing not only dangerous but virtually impossible. If safe crossing were possible, the people of Buena Vista could reach Peralta in twenty or thirty minutes. But they must go to distant Turrialba to make necessary purchases, to sell produce, and to attend church. This happens weekly in spite of the distance being five or six times as great and the time required at least two and one-half hours.

Thus one cannot always predict from a map or other cursory survey whether the people of a given locality will utilize the services of a certain trade center. The topography of the area and the availability of transportation

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[1]This small neighborhood is outside the Central District and does not show on any of the maps.

facilities will also affect people's choice of a service center. For this reason distance defined in terms of time required to traverse such distance becomes a variable in the characteristics and activities of population groups.[2]

Rural Turrialba is made up of localities which are sometimes populated by small independent owner-operators, who cultivate their farms mostly with the help of other members of their families. Occasionally there may be a hired man. Other localities are more or less coincident with the boundaries of large haciendas, called fincas, and are thus populated predominantly by jornaleros (hired men who earn a daily wage). There are some localities which are composed of both large and small holdings.

Taking into consideration these two factors of "time-distance" and land tenure, a taxonomy of "place-groups" will be described. The seven place-groups, which result from this cross-classification, are each composed of one or more locality groups, all of which--in a given case--have two characteristics in common. For example, a given place-group will be composed of locality groups which are equidistant from the trade center of Turrialba and, at the same time, homogeneous with respect to land tenure.

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[2]In the present case, the people's own estimate (approximately verified by the present investigator) of the time required to reach Turrialba by the most commonly used means of transportation--on foot--was employed to determine the time zones.

By reference to Figure 4, the results of this cross-classification can be seen. It will be noted that the solid black area represents the city of Turrialba. This urban zone then becomes the first place-group of the taxonomy.

The remaining place-groups will be considered rural. Three neighborhoods closest to Turrialba, from which the town could be reached in fifteen minutes or less, comprise the next place-group. These three localities are all fincas. This place-group is thus designated the "rural close-in" group.

Neighborhoods in the next time zone from which the people require more than fifteen minutes but not more than an hour and a half to reach Turrialba are subdivided into three place-groups according to size of landholdings. These are called "rural large holdings," in those localities which coincide with large haciendas; "rural small holdings," in those localities comprised of owner-operators; and "rural mixed holdings," in those localities in which both types of land holding are found.

The remaining neighborhoods, those from which residents require more than an hour and a half to reach Turrialba, are likewise grouped on the basis of land tenure into "rural-isolated large holdings" and "rural-isolated small holdings" place-groups.

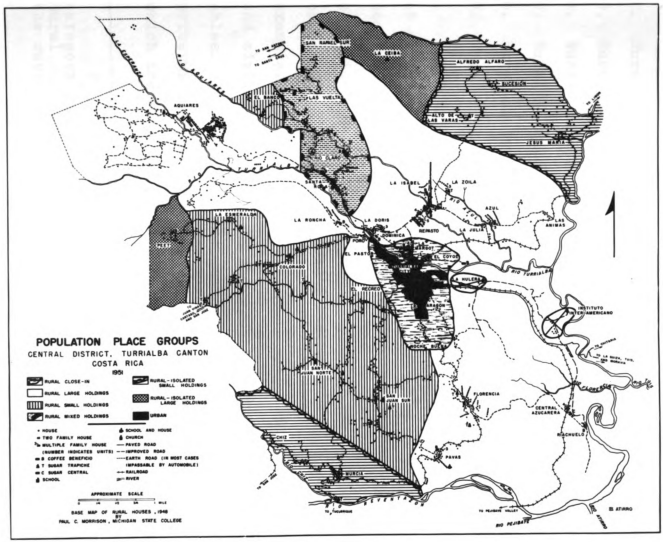
POPULATION PLACE GROUPS
CENTRAL DISTRICT, TURRIALBA CANTON
COSTA RICA
1950
RURAL CLOSE-IN
RURAL LARGE HOLDINGS
RURAL SMALL HOLDINGS
RURAL MIXED HOLDINGS
RURAL-ISOLATED SMALL HOLDINGS
RURAL-ISOLATED LARGE HOLDINGS
URBAN
= HOUSE
= TWO FAMILY HOUSE
= MULTIPLE FAMILY HOUSE (NUMBER INDICATES UNITS)
B COFFEE BENEFICIO
T SUGAR TRAPICHE
C SUGAR CENTRAL
SCHOOL
SCHOOL AND HOUSE
CHURCH
PAVED ROAD
IMPROVED ROAD
EARTH ROAD (IN MOST CASES IMPASSABLE BY AUTOMOBILE)
RAILROAD
RIVER
APPROXIMATE SCALE
BASE MAP OF RURAL HOUSES, 1948
BY
PAUL C. MORRISON, MICHIGAN STATE COLLEGE
AGUIARES
LA ROSITA
ALFREDO ALFARO
JESUS MARIA
LA ISABEL
LA ZOLA
AZUL
LAS ANIMAS
LA ROSCA
LA DORIS
MONSTO
EL PASTOR
EL COYOL
RIO TURRIALBA
INSTITUTO INTERAMERICANO
FLORENCIA
CENTRAL AZUCARERA
MOLINILLO
PAVAS
RIO PACUARE
TO ATIRRO

Figure 4

This taxonomy[3] may be outlined as follows:

1. Urban Zone . . . . . zero time
2. Rural Close-in . . . . . up to 15 minutes
3. Rural Large Holdings . . . . . from 16 to 90 minutes
4. Rural Small Holdings . . . . . from 16 to 90 minutes
5. Rural Mixed Holdings . . . . . from 16 to 90 minutes
6. Rural-isolated Large Holdings . . more than 90 minutes
7. Rural-isolated Small Holdings ....more than 90 minutes

The purpose of this taxonomy is that of facilitation of comparison of these place-groups which, having two aspects in common, will be seen to demonstrate certain social, economic and demographic characteristics which differ according to these two variables. Further, other factors, for example, migration, length of residence, educational level, and civil status, will be influenced by these same variables. In general, social organization and interaction patterns will be shown to differ according to the way in which these variables are combined.

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[3]In the presentation of data, the "Rural Close-in" category is sometimes called "sub-urban," and the other Rural categories (Nos. 3 through 5) may be combined under the rubric "medium distance."

CHAPTER VII

DEMOGRAPHIC ANALYSIS AND COMPARISON OF LOCALITY GROUPS

Introduction

The purpose of this chapter is to analyze and describe the population characteristics of the seven place-groups which compose the taxonomy outlined in the previous chapter. The characteristics of a given place-group, as set forth in the following pages, can be considered as indices for their future comparison and for any trends which may be demonstrated later. At the same time given characteristics can be compared between place-groups.

Analyses of the population characteristics of the locality and place-groups of the Central District of Turrialba were made on the basis of a "Trial Census" taken in 1948. The Bureau of the Census, taking advantage of the professional personnel and excellent direction of the Inter-American Institute of Agricultural Science, used the Turrialba District as a testing ground in preparation for the forthcoming Census of 1950. As a result of this test many improvements were made with respect to terminology and the interview approach.

At the time the present analyses were made the 1950 Census enumeration had been completed but data were not

available to this investigator. Therefore, cards were punched from the 1948 results and machine tabulation was utilized. There was a small difference between the results of the 1948 and the 1950 Census enumeration. If both figures are correct, the population of the Central District diminished by 554 people during this two year period. The "Trial Census" in 1948 gave a total of 14,138 while in 1950 the population was 13,584. The urban zone lost 910 people during this period, having registered a total of 6,359 in 1948 and 5,449 in 1950. However, the rural zone gained 356 people, having registered 7,779 earlier and 8,135 in 1950. These differences, when distributed among the 43 locality groups delineated in the District, are so minimal that they may be ignored for comparative purposes.

Age-Sex Composition

Age and sex are two of the most fundamental characteristics of a human population from the demographic point of view. The joint analysis of these two variables, the conversion of the quantitative results of this analysis into proportions, and the subsequent graphic presentation of these results in a form which has come to be known as the Age-Sez Pyramid, provides an overall view of the population unit as regards age and sex. Anyone trained in demographic principles can easily recognize trends as well as present

status with respect to birth rate, migration, and death rate for the population group in question.

For the purpose of age and sex composition and comparison the population of the District was divided into two units; rural and urban. The results of this analysis are shown in Figure 5 and Tables III and IV.[1]

One of the first aspects which comes to attention in the present case is the broad base of both of the pyramids. This indicates a high birth rate for both the rural and urban areas. However, this phenomenon is more outstanding in the case of the rural zone. The crude birth rate (number of births per thousand persons) for the urban center was 36.4 and for the rural zone 41.0 in 1940. For Costa Rica as a whole the crude birth rate was 42.7 at that time. This is a high birth rate as compared with Guatemala which had that of 33.4, and Uruguay with a rate of 20.1 while the United States had a rate of only 17.9 in 1940. By 1950 Costa Rica had a crude birth rate of about 46.2.[2] It is assumed to be somewhere near this at the time the present data were collected. By the end of the first half of 1955 the crude birth rate for the nation as a whole had reached 48.3. The

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[1]The Age-Sex composition for Costa Rica is given in tables to be found in the Appendix.

[2]Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 48.

AGE-SEX PYRAMIDS FOR THE RURAL AND URBAN POPULATIONS, CENTRAL DISTRICT OF TURRIALBA, 1950

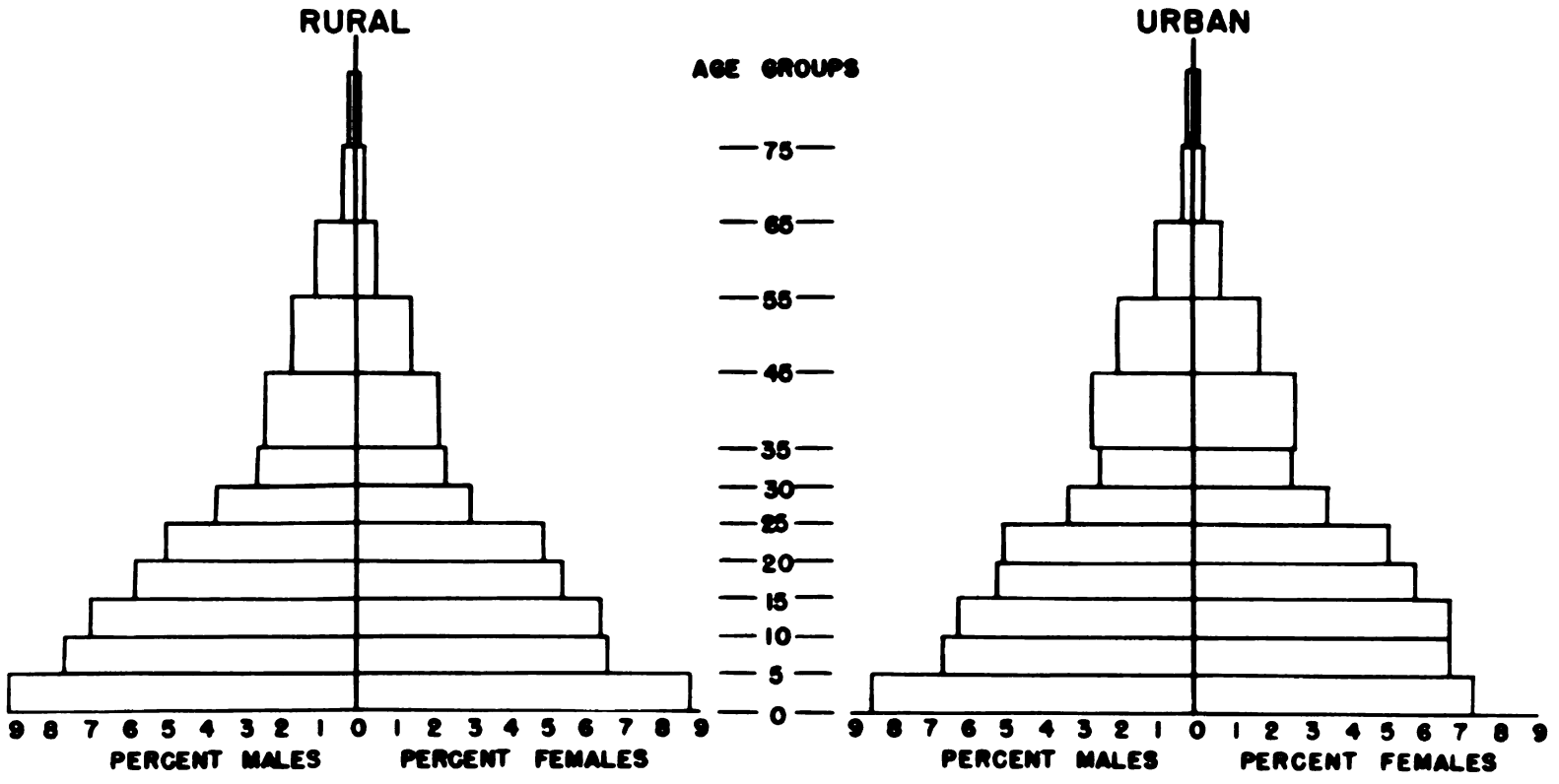

Figure 5

TABLE III

NUMBERS AND PERCENTAGES OF PERSONS CLASSIFIED BY AGE AND BY SEX, RURAL ZONE, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

RURAL ZONE						
Age	Male		Female		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
0 - 4	702	9.1	679	8.8	1,381	17.9
5 - 9	589	7.6	518	6.7	1,107	14.3
10 - 14	545	7.0	506	6.5	1,051	13.5
15 - 19	449	5.8	424	5.5	873	11.3
20 - 24	382	5.0	387	5.0	769	10.0
25 - 29	285	3.7	242	3.1	527	6.8
30 - 34	204	2.6	182	2.4	386	5.0
35 - 39	197	2.6	205	2.7	402	5.3
40 - 44	173	2.2	149	1.9	322	4.1
45 - 49	166	2.1	140	1.8	306	3.9
50 - 54	98	1.3	98	1.3	196	2.6
55 - 59	100	1.3	46	0.6	146	1.9
60 - 64	72	0.9	51	0.7	123	1.6
65 - 69	33	0.4	23	0.3	56	0.7
70 - 74	19	0.3	20	0.2	39	0.5
75 and over	32	0.4	18	0.2	50	0.6
Total	4,046	52.3	3,688	47.7	7,734	100.0
Age unknown	24		21		45	
Grand total	4,070		3,709		7,779	

TABLE IV

NUMBERS AND PERCENTAGES OF PERSONS CLASSIFIED BY AGE AND BY SEX, URBAN ZONE, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

URBAN ZONE						
Age	Male		Female		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
0 - 4	540	8.5	469	7.4	1,009	15.9
5 - 9	417	6.6	429	6.8	844	13.4
10 - 14	391	6.2	429	6.8	820	13.0
15 - 19	330	5.2	375	5.9	705	11.1
20 - 24	313	5.0	326	5.2	639	10.2
25 - 29	207	3.3	229	3.6	436	6.9
30 - 34	158	2.5	169	2.7	327	5.2
35 - 39	206	3.3	208	3.3	414	6.6
40 - 44	138	2.2	141	2.2	279	4.4
45 - 49	143	2.2	150	2.4	293	4.6
50 - 54	114	1.8	80	1.2	194	3.0
55 - 59	78	1.2	44	0.7	122	1.9
60 - 64	55	0.9	60	0.9	115	1.8
65 - 69	22	0.3	20	0.3	42	0.6
70 - 74	17	0.3	17	0.3	34	0.6
75 and over	26	0.4	23	0.4	49	0.8
Total	3,155	49.9	3,167	50.1	6,322	100.0
Age unknown	23		14		37	
Grand total	3,178		3,181		6,359	

Province of Cartago had a crude birth rate of 48.3 based on vital statistics available for the first half of 1954, and that of 50.3 for the same period of 1955. The Central District of Turrialba (the study unit) had a crude birth rate of 51.8 in mid-1954.[3] It can be noted in Figure 5 that the sex ratio of the lowest age group is somewhat higher in the urban zone. The overall sex ratio for the entire district was 105.2 in 1948. For the urban zone this sex ratio was 99.9 and for the rural zone it was 109.7. Thus the rural area is seen to have an excess of males, taking all age groups into account.

The crude death rate (number of deaths per thousand persons) for Turrialba Cantón was 23.0 in 1920, but had decreased to 16.9 in 1940. For the country as a whole the crude death rate was 22.6 in 1927 and 18.1 in 1940. The Central District of Turrialba (the study unit) had a crude death rate of 10.96 in mid-1954.[4] It might be said the health situation is better in Turrialba than for Costa Rica as a whole. From Figure 5 it can be seen that infant mortality is high, but mortality decreases after the first five-year period.

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[3] Principales Hechos Vitales Ocurridos En Costa Rica En El Primer Semestre De 1954 (San José: Ministerio de Economía y Hacienda, Dirección General De Estadística y Censos, julio de 1954), pp. 3 and 9; idem., for 1955, p. 1.

[4] Ibid., (1954), p. 9.

According to the United Nations Demographic Yearbook for 1954 the mortality rates for specified ages (both sexes combined) for 1949-51 were: 97.1 at birth, 33.4 for age 1, 14.4 for age 2, 7.8 for age 3, 5.8 for age 4, 4.3 for ages 5 to 9, decreasing to as low as 1.5 from ages 10 to 29, increasing thereafter up to 10.7 for ages 50 to 54, and increasing rapidly after age 55 to a high of 166.2 for those few who reach the age category of 85 to 89. No comparable figures are available for Turrialba.

Life expectancy at birth for the Costa Rican during the period 1949-51 was 55.72 years. For those who survive the first year of life the expectancy is increased to 60.66. It increases slightly during the next three years, but drops again to 60.47 at age 5. Life expectancy decreases consistently thereafter. At age 50 a Costa Rican has a life expectancy of 22.42 years, at age 75 one of 7.39 years, and at age 85 he may still expect another 4.30 years. Thus it is seen that mortality rates have decreased considerably and are relatively low at present. The pyramids also demonstrate the high rate of mortality in Turrialba in that the age groups from 65 and above are relatively minute.

In general, both pyramids of Figure 5 demonstrate relatively stable population groups. This phenomenon is stronger in the case of the rural population, as indicated

by the more or less consistent decreases as age increases. In the case of the urban population two hypotheses may be advanced to explain the irregularity, especially on the male side, between the 30 to 35 age group and the 35 to 45 age group. It may be that the increased proportion in the advanced age group is due to an in-migration about 10 to 20 years earlier, when the local economy was undergoing some changes and tending towards stabilization. The other possibility, not as likely to hold, is that the people in the age groups 25 to 30 and 30 to 35 have more recently emigrated. The only generalization which can be made with respect to migration in and out of Turrialba is that Turrialba is the only cantón of those which comprise the province of Cartago which is enjoying immigration, and at the expense of nearby cantones. (This phenomenon of short-distance migration will be emphasized in Chapter VIII in connection with population stability.) However, Turrialba also suffers a strong emigration toward the cacao plantations to the east in the Province of Limón.[5]

Education and Literacy

Costa Ricans have boasted for years that they have more school teachers than soldiers. And the facts support

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[5] Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 46.

them in this contention. They are often said to be among the most democratic of Latin American nations, and to have a high degree of political stability. Could it be that political stability contributes to raising the level of literacy? However this may be, the high rate of illiteracy in Costa Rica a hundred years ago has steadily decreased. In 1864 the nation was 89.0 per cent illiterate. In 1892 this percentage had decreased to 68.6. By 1927 the majority of the people of Costa Rica had become literate, and, at the same time, the per-unit rate of literacy increase had also increased. At this time the nation was only 23.6 per cent illiterate. According to the 1950 Census this percentage had decreased still further to that of 14.7, although the per-unit rate of literacy increase had by this time begun to decrease.[6]

In general, the younger age groups are more literate than the older, which indicates an improving situation with regard to education as a value and/or educational opportunities. The rural-urban differential is also notable. For the country as a whole the urban area was 91.9 per cent literate, and the rural area was 71.5 per cent literate in 1950. The same phenomenon of decreasing literacy with in-

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[6] Ibid., p. 52. Following the recommendation of the International Committee on Demography, Costa Rica changed its base age year of 9 (nine) years and over to that of 10 (ten) years and over for the purpose of calculating literacy rates.

creasing age was noticeable, to an approximately equivalent degree, in both areas.[7] The sex differential with respect to literacy and for rural Costa Rica slightly favors the men who, according to the 1950 Census, were 72.2 per cent literate while the women were 70.8 per cent literate. For urban Costa Rica corresponding percentages were 93.5 and 90.6, respectively.

Costa Rica rates high among its Latin American neighbors with respect to literacy. While Costa Rica was only 14.7 per cent illiterate in 1950, El Salvador and Honduras were 57.7 and 64.8 per cent illiterate respectively.

With respect to the highest grade achieved (both sexes, age 7 and above) Costa Rica showed a median of 2.8 grades in 1950. Urban Costa Rica was favored with a median grade of 4.3 while the rural area showed a median grade of only 2.2. Women were shown to continue slightly longer in school than men; women showed a median grade of 2.9 and men one of 2.8 in 1950.[8]

Since the purpose of the present study is to make comparisons based on the variables, both implicit and explicit, of the previously established taxonomy, the fore-

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[7] Ibid., Table 1 on p. 52.

[8] Censo de Población de Costa Rica (22 de mayo de 1950), (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), pp. 40-41.

going percentages serve primarily as comparative indices for the study unit as a whole and will not be taken into account in the following internal analyses and comparisons. The relevant hypotheses with respect to literacy and education may be stated as follows. In rural Turrialba farmers who are owner-operators place a higher value on education and as a group achieve a higher percentage of literacy and a higher level of education than daily wage workers on large plantations. Because of the relative scarcity of educational facilities away from the urban center, people who live nearer the urban center, whether owner-operators or daily wage workers, will be more likely to reflect their varying interests in education as a value, and will therefore demonstrate a higher percentage of literacy and a higher level of education than people who are relatively isolated from such facilities. The ecological variable of distance from educational facilities is obviously related to the factor of convenience, for those who live near such facilities, and inconvenience to the point of impossibility for those who are physically removed from such facilities. With regard to tenancy, the author is depending upon the sentiment of the more highly motivated owner-operators, the feeling of belonging to the land, and their personal pride in being independent operators. On the other hand, the daily wage workers have no basis for possessing such senti-

ments, and the absence of this motivation is not likely to impel them toward personal achievement to the same extent as in the case of the owner-operators.

Analysis of literacy in relation to the two basic variables, tenancy and distance from trade center, gave the following results. Table V and Figure 6 portray these results in terms of percentages of literacy according to selective age groups. The lower age group 6 to 10 presents an irregularity in that the children of owner-operators in the isolated distance zone are less literate than the children of daily wage workers. However, this is not to be taken as a negation of the foregoing hypotheses.[9] A glance at Table VI will confirm the hypotheses for all ages after age 10. People living on small farms are in all age groups more literate than those living on large plantations. People living nearer the trade center, whether living on small farms or large plantations, are more literate than those who live farther from the trade center. One slight exception to the latter proposition is the case for people age 51 and above who live on large plantations near the trade center. This may be accounted for on the basis of

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[9]Previous figures on literacy for Costa Rica were based on age 10 and above. This analysis into the lower age level was made primarily to show the extent of literacy during early school years.

TABLE V

PERCENTAGE OF LITERATE PERSONS BY AGE GROUPS, BY RURAL SUB-AREAS, AND BY URBAN ZONE, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Age	Urban Zone	Rural Sub-Areas					
		Sub-Urban Large Hold.	Medium Distance			Isolated	
			Large Hold.	Small Hold.	Mixed Hold.	Large Hold.	Small Hold.
6-10	53.6	34.5	54.4	23.1	31.3	17.1	53.6
11-15	84.0	65.2	70.9	83.1	60.9	50.0	63.6
16-20	86.5	65.0	78.5	85.2	73.6	71.4	74.5
21-50	85.5	74.7	75.5	81.9	77.3	68.8	75.8
51 and over	75.8	63.8	58.6	66.6	61.9	61.8	63.9

LITERACY IN RELATION TO SIZE OF LAND HOLDING AND DISTANCE FROM TRADE CENTER, BY AGE GROUPS, RURAL ZONE, CENTRAL DISTRICT OF TURRIALBA, 1950

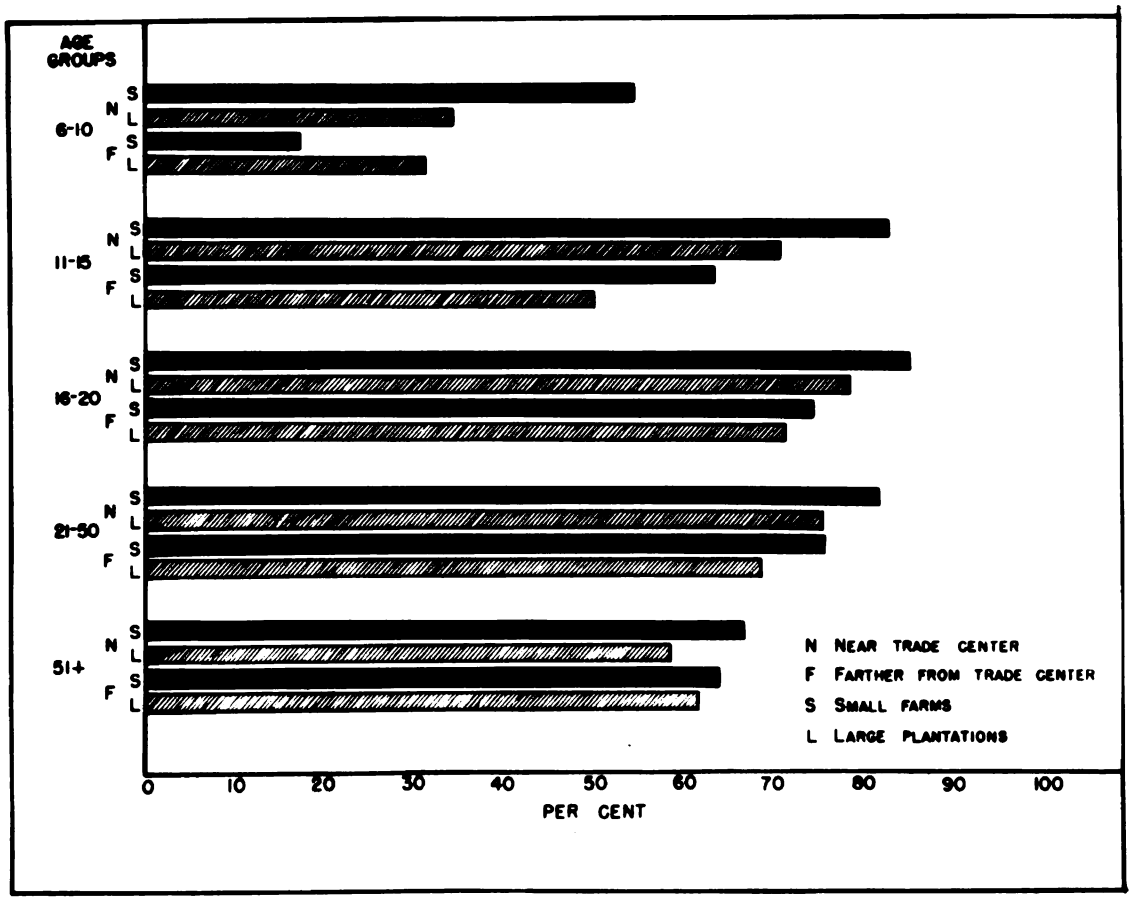

Figure 6

TABLE VI

PERCENTAGE OF ADULTS 21 YEARS OF AGE AND OVER, CLASSIFIED BY HIGHEST GRADE OF SCHOOL COMPLETED AND BY ZONES, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Grade Completed	Zones		Total Area
	Rural	Urban	
None	33	22	28
1	8	8	8
2	23	15	19
3	19	20	19
4	9	11	10
5	3	8	6
6	2	10	5
Total elementary	64	72	67
Secondary school	1	5	4
University	2	1	1
Grand Total	100	100	100

Note: This table constitutes an exception to the general rule in that the "foreign group" was included, thus increasing the number of university graduates in the Rural Zone.

migration on the part of this group from other parts of the district or of Costa Rica.

It will also be noted that the upper age groups are less literate than the younger groups. This is an indication that the educational quality of the population of Turrialba is increasing.[10] It will be recalled that, for the nation as a whole, literacy was also shown to decrease with increasing age. Turrialba is thus following the national pattern with respect to educational improvements.

Specific variations with respect to literacy are shwon in Table V for the different sub-areas of the study unit. The urban zone and medium-distance small holdings sub-areas have uniformly higher literacy levels for all age groups. Below average levels appear in the sub-urban area for the middle age group (16 to 20), in the isolated large holdings 11 to 15 age group, and in the isolated small holdings 6 to 10 age group.

Table VI indicates the level of education broken down by urban and rural zones. The urban zone includes a larger proportion of persons who have received fourth, fifth, and sixth grade educations as well as secondary

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[10]With regard to this concept of population quality see T. Lynn Smith, Population Analysis, New York: McGraw-Hill Book Company inc., 1948, p. 153; and with regard to positive and negative consequences of educational differentials see Warren S. Thompson, Population Problems, New York: McGraw-Hill Book Company Inc., 1942, p. 120.

school educations. In rural areas, however, almost no one has received education beyond the fourth grade. In the medium distance large holdings the 16 to 20 year age group had completed an average of 2.4 grades of school while the older members had completed an average of 1.8 grades. Likewise, in the medium distance small farm sub-area the 16 to 20 year age group completed 2.4 grades and the older, 1.7 grades. Thus educational level varies more by age groupings than by rural sub-areas.

Marital Status

Although Costa Rican law requires school attendance to age 14, few children attend school more than five or six years. Most boys, especially in the rural area, are working by age 15. By age 16 most persons are, or have been, married.

For the 1950 Census, civil or marital status was determined for all persons 15 years of age and above. At this time 57.16 per cent of Costa Ricans were in this age category. Considering this category as 100 per cent, civil status for the country as a whole was determined as follows: married 43.63 per cent, single 41.21 per cent, free union (*conviviente*) 7.51 per cent, widows 5.47 per cent, separated 1.89 per cent, and divorced 0.29 per cent. There were

more men than women who were single, and the percentages of divorcees and widows were higher for the feminine sex.[11]

With regard to rural-urban differences in marital status the men show very little variation. For Costa Rica as a whole, 44.1 per cent of males age 15 and above were married. In the rural area 43.0 per cent of the males were married; and in the urban area 46.3 were married. There is some variation, however, on the part of the women. For Costa Rica as a whole 43.1 per cent of females age 15 and above were married. In the rural area 46.9 per cent of the women were married; in the urban area only 37.7 per cent of the women were married. This difference can be attributed to the lower sex ratio, for the working age groups, which is normally expected for urban areas.[12]

Table VII gives marital status for both sexes combined for the Cantón of Turrialba. This is the nearest possible comparison to the basic unit of this study.

Table VIII indicates percentages for the various marital statuses for the Central District of Turrialba. It will be noted that there is a difference of one year in the age category. This resulted from the multi-purpose analyses

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[11] Censo de Población de Costa Rica (22 de mayo de 1950), (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), pp. 34, 35.

[12] Ibid., Table 13 on pp. 115 ff.

TABLE VII

CIVIL STATUS FOR THE POPULATION 15 YEARS OF AGE AND OVER, FOR THE CANTÓN OF TURRIALBA, 1950

Civil Status	Number	Per Cent
Total	13.289	100.00
Single	4.907	36.90
Married	6.855	51.60
Separated	257	1.95
Free Union	548	4.12
Widowed	711	5.35
Divorced	11	0.08

Source: Censo de Población de Costa Rica (22 de mayo de 1950), (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), Table 14 on p. 123.

TABLE VIII

PERCENTAGES OF PERSONS SIXTEEN YEARS OF AGE AND OVER, CLASSIFIED BY MARITAL STATUS, BY SEX, AND BY ZONES, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Marital Status	Zones				Total Area	
	Rural		Urban			
	Male	Female	Male	Female	Male	Female
Single	40	34	40	33	40	34
Married	53	56	50	51	52	53
Widowed	4	6	4	11	4	9
Conviviente*	3	3	5	5	4	4
Separated or divorced	-	-	-	-	-	-
Totals	100	99	99	100	100	100

*Living together as man and wife while not legally married.

involved in team research, under which conditions the present investigator was operating in Costa Rica. As for the nation as a whole, and although marriage occurs at a relatively lower age in Costa Rica, the age group 16 to 20 accounts for most of the single persons. There are proportionately fewer widowed women and convivientes in the rural than in the urban zone. Otherwise, rural-urban differences are minimal. There is a higher proportion of single males than females in both the rural and urban zones. There is a slightly higher proportion of married women than married men.

Occupational Composition

Costa Rica is following the contemporary trend in that it is gradually becoming less rural. According to the 1927 Census 61.77 per cent of the economically active (12 years of age and above) population of Costa Rica was engaged in agricultural pursuits. In 1950 this percentage had been reduced to 54.72.[13] Of these 271,984 persons, 33.96 per cent were economically active. Rural-urban differences, with regard to active and unemployed segments of the population, are hardly significant. Furthermore, differences

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[13] Ibid., p. 45.

between the seven provinces vary but little. Also, the rural-urban differences within the provinces are slight.

For the Province of Cartago, 64.25 per cent of the work force was engaged in agricultural pursuits.[14] Thus Cartago can be considered more agricultural than the nation as a whole.

Turrialba Central District is predominantly agricultural in spite of the fact that 45.0 per cent of its population lives in the urban center. In the 1948 Trial Census data were collected and analyzed on two occupational characteristics: occupational "branch" (type of activity); and occupational "position." The results of this analysis are shown, according to the taxonomy previously developed, in Tables IX, X, and XI.

These data demonstrate the overwhelming importance of agriculture in the Turrialba Central District. Even in the urban zone 25.5 per cent of the working population (11 years of age and over), and 82.2 per cent of paid male employees are directly engaged in agriculture (Tables IX and X). It may be that in an a growing agricultural community an "urban" center may be less urban as a way of life than its size would indicate. Even though Turrialba City had a population of 5,449 in 1950, the data indicate that its basic orientation is decidedly rural.

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[14] Loc. cit.

TABLE IX

PERCENTAGES OF WORKING PERSONS ELEVEN YEARS OLD AND OVER, CLASSIFIED BY OCCUPATIONAL BRANCH, AND BY RURAL SUB-AREAS AND ZONES, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Occupational Branch	Sub-Urban large hold.	Rural Sub-Areas					Zones		
		Medium Distance			Isolated		Rural	Urban	Total Area
		large hold.	small hold.	mixed hold.	large hold.	small hold.			
Agricultural	57.7	54.8	54.5	52.4	61.8	60.3	55.2	25.5	41.6
Domestic*	33.7	41.7	44.0	45.5	38.2	37.9	41.7	43.4	42.5
Other**	8.6	3.5	1.5	2.1	-	1.8	3.1	31.1	15.9
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Includes a large number of persons not gainfully employed, namely, housewives.

**Includes construction, transportation, extractive and factory workers, skilled and unskilled craftsmen, public service, hotel and personal employees, and professionals.

TABLE X

PERCENTAGES OF AGRICULTURAL WORKERS ELEVEN YEARS OF AGE AND OVER, CLASSIFIED BY OCCUPATIONAL POSITION BY SEX, BY RURAL SUB-AREAS, AND BY ZONES, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Occupational Position	Sex	Sub-Urban Large hold.	RURAL SUB-AREAS					Rural	Urban	Total Area
			Medium Distance			Isolated				
			Large hold.	Small hold.	Mixed hold.	Large hold.	Small hold.			
Owners	M	.6	1.2	28.3	13.2	-	62.7	18.4	7.8	15.4
	F	-	.4	1.6	1.4	-	3.0	.9	.2	.7
Paid Employees	M	78.6	74.3	55.6	76.3	81.0	28.4	67.5	82.2	71.6
	F	20.2	12.4	3.0	4.9	19.1	3.0	9.6	9.7	9.6
Unpaid Employees	M	-	1.0	10.2	4.2	-	2.5	3.2	.1	2.3
	F	.6	.2	1.4	-	-	.5	.4	-	.3
Totals	M	79.2	87.0	94.1	93.7	81.0	93.5	89.1	90.1	89.4
	F	20.8	13.0	5.9	6.3	19.1	6.5	11.0	9.9	10.7
GRAND TOTAL		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE XI

PERCENTAGES OF FEMALE DOMESTIC WORKERS ELEVEN YEARS OF AGE AND OVER, BY OCCUPATIONAL POSITION, BY RURAL SUB-AREAS AND BY ZONES, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Occupational Position	Sub-Urban Large hold.	Rural Sub-Areas					Zones		Total Area
		Medium Distance			Isolated				
		Large hold.	Small hold.	Mixed hold.	Large hold.	Small hold.	Rural	Urban	
Housewives	80.2	67.5	61.1	65.6	80.8	81.9	67.9	63.1	65.6
Employees	1.0	5.8	2.9	2.0	3.9	0.8	3.8	13.0	8.1
Non-paid	18.8	25.1	36.1	32.0	15.4	15.0	27.1	21.1	24.3
Total Female*	100.0	98.4	99.2	99.6	100.0	97.7	98.8	97.2	98.0

*If males had been included these totals would have been 100.0.

Comparing the various place-groups it is seen that the sub-urban area contains relatively fewer domestic workers. This may indicate that females in this place-group work in other occupational branches. For example, Table X shows that 20.2 per cent of these females are directly engaged in remunerated agricultural work. Also it will be noted in Table XI that 80.2 per cent of the women in this place-group are classified as housewives. It will be noted in Table IX that very few people are occupied in other than agricultural and domestic activities in any of the place-groups.

In Table X agricultural workers are classified according to their occupational position. For the entire District, it will be noted that only 15.4 per cent of males classified as agricultural workers are owners. As is to be expected, the highest percentages of owners are found in the small holdings place-groups (both medium distance and isolated place-groupings). On the other hand, paid employees predominate in the large holdings place-groups and in the urban zone.

In all the large holdings areas (including the sub-urban area) there are relatively more paid female employees. This is due to the existence of <u>beneficios</u> (coffee processing plants) and other evidences of agricultural industrialization in such areas. Also with respect to domes-

tic workers (see Table XI) the employed females are relatively more prevalent in large holdings areas than in small holdings areas. Non-paid domestic workers are more prevalent in the rural than in the urban zone. They are also more numerous in the small holdings place-groups of the rural zone than in the large holdings place-groups. This is to be expected in that the small owner-operators depend, to a much greater extent, on the members of their families for economic assistance of various types. In general, the data indicate that the people of the Turrialba District, oriented as they are by agricultural pursuits, constitute a rural population.

Place of Birth and Migration

Data on the birthplaces of residents in the Turrialba community were obtained from national census bulletins. Other data on recent migrations were available from the Community Study of 1948 already mentioned.

For the Cantón of Turrialba 64.13 per cent of the 24,466 inhabitants were born within the cantón itself.[15] As has been pointed out earlier, the Turrialba Cantón gradually loses some of its population to the eastern province of Limón. It was also pointed out, however, that this can-

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[15] *Ibid.*, p. 24.

tón receives migrants from that of Jiménez, which joins it on the west. Actually, the inhabitants of these two cantones are less "native" than other cantones of the Province of Cartago.

Table XII and Figure 7 provide information on place of birth for the inhabitants of the various place-groups. It will be noted that about half of the people in all of the rural sub-areas were born in the Turrialba Central District and very few were foreign bron. The sub-area with the smallest proportion of locally born residents was the isolated, large holdings place-group. None of these locality groups was included in the Community Study, so that no data are available for them on length of residence, but it is known that settlement is of comparatively recent date.

It will be noted that relatively few people of the various areas were born in other districts of the Turrialba Cantón. This is due to the fact that (1) the part of the Cantón other than the Central District is relatively sparsely settled, and (2) lines of communication and transportation influence migration from areas outside the Cantón.

The small holdings place-groups in both the medium distance and isolated zones demonstrate higher percentages of "native" inhabitants than the other place-groups. This finding was originally hypothesized because of factors re-

TABLE XII

PERCENTAGES OF PERSONS RESIDING IN THE RURAL SUB-AREAS AND URBAN ZONE, CLASSIFIED BY PLACE OF BIRTH, TURRIALBA CENTRAL DISTRICT, COSTA RICA, 1948

Place of Birth*	RURAL SUB-AREAS						Urban Zone
	Sub-Urban	Medium Distance			Isolated		
	large hold.	Large hold.	Small hold.	Mixed hold.	Large hold.	Small hold.	
Central District	41.0	52.5	64.1	46.6	32.0	52.4	48.2
Turrialba Cantón	5.5	3.9	5.6	15.4	6.4	4.1	3.7
Cartago Province	27.0	26.6	18.0	28.9	53.6	30.5	24.8
Costa Rica	26.5	16.4	11.9	9.1	8.0	12.6	21.3
Foreign	-	0.6	0.1	-	-	0.4	2.0
Total	100.0	100.0	99.7	100.0	100.0	100.0	100.0

*Each successive place of birth excludes the preceding one.

PLACE OF BIRTH IN RELATION TO SIZE OF LAND HOLDING AND DISTANCE FROM TRADE CENTER, CENTRAL DISTRICT OF TURRIALBA, 1950

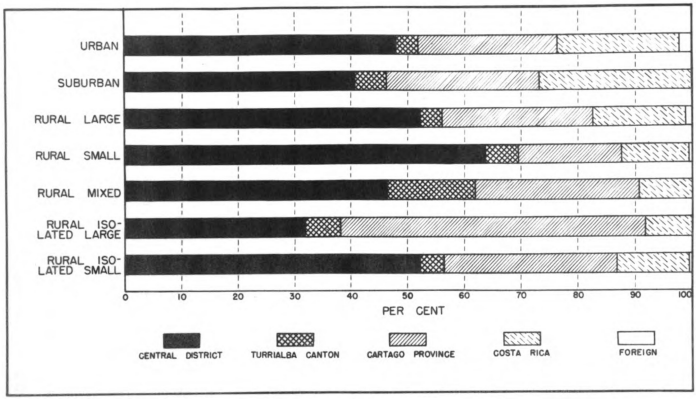

Figure 7

lated to the inheritance of land, and because of characteristics hinging on the concept of belongedness (elaborated in other parts of this work).

Nationality

Costa Rica has never attracted large numbers of foreigners, especially from faraway places. About 1890, when the railroad was built from Limón on the east coast to the capital of San José in the Central Plateau,[16] some colored workers were brought in from the Antilles, mostly from Jamaica, because they were more resistant to the bad climate and the unhealthy conditions of the area. Some of these may figure in the percentage given in Table XIII for North African origin.

It will be noted that most foreign-born in Costa Rica come from neighboring Nicaragua (57.25%). While proximity seems to be influential in this case, it does not seem to function on Costa Rica's southern border, since only 5.27 per cent of foreign-born are shown to come from Panama. Both North Africa and Europe exceed Panama in terms of number of foreign-born in Costa Rica.

More than 90 per cent of the foreign-born of North African origin are to be found in the Province of Limón.

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[16]See pp. 20 f. of this work.

TABLE XIII

PLACE OF BIRTH OF THE FOREIGN-BORN POPULATION OF COSTA RICA IN 1950

Place of Birth	Number	Per Cent	
Total	33.251*	100.00	
Africa	19	0.05	
North Africa	5.437	16.19	
Central America	22.571	66.67	
El Salvador	574		1.56
Guatemala	276		0.70
Honduras	753		1.89
Nicaragua	18.904		57.25
Panama	2.064		5.27
South America	1.032	2.88	
Asia	783	3.32	
Europe	3.408	10.88	
Oceanus	1	0.01	

Source: Censo de Población de Costa Rica (22 de mayo de 1950), (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), Table 24 on p. 33.

*Of this total, 14,261 (42.89%) were men, and 18,990 (57.11%) were women. This surplus of women was more or less evenly distributed in terms of place and foreign birth.

This is due to several causes. About the end of the 19th century a discriminatory law was passed forbidding people of color to live west of Turrialba. This meant that no colored people were to be found on the Central Plateau. Since the railroad was built on the eastern slopes of the continental divide, this offered no great problem at the time. The banana plantations on the east coast (Limón) subsequently absorbed many of the ex-railroad workers. Later, when disease attacked the banana trees, and much of the United Fruit Company's operations were moved to the west coast, the trained workers were forbidden to migrate.

By the time this law was repealed in 1948 (because it was against the "spirit of our Republic") others had established themselves in the new operation. The cacao industry in Limón has saved the people there from ruin.

According to the 1950 Census 4.15 per cent of the Costa Rican population was foreign-born. Table XII (page 113) offers comparative figures for the place-groups analyzed in the present study.

At the time of the Trial Census in Turrialba in 1948, there were very few foreign-born persons in the District, and most of these were in the urban area (see Table XII and Figure 7). It will be recalled that the population of Turrialba derives from early white settlement (see Chapter II, pp. 19-24). The foreign-born element in Turrialba is not significant enough to merit further analysis.

CHAPTER VIII

POPULATION STABILITY AND SOCIAL SOLIDARITY

Introduction

The extent of the feeling of group identification and belongedness, or esprit de corps as some may prefer to conceptualize, is suggested as a variable directly related to the social solidarity of a given group and to the degree of cooperation which may be expected of such a group. Social change occurs at a slower pace in such groups than in those groups which demonstrate lesser degrees of stability (amount of population movement) or solidarity (level of group identification). Knowledge of the degree to which social groups express these characteristics should be a part of the goal of sociological research, and is especially helpful to the leaders of any practical program of social welfare.

One important fact worth knowing about any community is the relative stability of the people, that is, the permanency of their relationship to the localities in which they reside. This stability may be measured through the use of data on place of birth, length of residence, and migration--the amount of movement from one place to another.

Questions on length of residence in the present place and place of last previous residence were asked and the data analyzed with three interrelated assumptions in mind--that the population of a community is more integrated or stable: (1) the greater the average length of residence of its inhabitants, (2) the greater the homogeneity of place of last previous residence of the in-migrants, (3) the shorter the distances moved by such migrants.

In some of the tables presented in this chapter, it will be noted that information for San Juan Sur is given separately from that for other neighborhoods in the small holdings place-group. This is because all San Juan Sur family heads were interviewed, whereas fifty per cent were contacted elsewhere in the place-group. Data concerning Aquiares are separated from those for other parts of the large holdings place-group, since these data were found to be distinctly different from those for the remainder of that place-group.

Stability of the Central District as a Whole

Tables XIV and XV summarize data available for the Central District as a whole.[1] As just indicated, one basis

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[1]These tables are based on information obtained from schedules administered to 387 family heads. This information was adjusted to represent all 1,082 families in the neighborhoods sampled, by multiplying interview results in

TABLE XIV

DISTRIBUTION OF FAMILY HEADS BY YEARS OF RESIDENCE AT PRESENT PLACE, FOR GROUPINGS BASED ON PLACE OF LAST PREVIOUS RESIDENCE, 1948-1949

Years at Present Place	Place of Previous Residence*						
	Native (N--143)	District (N--288)	Cantón (N--116)	Province (N--325)	Nation (N--192)	Unknown (N--18)	All (N--1082)
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
0-1	1.4	16.3	17.2	12.6	13.0	27.8	12.9
1-5	2.8	23.6	30.2	19.4	26.0	5.6	20.4
5-10	-	25.8	20.7	10.5	12.5	16.7	14.7
10-20	7.7	16.7	11.2	27.1	26.6	38.8	20.1
20-30	43.3	15.6	19.0	20.3	14.1	11.1	20.8
30-40	16.8	1.7	1.7	10.1	7.8	-	7.3
40-50	9.1	0.3	-	-	-	-	1.3
50	18.9	-	-	-	-	-	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Each successive place of previous residence excludes all preceding ones--e.g., those under "Cantón" came from the same cantón, but from outside the Central District.

TABLE XV

DISTRIBUTION OF FAMILY HEADS BY PLACE OF LAST PREVIOUS RESIDENCE, FOR GROUPINGS BASED ON YEARS OF RESIDENCE AT PRESENT PLACE, 1948-1949

Place of Previous Residence*	Years at Present Place								
	0-1 (N--140)	1-5 (N--221)	5-10 (N--159)	10-20 (N--218)	20-30 (N--224)	30-40 (N--79)	40-50 (N--14)	50 (N--27)	Total (N--1082)
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Native	1.4	1.8	-	5.0	27.7	30.4	92.9	100.0	13.2
District	33.5	30.8	46.5	22.0	20.1	6.3	7.1	-	26.6
Cantón	14.3	15.8	15.1	6.0	9.8	2.5	-	-	10.7
Province	29.3	28.5	21.4	40.4	29.4	41.8	-	-	30.1
Nation	17.9	22.6	15.1	23.4	12.1	19.1	-	-	17.7
Unknown	3.6	0.5	1.9	3.2	0.9	-	-	-	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Each successive place of previous residence excludes all preceding ones--e.g., those under "Cantón" came from the same cantón, but from outside the Central District.

for judging stability is the length of time people have lived in their local neighborhoods. The largest single group of family heads, 20.8 per cent of the total, had resided in their present place between 20 and 30 years, and another 11.1 per cent for over 30 years (Table XIV). The fact that 12.9 per cent had been there but one year or less and another 20.4 per cent for only one to five years would seem to indicate considerable instability, however.

Most stable, of course, were those classed as "native," that is, those family heads born in their present place of residence or whose last previous living place was elsewhere in the same neighborhood. Among the natives, the modal group were those had resided at their present place for 20 to 30 years. This group included 43.3 per cent of the natives. The least stable group appears to be those whose last previous home was outside the Central District but in Turrialba Cantón, for 30.2 per cent of these persons had lived only one to five years in their present location, and another 17.2 per cent one year or less.

As indicated in Table XV, the smallest proportion of family heads, 10.7 per cent, were in this least stable group, however. This might be expected, since the other

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each neighborhood according to the percentage of family heads contacted in each. If the sample was 20 per cent, for example, answers obtained were multiplied by five.

districts of Turrialba Cantón--namely, Santa Cruz, La Suiza, and Peralta--are farther from the original core of expanding settlement and are also much less densely populated than is the Central District. Thus, relatively few families appear to have migrated back to the Central District from areas of the cantón closer to the frontier of settlement. Investigation showed that of those who did, nearly half did so during the last five years before the study was made.

This relative lack of movement from sparsely peopled areas is also evident if the place of last residence for those coming from parts of the nation other than within Cartago Province is analyzed. Most of the 17.7 per cent of family heads who were in this category (Table XV) came from densely settled San José Province. Only a few were from nearby Limón and none at all from distant Puntarenas, both thinly settled frontier provinces.

Turrialba Cantón is the most eastern cantón of Cartago Province. It is on the opposite side of the province from the city of Cartago, the original population core from which national settlement has expanded. It seems natural, therefore, that the largest proportion of Central District family heads interviewed (30.1 per cent) gave the province as the place last moved from (Table XV). Among those who had lived in their present location ten to forty years, the

province was the most common place of last previous residence; it was second only to the district among those who had resided where they are now for less than ten years.

About 27 per cent of all family heads last moved from within the district. It is particularly significant that, of the least stable groups on the basis of years of residence, those who had been in their present location one year or less, one year to five years, and five years to ten years--33.5 per cent, 30.8 per cent, and 46.5 per cent, respectively--came from within the district. This being true, it can be concluded that the stability of the Central District's population as a whole is somewhat greater than first seemed apparent. Moves within the district were short ones, as were also many moves from adjoining areas of the cantón or province. The shorter the move the less difficult, presumably, is the adjustment in the new home--or, by inference, the greater is the overall stability.

Stability As It Varies between Types of Locality Groups

Not only is a considerable part of the instability of the Central District's population due to internal movement, but also there is a very noticeable variation in stability within the district, according to type of land tenure. The longest average length of residence at the pres-

ent place, 22.53 years, was that of the 66 family heads sampled in the small holdings place-group. The average was lowest (8.01 years) for the 22 family heads contacted in the close-in group, and almost as low (9.64 years) for the 103 family heads contacted in the large holdings place-group. The land in the latter two cases is in the hands of a few owners, and most of the family heads are day-wage workers. In the mixed holdings place-group, where both large and small farms are to be found, the average for the 73 family heads interviewed was 13.01 years of residence.

That the average years lived in the present place is a valid indicator of stability seems to be substantiated by Tables XVI and XVII.[2] The greater stability in the small holdings place-group is evidenced by the smaller proportion of residents who had lived in their present place one year or less (Table XVI). Only 10.1 per cent of the family heads in the small holdings group were in this class, as compared with 15.5 per cent for the large holdings group, 21.9 per cent for the mixed holdings group, and 22.7 per cent for the close-in group. Another 19.8 per cent of the small holdings group were in the one-to-five-year class, making a total of 29.9 per cent who had resided in their

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[2]Attention is again called to the fact that statistics given for the small holdings place-group exclude those for the neighborhood of San Juan Sur, and those for the large holdings place-group do not include Aquiares.

TABLE XVI

DISTRIBUTION OF FAMILY HEADS BY YEARS OF RESIDENCE AT PRESENT PLACE, FOR EACH PLACE-GROUP OR NEIGHBORHOOD, 1948-1949

Years at Present Place	Place-Group or Neighborhood						
	Close In (N--22)	Large Holdings[1] (N--103)	Small Holdings[2] (N--66)	Mixed Holdings (N--73)	Aquiares (N--48)	San Juan Sur (N--75)	Adjusted Total, Central District (N--1082)
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
0-1	22.7	15.5	10.1	21.9	-	1.3	12.9
1-5	22.7	31.1	19.8	17.8	6.2	6.7	20.4
5-10	31.9	21.4	6.1	15.1	6.2	10.7	14.7
10-20	9.1	19.4	15.3	19.2	27.1	30.6	20.1
20-30	13.6	9.7	21.3	17.8	39.6	32.0	20.8
30-40	-	2.9	7.6	8.2	16.7	9.3	7.3
40-50	-	-	6.1	-	2.1	2.7	1.3
50	-	-	13.7	-	2.1	6.7	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Except Aquiares.

[2]Except San Juan Sur.

TABLE XVII

DISTRIBUTION OF FAMILY HEADS BY PLACE OF LAST PREVIOUS RESIDENCE, FOR EACH PLACE-GROUP OR NEIGHBORHOOD, 1948-1949

Place of Last Previous Residence[1]	Place-Group or Neighborhood						
	Close In (N--22)	Large Holdings[2] (N--103)	Small Holdings[3] (N--66)	Mixed Holdings (N--73)	Aquiares (N--48)	San Juan Sur (N--75)	Adjusted Total, Central District (N--1082)
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Native	-	-	36.4	8.2	22.9	33.4	13.2
District	45.5	33.0	24.2	24.7	8.3	21.3	26.6
Cantón	-	13.6	1.5	31.5	4.2	-	10.7
Province	45.5	33.0	21.2	17.8	37.5	25.3	30.1
Nation	9.0	18.5	16.7	17.8	27.1	5.3	17.7
Unknown	-	1.9	-	-	-	14.7	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Each successive place of previous residence excludes all preceding ones--e.g., those under "Cantón" came from the same cantón, but from outside the Central District.

[2]Except Aquiares.

[3]Except San Juan Sur.

present location five years or less. Comparable percentages for the other place-groups were larger: mixed holdings, 39.7; close-in, 45.4; large holdings, 46.6. The fact that the small holdings group was the only one of the four place-groups studied which had had any of its family heads as residents for more than forty years is additional evidence of the greater stability in this group.

If, as assumed, greater homogeneity of place of origin and shorter distances migrated are valid indicators of greater population stability, the data on place of last previous residence (Table XVII) also lead to the conclusion that stability is greatest in the small holdings place-group. Some 36.4 per cent of the small holdings family heads were native, and 24.2 per cent had last lived elsewhere in the Central District. Conversely, there were no natives in either the close-in or large holdings place-groups, although they did have 45.5 and 33.0 per cent, respectively, of their family heads from within the district. The classification of 8.2 per cent of the family heads of the mixed-holdings group as native, places that group second to the small holdings group in population stability. Another 24.7 per cent of its members came from within the district, while 16 of the 21 individuals making up the unusually high percentage (31.5) who migrated in from other parts of the cantón had last lived in the nearby neighborhoods of

Santa Cruz and San Antonio, and so had moved only a short distance. Least stable, based on the data for place of last previous residence, is the large holdings place-group.

In each group except the mixed holdings, fewest people had had their last previous residence in the cantón, and the next-to-smallest number were from elsewhere in the nation.

San Juan Sur. This neighborhood illustrates especially well the high population stability in an area of small farms. Composed in 1948 of seventy-five families, all of whom were interviewed, San Juan Sur is said to have had only about eight families in 1890.[3] The high average of 22.86 years of residence of present family heads, plus the facts that one-third were native (Table XVII), only 1.3 per cent had been in the neighborhood one year or less, and but 6.7 per cent had been there one to five years (Table XVI), all attest to the high stability of these peasant proprietors. It was found that none of the natives had lived at their present site less than 10 years; 20 per cent had been there over 50 years. Twenty-one per cent of all family heads, including three of the six who had been in San Juan

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[3]Reed M. Powell, A Comparative Sociological Analysis of San Juan Sur, a Peasant Community, and Atirro, an Hacienda Community Located in Costa Rica, Central America. A thesis, Michigan State College, 1951, p. 36.

Sur five years or less, had migrated from elsewhere in the Central District (Table XVII).

Aquiares. The high stability indicated for the large finca Aquiares, greater even than in San Juan Sur, was exceptional, and for this reason Aquiares was excluded from the large holdings place-group and analyzed separately. The average years of residence of 48 family heads interviewed was 23.88. None of these family heads had been in Aquiares as little as a year, and only 6.2 per cent, five years or less (Table XVI). Although 22.9 per cent of the family heads were native, only another 8.3 per cent had made their last move from within the district, while 37.5 came from the province and an unusually high percentage, 27.1, from the nation (Table XVII). All of the natives had lived in their present place more than ten years.

Why is the population stability so much higher on Aquiares--the largest landholding in the Central District--than it is on the other large fincas? For one reason, Aquiares has been under the same ownership for a longer period than has any of the haciendas in the Central District. It was established in 1908 by Stanley Lindo, who has paternalistically directed its activities ever since.

For another reason, Aquiares is unusual among the large fincas of the district because--in addition to hiring the usual force of laborers who are paid a daily wage--the

owner has established colonos on the finca. A colono contracts to care for and harvest, under the supervision of one of the owner's foremen, a plot of coffee for a fixed payment per fanega (11.35 bushels) of coffee produced. About 60 per cent of the family heads on Aquiares are colonos; the remainder are day-wage workers, or peóns. Since the colono has more independence and usually makes more money, he is much more stable than the péon.

Finally, both the colonos and the peóns on Aquiares have been very carefully selected. The colono system was established in 1915 with 25 to 30 families. The plan followed was to bring groups of families from the same locality in the Meseta Central so that adjustment in their new home would be facilitated. In many cases descendants of the first colonos still tend the same land their parents did. Any replacements or additions have been recruited from the best workers available, often from other properties of the same owner. The same has been true of the péón labor force.

Graphic Representation. A method of graphically representing the data of this study for determining population stability is presented in Figure 8.[4] On the circular

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[4]In this graph, Aquiares is included in the rural large holdings place-group, and San Juan Sur is included in the rural small holdings place-group.

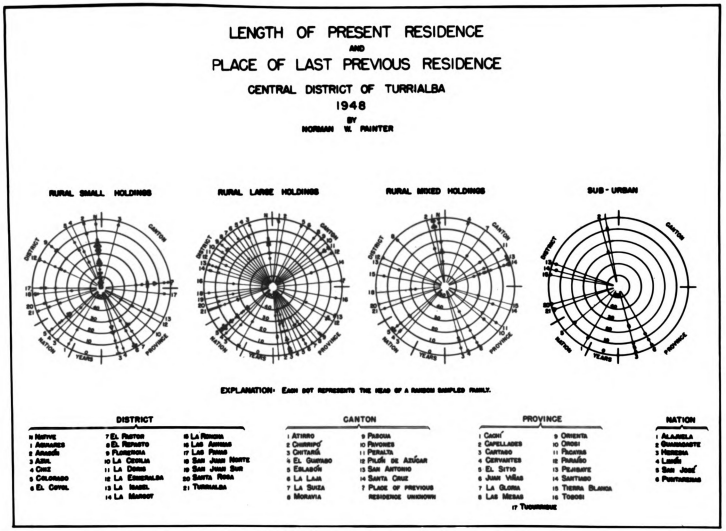
LENGTH OF PRESENT RESIDENCE
AND
PLACE OF LAST PREVIOUS RESIDENCE
CENTRAL DISTRICT OF TURRIALBA
1948
BY
NORMAN W. PAINTER
RURAL SMALL HOLDINGS
RURAL LARGE HOLDINGS
RURAL MIXED HOLDINGS
SUB - URBAN
DISTRICT
CANTON
PROVINCE
NATION
EXPLANATION- EACH DOT REPRESENTS THE HEAD OF A RANDOM SAMPLED FAMILY.
DISTRICT
1 NATIVE
2 ARAGUACIE
3 ASIS
4 CRUZ
5 COLORADO
6 EL COYOL
7 EL REPOSO
8 EL REPUESTO
9 FLORESCICA
10 LA CECILIA
11 LA DORIS
12 LA ESMERALDA
13 LA MAGIL
14 LA MORGOT
15 LA RENGIA
16 LAS ANIMAS
17 LAS PENAS
18 SAN JOSE NORTE
19 SAN JOSE SUR
20 SANTA ROSA
21 TURRIALBA
CANTON
1 ATIRRO
2 CHIRRIPO
3 CHITARRA
4 EL GUAYABO
5 ERLAGOÑ
6 LA LAJA
7 LA SUIZA
8 MORAVIA
9 PARDIA
10 PAVONES
11 PERALTA
12 PILON DE AZUCAR
13 SAN ANTONIO
14 SANTA CRUZ
? PLACE OF PREVIOUS RESIDENCE UNKNOWN
PROVINCE
1 CACHI
2 CAPELLADES
3 CARTAGO
4 CERVANTES
5 EL SITIO
6 JUAN VIÑAS
7 LA GLORIA
8 LAS MESAS
9 ORIENTA
10 ORIGI
11 PACAYAS
12 PASAGÜO
13 PEJIBAYE
14 SANTIAGO
15 TIERRA BLANCA
16 TOBOSI
17 TUCURRIQUE
NATION
1 ALAJUELA
2 GUANACASTE
3 HEREDIA
4 LIMON
5 SAN JOSE
6 PUNTARENAS

Figure 8

graphs each dot stands for the head of a sampled family. The length of residence in the present place is shown by the position of the dot along a radius in relation to the circles which represent time. The closer the dot is to the center of the graph, the longer the family head represented has lived in his present location.

The place of last previous residence of the family head is indicated by the radius the dot is on. If the radius is in the upper-left quadrant of the graph, the place was in the Central District; if in the upper-right quadrant, it was outside the Central District, but inside Turrialba Cantón; if in the lower-right quadrant, it was outside Turrialba Cantón, but inside Cartago Province; if in the lower-left quadrant, it was outside Cartago Province, but in another province of Costa Rica. Radii in each quadrant are numbered at their ends. The name of the place of last previous residence represented by any particular radius can be determined by looking up its number in the section of the legend which is for the quadrant of the graph the radius is in. Thus, the six dots on the radius numbered 12 in the upper-left quadrant of the graph, titled "Rural Small Holdings," symbolize six family heads whose place of last previous residence was within the Central District at La Esmeralda. Or again, on the same graph, the three dots on the radius numbered 1 in the lower-left quadrant denote three

family heads whose last previous residence was in Alajuela Province.

In terms of the definitions and assumptions used here, population stability can be deduced from the graph as follows: (1) The closer to the center of the graph the dots are grouped, the greater is the indicated population stability. Such a grouping denotes a higher average length of residence of family heads at this place. (2) The greater the number of radii in relation to the total number of dots on a graph, the greater the heterogeneity of place of last previous residence and the less stable the population can be inferred to be. This is all the more true if a large percentage of the family heads have lived in their present place only a short time. (3) The greater the proportion of family heads who are classed as native and are shown on the radius marked "N" in the upper-left quadrant of the graph, the greater the population stability. (4) Since, of the family heads who are not native, those contributing most to population stability are the ones whose last previous residense was elsewhere in the district, the greater the proportion of dots that appear in the upper-left quadrant of the graph, the greater is the population stability. This conclusion is based on the assumption that the shorter the move the easier will be integration into the new community. Generally speaking, moving distance was shortest for those

who came from elsewhere in the district, next shortest for those who came from somewhere in the cantón, next for those from somewhere in the province, and longest for those from elsewhere in the nation. The first years of residence in the new home are most important in the integration process, however, so the length of move has most significance in the case of recent arrivals.

It is evident that the conclusions arrived at already from analysis of the tables could be obtained visually from the study of the graph.

Conclusion

The foregoing analysis indicates that the place-groups rank in order of population stability from greatest to least as follows: (1) small holdings, (2) mixed holdings, (3) close-in, and (4) large holdings. The medium distance small holdings place-group demonstrates the highest degree of population stability when the proportion of local births is used as the criterion. Assuming that the factor "length of residence" contributes to community stability, it may be said on the basis of the present study that the people of the small land holding localities have greater stability than those living on the haciendas. The greater stability in the small holdings place-group is to be expected, of course, in view of the attachment of these people to the land through ownership and sentiment.

The lesser stability in the large holdings place-group can be accounted for by the fact that the majority of the family heads are landless day-wage workers and thus more subject to the effect of fluctuations in economic conditions, dismissal, attraction of supposed greater opportunities elsewhere, changing finca management, and other factors affecting mobility of people with weak attachments.

That instability in the case of large holdings is not universal, however, is illustrated by the exceptional case of the finca Aquiares. Its population stability was shown to be even greater than that for small holdings in the Central District, with an average length of residence of more than 24 years. This case was explained by the careful pre-migration selection of tenants and workers, the comparatively long period of single ownership of the finca, and the semi-attachment to the land which at least a portion of these people have in the form of the sharecropping system of tenancy.

CHAPTER IX

CONCLUSION

The two basic purposes of this study, that of delineation of locality groups within the Central District of Turrialba and that of making demographic comparisons between combination of these groups, have been fulfilled. In addition to these, the ecological and socio-cultural structure of the community of Turrialba and its delineated neighborhoods has been elaborated. Also, the interaction patterns, both within the locality groups and between localities, have been described--mostly in terms of the daily life patterns of the people, sometimes utilizing the institutional approach.

Since, in the presentation of the basic material of this work, each chapter and section contains its own conclusions, which are directly related to the variables treated in these chapters, and since the multiplicity of factors related to these variables requires more extensive treatment than is possible in a Conclusion, it is desired at this time only to point out certain implications and general contributions in connection with the field work and the procedures of analysis.

A history of the origin and development of delineation techniques has permitted the author to point out the advantages and disadvantages of the various techniques employed, and to develop and recommend his own technique--where time permits the precision which it offers. The concept of identification was utilized as a determinant of locality groups. This concept was elaborated and clarified with respect to the cohesion and solidarity of social groups.

A taxonomy was developed which consisted of the inter-relatedness of two basic variables--type of land tenancy, and time-distance--which permitted the establishment and definition of the concept of place-groups. These place-groups were described and presented as a method of combining locality groups into meaningful social units which possess homogeneous characteristics. This process permitted the author subsequently to arrive at generalizations relative to meaningful universes. The precise definition of these groupings and those studied by such investigators.

The transition from the delineation of locality groups to the analysis of the social characteristics of such groups is not always easy or smooth. The variables which influence these characteristics may be related in such a way as to make analysis difficult. In the present instance, this problem was handled by the development of

the cross-classification system just described. This taxonomy permitted the development of relevant and significant hypotheses. Subsequent analytical comparisons permitted the derivation of certain conclusions which are capable of being tested in other universes in which the science of sociology may be interested in so testing them, and, at the same time, these comparisons provide orientations for extension and change agents and other social welfare workers who are operating in a similar milieu.

The demographic data analyzed for the study unit and its congeries of locality groups were those of the Trial Census of 1948 which resulted from the choosing of the Central District of Turrialba as the test area. The adequacy and relation of this Trial Census to the national census of 1950 was described. Differences in the population characteristics of Turrialba were shown to be minimal for this brief period of two years.

One advantage which the present study offers over other studies is that the ultimate analysis (in this case, demographic analysis) and comparison of the sub-groups studied could lean comfortably on the assurance that the taxonomic groups were "real" groups from the sociological point of view. Too often an investigator has to depend upon a quick judgment or rapid technique of delineation of the groups studied and compared, thereby prejudicing his

conclusions. In the present case, any weaknesses which might be inherent in the conclusions of a given section could not derive from this source; the sub-groups are accurately defined.

Another advantage enjoyed by the present research was the fact of full coverage of the unit of study with respect to both delineation procedures and to the demographic characteristics analyzed. For this reason no statistical manipulation was necessary in drawing conclusions based on the percentage differences between sub-units with regard to the factors studied.

The present study has established certain demographic bench-marks for the universe investigated. For examples, birth and death rates, the age-sex composition, internal migration and inmigration and emigration, marital status, literacy and educational level, occupational composition, and the multi-factor characteristic of social solidarity and population stability, among others. Future comparisons are thus made possible, with respect to these demographic bench-marks, and subsequent studies of the same universe will be able to establish trends beyond the capabilities of the present research. The only trends that were possible for the present study had to depend upon the often inadequate data of earlier censuses.

The internal comparisons of the various locality groups within the Central District of Turrialba, and the conclusions based on these comparisons, are necessarily limited to the universe studied. However, it may be said that when other groups are encountered which possess the same or similar socio-cultural characteristics, it may be hypothesized that the variables analyzed herein will affect these other groups in the same or similar manner as the conclusions of the present study indicate.

The foregoing are the general contributions which the study is believed to have made. For specific conclusions the reader is referred to Chapter III if interested in those related to delineation, to Chapter VI if interested in the taxonomy developed for the study, to Chapter VII if conclusions related to the demographic characteristics analyzed are of interest, and to Chapter VIII if interested in the question of social solidarity and population stability.

APPENDIX

TABLE 1

TOTAL POPULATION OF COSTA RICA BY AGE GROUPS AND SEX, WITH PERCENTAGES: 1950

Age	Number		Per Cent	
	Male	Female	Male	Female
Total	399,859	401,016	49.95	50.05
0-4	67,481	65,154	8.43	8.13
5-9	56,789	55,367	7.09	6.91
10-14	49,734	48,555	6.21	6.06
15-19	40,418	43,826	5.05	5.47
20-24	37,671	39,386	4.70	4.92
25-29	28,647	30,491	3.58	3.81
30-34	23,581	23,705	2.98	2.96
35-39	22,908	23,930	2.86	2.99
40-44	18,310	18,074	2.29	2.26
45-49	14,140	13,966	1.77	1.74
50-54	12,313	11,853	1.54	1.48
55-59	7,889	7,827	0.99	0.98
60-64	7,667	7,248	0.96	0.90
65-69	4,716	4,420	0.59	0.55
70-74	3,331	3,227	0.42	0.40
75-79	1,860	1,768	0.23	0.22
80-84	1,073	1,147	0.13	0.14
85 and more	1,559	719	0.09	0.10
Unknown	574	342	0.04	0.03

Source: Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 42.

TABLE 2

RURAL POPULATION OF COSTA RICA BY AGE GROUPS AND SEX, WITH PERCENTAGES: 1950

Age	Number		Per Cent	
	Male	Female	Male	Female
Total	275,232	257,357	51.70	48.30
0-4	48,148	46,315	9.04	8.70
5-9	40,656	39,372	7.63	7.39
10-14	35,304	33,472	6.63	6.28
15-19	28,114	27,796	5.28	5.22
20-24	25,549	23,698	4.80	4.45
25-29	19,275	18,334	3.62	3.44
30-34	15,976	14,344	3.00	2.69
35-39	14,976	14,067	2.81	2.64
40-44	12,201	10,860	2.29	2.04
45-49	9,299	8,119	1.75	1.52
50-54	8,112	6,786	1.52	1.27
55-59	5,047	4,292	0.95	0.80
60-64	4,979	4,016	0.93	0.75
65-69	2,971	2,217	0.56	0.42
70-74	2,075	1,676	0.39	0.31
75-79	1,153	854	0.22	0.16
80-84	669	571	0.13	0.11
85 and more	468	423	0.09	0.08
Unknown	260	145	0.05	0.03

Source: Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 42.

TABLE 3

URBAN POPULATION OF COSTA RICA BY AGE GROUPS AND SEX, WITH PERCENTAGES: 1950

Age	Number		Per Cent	
	Male	Female	Male	Female
Total	124,627	143,659	46.46	53.54
0-4	19,333	18,839	7.21	7.02
5-9	16,133	15,995	6.01	5.96
10-14	14,430	15,083	5.38	5.62
15-19	12,304	16,030	4.59	5.97
20-24	12,122	15,688	4.52	5.85
25-29	9,372	12,157	3.49	4.53
30-34	7,875	9,361	2.94	3.49
35-39	7,932	9,863	2.96	3.68
40-44	6,109	7,214	2.28	2.69
45-49	4,841	5,847	1.80	2.18
50-54	4,201	5,067	1.57	1.89
55-59	2,842	3.535	1.06	1.32
60-64	2,688	3,232	1.00	1.20
65-69	1,745	2,203	0.65	0.82
70-74	1,256	1,551	0.47	0.58
75-79	707	914	0.26	0.34
80-84	404	576	0.15	0.21
85 and more	251	417	0.09	0.16
Unknown	82	87	0.03	0.03

Source: Atlas Estadístico de Costa Rica (San José: Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, 1953), p. 42.

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