

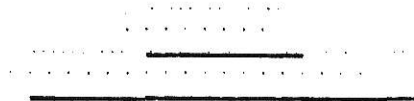
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DEVELOPMENT AND SOCIAL INEQUALITIES
IN AN INTERVILLAGE SYSTEM: THE CAUCA VALLEY OF COLOMBIA

By

CHING-LI WANG

B.A., National Taiwan University, 1966



A MASTER'S THESIS

Submitted in partial fulfillment of the

requirements for the degree

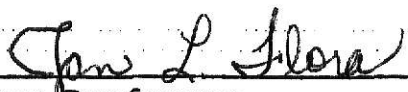
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BIOGRAPHICAL SKETCH

The author was born in Taipei, Taiwan, Republic of China on October 14, 1943. He graduated from National Taiwan University with a Bachelor of Arts in Sociology in 1966. After one year's military service in the Army, he became a research assistant to the Project Head, Kenneth A. Abbott, and Project Director, Wolfram Eberhard, in the Chinese Family Life Study, Institute of International Studies, University of California at Berkeley, when this project was conducted in Taiwan in 1967-1968. He was a teaching assistant in the Department of Sociology, National Taiwan University in 1968-1970. He enrolled in the Master's program at Kansas State University in the fall of 1970, where he had a research assistantship in the Department of Sociology. In the summer of 1972, he worked in the Planning Department of the City of Boulder, Colorado, with an internship in the field of population and environment sponsored by the Institute of International Education.

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ACKNOWLEDGEMENTS

When this study was in progress, I was asked how I could do research on Colombian data, because I came from Taiwan to study in the United States, but the data I analyzed was taken from other society, a Spanish-speaking Colombia. The difficulty of this study can be imagined. Now that this study is accomplished, a great acknowledgement is to my major professor, Jan L. Flora. Without his direction and constant consultation, this study may not have been as fruitful as it turned out to be. He spent an enormous amount of time struggling through the rough draft. I am also very grateful for the encouragement of his wife, Cornelia Flora, Director of the Population Research Laboratory and Assistant Professor in the Department of Sociology and Anthropology.

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Finally, I thank my wife, Ko-chu Wang, for her helping me through the thesis-writing period.

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Chapter I

Introduction

The purpose of this study is to examine the relationship between development and social inequalities in a comparative community setting. The variables used are differentiation, centrality, level of living, and inequality. Forty municipios (a municipio is similar to a county) in the Cauca Valley of Colombia are included in the comparative study.

Development is a desirable phenomenon, especially for the underdeveloped and developing countries. Development brings more resources for the people to improve their living. In order to achieve this goal, people always struggle for a desired standard of living, and engage in various activities to that end. In such a process of development, many benefit but some do not. The egalitarians, then, propose to equalize the distribution of resources because they see that distributional inequalities create conflicts within the society and they see such inequalities as being unjust. But some believe that inequalities are indispensable for progress. However, things are not so strictly fixed. When inequalities associated with rigid socio-economic structure and lack of mobility, it tends to inhibit the development by disassociating reward from effort and ability. But when a certain amount of inequality is associated with an open socio-economic structure and with mobility, it tends to favor development by providing rewards for change and improvement. Whether development can promote more equal distribution of resources at the same time that it increases the level of living is the main issue in this study.

The community is taken as the unit of analysis in comparing the degree of development, levels of living, and inequalities in this study. The community provides a territorial space for residence, for sustenance, and for other functions which meet people's needs. In order to perform various functions, governmental, economic, educational, and religious institutions are set up. Transportation, water supply, sewage system, light and power, recreation, etc. are provided. From the ecological viewpoint, the community forms symbiotic relationships within its structure; from the viewpoint of social organization, the community encompasses a system of stratification, hence a power structure (Scott, 1970: 431-434). Thus, the community is a suitable unit of comparative study.

The concept of development is intimately associated with the concept of differentiation. As Eisenstadt said,

"Differentiation describes the ways through which the main social functions or the major institutional spheres of society become disassociated from one another, attached to specified collectivities and roles, and organized in relatively specific and autonomous symbolic and organizational frameworks within the confines of the same institutionalized system . . . Development proceeds through various stages of specialization and differentiation." (Eisenstadt, 1964:376)

Thus, an advanced or developed society possesses a complex organization of differentiated social and cultural components. One element in growth or advancement is the process of differentiation of social structure. (Smelzer, 1959:1)

More concretely, differentiation is both a state and a process. As a state, differentiation can be defined as the number of structurally distinct and functionally specialized units in a

society. A society is, therefore, internally differentiated to the extent that it has numerous specialized roles and collectivities. As a process, it is the emergence of more distinct organizations to fulfill more distinct functions. So, the ideal indicator of differentiation would be a count of the total number of differentiated roles and collectivities in each society (Marsh, 1967:33). Thus, differentiation is a state or a process of the functional division of labor in the society.

Once differentiation proceeds, the roles or positions in the administrative system of any organization are divided into many new roles to carry out the task which one original role can do. Adam Smith (1937) gave a good example of the division of labor in the pin-making factory to demonstrate the efficiency of the division of labor. The collectivities in the social systems are also divided into more specialized units. The division into wholesale and retail is an example. The supervisors and subordinates in the bureaucratic system are also developed to meet the needs of integration of the division of labor in the organization. The roles and collectivities are evaluated differently and receive unequal amounts of rewards. This results in structural inequalities. This is a process of social stratification. As Tumin said,

"By social stratification, we refer to the presence in any society of a system by which various social units are ranked as inferior and superior to each other on a scale of social worth, or receive unequal amounts of the desired rewards available in the society. So defined, the inequalities referred to the term, 'social stratification'." (Tumin, 1963:19)

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Therefore, two phenomena occur when differentiation of roles and collectivities proceed. One is the functional division of labor which is included in the term, "horizontal differentiation." The other, in the term "vertical differentiation," refers to the system of stratification -- the inequality of rewards such as power, prestige, and utilization of goods and services.

Davis and Moore (1945) regard inequalities as inevitable in the social system because the rewards are built into the positions in order to carry out the function of the position. Because of the functional necessity of stratification, ". . . a society must somehow distribute its members in social positions and induce them to perform the duties of these positions." (Davis and Moore, 1945:242) They said,

"If the duties associated with the various positions were all equally pleasant to the human organism, all equally important to societal survival, and all equally in need of the same ability or talent, it would make no difference who got into which positions, and the problem of social placement would be greatly reduced. But actually it does make a great deal of difference who gets into which positions, not only because some positions are inherently more agreeable than others, but also because some require special talents or training and some are functionally more important than others." (Davis and Moore, 1945:243)

Thus, the greater the skill requirements and importance of the job, the greater must be the rewards built into that position. In other words, different positions receive unequal amounts of rewards. Role differentiation in terms of functional division of labor is immediately related to social inequality in rewards. Therefore, Barber (1957) maintains that stratification is the product of the interaction of social differentiation and social evaluation of the functional importance of each of the social roles. Inferring

from this point, Barber concludes that the amount of role differentiation is positively correlated with the development of a system of stratification. Especially in modern societies there is such a high differentiation that they all have elaborate systems of stratification (Barber, 1957:14-15). In other words, horizontal differentiation and vertical differentiation are highly correlated with each other. In this study, thus, it is hypothesized that the higher the level of differentiation, the higher the social inequality. ✓

In order to examine this hypothesis, the concept of rewards and the distribution of rewards should be defined. Davis and Moore (1945) suggest two determinants of positional rank as functional importance and skill or capacity for performance. As Tumin (1953) pointed out, the functional importance of social roles runs into a number of theoretical and empirical difficulties. Thus, the unequal distribution of rewards are always due to the differential valuation of performance, qualities (a prospective view of performance), and achievement (a retrospective view of performance). (Moore, 1963:13) But, among people with the same native capacity (qualities), the differences in their socially relevant talents are functions of training and learning which the dominant groups in society control. Thus, to reward them differently is to reward difference in opportunity of performance which were socially generated in the first place (Tumin, 1963:26). In other words, positions are determined by social inheritance. Although performance is important in determining the rewards, the chance to perform becomes more important (Buckley, 1958:374). Thus, the inequalities of inheritance or the inequality of opportunity has a strong influence ✓

on social inequality independent of differentiation. Therefore, in order to determine the influence of differentiation on the unequal distribution of rewards, we should control for inequality of opportunity--prior social stratification. In this study, inequality of agricultural land distribution is used to indicate inequality of opportunity.

The content of rewards is diversified. The results of development which reflect on the community is the comfort of living or the utilization of goods and services. Thus, level of living is used to indicate the rewards. The level of living is defined as the actual attainment of material goods and services. In addition, the degree of inequality of distribution of such goods and services will also be used as measures of inequalities.

Differentiation, in terms of functional division of labor, creates need for integration. Therefore, a contract of reciprocal obligations emerges. The contract is the symbol of exchange. (Durkheim, 1933:124) The interdependence on each other of the differentiated social units in the division of labor is what Durkheim terms "organic solidarity." However, differentiation of social units is limited by the extent of the power of exchange (Adam Smith, 1937:Chapter 3). For example, various trades cannot be carried on except in towns where there is a transportation system to provide the exchange of goods and services. In the process of exchange, the concomitant growth of interdependence and mutual interpretation among the differentiated social units tend to result in the emergence of a "center." (Eisenstadt, 1964:377)

Applying this concept to the structure of intervillage system, some communities dominate many of the conditions of life of all other communities. As Bogue said,

"This control (dominance) arises from a higher than average degree of specialization (differentiation) in such functions as services and wholesaling, and from an ability to foster industrial development in its immediate vicinity by provision of favorable combinations of the factors of production. Other communities must accept these conditions of life by specializing in other activities and by becoming dependent upon the central city for those goods and services which their residents require but which they cannot provide locally." (Bogue, 1949:61)

In other words, with respect to the interdependence of communities in the larger system, the highly differentiated communities exercise dominance over the lowly differentiated communities. The information flow among the communities in the system tends to bring the rewards of development from one community to the other. Some communities can still have a high level of living without differentiating their structure because of the benefits from the outside. The hinterland with low differentiation may still have a high level of living from the supply of the metropolis while the metropolis will not have so high differentiation and high level of living without the support from the communities in the process of exchange. This relationship among communities in a large system is termed centrality. It is defined as the degree to which the unit has access to the information in the larger system. It is also one dimension of community structure.

In the process of our examination of the relationship between differentiation and social inequalities, we have to take centrality into account and control the influence of the information flow on the distribution of rewards. At the same time, we also can examine

how the interplay of these two aspects of community structure affects the level of living and the distribution of rewards.

Therefore, in this study, differentiation, centrality, and inequality of opportunity (prior stratification), are used as independent variables, the level of living and its distribution are used as dependent variables.

The units of analysis for this study are 40 municipios in the Cauca Valley of Colombia. A name list of these municipios is in Appendix I.

In the following chapter, the measurement of differentiation and centrality is presented. Chapter 3 describes the measurement of level of living; factor analysis is applied to determine whether the items used to indicate level of living are unidimensional. Then the comparisons of level of living and differentiation, and centrality are made. The composite index of level of living for the Cauca Valley is constructed. The data in the population, building and housing censuses (1964) from which the items of level of living are obtained are divided into urban and rural areas. Our analysis is separated in these two aspects in order to determine the effect of the urban nucleus on its hinterland.

Chapter 4 presents the measurement of inequalities, including the indicator of prior stratification (land inequality) and the inequality of level of living. The relationships between inequalities and levels of living, differentiation, and centrality respectively are also presented.

Chapter 5 is the analysis of these variables in the path diagram. The composite influences of the independent variables

on dependent variables, as well as the relative importance of the influence of the independent variable, are demonstrated.

The measures of differentiation and centrality which were constructed in 1969 by J. Flora are ordinal scale (Guttman scales, ✓ ranking, presence-absence). Although the other measures are the data of census in 1964, the rank of the municipios on differentiation did not change too much in these five years. Therefore, the data in different period are used.

The correlation coefficients used in this analysis is Pearsonian r . The significant levels selected is 0.05 level. On each table of correlations, all the correlation coefficients are above 0.01 level of significance if there is not an asterisk, unless otherwise stated.

Chapter II

Differentiation and Centrality

Community structure includes two major dimensions in the systems approach. One is internal structure which is conceived as having internal system structure and process. The other is external structure in which the community is conceived of as being more or less integrated into a system of exchange and interdependence with other communities (Eberts, Eby, Kluess, 1969:1-2) The internal structure refers to the structure of social units in the community: roles, informal groups and large formal organizations or groups. It reflects varieties of division of labor and functional integration which Durkheim called "organic solidarity." Besides this symbiotic relationship among the social units, the consensus of social units which Durkheim called "mechanical solidarity" also exists. But when we are talking about development, the division of labor simply called differentiation is emphasized. If we view the community as a social unit, its relations with other communities in the large system is more or less like the relationship of social segments with each other in a community. They have certain degrees of functional interdependence and exchange, but the linkage between communities is emphasized. The generalized concept to represent this is centrality among communities.

In an attempt to understand why levels of living and inequality differ from community to community, the present study will use the indicators of two dimensions of community structures, the relative

centrality of each community in the large system and the degree of differentiation within the community. The following pages will present the measurement of differentiation and relative centrality for 40 municipios in the Cauca River Valley.

Measurement of Level of Differentiation

Marsh, in his comparative societal study, said that the ideal indicator of differentiation would clearly be a count of the total number of differentiated roles and collectivities in each society. (Marsh, 1967:33) Then the count of the specialized roles or the differentiated occupations in the labor force can be used to indicate the degree of differentiation in each society. But there is the technical problem of counting the roles. The validity of the method is doubtful. So, he used the Index of Differentiation Score from any given society in Murdock's sample which is the sum of its score for population size of the political unit, and its score for social stratification, and used two further indicators: the percentage of males who are in non-agricultural occupations and gross energy consumption per capita. These are not the direct measurement of differentiation. But, from the indicators he used, differentiation is assumed to be highly correlated with population size, social stratification, non-agricultural activities, and the affluence in the society. In other words, differentiation is highly correlated with the levels of living (the affluence) and social inequality (stratification). This is the assumption which will be tested in this study.

On the community level, the differentiation of roles and collectivities will be reflected in the various types of activities and in the complexity of institutions. When the community is highly differentiated, the various service centers, stores, groups, and associations carry out a variety of specialized functions; the occupational roles of individuals are differentiated from one another. Because the differentiated roles are always adherent to the differentiated groups of specialized functions, the measuring of functional diversity should be able to reflect the differentiation of the whole community structure. Therefore, the differentiation of functional institutionalized pattern is emphasized in this study.

According to the communication framework, Young defined differentiation as ". . . the diversity of meaning areas maintained by a social system." (Young, 1970:30) Using the Guttman Scale technique, he and his students constructed the scales of system-level differentiation for states (MacConnell, 1968), communities (Fujimoto, 1965; 1966; Huang, 1966; J. Flora, 1971), and organizations (C. Flora, 1971).

The Guttman Scale of differentiation is very useful because it focuses on the addition of different institutions in the community, provides an adequate conception of community growth, and it allows one to rank communities from simple to complex; even when the communities are from different cultural contexts, it is possible to calculate the increase and decrease in differentiation to measure "community growth." (Young, Spencer, and Flora, 1968:344)

In the Cauca River Valley, three differentiation scales have been developed by Flora (1971), namely, general differentiation, organization differentiation, and agricultural differentiation (J. Flora, 1971, Chapter 3). The general differentiation items were chosen to include the general institutional sectors including the educational, medical, recreational, governmental, commercial, and community services. Agricultural differentiation items included all community-based agriculturally related services. Organizational differentiation items included clubs, associations, and cooperatives. For the purposes of the present study, the general differentiation is used since it includes as many institutional sectors as possible. The high correlation between general differentiation and organizational differentiation on the one hand, and agricultural differentiation on the other, with correlation coefficients of 0.79 and 0.87 respectively, suggests that general differentiation can represent the dimension of community differentiation (J. Flora, 1971: p. 85). Table 2-1 is the Guttman Scale of general differentiation of 45 municipios in the Cauca River Valley (1969).*

* Five communities were dropped from our study because, although in the geographic valley, they are in the Department of Cauca, for which the data for construction of the index of land distribution was not available.

TABLE 2-1: Guttman scale of general differentiation, 45 municipios in the Cauca River Valley, Colombia, 1969.

Step No.	Content	Cumulative Proportion of Sample Included	Errors	Errors/Non-Modals
1	Bakery	98%	0	.00
2	Dental office or clinic	96	1	.33
3	Red light district	89	2	.33
4	Beauty parlor	84	2	.22
5	Service station	82	3	.27
6	Hospital	78	6	.50
7	Shoe store	76	6	.46
8	Private bank (excluding Caja Agraria)	67	2	.12
9	Medical office or clinic	64	6	.33
10	Jewelry or watch repair store	51	7	.35
11	Furniture store	44	2	.10
12	Law firm	40	7	.37
13	Hardware store	33	1	.06
15	Book or paper store	31	2	.13
	Insurance Company		5	.29
16	Printing shop	24	1	.08
17	Radio transmitter	20	4	.44
18	Hat shop	16	2	.29
19	Office of Family Compensation Agency	13	1	.20
22	Juvenile home	11	2	.40
	Real estate agency		2	.40
	Urban transit system		0	.00

TABLE 2-1: Continued

Step No.	Content	Cumulative Proportion of Sample Included	Errors	Errors/ Non-Modals
26	Office of public works	9	2	.33
	Municipal Planning Office		1	.20
	Office of Territorial Credit Institute		2	.50
	Optician's shop		0	.00
28	Tourist agency	7	1	.25
	Advertising agency		0	.00
29	Van and storage company	4	1	.33
30	University	2	0	.00

Coefficient of Scalability = .74

Sources: Jan L. Flora, Elite Solidarity and Land Tenure in the Cauca Valley of Colombia, Ithaca, New York: Latin American Studies Program Dissertation Series, Cornell University, 1971, 75-76.

There are 30 items on the Guttman Scale in Table 2-1. The bakery is the most common item in the Cauca Valley since almost all the municipios under study have bakeries. University is the highest step of the differentiation in the scale. The Guttman Scale is arranged these items in such a fashion as to indicate that communities with a particular service or agency of certain step on the scale will also have all of the other services above it on the scale. For example, a community having a red light district will also have dental offices and a bakery (see Table 2-1). In other words, the lower the step of the institution, the most common the services are; the higher the step of the institution, the fewer are the services in the system. The communities with a high rank on the scale are more complex because there are many services or agencies within the community. Therefore, Guttman scaling allows us to predict the presence or absence of particular institutions in the system; and allows us to compare the degree of institutional complexity among communities.

In the process of community growth, population growth becomes an important element. Marsh (1967) used population size to be one of the indicators of the differentiation. Eberts, Eby and Kluess (1969) used population size as the indirect indicator of differentiation besides the direct measurement of institutional differentiation. Countless studies have used population size to indicate the development of an area, especially to represent city size and standard metropolitan statistical areas. The measure of population size is the traditional variable in various studies. In terms of community growth, it is assumed that the more highly

differentiated the community, the greater the population size because more differentiated positions require more population to fill them. But there still is a discrepancy between the community institutional differentiation and population. It is true when the differentiation scale was made for the communities in different cultural backgrounds. For example, the familism in Chinese traditional society kept people crowded together in a village but does not make the structure of community more functionally differentiated. For this reason, in a cross-cultural study done by Young, Spencer and Flora, there is no significant correlation between population and degree of differentiation. (Gamma coefficient 0.14) (Young, Spencer, Flora, 1968:349). Even in the same society, the discrepancy between differentiation and population still exists. Hawley (1961) used the 1935 census of business to examine the relationship of institutions with certain population variables other than size because he said,

"A brief comparison reveals that 12,000 people are required to maintain a music store in the surveyed city of over 100,000 population; whereas, in Texas, music stores occur in towns of 2,500 population. Further, there is one specialized men's hat store per 27,000 people in the metropolitan communities. Although 60,000 are required to support such a store in Texas city . . . On the basis of these studies, it appears that there is no consistent relationship between institutions and population." (Hawley, 1961, p. 189)

Thus, he recognized that there are differences among cities with respect to their institutional structures which are not accounted for by variation in size of population (Hawley, 1961:191).

In the Cauca River Valley, municipio population in 1964 was available. It correlated 0.79 with general differentiation; and population of the cabecera (county seat) in 1964 correlated 0.81

with general differentiation. It becomes clear that population will be significantly correlated with differentiation only among the communities within the same regional system. The municipios in the Cauca Valley are geographically close to the Cauca River. They should be more homogeneous than those in different counties or states. So, the population of municipios--or, better yet, the population of the cabecera--could be one measure of structural differentiation in Cauca Valley. But, because it has little theoretical meaning, it will not be used as the measure of the dimension of differentiation.

Measurement of Centrality

Centrality, as the external orientation of the community, indicates the degree of linkage of communities to the larger system. The concept is closely related to the "centrality" used by central place theorists such as Christaller (1966), Zipf (1941), Bogue (1948), and McKenzie (1933).

In the community, there is a certain point that is considered to be the center. As the general rule, this central point is the place where people have to go to get certain kinds of goods or services. If one extends this conceptualization to the hinterland of a service center, the urban service area and metropolitan region emerge. It is generally recognized that persons may be directly dependent on urban services by traveling to the urban unit to obtain the service, or obtain it by mechanical means as is the case of public utilities. The territory which the urban services cover

(including such services as retail shopping, public utilities, transportation, medical facilities, education, recreation, religion, etc.) delineate the service area of the central place.

The dependence of persons on an urban unit extends beyond the periphery of primary service areas. Each large city is surrounded by territory containing people who are indirectly dependent on its services. The form of dependence is characterized by the existence of an intermediary to transfer the service of central place to individual. The most common intermediary is the retail establishment. Even a community is far away from an urban center, its retail establishments may depend on wholesale establishments in the center. Such a relation between a community and an urban unit constitutes the metropolitan region of the urban center (Gibbs, 1961:256).

Based upon the direct and indirect dependence on the central place, when we view many communities distributed in a large regional system, every community will have its service area in some extent, and will have some extent of dominance over other communities. They tend to constitute the central place where the community has strong dominance over other communities. The sub-dominant communities are dependent on this dominant community. It is just like the relationship between metropolitan centers and hinterland cities (Bogue, 1949). Bogue constructed an index of dependency in terms of a ratio of actual quantity and the requirements of the population of central cities and of the hinterland in regard to retail trade, services, wholesale trade

and manufacturing.¹ (Bogue, 1949:42). This is assumed that the position of a place in the central place hierarchy is perfectly correlated with the functions performed by that place. As Flora (1967) pointed out, the perfect correlation between centrality and central function complexity may not always be true. (Flora, 1967: 10) Because a city in a less developed area of a larger system could have rather simple central functions while serving a hinterland which allowed it to be placed in the same position in the hierarchy as another functionally more complex city in a more developed region. However, central place theory provides the framework of actual physical contacts between communities in terms of the functional interdependence of communities.

In order to have a clear picture of the centrality in a larger system, one should go beyond the economic distance as central place theorists used and should look at other kinds of measures such as religious, recreational, or educational networks, etc. In terms of various kinds of activities, every community will be the central place in one way and the other. Combining all the activities together, the communication framework provides the general concept of centrality in terms of information flow. "It is the access which each sub-system has to the total information in the entire system relative to the other sub-systems." (Flora, 1967:11)

¹ When the ratio is 1.0, the community is self-sufficient. When the ratio is greater than 1.0, the community tends to be able to supply other communities. But, when it is less than 1.0, the community tends to rely on other community and becomes a sub-dominant community.

Or ". . . a community's position relative to other communities in the total configuration of communication path." (Young, 1966:67) Using this concept with the central place theory, the centrality is derived as the locational centrality of the physical contacts of communities. Therefore, the trade, mail flows, transportation flows, can be the indicator of centrality. For example, Green used the railroad coach ticket purchases, the truck freight movement, newspaper circulation, long-distance calls, etc. to delineate the boundary between the hinterlands of Boston and New York in southern New England (Green, 1955: reprinted in Theodorson, 1961:298).

In the Cauca Valley, Flora has developed several measures of locational centrality (Flora, 1971:Chapter IV). One of them is bus flow centrality. It was measured by the Bavelas sociometric method, utilizing as basic data the number of passenger buses which pass through the community daily. Bus is the main transportation tool in the Cauca Valley and it was found to be more satisfactory than the other measures as a measure of locational centrality (Flora, 1971:108). So, it was decided to use bus flow centrality as the measure of centrality in this study.¹

¹ "Briefly, the number of buses daily originating in or passing through cabecera A and terminating in municipio B was used as basis for calculating the distance from A to B. The square root of the reciprocal of this number was used in the actual calculation. It was necessary to use the reciprocal because in the Bavelas scheme a small number represents high centrality. . . . The sum of the cells in each run represents the distance from each community in the system to all other communities in the system. Or, in informational terms, the totals represent the access each community has to information in all other communities." (J. Flora, 1971:90-91)

Relationship Between Differentiation and Centrality

Differentiation refers to the complexity of the social organization of the community and the functional specialization of social groups. The high differentiation in the community means that there are a variety of organizations or groups which carry out various activities. The lowly differentiated communities may always depend on the supply of the goods or services from the highly differentiated communities. The dependence of the community on more highly differentiated communities causes the flow of information. In short, it causes the centrality. As Bogue (1949) said,

" . . . A large part of the dominance of the metropolis rests upon the inability of the hinterland population to provide most economically or most expeditiously all of the wholesale, service, and manufacturing activities which they require to sustain themselves at present levels of living.

"The fact that the metropolis and those zones which are in daily contact with the metropolis (in the case of manufacturing) are the principal source of such needed activities constitutes one of the conditions of life for the individual community lying in the hinterland. . . . Because these necessary goods and services must perforce be transported from the center to the dependent community, one very obvious adaptation, other things being equal, is for individual units of the population to locate near the sources of supply. Because a dependent community must obtain needed wholesale, service, and manufacturing services from the center, it must specialize in some other activity and then exchange the product of that specialization in order to supply its needs." (Bogue 1969:40)

In this process, the dominance of the center is very obvious. The contact with the outside and the attraction from the outside are constantly increasing. Thus, high differentiation causes high centrality.

But, in the Cauca Valley, differentiation correlated only 0.44 with bus flow centrality. This suggests that the central place

theory cannot explain the centrality of the communities in the larger system very well. This low correlation also implies that some highly differentiated communities have a low centrality in the system and some lowly differentiated communities have high differentiation. It is because locational centrality is highly influenced by the geographical distance and by the topography. For example, the satellite communities are close to the central place. It is likely to get many benefits from the central place. A highly central satellite town, then, is likely to lack many services it would be expected to have because these services would be available in the nearby center. Therefore, differentiation in satellite communities is low and centrality is high. A rather isolated and independent community provides full services not only for the population within the urban area, but also for many farmers in its hinterlands. Its centrality in regional system is not very high, but its differentiation is still high enough to be self-sufficient.

In conclusion, the internally institutionalized pattern differentiation provides the comparison of the development of communities in a system. Centrality is an indicator of the interrelationship of communities in a system in terms of information flow. It is also considered one aspect of development. These two variables are the independent variables in this study.

Chapter III

Level of Living

The concept of level of living refers to the actual material attainment at a given time in terms of goods, services, and other forms of comfort. It is different from the concept of standard of living which refers to the goods, services, and opportunities the people of a given society desire to obtain; it reflects the value system of the community (Taylor and Jones, 1964:418). ✓

When the level of living is used to indicate individual differences, it is always connected with the concept of socio-economic status in the community. Chapin defines socio-economic status as ". . . the position an individual or a family occupies with reference to the prevailing average standard of cultural possession, effective income, material possessions, and participation in the group activities of the community." (Chapin, 1928:101) He, then, constructed the scale for measuring socio-economic status in terms of material equipment and cultural expressions in the living room of the home such as floor condition, lights, tables, radios, televisions, telephones, newspapers, etc. (Chapin, 1936: in Pauline Young, 368-371). All of these indicate the degree of the attainment of the material goods and comfort. Therefore, some aspects of Chapin's socio-economic status index of individuals can be applied to the measurement of the community level of living.

Other aspects of levels of living--as emphasized by Twichell (1948) which may be of importance in this study--are safety and healthfulness. (Twichell, 1948:280) The adequacy of heating, ✓

lighting, sanitary conditions, condition of repair of housing, and items such as toilet, bathing facilities, persons per room, are taken in account of the important aspects of living (Twichell, 1948:280).

Hagood (1957) constructed a level of living index for the farm families in the United States which includes items such as the percentage owning automobiles, electricity, and telephones, and the average value of farm products sold. (Hagood, 1957:97-98)

Bertrand used items such as running water, mechanical refrigeration, television, and home freezers besides the proportion of electricity, telephones, automobiles, to see the trends and patterns in levels of living of farm families in the United States (Bertrand, 1958). These are the typical examples of measurement of level of living of households.

The educational level is also considered an indicator of level of living. In most cases, an individual's educational level helps him improve his present living conditions as well as better prepare him for the future. Income is another important indicator of level of living. It is the mean through which the goal of improving living conditions can be reached. But, because the amount of income is highly correlated with the occupation of the individual, many researchers have used occupation in addition to education and income to construct indices of socio-economic status. (Kahl and Davis, 1955; Schnore, 1963; Shevky and Bell, 1961; Baster and Scott, 1969)

More recently, using the technique of factor analysis, Munson (1968) factor analyzed 113 community variables with data from Ohio

counties and, as the result, found one factor which he named "level of living" including many variables concerning education level, quality of housing, good business and economic conditions, occupational level, and good employment opportunities. Bonjean, Browning, and Carter (1969) also used factor analysis to analyze 79 variables of community structure in the United States. A socio-economic status factor emerged. It includes family income, per capita income, several educational variables, white collar occupations, and a number of variables indicative of the quality of housing. ✓

The data used to construct the measures of level of living for the Cauca Valley is derived from the Housing and Building Census and the Population Census of the Department of Valle del Cauca, Colombia, 1964. The items included in the level of living measurement are as follows:

- ✓ 1. Per cent of households with running water in the house itself.
- ✓ 2. Per cent of households with toilet and/or latrine.
- ✓ 3. Per cent of households with private or collective bath or shower.
- ✓ 4. Per cent of households with electricity.
- ✓ 5. Per cent of households with radio.
- ✓ 6. Per cent of households with television set.
- ✓ 7. Average score per house according to principal building material used in constructing the floor, walls, and roof.
- ✓ 8. Average number of persons per room.
- ✓ 9. Per cent of houses owned by dweller.
- ✓ 10. Per cent of population seven years of age, or older, who are literate.
- ✓ 11. Per cent of population ten years old and over who have gone beyond primary.
12. Per cent of population ten years and over who has completed more than two grades of primary.
- ✓ 13. Per cent of population ten to fourteen years of age who have completed more than two grades of primary.

Because the income and occupational data is not available, it is not included in the items listed above. All the remaining are

concerning housing utilities, building quality, crowding degree, possession of material equipment, and education. Preliminary analysis indicated that home ownership did not correlate with other measures of level of living, suggesting that quality of housing was more important than actual home-ownership. For example, in rural areas, small peasants were most likely to own their own homes-- although the quality of their housing was quite low. Also, as Table 3-1 shows, home ownership is higher in rural areas than in urban areas which is contrary to the pattern for all other variables. Therefore, home ownership was eliminated as an indicator of level of living.

These items are calculated separately for urban and rural areas for every municipio. Therefore, we can have a measure of level of living for two aspects of the community--urban areas and rural areas. First of all, let us look at the mean and standard deviation of each variable which appears in Table 3-1.

TABLE 3-1: The mean and standard deviation of the measures of level of living of 40 municipios in Cauca Valley, Colombia. 1964

MEASURES	URBAN		RURAL	
	Mean (%)	S.D.	Mean (%)	S.D.
% of households with running water	29.9	18.7	7.0	4.9
% of households with toilet/latrine	45.1	26.8	18.2	14.6
% of households with bath/shower	35.6	22.7	6.7	4.8
% of households with electricity	39.4	26.1	8.4	9.2
% of households with radio	57.6	10.4	37.5	6.6
% of households with T.V.	2.4	2.4	0.7	0.7
Mean building materials score*	2.50	0.15	2.25	0.11
Average number of persons per room	2.55	0.27	2.71	0.21
% of dwellings which are owner-occupied	60.0	9.28	80.6	9.0
% of population 7 years old and over who are literate	79.1	5.2	66.4	3.9
% of population 10 years of age and over who have gone beyond primary	10.6	4.1	2.7	1.1
% of population 10 years of age and over who have completed 2 grades of primary (functional literacy)	57.3	10.8	38.1	6.3
% of population 10-14 years of age who have completed more than 2 grades (Index of current literary effort)	48.4	8.5	25.7	6.7

SOURCES: Colombia, Republica de, Departamento Administrativo Nacional de Estadística: XIII Censo Nacional de Poblacion 1964
 II De Edificios Y Viviendas 1964
 Bogota: Imprenta Nacional, 1967

* For methods used in calculating this measure, see Appendix 2.

In Table 3-1, we can see that all the percentage of households with those items of level of living or score except home ownership are higher in urban areas than in rural areas. Home ownership is higher in rural areas with lower deviation than in urban area. Among the utility or facility items, possession of a radio was the most prevalent item. There are very few television sets in those municipios under study.

The average number of persons per room in the community indicates the degree of crowding in the dwelling unit. A great number of persons per room means a high degree of crowding--it is considered bad with respect to quality of life. In the Cauca Valley, the rural areas have a higher average number of persons per room than the urban area. It is contrary to what one would expect. This may be due to the fact that Colombia is an agricultural society and land ownership is concentrated in the hands of the members of a few powerful families. For Colombia as a whole, a mere 1.7 per cent of the "producers " with holdings above 200 hectares in size, accounts for 55.1 per cent of all the land; whereas, the 50.2 per cent of the "producers" with places of less than 3 hectares have the use of only 2.4 per cent of the land (Smith, 1967:34). This suggests that there are large proportions of poor farmers with small parcels of land and that when population growth occurs in the rural areas, more space cannot be provided for the increased population. Colombia is a developing country, and development always starts from urban areas. Hence, more space is available for the people in urban area.

Four measures are used to determine educational levels. The percentage of the population 7 years old and over who are literate

will give us a crude measure of educational level. The percentage of the population 10 years and over who have gone beyond primary school gives us the measurement of higher level of education in the Cauca Valley. The percentage of the population over 10 years old who have completed more than two grades of primary school will be termed functional literacy. It is assumed that without at least two years of school, most people are unlikely to be able to read simple instructions or do simple arithmetic. The percentage of the population 10-14 years old who have completed more than two years of primary school is an indicator of current or recent efforts in schooling.

In order to test whether the measures of level of living we introduced above form a single dimension, a factor analysis will be run. In the absence of a single dimension, the measures which best represent levels of living can be selected.

Levels of Living in Urban Area

Table 3-2 shows the results of the selected measures of the level of living factor analysis for urban area. There are two factors with Eigenvalues of greater than 1.00; 80 per cent of the variance was explained. The first factor includes the utility items, radio, television, building material score, persons per room, and education beyond primary school. The second factor includes the educational measures, persons per room, radio, television, and building material score. The first factor tends to include the materials goods. The second factor tends to include the non-material attainment or educational sphere.

The four utility measures--the percentage of households with running water, toilet, bath or shower and electricity--cluster highly together with at least a 0.92 factor loading.

TABLE 3-2: Factor loading of selected measures of level of living. Urban areas of 40 municipios in the Cauca River Valley Colombia, 1964

Measures	Factor 1	Factor 2
1. % of households with bath or shower	0.97	*
2. % of households with toilet or latrine	0.96	*
3. % of households with electricity	0.96	*
4. % of households with running water	0.92	*
5. Average building material score	0.79	0.43
6. % of household with radio	0.70	0.57
7. % of household with television	0.54	0.65
8. Average number of persons per room	0.41	-0.68
9. % of population 10 years old and over with education beyond primary	0.37	0.79
10. % of population 10 years old and over who have completed 2 grades of primary	*	0.73
Eigenvalues	6.33	1.73
% of the variance explained	63%	17%

* Not significant at level 0.05.

Source: Same as Table 3-1.

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TABLE 3-3: Intercorrelation of utility measures, personal possessions, and building materials score, urban areas of 40 municipios in the Cauca Valley, Colombia, 1964

	2	3	4	5	6	Building Material Score
1. % of households with bath/ shower	0.97	0.95	0.94	0.74	0.64	0.80
2. % of households with electricity		0.97	0.94	0.75	0.58	0.79
3. % of households with toilet/ latrine			0.91	0.66	0.48	0.72
4. % of households with running water				0.76	0.64	0.81
5. % of households with radio					0.72	0.78
6. % of households with T.V.						0.74

Correlations are significant at .01 level.

In Table 3-3 which shows the intercorrelation of the measures loading principally on the first factor, the correlation of the percentage of households with toilet or latrine and the percentage of households with television is 0.48; all of the remainders are beyond 0.60. The clustering of the first four measures indicates that they represent almost the same things. So, the combination of these four items will be made to represent the utility measures, thereby producing the utility index. It was calculated for every municipio by combining the z-score of these four items and dividing by 4.

The percentage of households with radio and television are highly correlated with the utility items. The high correlation between building material score and material equipment is consistent with relationship suggested by Belcher (1972). He said that the exterior appearance of the home was related to the possession of material goods and other aspects of consumption. (Belcher, 1972:209)

In regard to the second factor which is education, Table 3-4 shows the intercorrelation of those measures which loaded on that factor. We find that persons per room correlated significantly only with the percentage of households with radios. No significant correlation was found with other items, although the sign was negative in all cases but one. Since persons per room is a measure of crowding, i.e., an undesirable characteristic, the correlations are in the expected direction. Still, this appears to be a very weak variable for measuring level of living.

In Table 3-4, we find that the first three educational measures cluster together with high correlation. Among them, the measure of functional literacy (the percentage of the population 10 and over who have completed two grades) correlated highest with other educational variables, and was the most meaningful measure. Then it was decided to select this measure to represent those three variables (i.e., per cent of population 10-14 who have completed two grades, per cent of population 7 years and over who are literate, and functional literacy itself).

The other educational measure--the percentage of the population 10 and over who have gone beyond primary school--is also an important measure, because it correlated highly with other measures of level

of living and serves as a measure of "higher" education in the Cauca Valley. So, it was also decided to select this measure to indicate the educational sector of the level of living. The measures of the second factor in Table 3-2, therefore, only include the functional literacy measure and "population with education beyond primary school."

The correlations of all measures of level of living, both urban and rural, including the measures selected and omitted, are shown in Appendix III.

TABLE 3-4: Intercorrelation of education measures and other measures of level of living in factor 2 of urban area, 40 municipios, Cauca Valley, Colombia, 1964

	1	2	3	4	5
1. % of population 10-14 who have completed 2 grades		0.89	0.93	0.71	-0.24*
2. % of population 7 and over who are literate			0.96	0.63	-0.19*
3. % of population 10 and over who have completed 2 grades				0.70	-0.27*
4. % of population 10 and over who have gone beyond primary					-0.19*
5. Average number of persons per room					
6. Average of building materials score		0.43	0.45	0.37	0.65
7. Per cent of households with radios		0.55	0.57	0.62	0.69
8. Per cent of households with T.V.		0.44	0.33**	0.44	0.72
					-0.18*

* Not significant at 0.05 level.

** Significant at 0.05 level.

Correlations without asterisks are significant at 0.01 level.

Levels of Living in Rural Area

Table 3-5 shows the factor loading of the selected measures of level of living for rural areas; 74 per cent of the variance was explained. All the measures of level of living except number of persons per room loaded significantly on first factor. This suggests that, in rural areas, we are close to having a single "level of living" dimension. However, the measures of educational level and the average number of persons per room still loaded on the second factor. It indicates that the education measures still keep their independence, although not to the same degree as in the urban area.

In the preliminary analysis, a factor analysis was run for all the measures of level of living in rural areas. We found that the percentage of houseowner loaded negatively on the factor of housing utility. This means that the community with higher level of living in rural area tends to have a lower percentage of houses owned by dwellers. This is contrary to expectations, since a farmer without his own house should be a very poor peasant. This may be a special case in Colombia where the concentration of land ownership determines the whole structure of house ownership in rural areas. In the more remote mountainous areas, the peasant areas, farmers own their own houses but it is in these areas where utilities such as running water and sewage are most expensive. Those who own their houses cannot always have the high level of living so that the house ownership is not a proper indicator of level of living in rural area.

TABLE 3-5: Factor loading of selected measures of level of living, rural areas of 40 municipios in the Cauca Valley, Colombia, 1964

Measures	Factor 1	Factor 2
1. % of households with running water	0.95	*
2. % of households with bath or shower	0.94	*
3. % of households with electricity	0.86	*
4. % of households with toilet or latrine	0.83	*
5. % of households with television	0.87	*
6. % of population 10 years old and over who has gone beyond primary school	0.80	0.30
7. % of population 10 years old and over who have completed 2 grades of primary school	0.73	0.45
8. % of households with radio	0.54	*
9. Average number of persons per room	*	0.96
Eigenvalues	5.53	1.16
% of variance explained	61%	13%

* Not significant at 0.05 level.

Source: Same as Table 3-1

The building material score in the rural area in the preliminary analysis loaded highest, along with the average number of persons per room, on the third factor. But they were not correlated significantly with each other (-0.09) and formed a very weak factor. So, it was decided to omit building material score for measuring level of living in rural area.

Let us look at the correlations of the measures on second factor and the other two measures of educational level which are shown in Table 3-6. We find that the average number of persons per room did not significantly correlate to the other measures. ✓ The first three education measures clustered together again. It was decided to select the functional literacy among these three measures since it could correspond with the education measures for urban area and was the most meaningful measure. And, obviously, the percentage of the population 10 years old and over who has gone beyond the primary school is the other important variable ✓ which was selected.

Table 3-7 shows the intercorrelation of the utility measures and their correlations with the education measures which loaded on the first factor. The four utility measures still correlated highly. These four measures were also combined in a manner similar to that used for the urban area; Z scores for each municipio were calculated to indicate the level of utility aspect.

Table 3-7 also shows that the education measures highly ✓ correlated with measures of level of living. This is also true in the rural areas of the United States. As Bertrand showed, as more education is obtained, level of living also increased for ✓ farm families (Bertrand, 1958:16).

TABLE 3-6: Intercorrelation of the education measures and average of persons per room, rural area of 40 municipios in Cauca Valley, Colombia, 1964.

	2	3	4	5
1. % of population 10-14 who has completed 2 grades	0.88	0.80	-0.19*	0.64
2. % of population 10 and over who has completed 2 grades		0.77	-0.06*	0.73
3. % of population 7 and over who are literate			-0.18*	0.53
4. Average number of persons per room				0.20*
5. % of population 10 and over who has gone beyond primary				

* Not significant at 0.05 level.

Correlations without asterisks are significant at 0.01 level.

TABLE 3-7: Intercorrelation of the utility measures, personal possessions, and the educational measures, rural area of 40 municipios in the Cauca Valley, Colombia, 1964.

	1	2	3	4	5	6
1. % of households with running water		0.96	0.76	0.72	0.85	0.50
2. % of households with bath/shower			0.77	0.72	0.80	0.46
3. % of households with electricity				0.70	0.67	0.46
4. % of households with toilet/latrine					0.62	0.45
5. % of households with T.V.						0.39*
6. % of households with radio						
7. % of population 7 and over who are literate	0.48	0.62	0.57	0.74	0.42	0.37*
8. % of population 10 and over who has gone beyond primary	0.52	0.70	0.59	0.54	0.79	0.23**
9. % of population 10 and over who has completed 2 grades	0.48	0.61	0.56	0.75	0.58	0.33*
10. % of population 10-14 who have completed 2 grades	0.41	0.60	0.46	0.63	0.52	0.20**

* Significant at 0.05 level

** Not significant at 0.05 level.

Correlations without asterisks are significant at the .01 level.

Level of Living and Differentiation

It is hypothesized that the more developed the community, the higher the level of living in that community. Differentiation is the indicator of the complexity and diversity of institutionalized functional patterns. It has been regarded as the best indicator of development for national or societal levels, community levels and organizational levels (C. Flora and J. Flora: 1971:2). Table 3-8 shows the correlations between general differentiation and the measures of level of living of urban areas and rural areas.

TABLE 3-8: Correlation of general differentiation and measures of level of living in urban and rural areas of 40 municipios in the Cauca River Valley, Colombia, 1964.

MEASURES OF LEVEL OF LIVING	URBAN	RURAL
Utility Index	0.63	0.41
% of households with radio	0.60	0.21*
% of households with T.V.	0.74	0.17*
Average building materials score	0.73	-0.03*
Average number of persons/room	-0.02*	-0.00*
% of population with education beyond primary	0.57	0.34**
% of functional literacy	0.18*	0.24*

* Not significant at 0.05 level.

** Significant at 0.05 level.

Correlations without asterisks are significant at the .01 level.

It is very clear that differentiation correlated highly with the level of living of urban areas, but not with rural areas. This is due to the fact that when the development of a community is carried out, the urban area is the place where such developments come first. Urbanization is always one of the features of the development of an area.

However, the educational measures correlated with differentiation in different ways, only the percentage of population with education beyond primary school significantly correlated with general differentiation. High differentiation in the community indicates the complexity of social organization of the community. There are more specialized roles in the specialized collectives. The persons who are qualified to fill those positions tend to be more in the highly differentiated communities. But functional literacy, the population with education beyond two grades of primary school, indicates the level of mass education. Where primary schooling is compulsory, the availability of schooling does not depend on how differentiated the community is because every community has schools.

The average number of persons per room does not relate to general differentiation. This would lead us to believe that the degree of crowding in the dwelling unit is related to something other than community development, at least for the case of the Cauca Valley.

Level of Living and Centrality

TABLE 3-9: Correlation of bus flow centrality (1969) and measures of level of living in urban and rural areas, 40 municipios in the Cauca Valley, Colombia, 1964

Bus flow correlates with measures of level of living	Urban	Rural
1. Utility index	0.59	0.54
2. % of households with radio	0.51	0.54
3. % of households with T.V.	0.39	0.41
4. Average building material score	0.54	-0.18*
5. Average number of persons per room	0.19*	-0.18*
6. % of population 10 and over with education beyond primary school	0.27*	0.31**
7. % of population of functional literacy	0.12*	0.31**

* Not significant at 0.05 level.

** Significant at 0.05 level.

Correlations without asterisks are significant at the 0.01 level.

Table 3-9 shows the correlation between bus flow centrality and measures of level of living. In urban areas, bus flow centrality correlates with the utility index. The percentage of households with radio and television, and average building material score, but not with educational level and average number of persons per room. While in the rural areas, only average building material score and average number of persons per room do not correlate

significantly with bus flow centrality. This leads us to believe that communities with high centrality will have a high level of living in terms of material possessions, utilities, housing quality in urban areas; and will have a high percentage of material possessions and education level but not a high building materials score in the rural areas. We also can see that the correlations of bus flow centrality and the utility index, material equipment (radio and television) shows no differences in both the urban and rural areas. This suggests that bus flow centrality has almost the same effect on the level of living in urban and rural areas. This is the point that bus flow centrality is different from general differentiation in the influence on level of living. However, relatively, in the urban areas, level of living responds principally to differentiation, while in the rural areas it is more closely related to centrality.

Composite Index of Level of Living

In the discussion of level of living in preceding sections, we looked at the separate measures of the levels of living in housing utility, possession of material goods, building materials quality, degree of crowding, and education level. Each measure is significant theoretically. Housing utility is the item most significant both in urban and rural areas. The possession of material equipment is also the important indicator of level of living in both urban and rural areas. But the building material quality is important in urban area but not in rural area. The degree of crowding is a weaker variable in our finding.

Education level is more important in the rural areas than in the urban areas. According to the importance of each variable in determining the level of living, the factor scores can provide a composite index of level of living for each municipio. Therefore, the factor score from the analysis of the selected variables used in the discussion in preceding section is calculated (See Table 3-2 and Table 3-5). In the urban areas, the first factor includes utility, material possessions, building material quality, the average of persons per room and the population 10 and over who has gone beyond primary school. The second factor includes all education measures, persons per room and some weight of material possessions. However, the first factor explained 63 per cent of the variance and the second factor only explained 17 per cent of the variance. Thus, it was decided to use the factor scores of the first factor to produce the composite index of level of living for urban areas.

In the rural area, the first factor which explained 61 per cent of variance includes all the education measures, utility items, material possessions, except the number of persons per room which loaded highest on the second factor with some weight of education measures. Therefore, it was also decided to use the first factor to produce the factor score for rural areas.

Comparing the composite indexes of urban and rural level of living, we will find that the utility, material possessions and building material quality were emphasized in the urban area; all measures of levels of living in the first factor were included in the rural area except the average number of persons per room

and the building materials score. The inclusion of educational measures in the rural area is important because education in rural areas is not so prevalent as the urban area. Educational level is closely related to level of living in rural areas. In the urban area, the education becomes so common that nearly everybody has the chance to go to school although, to some extent, it can influence the level of living, or vice versa. Kamershen argued that literacy did not afford a good index of the level of socio-economic development in developed areas (Kamershen, 1968). This leads us to conclude that the composite index of level of living in this study is a powerful indicator of level of living. It will be used for further analysis.

Chapter IV

Inequality

Social inequality in this study refers to the condition of unequal distribution of goods, resources, or services among the individuals within the community. In any society, there is a system for the distribution of the scarce resources or rewards to its members. Many studies on inequality regarded the distribution of rewards or valuable natural resources as the results of "social stratification." (Davis and Moore, 1945; Moore, 1963; Buckley, 1968; Tumin, 1963) They assumed that various social units are ranked as inferior and superior to each other on a scale of social worth, and receive unequal amounts of the desired rewards available in the society. Thus, inequality implies two aspects of the distribution. One is the inequality of structure, such as social class, stratum, status, stratification. The other aspect is inequalities of the distribution of rewards such as the distribution of property ownership, power, prestige, the use of certain objects, etc.

These two aspects are correlated with each other. The people with high social status will receive the great amount of rewards, goods or services, and the great amounts of rewards always indicate the high social status. Therefore, differential rewards symbolize the inequality of structure. Especially in a society of rigid social class (like in ancient Chinese society where people were divided into certain ranks and different quality of clothes were assigned), the differential rewards were completely

the symbol of the social classes. In modern society, although the distribution of goods or services is not strictly determined by rigid social class, the differential possession of goods, services, resources of the community, still exist.

In the community context, it is obvious that some people have a comfortable living, but some others don't. Thus, this difference of living condition reflects the inequality of rewards or the unequal obtaining of goods and services. Inequality, then, refers to the distribution of levels of living, or the distribution of quality of life in the community. In the last chapter, the levels of living discussed were individual level measures aggregated to the community level. The 40 communities in the study were compared on these measures. This did not tell us how the level of living within each municipio is distributed. In this study, we are asking whether the development of the community can promote more equal living conditions for the people at the same time that it promotes a higher level of living. Thus, it is necessary that we measure the inequalities of distribution of levels of living for each municipio.

The indicators of the level of living in this study includes the utility items, material possessions, building material quality, degree of crowding (negative), and educational level. We can use them to produce the variance or standard deviation from the mean of these measures for each municipio. The housing and building census of Valle del Cauca, Colombia, 1964, only provides the information on frequency distributions for items such as the room distribution, the building quality, and schooling years.

Therefore, three measures of inequalities were devised:

1. Gini Index of room distribution.
2. Gini Index of education distribution.
3. Variance of building material score.

The Gini Index is a widely used measure of inequality. It is a concentration ratio of the area between the Lorenz Curve and the line of equality, to the entire area lying under this line.¹ It is to standardize with values ranging from 0 to 1. A score close to 0 means that the community has a more equal distribution of these items. A score close to 1 means that they are more unequally distributed. Room distribution and the years of education yield the requirements for the Gini Index, building material score does not. Therefore, Gini Indices are calculated for room distribution and educational distribution, the variance of building material score is used to indicate the inequality of the building quality distribution. All these measures of inequality of level of living in the community indicate the results or the state of distribution

¹ The following formula was utilized in calculating the Gini Index:

$$\text{Gini Index} = 1 - \frac{\sum_{i=1}^n f_i (g_{i-1} + g_i)}{10,000}$$

where n = number of groupings of class-interval.

f_i = number of frequency in each class-interval as a percentage of the total frequency.

g_i = cumulative percentage of the frequency in each class-interval and all smaller ones.

source: J. Flora, 1971, p. 15, derived from United Nations, Economic Commission for Latine America, "Income Distribution in Latine America," Economic Bulletin for Latine America, Vol.XII, No. 2, October, 1967, p. 39.

of the resources of the community. The other aspects of inequality of rewards such as the ownership of property, the means of the production and income--serve as immediate factors affecting the distribution pattern of level of living. The ownership of certain important property can bring about certain kinds of power structure. As Meade (1964) said:

"A man with much property has great bargaining strength and a great sense of security, independence, and freedom; and he enjoys these things not only vis-a-vis his propertyless fellow citizens but also vis-a-vis the public authorities. He can snap his fingers at those who must rely on him for an income; for he can always live for a time on his capital. The propertyless must continuously and without interruption acquire his income by working for an employer or by qualifying to receive it from a public authority. An unequal distribution of property means an unequal distribution of power and status . . ." (Meade, 1964, in Budd's Inequality and Poverty, 1967, p. 105)

The question is "What is the basic property or resources in the community which will determine the power distribution in Colombia?" Colombia is an agricultural country. In the Cauca Valley, the principal productions are coffee, sugar cane, and livestock. The land is the principal means to produce these kinds of goods. Those who own more land will control the means of production. Therefore, the distribution of land ownership in Cauca Valley will be a good indicator of power inequality. The measure of inequality of land distribution for the Cauca Valley has been developed by Flora (1971). It is constructed in the form of Gini Index from the 1959 Agricultural Census.

Homans (1967) says that the distribution of rewards is not that society rewards people, but rather people and groups self-designate and command for themselves wealth and economic power.

(Homans, 1967:67) Thus, the reward system in the society is something to do with differential power of population segments. Differential power determines inequality of opportunity of performance and determines the distribution of rewards. In order to examine the relationship between differentiation and social inequality in rewards, the influence of the existing inequality or the prior stratification should be controlled. In this case, land inequality serves as a measure of concentration of power and a measure of existing structural inequality.

Income has been considered an important indicator of level of living. This is because it can be readily changed to the other forms of goods or services. This is especially true when the amount of income includes the earned incomes and the income from the profit earned by owners on their properties. Because the income data is not available for the Cauca Valley, the inequality of income distribution is not included in this analysis.

TABLE 4-1: Means and standard deviation of the measures of inequality, 40 municipios in the Cauca Valley, Colombia, 1964

	<u>Urban Area</u>		<u>Rural Area</u>	
	<u>Mean</u>	<u>Standard Deviation</u>	<u>Mean</u>	<u>Standard Deviation</u>
1. Gini Index of room inequality	0.328	0.023	0.322	0.028
2. Variance of building material	0.370	0.129	0.432	0.138
3. Gini Index of education inequality	0.448	0.040	0.520	0.027
4. Gini Index of land inequality*	(mean) 0.719 (Standard deviation) 0.080			

Source: Colombia, Republica de, Departamento Administrativo Nacional de Estadística: XIII Censo Nacional de Poblacion (July 15, 1964)
II De Edificios Y Viviendas (July 15, 1964)
Bogota: Imprenta Nacional, 1967

* Gini Index of inequality of land distribution is calculated for all agricultural land in the municipio. Source: Colombia, Facultad de Ciencias Economicas. Universidad del Valle: Censo Agropecuario of Del Valle del Cauca (1959).

Table 4-1 shows the average of the inequality measures of 40 municipios. Inequality of room distribution is not significantly different between the urban and rural areas. The variance of building material score and the Gini Index of the distribution of educational attainment is higher in the rural area than urban area. As the table shows, inequality of land distribution is very high in the Cauca Valley. Table 4-2 and 4-3 show the correlation of these four measures of inequality, urban and rural areas respectively.

In urban areas, the Gini Index of land distribution correlated 0.38 with variance of building material; there is no significant

correlation between the remaining measures. In rural areas, these measures correlated ranged from a -0.26 up to 0.64. This suggests that there are many different sources of power to influence the distribution of the level of living in the urban areas so that those measures of inequality cannot be unidimensional. Each of these measures represents a different sector of distribution.

TABLE 4-2: Intercorrelation of measures of inequality in urban areas of 40 municipios in the Cauca Valley, Colombia, 1964

Measures	2	3	4
1. Gini Index of land inequality (1959)	-0.17*	0.38**	-0.11*
2. Gini Index of room distribution		0.12*	-0.24*
3. Variance of building material			-0.04*
4. Gini Index of educational inequality			

* Not significant at 0.05 level.

** Significant at 0.05 level.

Correlations without asterisks are significant at .01 level.

TABLE 4-3 Interrelation of measures of inequality, rural areas, 40 municipios in the Cauca Valley, Colombia, 1964

<u>Measures</u>		<u>2</u>	<u>3</u>	<u>4</u>
1.	Gini Index of land inequality (1959)	0.58	0.64	-0.26*
2.	Gini Index of room inequality		0.58	-0.45
3.	Variance of building material			-0.37**
4.	Gini Index of educational inequality			

* No significance at 0.05 level.

** Significant at 0.05 level.

Correlations without asterisks are significant at 0.01 level.

The inequality of land distribution is not the immediate factor in determining the distribution of quality of life in the urban areas.

Because rural areas are more homogeneous in their structure, the significant correlation of the four measures of inequality is expected. The inequality of land distribution, the inequality of room distribution, and variance of building material quality were clustering together positively. Only inequality of the educational attainment is negatively correlated with all other measures (as was true in the urban areas, except that none of the correlations were significant). This suggests that the community with low inequality of educational attainment will have a higher inequality of the distribution of other aspects of the quality of life. Education is less dependent on the wealth of the family

than it is on the availability of schools. Hence, its distribution becomes less dependent on the distribution of the differential power or wealth which affects the distribution of the quality of life of other aspects.

Inequality and Level of Living

The ultimate state of the distribution of power is the distribution of the level of living or the quality of life--inequality of living. The levels of living of the community indicates an average level of the quality of life. This section will examine the relationship between the average of levels of living and its distribution. In other words, whether a community with a higher average level of living will have a more equal distribution of level of living than one with a lower average level of living. First of all, let us look at the relation of the measures of inequality to their corresponding level of living measures which is shown in Table 4-4

TABLE 4-4: Correlation of the measures of inequality and their corresponding level of living measures, 40 municipios in the Cauca Valley, Colombia, 1964

	Urban			Rural		
	4	5	6	4	5	6
1. Gini Index of room inequality	-0.24*			-0.38**		
2. Variance of building material		-0.21*			-0.64	
3. Gini Index of education inequality			-0.65			-0.68
4. Average number of persons per room						
5. Average building material score						
6. Functional literacy						

* Not significant at 0.05 level.

** Significant at 0.05 level.

Once again, we find that, in urban areas, the correlations of the measures of inequality to the corresponding level of living measures are not significant except for the educational measures. In rural areas, all the corresponding measures were correlated with each other significantly.

Each measure of inequality and its corresponding level of living measures have their own meaning. With respect to persons per room, a high average number of persons per room means the degree of crowding is greater. Hence, the more the crowding in the dwelling unit the greater the tendency toward more equal distribution of the rooms; the more average space per person results in more unequal distribution of the rooms.

The negative correlation of the average of building material score and its variance indicates that when the average building material scores is high (good quality), the building material variance becomes less (low inequality). This conforms to the positive assumption that the higher the level of living, the more equal the distribution of housing quality.

The education inequality negatively correlated with functional literacy both in urban and rural areas. This suggests that the high educational level will bring a more equal distribution of educational attainment.

Thus, with respect to the level of living measures from which each of the inequality measures is derived, education and building quality follow a similar pattern: In those communities where the average level is high their distribution is more equal than in the communities where their average level is low. Average amount

of living space (rooms per person) is related in the opposite fashion to the distribution of living space. In those communities where average amount of living space per person is high, there is a greater maldistribution of that space than in those communities where crowding is greatest.

In order to understand whether the other aspects of level of living correlate with the inequalities of distribution in terms of the rooms, building quality, educational attainment, and land, Tables 4-5 and 4-6 show their correlations, urban and rural areas respectively.

TABLE 4-5: Correlation of the measures of inequality and level of living, urban areas of 40 municipios in the Cauca Valley, Colombia, 1964

Measures of Level of Living	Land ***	Room	Building	Education
	<u>Inequality</u>	<u>Inequality</u>	<u>Inequality</u>	<u>Inequality</u>
1. Utility index	0.62	-0.14*	0.26*	-0.26*
2. % of households with radio	0.48	-0.12*	-0.05*	-0.42
3. % of households with T.V.	0.29**	-0.04*	-0.33**	-0.12*
4. Average building material score	0.50	-0.09*	-0.21*	-0.29*
5. Average number of persons per room	0.23*	-0.24*	0.32**	0.25*
6. % of population with education beyond primary	0.24*	0.00*	-0.29*	-0.43
7. % of population of functional literacy	0.15*	0.16*	0.06*	-0.65

All the correlations are significant at 0.01 level except:

* Not significant at 0.05 level.

** Significant at 0.05 level.

*** 1959

TABLE 4-6: Correlation of the measures of inequality and level of living,
rural areas of 40 municipios in the Cauca Valley, Colombia, 1964

<u>Measures of Level of Living</u>	<u>Land *** Inequality</u>	<u>Room Inequality</u>	<u>Building Inequality</u>	<u>Education Inequality</u>
1. Utility index	0.63	0.53	0.57	-0.39**
2. % of households with radio	0.21*	0.25*	0.23*	-0.33**
3. % of households with T.V.	0.69	0.57	0.34**	-0.28*
4. Average building materials score	-0.17*	-0.33**	-0.64	-0.12*
5. Average number of persons per room	-0.26*	-0.38**	-0.02*	0.09*
6. % of population with education beyond primary	0.44	0.49	0.35**	-0.35**
7. % of population with functional literacy	0.35**	0.53	0.56	-0.68

All the correlations are significant at 0.01 level except:

* Not significant at 0.05 level.

** Significant at 0.05 level.

*** 1959

Land distribution tends to correlate with levels of living in utility items and building quality in the urban areas and tends to correlate to all measures of levels of living in the rural areas. Inequality of room distribution and building material variance only correlated to the measures of levels of living in the rural areas. The negative correlations of inequality of education distribution and the measures of levels of living are about the same in urban and rural areas.

The results shown in Table 4-5 and 4-6 suggest that in the communities with higher degrees of inequality of land distribution, the level of living is higher. In Flora's study on land tenure of the Cauca Valley, he found that the higher the percentage of the agricultural land in large farms, the higher the inequality of land distribution. The inverse was also found to be true. Inequality of land distribution correlated 0.93 with the percentage of land in latifundios (200 hectares or more), and correlated -0.94 with the percentage of the land in family farms (5-50 hectares). (Flora, 1971:40) In other words, the high inequality of land distribution indicates a high percentage of land in latifundios; the lower degree of inequality indicated a high percentage of family-sized farms. The operators of the small size farms were poor which was shown by Smith (1967). For this reason, the land distribution has a direct effect on the wealth or the level of living in the rural area--the higher the inequality, the higher the level of living; the lower the inequality, the lower the level of living. Because the owners of the large-size farms live in towns or had something to do in the towns, and because the

livelihood of the towns depends on agriculture, the land inequality also has a significant effect on the differential levels of living between municipios in the urban areas. Flora's study also shows that the percentage of agricultural land in family farms correlated - 0.49 with regional elite solidarity, and the percentage of agricultural land in latifundios correlated 0.44 with regional elite solidarity (Flora, 1971:135). It gives evidence of why the municipios with a high inequality of land distribution will have a high level of living.

We can now understand how land inequality is such an important variable in the community structure. It indicates the structure which can be seen as the mechanism for the distribution of the resources of community to its individual members. In Tables 4-2 and 4-3, we found its relationships with other measures of inequalities. Here, we explored its effects on the levels of living.

Room inequality does not relate to urban levels of living, but it relates significantly to rural level of living (positively in all cases except building materials score). Building materials variance is also not very significantly related to levels of living in urban areas (all signs are negative except for the utility index), but significant in rural areas (pattern very similar to that for room inequality). Education inequality showed almost the same relationship with levels of living in urban and rural areas--fairly strong negative correlations. These suggest generally that in urban areas a higher level of living tends to be associated with a higher inequality of building material

variance and with a lower inequality of educational attainment. In rural areas, a higher level of living tends to promote a higher inequality of room distribution and building material variance, and a lower inequality of education attainment.

Inequality and Differentiation

Differentiation refers to the complexity of the institutionalized pattern in the community. It is an important aspect of development. In this section we will ask whether differentiation effects inequality of the distribution of level of living. Table 4-7 shows the correlation of general differentiations and the measures of inequality in the urban and rural areas. There is almost no relationship between general differentiation and inequality

TABLE 4-7: Correlation of general differentiation and the measures of inequality in urban and rural areas, 40 municipios in the Cauca Valley, Colombia, 1964

1969 General Differentiation correlated with	Urban	Rural
1. Inequality of room distribution	-0.30	0.07*
2. Variance of building material score	-0.37	0.21*
3. Inequality of educational distribution	0.06*	-0.08*
4. Inequality of land distribution**	0.22*	

* Not significant at 0.05 level.

** Inequality of land distribution is for all agricultural land in entire municipio.

In the rural areas, all of the correlation coefficients are below the significance level of 0.05. In urban areas, only inequality of room distribution and variance of building material score negatively correlate with general differentiation at the 0.05 level of significance. This suggests that as differentiation increases, the inequality of room distribution and building variance somehow is reduced.

Educational inequality does not correlate with general differentiation. This should be further examined because a high level of living results in a more equal distribution of education attainment, and high differentiation results in a high level of living. Why there is no relationship between differentiation and the distribution of educational attainment? In order to answer this question, we have to look at Table 3-8 in Chapter 3 which shows that general differentiation correlated only with the percentages of population with education beyond primary school (0.57), but not with the functional literacy (0.18). In other words, a high differentiation will have a high percentage of the higher education, not necessarily having a high percentage of functional literacy--common educational attainment. Mass education is promoted by the educational policy of the whole country. It does not depend on the differentiation of individual municipios.

The equal distribution of education is mainly affected by the increase of the percentage of functional literacy. Functional literacy does not correlate with differentiation. Therefore, the differentiation of each municipio does not correlate with the inequality of educational attainment.

As Table 4-7 shows, general differentiation does not significantly correlate with land inequality. This suggests that the large-size farms were not always located in the municipios where the differentiation is high. As Flora concluded that land inequality is a separate dimension from differentiation (J. Flora, 1971:83), this also disproves the assumptions we introduced in the first chapter that the higher differentiation results in a high inequality of distribution of power at the community level.

Inequality and Centrality

Table 4-8 shows the correlation of the inequality measure and bus flow centrality. In urban areas, inequality of building material and room distribution are significantly correlated with bus flow centrality. Educational inequality seems to be independent of bus flow centrality. Land inequality is significantly correlated with bus flow centrality.

The positive correlation between land inequality and centrality indicates that communities which have high land inequality have the strong influence or dominance on other communities in a system. In the case of the Cauca Valley, the large proportion of land in Latifundios will have more economic power. The produce in the large-size land are not only used to provide the sustenance for the people in that area, the extra portions should be transported to the outside and it is likely to form a market center. In the process of exchange, the people of the outside have to rely on that area. Therefore, the high inequality of land

distribution tends to have a high centrality. Meanwhile, the community of high centrality tends to attract the interest of economic elite in that area to purchase and collect the land.

TABLE 4-8: Correlation of inequality measures and bus flow centrality in urban and rural areas of 40 municipios in the Cauca Valley, Colombia, 1964

1969 Bus flow centrality correlates with	Urban	Rural
1. Inequality of room distribution	-0.14*	0.34**
2. Variance of building material score	0.18*	0.49
3. Inequality of educational distribution	0.16*	-0.21*
4. Inequality of land distribution ***	0.47	

* Not significant at 0.05 level.

** Significant at 0.05 level.

*** Inequality of land distribution is for all agricultural land in entire municipio.

Centrality also refers to the access to information in the communication network. High centrality provides more information for the communities. The rural areas always would be satellites to the urban areas. Therefore, when centrality is high, the people in rural areas tend to realize the urban way of life, the diversity of the ways of life become great. The variance of building quality and the room inequality in the rural area become obvious. In urban areas, variance of building quality and the room distribution will not be affected too much by the access to information since the information always originates from urban areas. But, for the

same reason, if the urban areas are in the satellite communities where the centrality is high, the inequalities are also high.

From the comparison of the correlation between differentiation and inequalities and that between centrality and inequality, one can see that differentiation is more related to urban inequality, and centrality to rural inequality. Land inequality is considered another independent variable to indicate certain degrees of stratification or power hierarchy. We found that it highly correlated with inequality of building material variance and room distribution in rural areas, but not in urban areas (see Tables 4-2 and 4-3). This leads us to conclude that the rural inequality is affected strongly by inequality of land distribution and centrality; the urban inequality mostly related to differentiation.

Conclusion

Of our measures of inequality, land inequality will be used as the independent variable which indicates the differential power of different segments of the population. It indicates the social stratification of the community. It is the only variable which measures pre-existent structural inequality--inequality of opportunity.

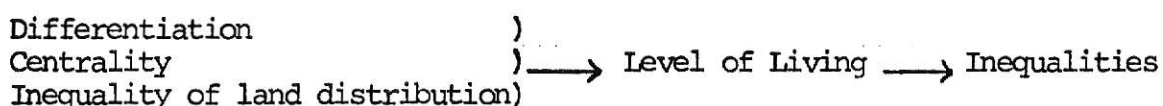
The other measures of inequality are another aspect of social inequality--the inequality of distribution of goods, services, or material rewards. They measure the ultimate distribution of goods and services. We refer to them as the inequality of the distribution of levels of living because the ultimate inequality of distribution reflects on the living conditions of individuals in the

community. The three measures used to indicate this aspect of distribution are the Gini Index of room distribution, variance of building material variance, and Gini Index of inequality of educational attainment. These three measures indicate something so different that we cannot combine them to be a single composite index of inequality. Therefore, we will use these three measures as the dependent variables separately for our further analysis in the next chapter.

Chapter V

Interrelationships of Community Structure,
Levels of Living, and Inequality

Inequality is defined as the degree of maldistribution of goods and services, or maldistribution of levels of living. Statistically, the change in level of living will cause a change in its distribution because inequality and level of living are derived from the same data. Whether development causes the increase of level of living is our first question. Then, whether development causes the change of inequalities is our second question. Therefore, the general analytical scheme in this study is to classify the variables under study into three major types: differentiation, centrality, and the inequality of land distribution are considered the independent variables; the level of living is the intermediate variable; and the measures of ultimate inequality are the dependent variables. These variables are arranged in the following diagram:



Multiple regression analysis and path analysis, then, will be applied to determine the extent to which the independent variables can explain the variance of the dependent variables. At the same time, we can determine the relative importance of the independent variables in predicting the degree of inequalities. This kind of analysis assumes an additive model with the following linear regression equation: $X_1 = A + C_{12}X_2 + C_{13}X_3 + \dots + C_{1i}X_i$

+ $C_{1a}X_a$, where X_1 is the independent variable, X_i are independent variables; C_{1i} are the regression coefficients of each independent variable. After standardizing this equation into Z score type,¹ the equation becomes:

$$Z_1 = P_{12}Z_2 + P_{13}Z_3 + \dots + P_{1i}Z_i + P_{1a}Z_a, \text{ where}$$

P_{1i} are the path coefficient. P_{1a} is the unexplained variance in the equation. (Land, 1969:8)

The value of each path coefficient tells us the amount of change in the dependent variable in terms of standard deviation, accompanying a change of one standard deviation in the independent variables, with all other independent variables held constant.

The zero-order correlations used in the preceding chapters do not show us the importance of each independent variable in affecting the variance of the dependent variable with all other variables held constant. In other words, the simple correlation includes the direct and the indirect effect of a variable on other variables. Using the path analysis, the direct effect and

¹ Let $Z_i = (X_i - M_i)/\sigma_i$, $P_{1i} = C_{1i}(\sigma_i/\sigma_1)$

The original equation is transformed into standardized form.

σ_i denotes the standard deviation of the independent variable.

M_i denotes the mean of the independent variable.

C_{1i} denotes the regression coefficient of each independent variable.

σ_1 denotes the standard deviation of the dependent variable.

the indirect effect of a variable on the other variables can be figured out.¹ The direct effect of an independent variable on dependent variable is shown by the path coefficient. The indirect effect of each independent variable through its correlation with other independent variables is measured by the product of its correlation coefficient with other variable and the path coefficient of other independent variables.

The Structure of the Independent Variables

Table 5-1 shows the zero-order correlations among differentiation, centrality, and land inequality. The correlations between differentiation and bus flow centrality, and bus flow centrality and inequality are higher than the correlation between differentiation and land inequality.

A community with high degree of differentiation will provide the functions which will not always be available in other communities. It attracts many people who come to obtain goods and services. Therefore, differentiation tends to generate high

¹ The relationship between simple correlation coefficient and path coefficient is in the following equation: (Land, 1969:20)

$$r_{1i} = p_{1i} + \sum_{\substack{j=2 \\ j \neq i}}^n p_{1j} r_{ij}$$

where r_{1i} is correlation coefficient of dependent variable and independent variable.

p_{1i} is path coefficient from independent variable to the dependent variable.

r_{ij} is the correlation coefficient of independent variables.

centrality of the community because there are a variety of jobs in the highly differentiated community. People in this community and surrounding areas have more choice as to how they will earn their livelihood, not only farming. Those people who were able to amass large holdings would do so in that part of the valley because it was the best land and was most accessible. The small size farm owners may tend to sell their land and find other jobs. Therefore, differentiation seems to cause an increase in centrality, and centrality causes the increase in inequality of land distribution.

From the other aspect, when the inequality of land distribution increased, the concentrated economic power is more likely to build roads to transport the product to somewhere and most likely to have larger enterprises set up. When the functions of the large enterprises were expanded, the service area was also extended and the centrality of the community becomes great.

Then, the inequality of land distribution contributes to the increase of centrality. At the same time, because the various enterprises are set up, a variety of jobs can be provided, the community becomes more differentiated. Reasoning this way, the increase in differentiation is somehow affected by the increase in the inequality of land distribution. In general, these three variables of community structure are likely to influence each other.

But, in the Cauca Valley, the correlation between differentiation and land inequality is only 0.22, which is below the 0.05 level of significance. This suggests there is no necessity for

differentiation to correlate with land inequality. In the preliminary analysis, we found high inequality of land distribution in central and satellite communities. Thus, land inequality seems to relate to the geographic location not to differentiation. High centrality will provide more information for the people. The small size farmers are more likely to give up the farming work and those people who were able to purchase the land would amass large holdings in that part, because it is more valuable and more accessible land.

TABLE 5-1: Correlation of differentiation, bus flow centrality, and land inequality, Cauca Valley, Colombia.

<u>Variables</u>	<u>2</u>	<u>3</u>
1. General differentiation	0.44	0.22*
2. Bus flow centrality		0.47
3. Inequality of land distribution		

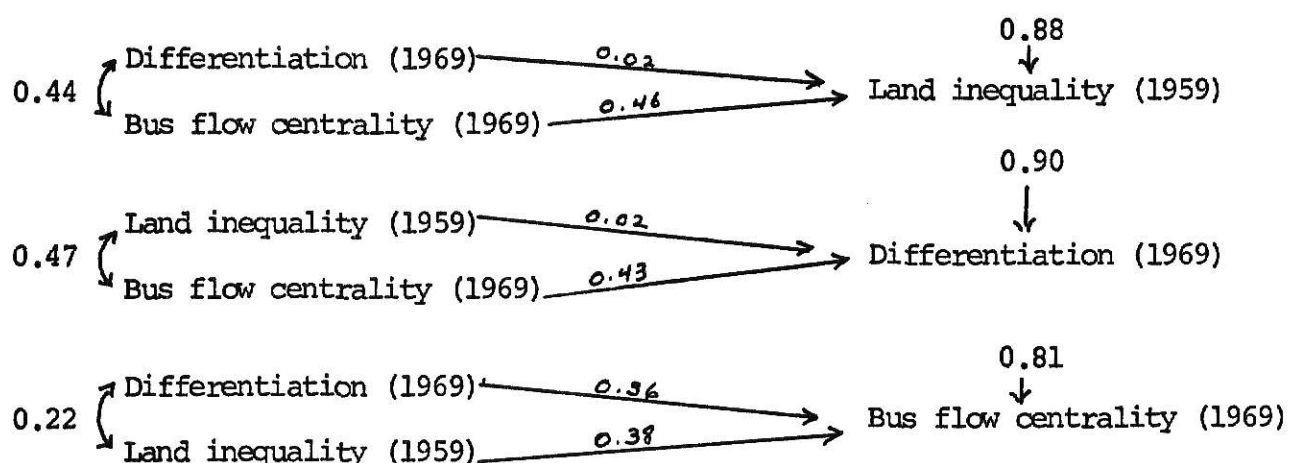
* Not significant at 0.05 level.

When the bus flow centrality was controlled in the regression and path analysis which is shown in Figure 5-1, inequality of land distribution showed a path coefficient of 0.02 (the direct effect on differentiation; differentiation also contributed 0.02 to land distribution. It becomes very clear that inequality of differential power or classes, and the differentiation of the community are the two separated dimensions.

When differentiation and inequality are put together to predict bus flow centrality, their relationships become very clear--that bus flow centrality was affected by differentiation and land inequality at almost the same weight of influence.

In conclusion, centrality has a strong positive influence on differentiation, while land concentration has little direct effect on differentiation independent of centrality. Likewise, differentiation has little effect on land inequality independent of centrality. Differentiation and land concentration both contribute about equally to centrality. Since bus flow centrality is limited by and conforms to the geographic lay of the valley to a remarkable degree, it can be assumed to be temporally prior to the other two.

Figure 5-1: The path diagram of differentiation, land inequality and bus flow centrality, Cauca Valley, Colombia, 1959, 1969.



The best land in the Cauca Valley is also the most accessible. Historically, the best land was claimed by large landholders, and the pattern remains so today. Concentration of land ownership has had a positive influence on centrality; roads and railroads pass

through or near the largest holdings. No such influence has occurred on differentiation, since the large landholders have no need to insure that services exist in the communities nearest their farms because they are generally absentee landowners.

Community Structure and Levels of Living

The higher the development of the community, the higher the level of living in that community. This is clear when we look at Table 5-2. But the development itself has a lot to do with the community structure. It is especially important to look at the magnitude of the effect contributed by each variable on level of living.

The indicator of levels of living used here is the composite index of all the selected measures of levels of living. This was accomplished by weighting each item with factor score of first factor in the factor loading, which explained more than 60 per cent of variance. It has been presented in Chapter 3.

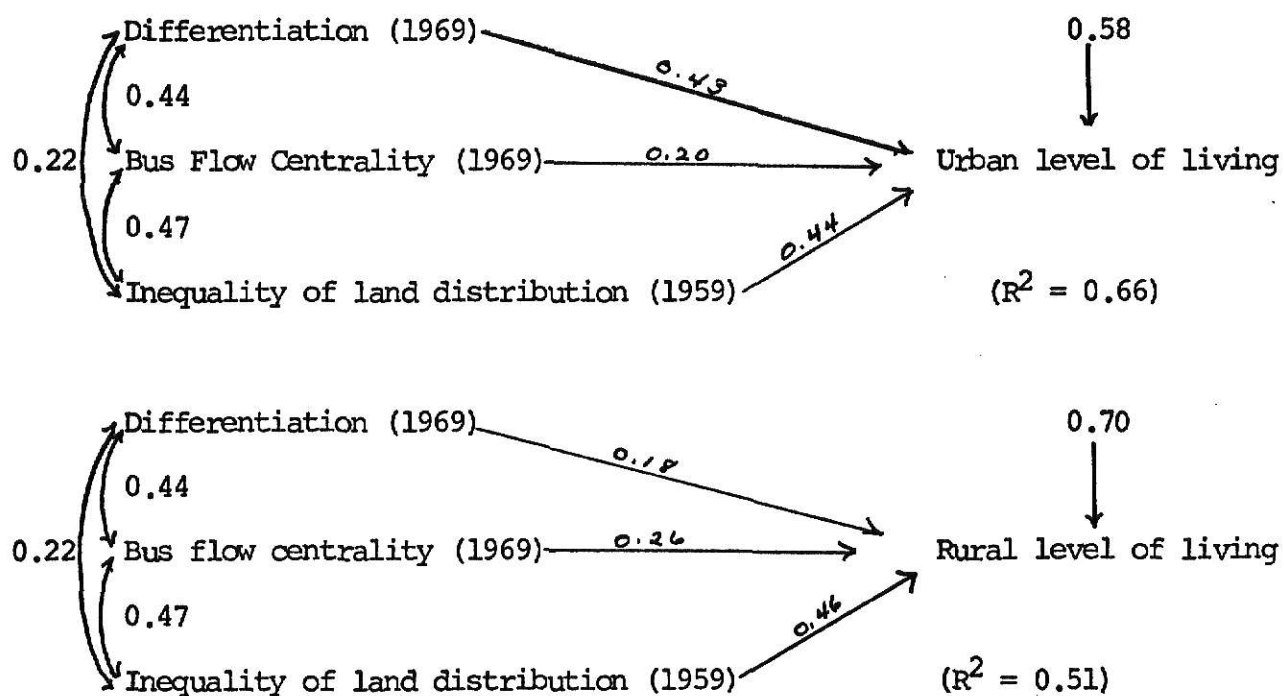
In Table 5-2, all the three independent variables are highly correlated with level of living, both in urban and rural areas, above the 0.01 level of significance.

TABLE 5-2: Correlation of differentiation, centrality, land inequality and levels of living, Cauca Valley, Colombia, 1964, 1969.

	Urban Level of Living	Rural Level of Living
1. General differentiation (1969)	0.61	0.40
2. Bus flow centrality (1969)	0.60	0.56
3. Inequality of land distribution (1959)	0.63	0.63
4. Urban levels of living	-	0.73

Significant at 0.01 level and over.

Figure 5-2: Path diagrams of community structural variables and level of living Cauca Valley, Colombia, 1964



In Figure 5-2, the three independent variables explained 66 per cent of the variance of the urban level of living, and 51 per cent of rural level of living.

In urban areas, the direct influence of differentiation on level of living is shown by the coefficient 0.43. The direct influence of bus flow centrality on level of living (0.20) is less than one-half that of differentiation. The direct influence of inequality of land distribution (0.44) is almost equal to that of differentiation. Thus, the correlation of bus flow centrality with the urban level of living ($r = 0.60$) is in part due to the strong interdependence between bus flow centrality and differentiation, and the strong influence of differentiation on level of living. It is also in part due to the strong interdependence between bus flow centrality and inequality of land distribution (0.47), and the strong influence of inequality of land distribution on level of living. Differentiation affects the level of living in part through its correlation with bus flow centrality (0.44) and through the influence of bus flow centrality on level of living (0.20). The indirect influence of differentiation on level of living through bus flow centrality is 0.088 (i.e., 0.20×0.44). The indirect influence of differentiation through land distribution is also high (0.096).

In rural areas, the direct effect of differentiation on level of living is less than that of bus flow centrality and inequality of land distribution. Land inequality contributed the strongest influence on the level of living in rural areas. Bus flow centrality influences the level of living directly with a path coefficient of 0.26. The correlation between differentiation and rural level

of living (0.40) included a great part of indirect influence through bus flow centrality and through land inequality.

From Figure 5-2, several conclusions can be derived. (1) All independent variables show significant and positive contributions to level of living. Communities which are more complex, more tied into the system, and which are dominated by elites generate more income and higher levels of living. A more complex community is one which includes a variety of functionally specialized activities to meet the needs of the community. Those people in such communities were more likely to have high levels of living. Those people who were able to obtain those services or goods and those who could afford those complex services or goods should have certain wealth or power. Flora's (1971) study shows that inequality of land distribution correlated 0.45 with solidarity of the regionally-based elite and general differentiation correlated 0.60 with regional elite solidarity. (Flora, 1971:135)

(2) Inequality of land distribution has relatively stronger influence on level of living in rural than in urban areas. Rural areas are affected directly by land tenure; urban areas are only indirectly affected by land tenure. In rural areas, the size of farm represents the concentration of the property or wealth. So, it has a direct affect on level of living. In urban areas, land inequality affects the level of living when the owners of large-size farms dwell in urban areas or utilize their wealth or influence to generate the elite solidarity.

(3) Differentiation has a greater impact on urban level of living because the development of the community tends to focus on

the urban areas before spreading to the hinterland. This is the reason why urbanization becomes the prevalent phenomenon. The central place, the market center, the service center, and so on, are always located in the urban area. In other words, differentiation always refers to the functionally differentiated patterns of the urban areas. So it has a direct effect on the level of living in the urban areas. The rural areas are affected when the service area of the differentiated center includes the rural areas or when the communication path bring the rural areas to the system. Therefore, bus flow centrality plays an important role in affecting the rural level of living (in the indirect effect of differentiation on rural level of living).

(4) In urban areas, centrality has the smallest direct effect on level of living but has a strong indirect effect (positive) through both differentiation and land distribution (0.18 and 0.21). In rural areas, the indirect effect of centrality is chiefly through land distribution (0.21), nearly as great as its direct effect (0.26).

Community Structure, Level of Living, and Inequalities

The inequalities in distribution of level of living are measured by building variance, room distribution, and educational distribution. Change in inequality of distribution is immediately due to the change in level of living among the individuals in the community, while level of living is affected by differentiation of the community structure. The question is whether the development of the community which will cause a higher level of living will make the distribution of levels of living more or less equal.

As Table 5-3 shows, level of living does not correlate significantly with the inequality measures in the urban areas, but it does correlate significantly in the rural areas. The other independent variables except the differentiation measure are also correlated with the inequality measures in the same direction as level of living.

In the following pages, the path diagrams of community structural variables, level of living, and inequalities will be presented. The model we found for the educational inequality is quite different from other inequalities. Thus, it is separated from other diagrams and will be discussed later. The diagrams are the combination of the diagrams we have presented in previous sections, plus the effect of the independent and intermediate variables on the quality of life inequalities.

The model for the urban area is different from that for the rural area with respect to the positioning of the independent variables. Because differentiation has a direct impact on urban area, while land distribution has a direct influence on rural area, differentiation is arranged between community structure and inequalities in the diagram for the urban area; inequality of land distribution as an intermediate variable for the rural area.

TABLE 5-3: Correlation of community structure, level of living and inequalities,
40 municipalities in the Cauca Valley, Colombia, 1964

<u>Independent Variables</u>	INEQUALITIES					
	<u>Building (U)</u>	<u>Room (U)</u>	<u>Education (U)</u>	<u>Building (R)</u>	<u>Room (R)</u>	<u>Education (R)</u>
Differentiation (1969)	-0.37	-0.30	0.06	0.21	0.07	-0.08
Bus flow centrality (1969)	0.18	-0.14	0.16	0.49	0.34	-0.21
Level of living (urban)	0.26	-0.19	-0.16	-----	-----	-----
Level of living (rural)	-----	-----	-----	0.54	0.55	-0.43
Land distribution (1959)	0.38	-0.17	-0.12	0.64	0.58	-0.26

* U = Urban area; R = Rural area.

Figure 5-3: Path diagram of community structure variables, level of living, and inequalities of building variance and room inequality in urban areas, Cauca Valley, Colombia, 1964.

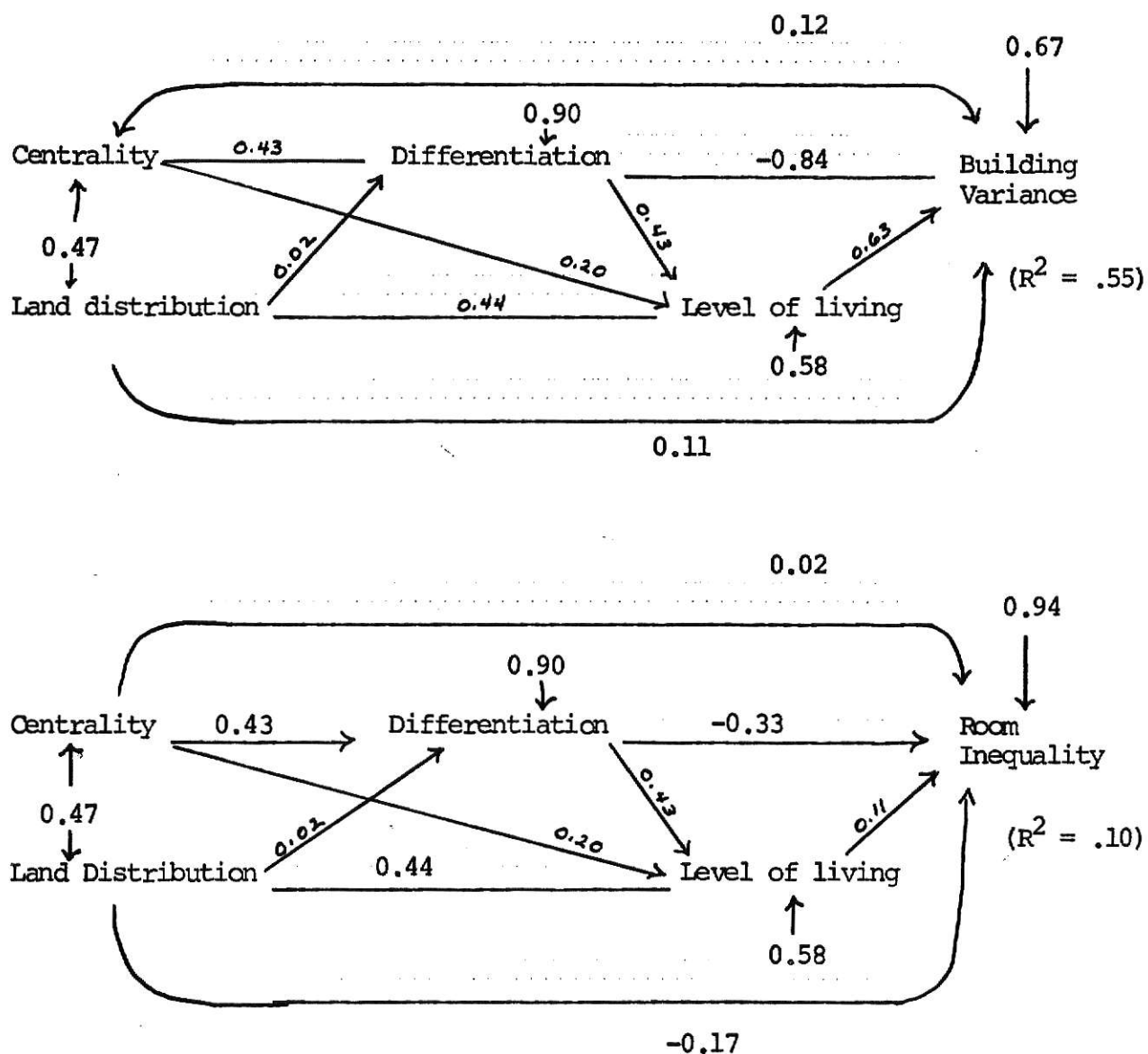


Figure 5-3 shows the path diagram of the community structure and level of living to inequalities in urban areas. The direct influence of differentiation on urban building inequality is shown by the path coefficient of -0.84. It suggests that differentiation tends strongly to decrease the urban building materials inequality. Bus flow centrality, land inequality, and level of living promote building material inequality. Urban level of living has the strongest influence on the unequal distribution of building quality. The indirect influence of differentiation through urban level of living is 0.38 (positive); this suggests that the differentiation of the community itself does not promote an increase in inequality. If inequality increases, it is because of differentiation's association with level of living which causes an increase in the building material variance.

High level of living in the communities indicates that the average income is high in that community. But, it is not all the individuals in rich communities are wealthy. Those people of lower level of living may also improve their living condition as the community develops. But they are moving up too slowly. On the other hand, those people of higher level of living, because of their power of wealth, property or classes, will get multiple rewards and fruits from the development of the community. The range of difference between high and low level of living becomes great. The rich get richer faster than the poor become rich.

In the Cauca Valley, land distribution can be roughly viewed as the distribution of wealth, especially in the rural areas. The large landholders are the rich. In other words, in the communities

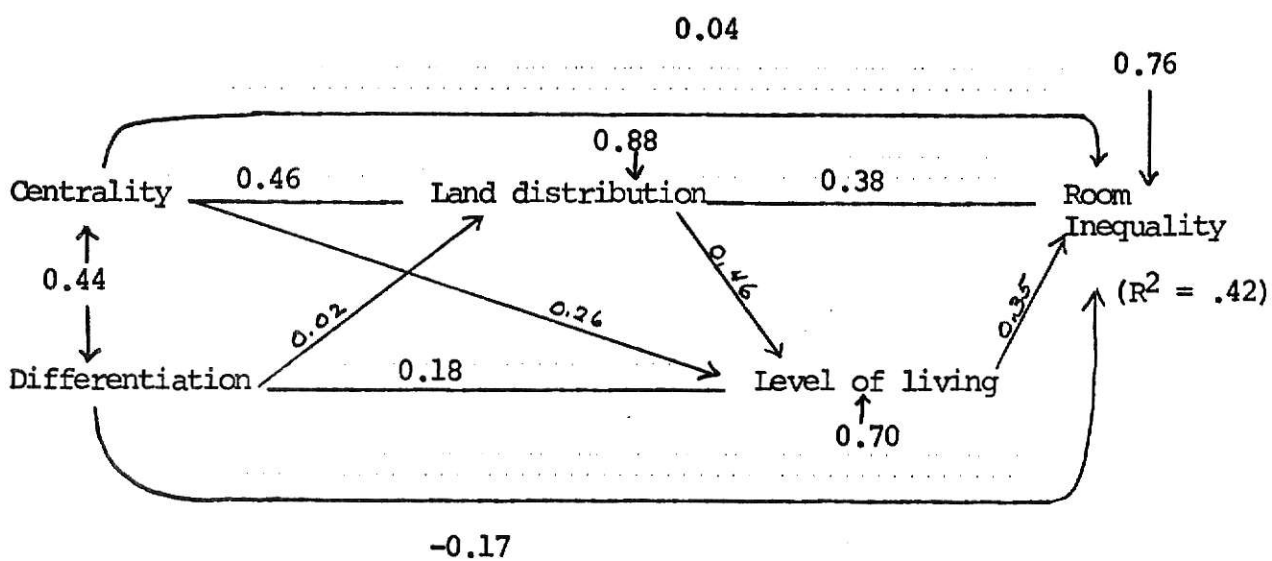
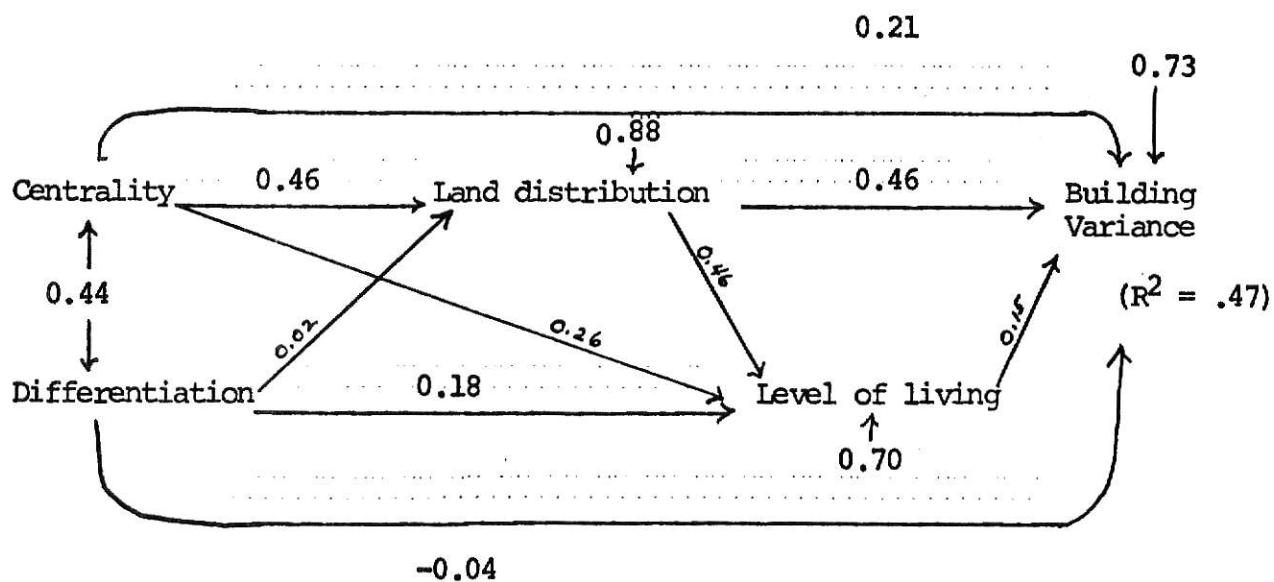
where the land inequality is great, the level of living was high and, because the level of living is high, the distribution of level of living tends to be more unequal. As the diagram shows, the direct effect of land distribution on building material variance is 0.11, while its indirect influence through level of living is 0.40.

When we look at the correlation between land distribution and regional elite solidarity (0.45) again (Flora, 1971:135), and look at the dominance of elites with respect to the establishment of enterprises and occupancy of important positions in political, economic, or social organizations, we can understand that the inequality of ownership distribution of the important property is an indication of the elite control. They make the other segments of population rely on them for an income or for certain kinds of services. It is like the dominance of metropolises over its hinterland. The positive effect of centrality on the building material variance becomes obvious. Centrality, therefore, can also be seen as an indication of regional elite control. However, its direct influence on inequalities is not strong (0.12) but it does show a strong indirect influence through levels of living (0.36).

Centrality also promotes differentiation. Thus, its indirect effect on inequalities through differentiation is very high (-.37) but negative. Its negative indirect influence on inequalities through differentiation which promotes more equal distribution of resources is almost offset by its indirect influence through level of living because level of living has a strong positive effect on increasing inequalities.

In the second diagram for urban areas, once again, the direct influence of differentiation on room inequality is negative. All other paths show the same pattern as building inequality; only land inequality shows a negative effect on room inequality. The R^2 of the regression equation of the paths to room inequality is very low. Only ten per cent of the variance can be explained. In our discussions of the measures of level of living, we found the measure of persons per room did not correlate highly with the other measures of level of living. The average number of persons per room in urban areas is not important in the measurement of the level of living in the community. It appears that to some degree the people who live in urban areas tend to sacrifice the space to live in the towns with higher levels of living. Therefore, the room distribution will not be affected significantly by the level of living. As Figure 5-2 shows, we found the direct effect of urban level of living on room inequality was not very strong. Although the variance explained in room inequality is not great, it is of significance to note that the signs of the path coefficient are the same as for building materials variance, with the exception of land inequality

Figure 5-4: Path diagram of community structure variables, level of living, and inequalities in rural areas, Cauca Valley, Colombia, 1964.



In Figure 5-4, we can see in rural areas land inequality is the most important variable affecting the increase of building inequality (0.46). Differentiation becomes an unimportant variable in determining the inequality. Because differentiation does not have much effect on rural level of living or on the development of rural areas, its equalizing strength is weaker than the disequalizing strength of land inequality. The rural building inequality is higher than in urban areas (as Chapter 4 shows, the average variance of the urban building materials score is 0.37 and in rural areas it is 0.432).

Bus flow centrality in the rural areas is an important variable influencing the inequality of building materials. The rural level of living also has a positive effect on the increase of building inequality. But because rural level of living was mainly affected by land inequality and to some extent by bus flow centrality, and land inequality and bus flow centrality have already had a strong direct effect on the inequality of building materials, there is no necessity for them to have a strong indirect effect through intermediate variables.

In the same figure for rural areas, we can find that room inequality is mainly affected by land distribution and rural level of living which contribute almost the same effect (0.38 and 0.35 respectively). Differentiation also negatively affects the increase of room inequality in rural areas, but is weaker than the influence of land distribution. Room distribution in the rural area is different from the urban areas. It is not necessary that people in the rural area sacrifice the space like people in the urban area.

Therefore, the measure of persons per room, to some degree, can indicate the level of living. The R^2 of the regression equation of the paths to rural room inequality is 0.42, and greater than that of the urban area in Figure 5-3.

Looking at both Figure 5-3 and 5-4, we can draw a general picture of the community structure and inequalities.

1. Level of living, bus flow centrality, land inequality (except for urban room inequality), all have a positive effect on the increase of social inequalities.
2. Differentiation has a negative effect on social inequality when other variables are held constant. Therefore, differentiation itself promotes more equal distribution of rewards.
3. Differentiation promotes high levels of living; and higher level of living tends to increase social inequality, thus differentiation tends to indirectly increase social inequality.
4. In urban areas, bus flow centrality and land distribution do not contribute strongly to inequality directly, but their indirect influences on inequalities through level of living are greater than their direct effect (indirect effects promote inequality). This suggests that level of living is the most important variable mediating the relationship of bus flow centrality and land distribution, with urban social inequalities.
5. In urban areas, differentiation and level of living operate to influence on inequalities in opposite way. Differentiation promotes more equal distribution. Level of living tends to dis-equalize the distribution. These two variables are the most important factors in determining the social inequalities in urban area directly.
6. In rural areas, land inequality has a strong direct effect on social inequality, differentiation becomes less important in rural area because differentiation mainly affects urban areas; even its direct effects are not very great. Bus flow centrality has a strong positive effect on rural building inequality but not very strong on rural room inequality. This suggests that in rural areas building inequality is affected by the factors from the outside besides the internal structure; while room inequality is mainly determined by internal factors.
7. In rural areas, besides the direct effect of bus flow centrality and land distribution on inequalities, they also have a strong indirect effect on inequalities through level of living. In

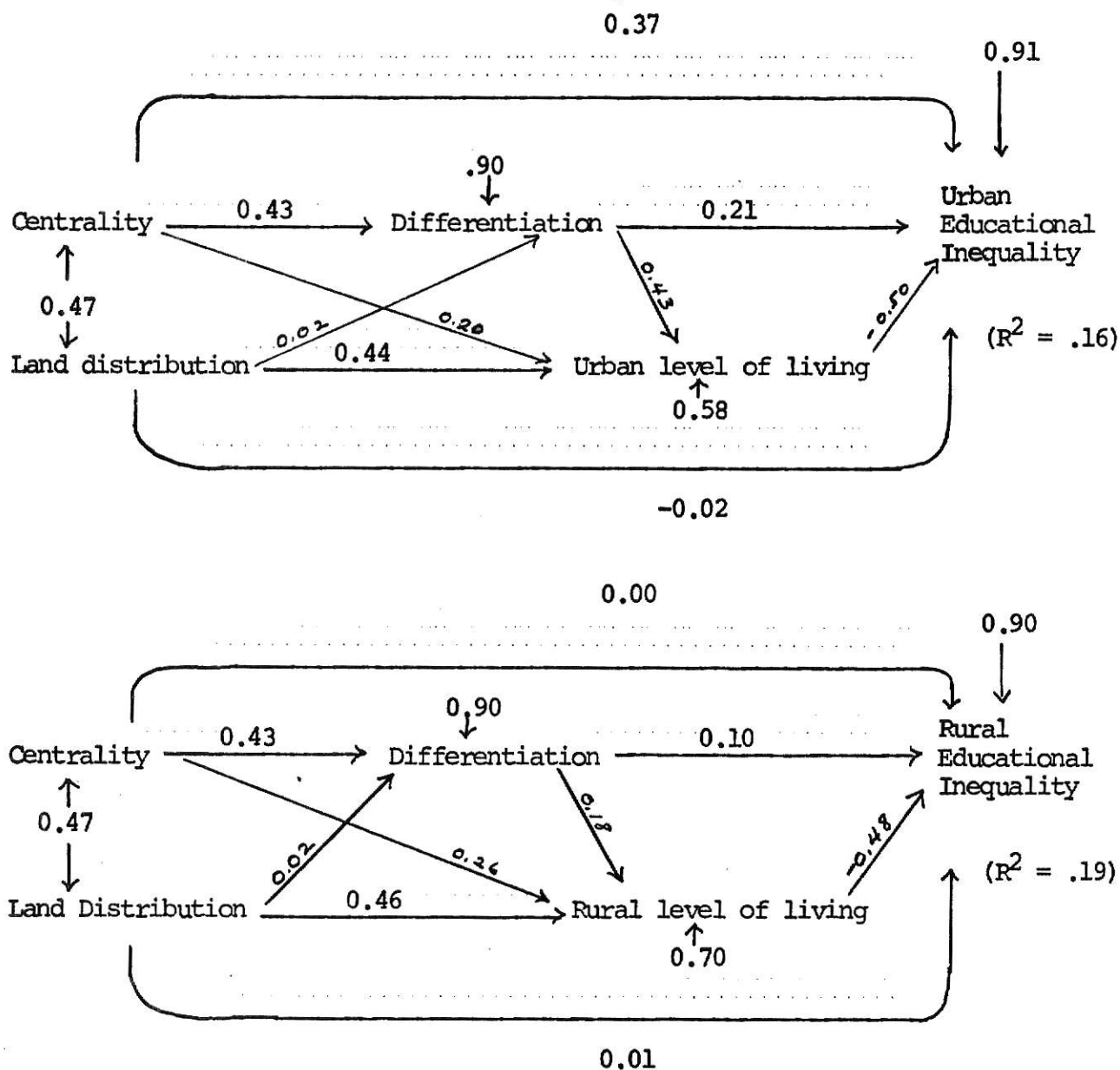
particular, the indirect effect of bus flow centrality on room inequality through level of living is greater than its direct effect. All of these demonstrate that, as in urban areas, level of living in rural area still tends to be an important variable mediating between community structure and inequality.

Of four diagrams, only urban building materials score correlated with other items of level of living--was part of level of living index. As the items used in producing composite index of level of living in the factor analysis, the other three inequalities (rural building material, rural persons per room and urban persons per room) loaded on the second factor or on its own factor. However, the path diagrams of these four inequalities tend to be same pattern.

The conclusions we draw above are concerning only one aspect of the inequality of level of living. The other aspect, educational inequality shows a very different pattern.

Figure 5-5 shows the path diagram of community structure and education inequality. Its pattern is quite different from that of building inequality and room inequality. Differentiation tends to have a positive effect on the inequality of educational attainment. Level of living tends to have a negative effect on the inequality of educational attainment. The indirect influence of differentiation operating through urban level of living is -0.31 . In this case, the positive influence of differentiation on educational inequality is cancelled out by the rising of level of living.

Figure 5-5: Path diagrams of community structure, level of living, and inequality of education attainment, Cauca Valley, Colombia, 1964



In urban areas, the bus flow centrality also has the positive effect on educational inequality. High centrality will introduce various kind of groups with different background to communities. The migration of those people with lower educational background will have the positive influence on educational inequality. In-migration always

occurs in the urban area. It is the reason why bus flow centrality has the effect on the increasing inequality of educational attainment in urban areas but not in rural areas. Land distribution seems to have no significant direct effect on the education distribution in Figure 5-5. This demonstrates the educational sector is more independent from the hierarchical power configuration.

The reason why differentiation has the positive effect on the inequality of educational attainment is because differentiation has the strong influence on the increase of the percentage of the population with higher education. The correlation between general differentiation and the percentage of the population with education beyond primary school is 0.57 in the urban areas, while the correlation between general differentiation and the functional literacy, the population with education beyond second grade in the primary school, is only 0.18. This indicates that high differentiation will result in an increase of persons with advanced education but not influence the increasing of functional literacy. In this case, some people in the highly differentiated communities attained higher education. The range of the distribution of educational attainment becomes large. The same reason, in rural areas, differentiation correlated 0.34 with the percentage of the population with education beyond primary school, and 0.24 with functional literacy. The positive effect of differentiation on rural educational inequality is expected. However, differentiation has little impact on rural areas, it is merely indirect influence. Thus, we cannot see very strong direct effect of differentiation on rural educational inequality.

The negative effect of level of living on educational inequality can be explained in that high level of living will provide more time and expense for schooling, can prevent children from leaving school, and since much of education--especially on primary level--is funded publically and since costs of education per pupil at lower levels is less than at higher levels, this means that in terms of educational attainment, the poor get rich faster than the rich get richer--the opposite of the situation for other inequalities.

From Figure 5-5, we can see that the rising level of living promotes more equal distribution of educational attainment. However, the unequal distribution of educational attainment is mainly affected by factors from the outside and differentiation inside the community. The strong influences from the outside always focus on urban areas. Therefore, educational inequality is affected strongly by bus flow centrality (positive) in urban areas but not in rural areas. Rural educational inequality appears to be determined by the internal structure independent of land inequality. Because level of living has so strong effect on the equalizing educational distribution and the urban level of living (which is affected by differentiation, land inequality, bus flow centrality) is higher than in urban areas (as Chapter 4 shows, the average of Gini Index of educational inequality in urban areas is 0.448 and in rural areas is 0.520).

From the path analysis of community structure and inequalities, we can conclude that differentiation has the effect of promoting more equal distribution of the levels of living. Because the increase of level of living, which is generated by differentiation and the existence of the inequality of differential power structure

and the dominance of elite's influences the increasing inequalities, the development of community in terms of differentiation fails to successfully promote the equal distribution of quality of life. In the educational sector, although differentiation tends to increase the inequality of education attainment, the level of living tends to equalize it. Therefore, we can expect the distribution of education will become more equal with time. But, the other aspects of level of living may continue to be unequally distributed.

Conclusion

The question to be answered in this study is "whether the development of community in terms of differentiation will cause a high level of living and a more equal distribution of level of living?" In this chapter, the answer is positive in certain situations and negative in the other.

Differentiation can cause a high level of living in the urban area, but it merely has the indirect effect on the level of living in rural areas. In the process of development, differentiation tends to promote more equal distribution of the quality of life in general, but it is not so significant in the rural areas because inequality of land distribution strongly influences level of living in rural areas. Education is the independent sector of the level of living. Its inequality of distribution tends to be generated by differentiation. However, the level of living tends to equalize the distribution of educational attainment.

In the hypothesis we are testing that the higher the differentiation, the higher the inequality, there are many implications. Controlling structural inequality (land inequality) and the influence from the outside (centrality), differentiation tends to equalize the distribution of material rewards but makes educational attainment more unequal. The reason why the more differentiated society has an elaborate system of stratification or inequalities of rewards is because the other factors such as the inequality of opportunity and centrality, combining the effect of differentiation on level of living and then influence the increase of inequalities. Therefore, it becomes very clear that development in terms of differentiation itself positively affect the distribution of educational attainment and negatively on the other inequalities.

Chapter VI

Conclusions and Implications

In this study, three variables, differentiation, centrality, and land distribution are used as community structural variables. Level of living and inequalities in building material, room distribution and educational attainment are the intermediate and dependent variables. Differentiation refers to the functional division of labor in the community structure. Centrality refers to the reciprocal relationship of the community with the outside. In terms of the communication framework, differentiation is defined as the diversity of meaning areas maintained by the system; centrality is defined as the degree to which social units have access to the information in the system. Land distribution is an indicator of the existing stratification system or the structural inequality. It is hypothesized that the higher the differentiation the higher the inequality, because the differentiated roles are evaluated differently and receive unequal amount of rewards. Rewards are defined as the level of living in the community. Thus, the inequality of rewards refers to the inequality of levels of living.

Once differentiation proceeds, many new roles emerge to carry out the function of original roles. The rewards distributed to those new roles are different from those associated with the original role. Davis and Moore (1945) suggest that some positions (roles) are functionally more important than others and required more training or talent; hence, inequalities in rewards are built in the positions. Barber (1957) concluded that the highly differentiated society has

an elaborate system of stratification. But the findings in this study does not conform to this point. It shows that differentiation by itself promotes more equal distribution of rewards in terms of attainment of goods. Thus, some implications of this discrepancy should be discussed.

Homans (1967) suggests that rewards are not distributed by society but designated by people and groups for themselves. Tumin (1963) and Buckley (1958) emphasize the influence of social inheritance on the distribution of resources. In other words, the existing inequality promotes the increase of inequalities. This point is supported by the findings in this study that land inequality (existing inequality) has a positive direct effect on inequality of attainment of goods. From the path diagrams in Chapter 5, we can see that land inequality does not generate high differentiation. This also conforms with Tumin's (1953) conclusion that stratification systems function to limit the possibility of discovering the full range of talent, to limit the possibility of expanding the productive resources, and to limit the development of creative potential. (Tumin, 1953:393) This suggests that, at least in the Cauca Valley, the rigid socio-economic system in terms of inequality of power or wealth tends to prohibit development. The extent to which differentiation can proceed depends on the differential skills or specialized talent. When the opportunity of developing skills or talent are limited by stratification, the development should be stimulated from the outside. Bus flow centrality, thus, has a strong positive effect on differentiation. However, the fruits of development are soon distributed mostly to a few people or groups

with power and wealth. Their level of living become higher, but the distribution of level of living in that area is unequal.

Controlling for the existing inequality and the factors from the outside, differentiation promotes social equality. The reasons may be that high differentiation provides more opportunity for individuals to perform and more chance to be evaluated in activities. Material rewards may not be the only way of recruiting the talent to positions.

High differentiation also promotes higher level of living because more resources are created. However, the rewards are more unequally distributed, i.e., the indirect effect of differentiation through level of living promotes inequality. We can only speculate as to how this occurs. More highly differentiated communities attract more immigrant than those which are not highly differentiated. The immigrant or the individuals who fill the new roles conduct themselves in the process of exchange with the original groups in the stratified system. Their productive energies increase the wealth of the original groups. Although most people in the process of development raise their level of living, the original groups with great wealth promote their level of living at an even faster rate. The range of unequal distribution is enlarged for two reasons: (1) migrants tend to be in the lower echelons of level of living, and (2) their productive labor increases the total product, much of which goes to the packets of those who are already rich. Therefore, inequalities are principally generated by prior stratification or structural inequality.

Educational inequality is accentuated by differentiation, but relate negatively to level of living.

Some positions are considered more important and require more talent and training. But, the division of labor itself does not imply the differential importance in the process of carrying out certain functions of totality. The functional division of labor generates the necessity of interdependence of differentiated units. Thus, the functional importance of positions or roles is equal. Then, only the scarcity of personnel, one of two determinants of position ranks which are presented by Davis and Moore is practical. It is concerning with how many population are qualified for certain positions. The higher the differentiation the greater the need for specialized skills. The differential skills always depend on the training. Educational attainment is the indicator of the length of training. Our finding supports this point. The result found is that differentiation has a positive direct effect on the inequality of educational attainment. (see Figure 5-5) Accordingly, as Davis and Moore insist that rewards are unequally distributed, because of the differential talent and training. But our finding does not support this point. Whereas, the higher educational inequality (differential skills) tends to promote more equal distribution of goods (see Chapter 4, Table 4-2 and 4-3).

High level of living tends to promote more equal distribution of educational attainment. Thus, the indirect effect of differentiation through level of living on the educational inequality promotes educational equality. This is different from other inequalities. Because educational sector is more independent of community structure,

its distribution is not affected by the prior structural inequality (land distribution). Since most of the expense of education (particularly at lower levels) is borne by the state, and since education is believed by most members of the society to be the key to move on the social ladder, a slight improvement in level of living by low income people is utilized in providing the children with a rudimentary education. Hence, in the community where level of living is high, the educational distribution tends to be more equal. Because educational attainment tends to be independent of differential power, its attainment tends to be more equal when level of living is high. Then, we can infer that any subject which is independent of the existing inequality tends to be equally distributed when level of living becomes higher; on the contrary, any subject which is related to the existing inequality tends to be unequally distributed when level of living becomes higher. Therefore, although differentiation promotes educational inequality, its indirect effect through level of living tends to cause more equal distribution of educational attainment. As the same reason, although differentiation has a strong influence on the equal distribution of material goods, its indirect influence through level of living tends to promote inequalities, because the distribution of material goods is highly related to the existing inequality. Therefore, it is concluded that the prior stratification or structural inequality determines most part of inequalities in rewards; differentiation itself in terms of functional division of labor does not have to generate inequalities in rewards.

APPENDIX I: List of municipios in the Cauca Valley of Colombia in Study.

Alcala	La Cumbre
Andalucia	La Union
Ansermanuevo	La Victoria
Argelia	Obando
Bolivar	Palmira
Buga	Pradera
Bugalagrande	Restrejo
Caicedonia	Riofrio
Candelania	Roldanillo
Cartago	San Pedro
Dagna	Servilla
Darien	Toro
El Aquila	Trujillo
El Cairo	Tulua
El Cerrito	Ulloa
El Dovio	Versalles
Florida	Vijes
Ginebra	Yotoco
Guacari	Yumba
Jamundi	Zarzel

**APPENDIX II: Method used in calculation of
mean building material score.**

Mean building material score is calculated by the following method:

1. According to the condition of the floors, walls, and roofs of the houses, scores are given to these three items separately in terms of good, average, poor. Good is scored 3, average scored 2, poor scored 1.
2. The scores of these three items of housing material are summed and divided by 3 for the single house.

Following this method, the average score for building material of each municipio is calculated in the following manner:

<u>CRITERIA</u>	<u>NUMBER OF HOUSES</u>	<u>SCORE</u>	<u>TOTAL OF SCORE</u>
I. Floors			
1) Good: cement, flagstone, brick	X	3	
2) Average: wood	X	2	
3) Poor: dirt	X	1	
II. Walls			
1) Good: cement blocks, brick	X	3	
2) Average: wood, pressed adobe	X	2	
3) Poor: scrap wood	X	1	
III. Roofs			
1) Good: asbestos, cement tiles, metallic tiles, cement slabs	X	3	
2) Average: adobe tiles	X	2	
3) Poor: scrap wood, straw, etc.	X	1	
	<u>Total houses</u>		<u>Total scores</u>

Average score = total scores ÷ total number of houses.

APPENDIX III: Correlation matrix of measure of level of living,
40 municipios, Cauca Valley, Colombia, 1964

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	*	0.72	0.96	0.76	0.50	0.85	0.16	-0.21	-0.50	0.48	0.52	0.48	0.41
2	0.91	*	0.72	0.70	0.45	0.62	-0.33	-0.11	-0.39	0.74	0.54	0.75	0.63
3	0.94	0.95	*	0.77	0.46	0.80	0.17	-0.22	-0.49	0.62	0.70	0.61	0.60
4	0.94	0.97	0.97	*	0.46	0.67	0.04	-0.20	-0.52	0.57	0.59	0.56	0.46
5	0.76	0.66	0.74	0.75	*	0.39	0.13	-0.16	-0.58	0.37	0.23	0.33	0.20
6	0.64	0.48	0.64	0.58	0.72	*	0.16	-0.25	-0.40	0.42	0.79	0.58	0.52
7	0.81	0.72	0.80	0.79	0.78	0.74	*	-0.09	-0.33	0.05	-0.01	-0.25	-0.13
8	0.07	0.29	0.25	0.19	-0.35	-0.18	0.03	*	-0.07	-0.18	0.20	-0.06	-0.19
9	0.00	0.21	0.01	-0.09	-0.08	-0.28	-0.17	-0.02	*	-0.40	-0.35	-0.29	-0.18
10	0.38	0.48	0.39	0.36	0.57	0.33	0.45	-0.19	0.30	*	0.53	0.77	0.80
11	0.35	0.37	0.31	0.29	0.69	0.72	0.65	-0.19	-0.05	0.63	*	0.73	0.64
12	0.31	0.46	0.33	0.32	0.62	0.44	0.37	-0.27	0.22	0.96	0.70	*	0.88
13	0.36	0.41	0.35	0.30	0.55	0.44	0.43	0.24	0.22	0.89	0.71	0.93	*

* Left side is for urban areas, right side is for rural areas.

Identification of Variables in Appendix III

1. Per cent of households with running water in the house itself.
2. Per cent of households with toilet and/or latrine.
3. Per cent of households with private or collective bath or shower.
4. Per cent of households with electricity.
5. Per cent of households with radio.
6. Per cent of households with a television set.
7. Average score per house according to principal building materials.
8. Average number of persons per room.
9. Per cent of houses owned by dweller.
10. Per cent of population seven years of age and older who is literate.
11. Per cent of population 10 years and over who has gone beyond primary school.
12. Per cent of population 10 years and over who has completed more than two grades of primary school.
13. Per cent of population 10-14 years of age who has completed more than two grades of primary school.

Bibliography

- ✓ Barber, Bernard
1957 Social Stratification, New York: Harcourt, Bruce and Company.
- ✓ Baster, Nancy and Wolf Scott
1969 Levels of Living and Economic Growth, A Comparative Study of Six Countries, 1950-1965, Geneva: United Nations Research Institute for Social Development.
- ✓ Belcher, John C.
1972 "A Cross-cultural Household Level of Living Scale," Rural Sociology, Vol. 37, No. 2, (June), pp. 208-220.
- Bertrand, Alvin L.
1958 "Trends and Patterns in Level of Living of Farm Families in the U.S.," Agricultural Marketing Service Information Bulletin #181, Washington: U.S.D.A.
- Bogue, Donald J.
1949 The Structure of the Metropolitan Community: A Study of Dominance and Subdominance, Ann Arbor, University of Michigan.
- ✓ Bonjan, Charles M. and Harley L. Browning, Lewis F. Carter
1969 "Toward Comparative Community Research: A Factor Analysis of United States Countries," The Sociological Quarterly, Vol. 10, No. 2, 157-176.
- ✓ Buckley, Walter
1958 "Social Stratification and the Functional Theory of Social Differentiation," The American Sociological Review, Vol. 23, No. 4, August, pp. 369-374.
- ✓ Budd, Edward C. (ed.)
1967 Inequality and Poverty, New York: W. W. Norton and Company, Inc.
- ✓ Chapin, F. Stuart
1936 The Measurement of Social Status, Minneapolis: University of Minnesota Press.
- 1928 "A Quantitative Scale for Rating the Home and Social Environment of Middle Class Families in an Urban Environment: A First Approximation to the Measurement of Socio-Economic Status," Journal of Educational Psychology, Vol. 19, pp. 99-111.

Christaller, Walter

- 1966 Central Place in Southern Germany. Translated by Carlisle W. Baskin. Englewood Cliffs, New Jersey: Prentice Hall and Co. (original in German, 1935).

Colombia, Republica de, Departamento Administrativo Nacional de Estadística

- 1967 XIII Censo Nacional de Poblacion, July 15, 1964
II De Edificio's Y Viviendas (1964)

Conning, Arthur M.

- 1971 "Rural Community Differentiation and the Rate of Rural-Urban Migration in Chile," Rural Sociology, Vol. 36, No. 3, September, pp. 296-314.

✓ Davis, K. and W. E. Moore

- 1945 "Some Principles of Stratification," The American Sociological Review, Vol. 10, pp. 242-249.

Duncan, Otis Dudley

- 1967 "Path Analysis: Sociological Examples," American Journal of Sociology, Vol. 72, July, p. 1-16.

- 1956 "Gradients of Urban Influence on the Rural Population," in Gribbs (ed), Urban Research Method, 1961, pp. 550-555, reprinted from the Midwest Sociologist, Vol. 18, No. 1, pp. 27-30.

Durkheim, Emile

- 1933 The Division of Labor in Society, translated by George Simpson, New York: McMillan Company.

Eberts, Paul R. and John W. Eby and Pluma Kluess

- 1969 Community Structure and Poverty, Regional Development Studies No. 4, Cornell University.

Eberts, Paul R.

- 1971 A Theoretical Perspective on Community Change and Development, A paper presented to the Association of Southern Agricultural Workers.

✓ Eisenstadt, Shmuel N.

- 1964 "Social Change, Differentiation and Evolution," The American Sociological Review, Vol. 28, No. 3, June, pp. 375-385.

Fleming, J. B.

- 1961 "An Analysis of Shops and Service Trades in Scottish Town," in Theodorson, Studies in Human Ecology, Evanston, Illinois: Row, Peterson and Company, 196-204

Flora, Cornelia B.

- 1970 "Mobilizing the Masses: The Sacred and the Secular in Colombia," New York: Latin America Studies Program Dissertation Series, Cornell University.

Flora, Jan L.

- 1967 "A Communications Approach to Development: An Inter-village system in Southwestern Puerto Rico," unpublished Master's thesis, Cornell University.
- 1971 "Elite Solidarity and Land Tenure in the Cauca Valley of Colombia," Ithaca, New York: Latin American Studies Program Dissertation Series, Cornell University.

Flora, Cornelia B. and Jan L. Flora

- 1971 "Macro-Model Variables Relevant to Social Accounting," Population Research Laboratory, Kansas State University.

✓ Fujimoto, Isao

- 1965 "The Process of Community Differentiation: An Insight into Development," Philippine Sociological Review, Vol. 13, pp. 199-218.
- 1966 "The Social Complexity of Philippine Cities and Towns," Philippine Sociological Review, Vol. 14 pp. 295-296.

Green, I. H. W.

- 1950 "Urban Hinterlands in England and Wales: An Analysis of Bus Services," in Theodorson, Studies in Human Ecology (1961), pp. 573-586. Reprinted from Geographical Journal CXVI Nos. 1-3, pp. 64-81

Green, Howard L.

- 1955 "Hinterland Boundaries of New York City and Boston in Southern New England," in Theodorson, Studies in Human Ecology, (1961) pp. 557-586, Reprinted from Economic Geography XXXI, No. 4, pp. 283-300.

Hagood, Margaret J.

- 1957 "Farm-operator Family Level of Living Indexes for Counties of the U.S.," 1945-1950-1954, Agricultural Marketing Service Statistical Bulletin No. 1204.

Hawley, Amos H.

- 1961 "An Ecological Study of Urban Service Institutions," in Theodorson, Studies in Human Ecology, pp. 188-198.

Hawley, Amos and Otis Dudley Duncan

- 1957 "Social Area Analysis: A Critical Appraisal," Land Economics, Vol. 33, pp. 337-345

- Homans, George
1967 The Nature of Social Science, New York: Harbinger Books.
- Huang, Ta-Chou
1966 "Social Differentiation in Taiwanese Communities," unpublished Master's dissertation, Cornell University.
- Kahl, Joseph A. and James A. Davis
1955 "A Comparison of Indexes of Socio-economic Status," The American Sociological Review, Vol. 20, No. 3, (June), pp. 317-325.
- Kamerschen, David R.
1968 "Literacy and Socio-Economic Development," Rural Sociology, Vol. 33, No. 2, (June), pp. 175-188.
- Land, Kenneth C.
1969 "Principles of Path Analysis," in Edgar F. Borgatta, Sociological Methodology, pp. 3-37.
- ✓ Landtman, Gunnar
1938 The Origin of the Inequality of the Social Classes, The University of Chicago Press.
- MacCannell, Earle Dean
1968 "Structural Differentiation and Rigidity in Forty-Eight States of the United States of America." Unpublished Ph.D. dissertation Series, Cornell University, Ithaca, New York.
- McKenzie, R. D.
1933 "The rise of Metropolitan Communities, Recent Social Trends in the United States." Report of the President's Research Committee on Social Trends, New York: McGraw-Hill Book Company.
- ✓ Marsh, Robert M.
1967 Comparative Sociology, New York: Harcourt, Bruce and World, Inc.
- ✓ Meade, James E.
1964 "Determinants of Inequality in a Property-owning Democracy," in Budd, Inequality and Poverty, 1967 pp. 105-113.
- ✓ Moore, Wilbert E.
1963 "But Some are more Equal than Others," The American Sociological Review, Vol. 28, No. 1, (February), pp. 13-18
- Munson, Byron E.
1968 "Structural Analysis of the Community," Rural Sociology, Vol. 33, No. 4, (December), pp. 450-459.

✓ Parsons, Talcott

- 1971 "Equality and Inequality in Modern Society, Social Stratification Revisited," Sociological Inquiry, Vol. 40, No. 2, (Spring), pp. 13-72.

Roscoe, John T.

- 1969 Fundamental Research Statistics for the Behavioral Sciences, Holt, Rinehart and Winston, Inc.

Rosen, Bernard C. and Alan B. Simmons

- 1971 "Industrialization, Family and Fertility: A Structural Psychological Analysis of the Brazilian Case," Demography, Vol. 8, No. 1, pp. 48-70.

Sharp, Emmet F. and Charles E. Ramsey

- 1963 "Criteria of Items Selection in Level of Living Scales," Rural Sociology, Vol. 28, (June), pp. 146-164.

✓ Smelzer, Neil J.

- 1959 Social Change in the Industrial Revolution, Chicago: University of Chicago Press.

✓ Smith, Adam

- 1937 The Wealth of Nations, New York: Random House, Inc. 1776 First Print.

Smith, T. Lynn

- 1967 Colombia: Social Structure and the Process of Development, University of Florida Press.

Stein, Maurice R.

- 1960 The Eclipse of Community, New Jersey: Princeton University Press.

7 Taylor, Lee and Arthur R. Jones, Jr.

- 1964 Rural Life and Urbanized Society, New York: Oxford University.

✓ Tumin, Melvin M.

- 1953 "Some Principles of Stratification: A Critical Analysis," The American Sociological Review, Vol. 18, (August), pp. 387-393.

- ✓ 1963 "On Inequality," The American Sociological Review, Vol. 28, No. 1, (February), pp. 19-26.

✓ Twichell, Allan A.

- 1948 "An Approach Method for Measuring the Quality of Housing," The American Sociological Review, Vol. 13, (June), pp. 278-287.

Theodorson, George A.
1961 Studies in Human Ecology, Evanston, Illinois: Row,
Peterson and Company.

Wien, Frederic Carl
1971 The Generalization of a Latin American Development
Model, Latin American Studies Program Dissertation
Series, Cornell University.

Young, Frank W.
1970 "Reactive Subsystem" The American Sociological Review,
Vol. 35, No. 2, pp. 297-307.

✓ Young, Frank W., Berkeley A. Spencer, and Jan L. Flora
1968 "Differentiation and Solidarity in Agricultural
Communities," Human Organization, Vol. 27, No. 4,
pp. 344-351.

Young, Pauline V.
1966 Scientific Social Surveys and Research, Englewood
Cliffs, New Jersey: Prentice-Hall, Inc., Fourth Ed.

Zipf, George K.
1941 National Unity and Disunity, Bloomington: The Principia
Press.

DEVELOPMENT AND SOCIAL INEQUALITIES
IN AN INTERVILLAGE SYSTEM: THE CAUCA VALLEY OF COLOMBIA

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AN ABSTRACT OF A MASTER'S THESIS

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Abstract

The units of analysis for this study are 40 municipios (counties) in the Cauca Valley of Colombia. Variables used are differentiation, centrality, land inequality, level of living, and other inequality measures (building variance, room distribution, and educational distribution). Differentiation is the complexity of institutional resources in the community, measured by a Guttman scale of community services. Centrality refers to the reciprocal relationships of the community with the outside, and was measured by the Bavelas sociometric method, utilizing as basic data the number of passenger buses which pass through the community daily (bus flow centrality). A Gini index of inequality of land distribution was constructed from the 1959 Agricultural Census, and serves as a measure of concentration of power and as a measure of structural inequality. A composite index of level of living was constructed, using the factor scores from a factor analysis of items measuring housing quality (building materials and utilities) and crowding, educational levels, and personal possessions from Population, Housing, and Building Census of 1964. This was done for both the urban and rural portions of the municipios. These were the independent and intermediate variables. The dependent variables were derived from the same data as the level of living indices, but measure the inequality of distribution of quality of building materials in homes, person per room, and education within both the urban and the rural areas of the community. Path analysis then was used to determine the independent contribution of variables to each of the inequality measures.

It was hypothesized that the higher the differentiation the higher the inequality, because the differentiated roles are evaluated differently and receive unequal amount of rewards. It was found, however, that controlling on the other independent variables, differentiation promoted social equality, although its indirect effect through level of living contributed greatly to social inequality. Land inequality contributed to greater inequality in the rural areas, and indirectly through level of living in rural and urban areas. It was concluded that differentiation by itself promotes social equality, but it is closely associated with variables which promote social inequality. Educational inequality is accentuated by differentiation, but relates negatively to level of living. The larger system has a greater direct influence on educational inequality than is the case for the other inequalities. Differentiation correlates more strongly with per cent of population with higher levels of education than with per cent of population with functional literacy (both correlations positive). Hence, differentiation promotes educational inequality. Since most of the expenses of education (particularly at lower levels) is borne by the state, and since education is believed by most members of the society to be the key to social mobility, a slight improvement in level of living by low income people is utilized in providing the children with a rudimentary education. Hence, the positive relation between level of living and educational equality.