ABSTRACT

CHANGE IN A PEASANT SOCIETY: THE CASE OF THE CENTRAL HIGHLANDS OF BOYACA, COLOMBIA

By

Hector F. Rucinque

Rural modernization is an issue of growing concern in developing areas. In the context of regional development, it is evident that the rural sector lags behind the urban centers, and more often than not, programs for its transformation obtain inadequate support from planning agencies. By contrast, when attempts are made to induce regional development, cities receive substantial governmental assistance to improve their physical infrastructure and social overhead, and to provide stimuli for, or direct investment in, industrialization. Such a policy, stemming largely from growth pole theory, assumes that the regional urban center will generate forces of change to affect the rural areas, thereby inducing agricultural modernization.

This study focuses on the problem of spontaneous technological modernization in the rural areas of Central Boyacá, Colombia, a region which has distinguished itself for being typically peasant. The leading hypothesis states that rural modernization is significantly related to distance from a regional center to the individual farm. Three urban centers--Tunja, Sogamoso, and Duitama--have been transformed largely by industrialization, a process which began with the establishment of the first Colombian steel mill near Sogamoso in the early 1950s.

To test the hypotheses, a comprehensive field survey was conducted in 1976. The study area comprises thirtyfive municipalities in which nearly 900 interviews were administered to the farmers. The data were qualitatively evaluated through cartographic analysis, supplemented by statistical correlation of the dependent variable--modernization--with distance from the farm to the nearest city, and with other physical and socio-economic factors.

The research detected a moderate inverse relationship between modernization and farm-to-city distance, thus confirming the principal hypothesis. The correlation of modernization level with income, physical attributes of the land, and farm size reveals the existence of a wide gap between a small number of wealthy, progressive farmers, and the bulk of poverty-stricken, traditionalist <u>campesinos</u>. Agricultural modernization in Boyacá, then, is a selective process from which the peasantry is largely disassociated. Therefore, it is concluded that spontaneous modernization does not automatically accrue to the traditional peasant farmer as a by-product of city growth.

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CHAPTER I

INTRODUCTION

En Boyacá comienzan a elaborarse los fermentos de una transformación renovadora . . . Estamos apenas en ese momento oscuro en que se esbozan las transiciones, perplejos y confundidos en el umbral del porvenir . . . Armando Solano¹

This study deals with the socio-cultural geography of rural communities in a developing economy. In brief, an attempt is made to examine and explain the process of rural modernization as it takes place in association with growth of local urban centers.

During the past few years rural issues have been receiving increasing attention in almost every quarter of the social sciences. This is in contrast to earlier times, however, when the rural sector in developing areas was largely ignored. A historical cleavage can be found in most places between the city dweller and the agriculturalist. While the city, civitas in Latin, was of course a synonym

¹In translation: "Ferments of a renewing transformation are beginning to operate in Boyacá . . . We are just entering that twilight instant in which transitions barely take shape. And we are bewildered and confused in the very threshold of the future" (Solano 1959:21).

of <u>civilization</u>, the countryside, the <u>ager</u>, was the realm of the serf or the peasant. Rurality carried a connotation of rusticity, at best.

Furthermore, regardless of the fact than civilization actually begins with, and rests upon, agriculture, farming has generally been looked down upon by people engaged in other activities. The actual plant cultivators, the peasants, have been discriminated against in almost any society. This situation holds especially true for Latin America where the transplanted Iberian feudal system has endured the passage of time.

Times are changing, however. Among the ecumenical consequences of World War II, is the awareness of rural problems which gradually became known as national revolutions and the dissolution of colonial ties occurred. Millions of people--mostly rural--living in the emerging nations suddenly became a political force to reckon with. And their fate is the concern of national and international policy-makers. In many instances, it was the peasants themselves that accomplished great transformations whenever apt leadership was available. As far as Latin America is concerned, the Mexican revolution is illustrative.

Concern for problems of the rural sector stems from at least two general considerations. In the first place, the world's rural masses constitute a rather complex

socio-economic and political phenomenon. This is the part of mankind where poverty is endemic. To quote the World Bank (1975:4),

Of the population in developing countries considered to be in either absolute [based on the arbitrary criterion of an annual per capita income equivalent to \$50 or less] or relative [incomes above \$50 but less than one-third of the national average per capita income] poverty, more than 80 percent are estimated to live in rural areas. Agriculture is the principal occupation of the four-fifths of the rural poor [of these, 100 million are Latin American peasants].

The second major reason for concern for the rural sector is the enormity of recent world population growth. Population is exploding, more acutely so in the cities which are obviously dependent on producers in the primary sector for subsistence. More and more people in the cities, as well as in the rural areas, necessitate additional farm output--a task which will prove difficult since new arable land is limited.

The role played by the rural sector in the overall process of development is widely acknowledged by social scientists, although not necessarily by governmental policy-makers.² In developed countries growth of the

²Of the huge literature on development, rural areas assume a sizeable share. Scholarly periodicals specializing in development are replete with peasant studies, a good indicator of how topical this thrust has become since the turn of the mid-century. Moreover, some journals are almost entirely devoted to the theme (e.g., <u>Economic</u> <u>Development and Cultural Change</u>, <u>Journal of Developing</u> <u>Areas</u>, <u>Journal of Development Studies</u>, <u>Rural Sociology</u>, and of course, the <u>Journal of Peasant Studies</u>, just to name a few with well established international circulation in the English language).

other economic sectors, particularly manufacturing, has been predicated upon a viable agricultural sector. This is well-known in the case of the Soviet Union where the economic burden of rapid industrialization was ruthlessly imposed on the rural economy.

These considerations are valid for the less developed countries where by definition the economy's mainstay is the primary sector, agriculture. In these areas "peasants are strategically important not only because they produce . . . the food and fibers necessary to sustain any labor which is diverted to any other form of economic activity. Beyond this, they also represent the prime immediate source of foreign exchange earnings in many underdeveloped countries" (Owen 1966:43).

Problem Statement

This study contends that technological modernization is one of the means conducive or instrumental to rural development. This principle subscribes to the rather comprehensive conceptualization of development as the complex set of processes of societal improvement (Seers 1972). In this sense, it should be clear at the onset that modernization is not synonymous with development but a supporting and constituent part of it.

As a spatial-temporal process, the pace of modernization is either expedited or hindered by the operation

of key factors which in the context of this study are distinctly geographic in nature.

In spite of governmental failure directly to implement rural development policies, agricultural technological transformations are occurring spontaneously in Latin America as in other developing regions of the world. A gradual lengthening and improvement of the communications network have made the interaction of city and rural areas an increasingly integral relationship. An irreversible imprint in the form of modernization of the countryside, with a wide spectrum of variations in degree, is accruing from such kind of spatial interaction.

It is the purpose of this study to examine the nature and extent of transformations of rural communities as generated by growing city influences and to explain the spatial structure of rural change in such a context. In contrast to other research based upon aggregated data for regional units, the case study in which the leading assumptions are tested is supported by data collected and analyzed at the lowest level of resolution, namely the individual peasant household.

In summary, the study addresses the problem of providing a geographic explanation of technological and managerial change occurring in the rural hinterland of rapidly growing urban centers. The distributional arrangement of modernization is to be explained by the areal

variation of a number of interacting physical, cultural, and socio-economic elements.

Objectives

The principal objectives of the investigation follow:

- To identify those major regional centers in the urban-industrial corridor which are the major sources of innovation in the highlands of Central Boyacá.
- 2. To identify those elements of the physical and cultural environment which are crucial variables in determining the level of technological modernization in the rural areas.
- To describe the distribution of the level of technology and management employed in the farms of the study region.
- 4. To describe and interpret regional change and related phenomena as they pertain to the problem of rural modernization.
- 5. To identify and evaluate regional needs and expectations of the government's role in Central Boyacá as perceived by the rural people.

All findings are subsequently analyzed, evaluated and summarized in the hope that the study contributes to the advancement and support of the body of theory of

spatial development, and also may add useful factual information for planning purposes.

Hypotheses

The inquiry was guided by two related hypotheses seeking to explain the generation of significant transformations and to identify factors upon which changes in the rural areas are dependent.

- The processes of regional industrialization and urbanization are the crucial forces spontaneously generating change among peasant communities.
- The intensity of modernization in the rural areas is determined by location relative to the cities. As distance from urban centers increases the level of modernization decreases.

The Role of the City

The effects of innovation have been found to show themselves in conspicuous spatial structures, termed "modernization surface" (Soja 1968b) or "development surface" (Gilbert 1975). Based on the assumption that cities are the main foci of diffusion, the highest values of modernization should occur near the cities and subsequently decrease in intensity outwards toward the periphery. The topographic regularity of such a modernization model is assumed to be disturbed by such phenomena as transportation routes, secondary centers, and others. Most social scientists of central place theory agree that cities perform a decisive role in rural affairs. The overall analytic approach has evolved out of the works of Christaller (1966) and Lösch (1954), originally published in German in 1933 and 1939, respectively. The organization of spatial functions proposed by Christaller has led to the formulation of hierarchical diffusion from the highest order city down to secondary and tertiary centers and villages (Berry 1972).

The notion of rural spatial organization as determined by urban centers is consistent with the von Thünen model (von Thünen 1826; Chisholm 1962). This model, originally proposed as an analytical tool for understanding and explaining variation in farming intensity, land rent and labor productivity, has evolved into the so-called "urban-industrial impact" formulation. In such a model a rural region is seen as an integral part of a space economy matrix articulated around a major center whose impact on its surrounding hinterland varies inversely by distance to the city (Schultz 1953).³

³To be sure, in the field of agricultural economics several formulations have been proposed as described by Hayami and Ruttan (1971). Besides the "urban-industrial impact" model these writers identify four other models of rural development: (1) The "conservation model," (2) the diffusion model," (3) the "high pay-off model," and (4) the "induced development model," which is theirs. Eclectic approaches are abundant in the literature. An excellent work discussing these methodological conceptualizations of rural development is that of Thornton (1973).

Growth Poles

A variation of central place theory, both as a methodological tool of analysis and a strategy for regional development planning, the growth pole or growth center theory, also bears on the problem at hand. Growth pole conceptualizations have evolved considerably since the original formulation of Perroux's (1955) pôles de croissance.⁴ But within this body of thought a contention clearly arises: to induce development in a region, public and private investments are concentrated along with services and other stimuli in the region's urban node. The process should occur whether it is the deliberate strategy, as in programs of industrial decentralization, or if it is the consequence of a spontaneous diffusion process, in the so-called "natural" growth poles. In either case, regional influences would disseminate from the node toward the periphery with intensities varying in degree largely under the frictional effect of distance. In other words, spatial interaction between the node and the hinterland decrease as a function of distance decay.

⁴Growth pole literature is already voluminous. As far as Colombia is concerned, the theory was tested by Gilbert (1975) in a case study on Medellin. On the other hand, growth pole strategy underlines most of the developmental philosophy of Colombian agencies. A recent work by Richardson and Richardson (1975) reviews the application of growth pole strategies in the Latin American contest as well as the usefulness of the theory in analyzing regional development and planning.

It is assumed that one of the important phenomena leading to city growth is industrialization. As this process develops, the expansion of the labor market attracts migrants to the city, thereby increasing its population. Such expansion affects not only the secondary sector of the economy, but also the sector of services. Obviously, the more the urban population grows the higher will be the demand for rural goods, especially food. Additional demand and better prices theoretically should induce farmers to produce more, probably by means of utilizing better techniques, i.e., through modernization.

The hypotheses of the research concur with this line of thought. Under unplanned, undirected conditions, rural modernization in a developing country will take place as a result of demand and supply forces, on the one hand, and of exposure of the peasantry to influences spreading out of the regional city, on the other.

For the hypotheses to hold true, though, certain supporting conditions are required. Basically, interaction rests upon the provision of an articulated transportation network. Similarly, the availability of public services is instrumental to encourage integration. In the basic conceptualization of the research, allowance is made to provide explanation for departures from the hypothesized outcome. Dysfunctional relationships may be found instead of regional integration, as in those instances described

as "internal colonialism" underlining the ties of the countryside with the pre-industrial city. Such type of relationship may remain in some cases due to what Harvey and Bhardwaj (1973) identify as the "parasitic tendency of the urban areas."

Methodology

This study falls primarily within the field of socio-cultural geography. As may be inferred in the following chapter, this branch of the discipline has several contact points and methodological affinities with other social sciences, particularly anthropology and cultural ecology. The theme of modernization requires a highly interdisciplinary approach.

Emphasis is placed on a qualitative analysis of the processes of change, the factors intervening, and the manifestations of those processes. The investigation correlates the dependent variable, modernization, with distance from the urban centers as well as with other variables which it is assumed bear on the explanation of spatial variation of change in the rural areas.

For the purposes of the study, modernization is operationally defined as a composite value of modern technological elements found in the farm unit, plus indicators of management and housing conditions. In a later chapter, details are given of the procedures used to construct and quantify this variable. Similarly, further

elaboration is presented concerning the other variables used in a correlation analysis to supplement the qualitative evaluation of the data.

Data were gathered in Colombia from mid-1975 to mid-1976. The main thrust of the research concentrated in field observations and interviewing. A comprehensive questionnaire was administered to nearly nine hundred households, covering thirty-five <u>municipios</u>.⁵ In order to insure a representative sample, Berry's stratified systematic unaligned sample was employed for each municipality after unsettled areas of paramos were discarded (Berry 1962; Yeates 1974). A team of six full-time assistants spent three months of intensive field work to complete the survey. After preliminary revision several cases were discarded. In the final correlation analysis 887 cases were included.

Case Study: General Background

A case study region was selected to test the hypotheses and assumptions in an area that might be defined as the geo-cultural core of Boyacá (Figure 1). In the Central Boyacá region rural characteristics persist which are for the most typically peasant. During the past quarter of a century, the old provincial centers of Tunja,

⁵A Colombian municipality is a county-like unit. Spanish words underlined as well as acronyms are defined and spelled out in full in the Glossary.



Sogamoso, and Duitama have been undergoing important transformations. However, no comprehensive programs to deliberately pursue transformational goals have ever been implemented in the rural hinterland of those cities. In the particular case study of this investigation, economic forces seem to have been spontaneously more effective in inducing modernization of the rural areas than the disarticulated functions performed by official and semiofficial agencies. Interaction between the countryside and the provincial center is likely to get stronger as the latter evolve into industrial cities eventually drawing growing numbers of peasants to urban jobs and services thereby exposing them to modern ways.

Changes in the Central Boyacá region, however, do not represent a unique trend. Since the early 1950s the whole country's drive to industrialization has intensified. Statistics quoted by Gilbert (1976:249) show that "between 1953 and 1969, industrial value-added increased by 6.5 percent per annum in real terms, manufacturing employment increased from 199,116 to 326,826 (64.1%), and industry's share in the nation's gross internal product increased from 16.7 percent to 20.0 percent." Moreover, during this period (in 1954) the most important steel mill in the country was built in Boyacá--a truly historical landmark in a region which distinguished itself for being one of the most rural-oriented in Colombia.

The Agricultural Sector in Colombia

It has been pointed out that in the country's general economic structure, agriculture still accounts for over 30 percent of the gross domestic product. About 47 percent of the active labor force finds employment in commercial farming, and according to official estimates, about 80 percent of all exports and 50 percent of industrial raw materials processed in the country were contributed by agriculture. By and large, the importance of the agricultural sector is widely acknowledged although not necessarily esteemed by the public at large. The countryside, el campo, and the peasantry, el campesinado are pervasive elements of the Colombian socio-economic structure.⁶ However, deeply rooted in the Colombian value system lies the Iberian tradition which rates farming activities as unsuited for <u>caballeros--the</u> gentry.⁷ Modern farming is increasingly interesting as a commercial

⁶It would be difficult to find anyone in Colombia who is not directly or indirectly related to the <u>campo</u>. Even the traditional elite has linkages with the <u>rural</u> areas, if only in the condition of absentee lords owning and exploiting the best lands through administrators and sharecroppers. Urban residents of other classes either were born peasants or can trace their roots back to the countryside not more than one generation or two.

^{&#}x27;A decade ago a noted sociologist wrote: "In most parts of Colombia the class structure and class distinctions are such, and the stigma attached to manual labor so great, that only those who have no alternative will engage directly and personally in work in the farm" (Smith 1967:26). His remarks still hold true.

productive activity, but still most young graduates in schools of agriculture would rather take an office job than become farmers.

Peasants in Colombia as elsewhere in the world, are on the move. They are probably the most important and dynamic demographic element in the country and have been crowding the cities at a dramatic pace during the past two or three decades, a phenomenon which accounts in large measure for the great difference in rates of population growth between cities and rural areas. Statistics quoted by Schultz (1969) place the annual growth rate for cities at 5.6 percent against a mere 1.2 percent for the rural areas. The intensive migration to the larger cities is illustrated by the case of Bogota where in the late 1960s three-fourths of its population aged 15 to 59 had been born elsewhere--mostly in rural regions.

To evaluate properly the demographic significance of the rural areas themselves, however, it must be pointed out that in spite of such a large-scale migration, in absolute terms the rural population is increasing rapidly. Dorner and Felstehausen (1970:224) make this clear:

Although the agricultural population as a percentage of the total is declining (71.5 percent in 1951 and only 47.2 percent in 1964 [and about 40.0 percent in 1973, with United Nations projections of 35.5 percent for 1980]) even with major migrations population growth adds over 100,000 people to rural areas each year.

Lastly, another clue of the growing importance of the rural sector in Colombia is that its problems, actual as well as potential, have become a matter of public discussion. Rural unrest and violence have affected the rural areas almost continuously since the late 1940s and are symptomatic of serious structural agrarian problems. This situation, as well as international pressures associated with the Alliance for Progress, forced the Colombian government to devote a sizeable share of money and effort to rural development programs. Probably the most ambitious of these came into being when a land reform program was enacted by Law 135 of 1961. After fifteen years of agrarian reform, though, the INCORA, namely the Colombian Agrarian Reform Agency, is a disappointment. No attempt is to be made here to evaluate INCORA's accomplishments, a task already performed by others (for instance, Felstehausen 1971; Findley 1973). In spite of huge expenditures and a decade of rhetoric the agrarian reform program "has done little to expand income or employment opportunities for peasants or to re-order the overall distribution of land" (Dorner and Felstehausen 1970:222). There is no reason to believe that the serious misallocation of land exposed by the National Department of Statistics (DANE 1964), with all its socio-economic implications, has changed in significant degree (Table 1).

The national concern for the countryside's problem is demonstrated by the emphasis placed by the López administration since the mid-1970s on policies oriented to

Size of the	LLA	"producers"	All land in	<u>explotaciones</u>
(hectares)	Number	Per cent	Number	Per cent
רמ+טן שי+םן	1.209.672	100.0	27,337,827	100.0
Under 0.5	165,652	13.7	38,344	0.1
0.50.9	132,419	11.0	93,649	0.3
1.01.9	191,347	15.8	270,308	1.0
2.02.9	117,005	9.7	275,656	1.0
3.03.9	92,001	7.6	309,165	1.1
4.04.9	58, 181	4.8	251,854	6.0
5.09.9	169,145	14.0	1,164,749	4.3
10.019.9	114,231	9.4	1,572,076	5.7
20.029.9	44,049	3.6	1,043,554	3.8
30.039.9	26,500	2.2	890,100	3.3
40.0-49.9	16,240	1.3	705,047	2.6
50.099.9	39,990	3.3	2,680,471	9.8
100.0199.9	22,317	1.9	2,996,152	11.0
200.0499.9	13,693	1.1	3,994,319	14.6
500.0999.9	4,141	0.3	2,730,764	10.0
1.000.02.499.9	1,975	0.2	2,808,210	10.3
2,500over	786	0.1	5,513,409	20.2

induce modernization in the rural sector. A new approach of semi-directed change is being implemented as Integrated Rural Development Program, or DRI (Programa de Desarrollo Rural Integrado). The project was designed with the coordination of the National Planning Bureau, is experimental in nature, and is to be directed by the Caja Agraria, a semi-official bank, rather than INCORA. One of the regions selected for implementation of the DRI program is highland Boyacá, in an area almost coincident with the region with which this study is concerned. Of course, it is too early to deal with the DRI critically. Its approach, however, is innovative and supported by a pragmatic ration-If the rural communities themselves can be involved ale. and the peasant persuaded to commit himself to his own betterment, significant transformations may occur.

Hopefully, this investigation may prove useful as an information basic to such endeavors as the DRI's. Furthermore, when future research is envisioned in this developing area these findings may well serve as a base point from which a historical perspective could be gained to evaluate the DRI's accomplishments. A valuable purpose will have been fulfilled to add as a postscript justification to the study.

CHAPTER II

MODERNIZATION AND PEASANTS: A REVIEW

Multiple phenomena bear upon the processes of socio-cultural transformation. Change is generated, unfolded, and diffused within and between human groups, but such social and temporal dimensions are necessarily tied to a spatial-environmental framework. Similarly, in such a highly systemic interacting set of forces, feedback mechanisms will add further to the complexity of societal change. The basic elements and forces which normally act as change facilitators conversely may perform changeresistor functions.

Social scientists confront these processes of social dynamics in several ways. Social geographers, for instance, deal with the spatial attributes that characterize socio-cultural change as well as those factors of the geographical environment which affect the distribution of change. It is appropriate to realize that geographers seek to identify the distributional geometry of phenomena and to explain and interpret them in terms of areally interacting factors and relationships.

At the onset the underlying premise is that modernization of peasant societies, with which this study will deal, can be approached as a spatial problem. Fundamentally, then, the emphasis of the research is geographic.

Change Pervasiveness

Historically, it is likely that the world's major preoccupations are represented by critical key words. Some terms might be equated to linguistic fossils that serve to identify specific historical periods. If one were to select a word which could fully characterize our times, he probably would choose <u>change</u> for such a function. Deep transformations in social organization, art, science, and technology that occurred during the past century, have evidently institutionalized rapid change as the norm. Moreover, in an epoch of unequaled world-spanning transport and communication, the notion of change surely is ecumenical.

Most of today's change is the result of a series of ideological, scientific, and technological innovations developed during the past two centuries. A most distinctive characteristic of the twentieth century, however, is the increasing pace of change and growth, which have become astonishingly worrisome as the scientifictechnological revolution unfolds. While in the most advanced countries innovation has become almost compulsive, others are involved in a strenuous and frantic mood

to catch up. Dennis Gabor (1970), a Nobel prize laureate, has called the trend "growth addiction."

The drive for societal development in Asia, Africa, and Latin America is a costly and not always successful commitment which has been going on for nearly three decades. These are the continents where the so-called traditional societies still survive. In general, programs to induce socio-economic transformations have fallen short in their ability to make significant changes. Now it appears that the key for effective transformations lies in overall public policies which may gradually lead the society into a selfsustained process of development. "Thus, it is not only important to change from traditional to modern, but also to incorporate the process of change as a permanent feature of the emerging society" (Peshkin and Cohen 1967:9). Such a formidable task of human engineering probably presents the greatest challenge for the Third World.

The terminology of change is relatively abundant in every language. The most inclusive terms are applied to the all-encompassing process of cultural dynamics as variously referred to as <u>social change</u> (Hagen 1962), or <u>socio-structural development</u> (Chodak 1973), by American sociologists; or <u>historical evolution</u> in Marxian theory (Marx 1965); or <u>civilizational process</u> as depicted by a Latin American anthropologist (Ribeiro 1972). By and large, modernization and development are terms used to qualify change in more a restrictive sense. In this respect, the degree of change is frequently assessed through different measures of development (Baster 1972; McGranahan 1972; Seers 1972), either concerning particular aspects of societal life (economy, polity, education et cetera) or multi-sectoral aggregates at the national level.

Very often change is associated with a notion of advancement, or progress, though all changes are not necessarily beneficial to the target society. Such connotation of progress seems to be implicit not only in the capitalist scheme of the <u>stages of growth</u> (Rostow 1961) but also in the Marxian model of the so-called <u>socio-economic for-</u> <u>mations</u> (Haring 1975). The ideological goals are different, but the idea of progress is deeply embedded as indicated in Brookfield's (1973:1) quotation concerning societal development:

The rise and spread alike of Christendom, liberalism, capitalism, communism, democracy, technology, science and the arts are seen as a process of temporal advance, coupled with spatial diffusion, in which the Euro-American region provides the necessary dynamism. This 'great transformation' is often viewed as leading toward a universal community, a world civilization characterized by abundance of wealth and the greatest liberty to enjoy it.

The striving for progress is what lies behind the process of modernization. In the developed nations such commitment is taken for granted. On the other hand, modernization as a socio-economic goal has become programmatic in the developing areas. The latter qualification

of "developing" is a polite euphemism to depict in many instances very low levels of modernization. In general terms, the achievements in the advanced nations tend to be advocated as civilizational paradigms to modernization.

The road to modernization, be it socio-economic, technological or political, is not an easy one. Even if Western Europe and North America learned to live with change as an everyday occurrence, their people's adaptation to rapid transformation in social organization and technology was difficult and disruptive. Impressive social dislocations related to the industrial revolution, massive intercontinental migration, and widespread urbanization, although "blurred by the mists of time" (Scott 1973:7), indeed occurred as painful episodes that affected the lives of millions. To be sure, today's change-crises are increasingly pressing. This is true not only for peoples in the less developed countries, but also for advanced nations facing population pressures, resource exhaustion, pollution of the environment, and outright socio-political disruption. If these sequels are widely associated with Western societies, they are far from being their exclusive by-products. Cases of environmental deterioration that occurred as a result of technological modernization have been documented in the Russian press by Powell (1971).

In the less developed countries worries about the environmental and social maladies associated with change

seemingly have been postponed or hidden by expectations of development seen at hand. Since the 1950s and 1960s, the decades of economic development programs and Third World awakening, "people throughout the backward and impoverished areas of the world suddenly acquired the sense that a better life was possible for them." And probably with an equal dosage of sincerity and demagoguery, new leaders "encouraged their people to believe in the immanence of progress and the fulfillment of their new, often millennial, hopes" (Lerner 1963:136).¹ This is what came to be called the <u>revolution of the rising expectations</u> which, after two decades of failures and disappointments gradually has yielded way to the sad counter-formulation of the <u>revolution</u> of the rising frustrations.

Tradition and Modernity

A recurring idea in the literature of the social sciences is that change "entails a linear movement from a traditional past toward a modernized future" (Gusfield

¹Third World responses to modernization have led to an ideological polarity, with some endorsing it (a commitment which in some radical quarters in Latin America is criticized as <u>desarrollismo</u>, i.e., "developmentalism"), and others subscribing to a stand of counter-modernization (which is equated to "nativism"). Besides these, some pragmatic, middle-of-the-road leaders are compromising for eclectic positions. "While we may thus still find traditionalism (we prefer this term to nativism) in various parts of the Third World, it is rarely expressed as direct opposition to modernity. Rather, there is the ambition to combine development and modernization with the protection of traditional symbols and patterns of life" (Berger et al. 1974:164).

1969:284). Such notion is consistent with the conceptual polarity which places tradition in one extreme of the sequence of cultural evolution and modernity in the other, making the two mutually exclusive terms. Although Bendix (1967) and Gusfield (1969) have dealt at length with the fallacies hidden behind this simplistic model, the dichotomy tradition vs. modernity still underlines much of the theory of cultural change.

Lately, consensus seems to be veering in favor of change as a set of forces that operates on a socio-cultural continuum in which the resulting form of modernity at a given point in time is closely related with the past. Tradition is the very source of modernity, and innovations absolutely independent of the past are almost inconceivable.

The philosophical controversy on this theme has been excellently presented in an essay by Bendix (1967). As he pointed out, dichotomies cast in mutually exclusive concepts as the tradition/modernity polarity can be found in many aspects of Western culture, some of which bear on the theme at hand. Liberalism, then, is just the necessary opposite of conservatism, as democracy excludes oppression. Industrial cosmopoliteness versus peasant localism, the <u>Bürger</u> versus the aristocrat, all of these are polarities which have greatly influenced ideas related to the theory of cultural change. And so it is with Tönnies' famous conceptualizations of Gemeinschaft (community) and
<u>Gesellschaft</u> (society), roughly corresponding with the concepts of traditional (rural, agricultural) and modern (urban, industrial) societies. It is not easy to dismiss the analogy of this line of thought with Marx's view of the differences between the old and the new order in which the former is characterized by manifold gradations of social rank, while the latter tends toward a simplified antagonism between bourgeoisie and proletariat (Marx 1936).

Bendix argued that the disjunctive characterization of tradition and modernity can be seriously misleading and do not always hold true. For instance Talcott Parsons' dichotomy between universalism and particularism as disjunctive attributes attached to modern and traditional societies are valid only to a certain extent. Medieval societies in Europe, though particularistic in many ways, were inherently universalist through the holistic role played by the Christian faith. Societies vary in their attributes not only in kind but also in degree.

More care should be taken when individual behavior is considered. No simplistic assumptions can be adopted to typify personal behavior on grounds of traditional or modern values. "A person can hold traditional values and yet be compelled to act in modern ways or, conversely, hold modern values and not have the ability or the means to implement them" (Peshkin and Cohen 1967:20).

The foregoing does not mean that generalizations cannot be formulated to conceptualize the notion of modernity. The list of attributes at which social scientists arrive is varied. Scott (1973:2), for instance, subscribes to a conceptual characterization of modernity in terms of "universality of norms, rationalization and secularization, bureaucratization, structural differentiation. industrialization, urbanization, democracy (or at least greater popular participation)." It would be very difficult to agree on which of those characteristics of predominant social behavior, or what combination of them, constitutes the essence of development. In a particular case, and the summation of these and certain other technological and institutional adoptions may gradually bridge the gap between tradition and modernity. Although it might look as a semantic technicality, modernization is actually that process bridging tradition and modernity.

Usually modernization is viewed as the result of the interaction of two sets of phenomena, namely social mobility and social stability. Social mobility is a factor facilitating socio-cultural change. Mobility is not only social but also geographic and psychic. Each of these types of mobility was harnessed with different degrees of intensity as soon as man was capable of freeing himself of ties to his physical and socio-cultural environment. On the other hand, "the acquisition and diffusion of

psychic mobility [man transforming himself to ways suitable for a new situation] may well be the greatest characterological transformation in modern history, indeed since the rise and spread of the great world religions" (Lerner 1963:138). This property is also called empathy, in the sense of a behavioral mechanism by which men "transform themselves in sufficient breadth and depth to make social change self-sustaining" (Lerner 1963:138).

Further recognizing the relationships between these concepts, another writer defines social mobilization as the "breaking down of old social, economic, and psychological commitments," whereas modernization "is the actual adoption of new commitments and patterns, resulting in use of new levels of technology and in structural differentiation" (Migdal 1974:13).

Modernization: Origins and Perspectives

Modernization is a term derived from the Latin word <u>modo</u>, meaning "just now." Its usage can be traced to the sixth century. "First in Latin and later in English and other languages the word was used to distinguish between contemporary and 'ancient' writers and themes, and by the seventeenth century 'modernity,' 'modernizers' and 'modernization' were employed in a variety of more or less limited and technical contexts" (Black 1972:241). In current usage to modernize is to bring up to date, or to catch up with a

pre-established civilizational model, which in itself is in a process of continuous transformation.

Bendix (1967) identifies a close antecedent to the concept of modernity as well as to notions related to those processes leading to it, in the impact of revolutionary changes which occurred in Europe during the eighteenth century. No doubt, the history of mankind shows a momentous discontinuity associated with the British industrial and the French political revolutions. Those revolutions brought about societal transformations for most of the world which are "comparable in magnitude only to the transformation of nomadic peoples into settled agriculturalists some 10,000 years earlier," as appropriately indicated by Bendix (1967:292).

In the literature of the social sciences modernization is variously defined. In every instance, however, the concept is associated with a notion of change. For example, a specialist in communication defines modernization as "the process by which individuals <u>change</u> [emphasis added] from a traditional way of life to a more complex, technologically advanced, and rapidly changing style of life" (Rogers 1969:14). An anthropologist views it as "a sequential process of cumulative <u>change</u> [emphasis added] over time generated by the interaction of economic and cultural innovations impinging on traditional economy, polity, and society, with feedback effects on the

innovating activities" (Dalton 1972:234). Another conceptualization dealing with development at large denotes modernization as "a process of bridging the gap between the level of development in a society (or in some sphere of its life) and a more advanced and modern form already achieved in the spheres of life in other societies" (Chodak 1973:257). Still other view approaches modernization as "essentially a process of revolutionary change" [emphasis added], involving "the shattering of traditional institutions of governmental authority and social control, a radical shift in class and economic relations and a thorough going reevaluation of the predominant myths and symbolic images of the society" (Sinai 1971:58). Syncretically, some geographers agree that "aggregate studies of modernization emphasize the characteristic mechanisms of societal change [emphasis added]--urbanization, industrialization, monetization, literacy, mass communications, and political mobilization" (DeSouza and Porter 1974:10).

Modernization is neither "good" nor "bad" in itself. The concept, however, has not gone unaffected through the epidemics of reification which taints especially terms related to economic and socio-political theory. Modernization frequently is used synonymously with Europeanization or Westernization, and the paradigm to which it is assumed to be geared is the Euro-American

culture. Eisenstadt (1966) one of the leading specialists on the theme writes on this respect:

Modernization is the process of change toward those types of social, economic, and political systems that have developed in Western Europe and North America from the seventeenth century to the nineteenth and have then spread to other European countries and in the nineteenth and twentieth centuries to the South American, Asian and African continents.

However, making modernization synonymous with Westernization or Europeanization is not only misleading but inexact, especially when the term is used to describe the contemporary impact of the more advanced countries on the less advanced. Black (1972:242) makes the point clear:

Yet this [Westernization] is only a part of the process, although a very important one, and it fails to take into account not only the initial transformation of the advanced countries themselves but also the impact of the less advanced countries on the still less advanced. One would not, then, refer to the 'Westernization' of England and France in the seventeenth and eighteenth centuries or to the 'Europeanization' of Manchuria by Japan in the twentieth century. In a different sense, 'industrialization,' 'industrial revolution,' and the 'revolution of the rising expectations' are also too narrow.

Induced modernization often is associated with mechanisms of political domination. Technology transfer then is considered and instrument of imperialism, more often than not of the capitalist side. Berger et al. (1974:161) correctly point out that the modernization strategy is also followed in its own way by the Soviet Union and other advanced socialist nations:

Unlike their American counterparts, Soviet developmental theorists have, of course, emphasized the importance of a revolutionary restructuring of traditional societies before the redemptive benefits of modernity can be fully savored. We would not minimize the importance of this difference. What remains quite similar is the uncritical legitimation of modernity in opposition to all traditional ways of life. One need mention only the Soviet glorification of such things as rural electrification or the mechanization of agriculture, not merely in their own country but in any part of the Third World into which Soviet development programs have been extended.

Moreover, it should be realized that the technology which made possible the transit of semi-feudal societies to world socialist powers during the twentieth century is the result of a long historical evolution which climaxed in Europe. On the other hand, if for ideological reasons a counter-modernization stand is adopted against Western culture, it is well to remember that the ideology that inspired the Russian and Chinese revolutions is basically European.

In a comprehensive sense modernization includes any spontaneous diffusion of modern culture and any deliberate and directed endeavor along this line as well. Irrespective of the ideology underlining transformations induced in the less developed world, new epochal forms of modernity can thus be conceptualized for the regions transformed. The term "modernization" still is a valid one to identify the processes leading to such a transformation.

Modernization Research in Geography

Social scientists other than geographers have stressed the temporal dimension of change. Recently, however, social geographers have become interested in studying the phenomenon from the spatial point of view. The spatial analytical approach introduced in this area of research is a by-product of the "quantitative revolution" that has affected geography since the 1960s (Burton 1963).

Modernization research in geography can be conducted through two general approaches:

- Structurally, the focus of study is the areal spread of certain traits, institutions or activities which may be operationally identified as indicators of modernization (schools, hospitals, machines, co-operatives, etc.). These are referred to as the structural variables of modernization (Harvey and Bhardwaj 1973:145).
- 2. Sequentially, the responses which occur in space and time to different inputs generating change are stressed. Such responses are called the sequential variables of modernization. For planning purposes these are considered more important than the structural variables. As Harvey and Bhardwaj (1973:145) argue, "it is more important to study

literacy [a sequential variable] rather than the number of schools" [a structural variable].

Ideally, social geographers should integrate these two approaches for a better understanding of the spatial distribution of change. Thus far, however, the largest share of the research effort has been directed to the first approach in diffusion of innovations. Recent literature on this theme is already impressive (Brown 1965, 1968; Brown and Moore 1969), so much that diffusion research has evolved into a respectable sub-tradition in geography. Although diffusion is far from being the exclusive domain of geographers,² they rightfully claim the theme's spatial approach as theirs. Far from disregarding the time perspective in their studies, geographers make emphasis in integrating temporal-spatial models of diffusion.

Man in Space and Time: this is the area of spatial diffusion, where processes are frequently the core of our concern as we try to grapple with problems of spatial dynamics (Gould 1969:1).

The geographical literature on diffusion focuses mostly in such developed countries as Sweden (Hägerstrand 1952, 1967) and the United States (Brown 1968; Bowden 1965) as well as on theoretical issues (Gould 1969; Hudson 1972).

²Sociologists and anthropologists have widely dealt with the temporal dimension of innovation diffusion. While geographers are well aware of this, their research contributions in turn are little known in other quarters. Rogers and Shoemaker (1971:70), for instance, dismiss diffusion research by geographers after a brief mention to Hägerstrand and his "enthusiastic coterie" of young American geographers.

Only a few theses and articles have dealt with spatial diffusion in developing countries (for example, Garst 1972).

A new research thrust in geography addressed to problems of the underdeveloped world started in the late 1960s. No longer were geographers interested in environmental factors and controls encroaching upon the human condition in this region as in Gourou's (1966) classical approach to the tropical areas. Rather, with a new problemoriented approach, the purposes were to explain the processes favoring or opposing change in terms of sociocultural, economic, and political elements. Geographers who had done research in the less developed areas had, of course, touched several related topics of development, such as agricultural colonization and settlement, industry, and transportation. And the diffusion research tradition may be identified in those studies dealing with the spreading of people and ideas, artifacts, plants and animals prior to the quantitative era. The development theme is sensed in those descriptive works of regional economic geography where a wealth of information still can have useful application.

More interest on economic development per se is increasingly apparent in the geographical literature since the mid-1960s. A comprehensive account of this trend can be found in a review article by Grigg (1973).

He recognizes that descriptive and quantitative techniques have proved valuable in analyzing the mechanisms of innovation diffusion as well as in aiding socio-economic planning through resource evaluation. However, Grigg points to the geographer's "traditional ways of looking at problems" as his most useful contribution to the understanding of change in the developing world. In Grigg's (1973:59) view:

In the first place the traditional belief that one of the functions of the geographer is to point out differences between places would seem to be an essential corrective to the view, widely held amongst some writers, that the underdeveloped world is a monolithic bloc with much the same problems throughout. This view leads to the belief that the same development plans can be applied to any country with equal success. This is not so; each country, and each major ecological region, has a particular combination of problems; the keys to development are different and regionally unique.

In the second place geographers have been traditionally concerned with inter-relationships between environment and society. In agricultural development there is little doubt that different environments offer different opportunities to the farmer; similarly, different environments offer different problems. Solutions to these problems are most likely to be found indigenously within those environments, not by transferring the techniques of other environments. It behoves geographers to emphasize this point, however commonplace it may seem to them, or however it may smack to some geographical determinism.

More recently, a resource paper of the Association of American Geographers' Commission on College Geography has reviewed what geographers are currently doing in terms of research of underdevelopment and modernization in the Third World (DeSouza and Porter 1974). This work is an account of conceptual and methodological issues related to development as a general process and, more particularly, modernization, in geographic terms. As these writers have summarized, the basic interest of the "geography of modernization" is the analytical description of levels of development--the term development being used "in the restrictive sense of economic and infrastructural growth" (DeSouza and Porter 1974:77). The emphasis is placed in those tangible economico-technological components of the modernizing process.

The new research thrust has been pursued almost exclusively by United States scholars of the new generation.³ From doctoral thesis research there has arisen a systematic concern for the study of change patterning, especially in Africa. The problem of nation-building has been there to test the all-inclusive process of postindependence change, not merely economic but institutional, political, social, attitudinal--multi-dimensional modernization. This school has been led by Edward Soja (1968a, 1968b, 1971, 1972; Soja and Tobin 1975).

³European geographers have been somewhat cautious about modernization studies. Moreover, some of them have been very critical of their American colleagues, mostly in Britain (Brookfield 1973). French geographers have done some research on underdevelopment and are fully aware of the American school's methodology (see Hinderlink 1975, for a recent account of French research in this field).

The conceptual foundations of the geography of modernization are inspired in formulations of spatial interaction, especially those of central place theory. The role of cities in the organization of human activities in space is widely acknowledged. Theoretical considerations of this matter in the context of developing areas have been contributed by the economist Friedmann (1969). He has dealt at large with the spatial attributes of development, considering that human activities and social interactions related to change are <u>space-forming</u> as well as <u>space-contingent</u> (Friedmann 1972:83). As change occurs in a society, its spatial structure is sequentially transformed. Concurrently, the process of change is also influenced by existing patterns of spatial interrelationships.

Another way of stressing the geographic dimension of the modernization processes is through the concept of <u>spatial development</u>. In Soja and Tobin's (1975:198) words, this concept involves "a set of processes working within a system of regions to transform structurally the spatial organization of society." Such a transformation "can be viewed as a consequence of innovation diffusion in which the values, attitudes, and material attributes of 'modernity' are spatially disseminated through a population; differentially adopted; and eventually incorporated within a territorially defined social system as a

primary basis for social, economic, political, and cultural organization."

Soja and Tobin (1975:199) propose a definition of the concept of <u>modernity</u> as "a cluster of associated innovations which, at a given point in time, represents a predominant paradigm of societal organization." This makes the notion of modernization a more general conceptualization, with wider applicability. Modernization, then, implies the idea of a <u>prevailing form of modernity</u> for every historical period which is further identified by the concurrence of what Kuznets (1966) names <u>epochal inno-</u> vations.⁴

Thus far the main drive of modernization research in geography has been oriented toward the study of problems pertaining to newly independent countries in Africa (Soja 1968; Gould 1970; Riddell 1970). In part this preference is explained by the spectacular political transformations which took place there in the 1960s. The achieving of independence in most African countries provides a clearly defined starting point to trace the evolution of change.

⁴As an illustration, according to Kuznets the twentieth century form of modernity is defined by the extended application of science and technology to problems of economic production as the century's major epochal innovation. Along this line of thought, contemporary modernization "represents the conjoining of contemporary innovation diffusion with a series of structural transformations-the former associated with the application of modern science, technology, and organizational theory; the latter characterized by the emergence of attitudes, values, and behavior which support sustained or continuous change and innovation" (Soja and Tobin 1975:199).

In many instances there was little transition from tribalism to a state actively engaged in modernization. The colonial elite, a world apart from the traditional African societies, was obliterated. Afterwards, African leaders committed themselves to change, the process that modernization geographers have been measuring and analyzing spatially.

Geographic research on Latin American modernization is meager or nonexistent. A few articles by nongeographers are exceptional (Oechsli and Dudley 1975; Roberts and McBee 1968), although related topics have been explored by Latin Americanist geographers as documented in CLAG's classical survey of the 1960s (Lentnek et al. 1971). Thus, Denevan (1971) reviews change literature in the prehistorical perspective, and Aschmann (1971) and Horst (1971) deal with research on cultural change in Indian and mestizo communities. In contrast to the turbulent and transformational character of contemporary Latin American societies, little work on change was found by Lentnek who bluntly recorded "a penchant toward irrelevancy with respect to the dramatic changes taking place" (Lentnek 1971:161). Soja's contribution to CLAG's Benchmark was as programmatic as Lentnek's article. Without too much to review, he projected the potential of modernization research in Latin America based on his African experience on this subject (Soja 1971). Thus far in the late 1970s, except

for Gilbert's (1975) article on Antioquia, little of importance has been published.

The paucity of modernization research in Latin America is confirmed in a recent review by Preston (1975). Studies somewhat related to the theme are exceptional as far as foreign geographers are concerned. The literature of Latin geographers dealing with development surrenders any problem-oriented component to the descriptive approach.

As problems become more pressing, however, and also through the formation of a new generation of Latin geographers, not only aware of new techniques and approaches but especially of the need to contribute to change in the region, more native research may be expected in this field. In this sense it is pertinent to quote Preston (1975:164):

It is assumed that geographers who research into modernization problems, more than into any other aspect of rural society, will wish to produce results that directly or indirectly help the rural population to improve the quality of their life . . . The many varied problems in rural areas of Latin America demand solution.

Peasants and Peasantries

The world-wide interest in modernization, induced or otherwise, focuses primarily on peasant communities. A review of the theme of peasantries is, then, a necessary supplement to the theoretical background. Peasants, on the other hand, are the predominant kind of people with which the case study of this investigation is concerned.

Peasantries are a socio-cultural phenomenon commonplace throughout history. Nevertheless, peasantries were recognized as an important and distinctive component of world society only recently. In many ways the peasant was a systematic subject of inquiry only since the post-World War II period. Anthropologists, for instance, did not show a specializing concern for the peasant until the 1950s, in spite of the fact that they are probably the most interested in this particular field of research (Foster 1967). The abundant literature on folk societies prior to that time, however useful in the study of peasantries, is basically ethnological. A difference in the treatment of the theme can be readily appreciated when comparisons are made between such a classical work as Wolf's Peasants (1966) and Redfield's Tepoztlán (1930).

During the past twenty-five years, however, the bibliography on peasants has become voluminous. The peasant has been variously studied as a historical subject as in Chesneaux's (1973) essay on the Chinese peasant, or Hilton's (1974) work on medieval peasantries; or in economic perspective, from which economic anthropology has come into being (Polanyi et al. 1957; Belshaw 1965; Chayanov 1966; Nash 1966; Dalton 1967); or as a political problem (Mitrany 1961; Beqiraj 1966; Migdal 1974; Duggett 1975); or, among other things, as a subject of ecological and sociological interest (Redfield 1965; Wolf 1966;

Galeski 1971; plus such comprehensive readers as Bock's 1969; Potter's 1967; and Shanin's 1971).

Regional surveys of peasant problems are certainly abundant. In this respect, the Latin American peasantries have been extensively served (Wolf 1955; Landsberger 1969; Pearse 1975; Feder 1971; Huizer 1973). Much of this work has touched on problems of societal change, with communication studies perhaps the field in which the research methodology has become more sophisticated (Rogers 1969; Deutschmann and Fals Borda 1962). Rogers' popular textbook on innovation diffusion is actually a systematization of his research experience in Latin America (Rogers and Shoemaker 1971), an earlier version of which was published in Spanish (Rogers 1966).

Apart from the works of Rogers and his followers, peasant research in Colombia is represented by a few but important contributions such as those by Fals Borda (1955b, 1962), Pérez Ramírez (1962), Adams and Havens (1966), Smith (1967), Torres Restrepo (1970), Grunig (1971), and James (1975). A significant addition to the foregoing is Fals Borda's <u>El Hombre y la Tierra en Boyacá</u> (1957, 1973) based on his 1955 dissertation in rural sociology. This study is the only substantive published source dealing with the sociology of Boyacá's agrarian problem in a historical perspective.

Agriculture is central to peasant life, but peasants are not farmers of the entrepreneurial kind associated with commercial farming. Beyond these characteristics, little or no agreement is found when definitions are formulated. Such difficulty is to be expected when one considers that a generic type of peasant is almost impossible to find. A whole gamut of transitional forms have been identified in the large regional variety of case studies. The typologies which can be derived are prolific depending on the classificatory criteria.

Different points of view yield many possible valid generalizations about peasants. In this sense, an attempt at summarization of the main criteria with which peasants are defined--economic, political, and cultural--is that of Geertz (1962). Economically speaking, peasants are at least somewhat involved in both cash and market relations. Culturally they are part of a larger society with a literate tradition. And, politically they are subordinate in a hierarchical, relatively centralized state.

By the same token, Landsberger (1974) characterizes peasants as those "rural cultivators who occupy relatively low positions on various critical dimensions." Basically those are economic and political dimensions, which in turn are broken down into three sets of sub-dimensions in Landsberger's (1974:11) conceptualization:

These three sub-dimensions are, respectively, those having to do with the control of the relevant

economic and political 'inputs;' those having to do with the control of the 'transformation process' within the economy and the polity; and those having to do with the degree of benefit derived from the 'output' of each of these sectors of society.

Attempts at more detailed generalizations typifying peasants are available. While recognizing an underlying diversity from region to region, Rogers (1969) claims that for the sake of generalization certain common socio-cultural elements can be adopted as characterization of all peasants. His controversial generalization is then formulated as a subculture of peasantry. The basic argumentation was presented in a co-authored work dealing with Colombian peasants (Rogers and Svenning 1969), and then refined in a contribution for a reader on subsistence agriculture (Rogers 1969). Rogers argues that a subculture includes many traits belonging to "the broader culture of which it is a part but has special aspects not shared by the broader culture or by other members of the particular society." Drawing from Foster (1962) and Lewis (1959), Rogers comes with a ten-fold characterization of his subculture of peasantry.⁵

2. A lack of innovativeness.

6. Limited time perspective.

⁵Rogers' (1969:115) characterization is as follows:

^{1.} Mutual distrust in interpersonal relations.

^{3.} Fatalism.

^{4.} Low aspirational levels.

^{5.} A lack of deferred gratification.

^{7.} Familism.

^{8.} Dependency upon government authority.

^{9.} Localiteness.

^{10.} A lack of empathy.

Views similar to Rogers' are commonplace in the literature. On the other hand, others have dispelled this type of negativism. In de-emphasizing Rogers' views, for instance, Brown (1971) points to cases refuting the characterization of peasantries as apathetic and unwilling to change. Thus, the Chinese revolution was made by peasants. The <u>caboclos</u>' leagues of the Brazilian northeast are a good example. As Brown notes, too, "such a radical innovation as rural-urban migration" of the contemporary peasant hardly could be explained on the basis of stubborn resistance to change, generalized fatalism, and limited world views (Brown 1971:190-191). Brown further elaborates:

Overemphasis on the mental and cultural deficiencies of the peasantry has, I believe, obscured far more important structural and situational causes of peasant 'backwardness,' and heightened the campesinos' vulnerability to repression and co-optation. Furthermore, when one looks at what Latin American campesinos do rather than merely what they say, one sees little evidence of apathy or passivity.

Peasants in the Modern World

The contemporary peasant has to be studied in the context of the nonpeasant world, since he is intrinsically bound to the outside society by means of "long-established interdependence with gentry and townspeople" (Redfield 1960:24). To Redfield the peasantry is actually a halfsociety, just a part of a larger societal system. Therefore, as a half-culture bearer, the peasant is a hybrid whose locus comprises the field of interaction between

traditions of his community and society at large (Redfield 1960:52).

The peasant's ties outside his community have also been discussed by Miqdal (1974:15): "Peasants have always been subordinate to others in their societies. [Thev] could never avoid outside contacts entirely as they were always somewhat involved in, and dependent on, institutions such as the market." In Redfield's view cities and peasantries are inseparable socio-historical phenomena. To quote him, "there were no peasants before the first cities. And those surviving primitive peoples who do not live in terms of the city are not peasants" (Redfield 1953:31). Similarly, Foster (1967:11) argues that peasant culture is far from being a grass-roots creation of rural folk. Quite the contrary, Foster believes that

Peasant societies are what they are . . . because, throughout history, they have replenished and augmented their cultural forms by imitating customs and behavior of other members of their wider society. But, since peasants comprehend imperfectly what they see in cities, the urban-inspired elements they acquire are reworked, simplified and trimmed down so they can be accommodated to the less complex village existence. And because the process is slow, by the time urban elements are successfully incorporated into village culture, urban life has changed and progressed; thus, peasants are always doomed to be old-fashioned.

A balanced interaction seems to operate between peasants and the pre-industrial city to which their community is tied. One might speak of relative equilibrium in this case. The question of under which conditions such equilibrium is broken, and a process of rapid change is set into motion, is critical for the study of modernization. The answer seems to lie around disruptive mechanisms associated with industrialization, a process which unleashes a chain reaction in the countryside encouraging more intensive interaction with the city. Potter (1967:378) describes this as follows:

The major sources of change in peasant societies are the cultural, technological, scientific, and ideological influences which have come in part from the Western industrialized nations, and in part from the elites of the new countries themselves [that are basically urban].

A conventional explanation of how peasants change has been geared around the phenomenon of "culture contact." Foster (1962:25) argues that direct "contact between societies is the single greatest determinant of culture change." For Lerner (1958), however, a more refined model should include another component, mass media, which makes physical contact no longer a requisite in the communication process. The peasant, then, is converted by the mass media into a mobile, modernizing personality--provided, of course, he has access to the media. The factors that facilitate direct or indirect contact seem to be closely associated with the development of the modern industrial city. It is from these urban centers that impulses of change are generated which diffuse to the countryside. Theoretically, the peasant responds by modifying his value system and behavioral patterns thereby restructuring the rural society. In a world subject to so rapid

transformations as today's the peasant stands as an anachronism, with little or no chance to remain unchanged himself.

Current concern for peasant modernization arises from the realization that the intensity of spontaneous transformational influences of cities now tends to preclude gradual adaptation. Applied approaches seek to integrate peasantries into the national society so as to make the rural sector a dynamic and productive force in itself. Leaving rural development up to the "natural" forces of spontaneously diffused modernization, instead of leading to prosperity may cause major disruptions of the rural society.

City growth, then, might not be advantageous at all to the agrarian sector in developing economies as some writers contend. Pearse (1975:ix), for instance, takes a cautious stand and warns of deleterious consequences of industrial development on peasant communities, a process which "is rapidly undermining their landbound security, but is niggardly in offering them advantageous places in the new society."

This research will discuss some of the effects of the spread of modernization elements and opportunities among peasants of central Colombia as a by-product of industrial growth and urbanization. The research aims also at disclosing clues of the prospects of further transformations of this peasantry.

CHAPTER III

BOYACA'S CORE REGION: GEOGRAPHIC SETTING

Physically and culturally, Boyacá and Cundinamarca may be regarded as Colombia's nuclear region. Few would contend that these departments have not played a significant role in the history of the country. Today, Boyacá is an important economic region, with its production role gradually shifting from traditional agriculture to heavy industry.

Introduction to Boyacá

It is the purpose of this chapter to outline the physical and cultural characteristics of the study area. No attempt at a comprehensive regional description is made, and only those geographic elements closely related to the research theme will be stressed. The ensuing description rests primarily on monographic works by Correa (1938), Reyes Rivera (1954), and IGAC (1971), as well as the historical-sociological study by Fals Borda (1957), and the regional descriptions by Acevedo (1952) and Bernal and Alvarez (1971).

Physically speaking, Boyacá is a tropical highland region. To Colombians its name brings to mind a landscape of mountains, high valleys and plateaus. This is correct inasmuch as its core region and nearby areas of traditional settlement are a part of the mountain system called Cordillera Oriental. This cordillera is one of the three ranges constituting the Andes of Colombia. However, Boyacá's territory spreads out to the west well beyond the Andean slopes into the lowlands of the Magdalena Valley, and eastward to the foothills facing the vast tropical lowland plains of the Llanos.

Until 1974 Boyacá was the second largest department in the country (63,884 square kilometers). That year the national Congress created the new <u>intendencia</u> of Casanare which took away over 60 percent of Boyacá's territory (18 municipios and 90,107 inhabitants). No doubt, Casanare is a region contrasting drastically from Boyacá proper, and actually had been already a separate unit from 1950 to 1955.¹ Such a re-organization of the territory was expected, and the same may occur with the western lowlands that comprise the hinterland of Puerto Boyacá.

¹Interestingly enough, Boyacá had a sort of "colonialist" tradition in the Llanos. Irrespective of inaccessibility and geographic dissimilarity, vast expanses of the plains were assigned to Boyacá in different times. The shrinkage began in 1923 when part of its Llanos were segregated to form the comisaría of Arauca (Medina 1936:18).

Boyacá remains a medium-size department containing 994,659 inhabitants (1973 census) with an area of 23,797 square kilometers (slightly over 2 percent of Colombia's total territory). Administratively, the department is subdivided into 114 municipal units, customarily grouped into 11 provinces.

Boyacá stands important among Colombian regions. This is certainly a land noted for its relative abundance in historical figures and landmarks. The Boyacenses, as natives call themselves, are proud of their homeland's history. Several presidents were born there, including Joaquín Camacho, José Ignacio de Márquez, Santos Acosta, Santos Gutiérrez, Salvador Camacho Roldán, Sergio Camargo, Rafael Reyes, Enrique Olaya Herrera (Hernández 1954), and closing the list General Gustavo Rojas Pinilla (1953-56). Rojas was born in Tunja and was the only dictator the country had in half-a-century, after General Rafael Reyes. Eminent historic events include the facts of the first crop of wheat harvested in Tunja in 1541, the most crucial battles of the independence wars, and Tunja proclaiming itself a republic as early as December 9, 1811 (Correa 1954:4).

Boyacá is closely related to the Colombian capital. A large proportion of Bogotá's population either is native from Boyacá or has its ancestry there. Boyacá supplies the capital, and for that matter the country at large, with

steel and cement. In a recent estimate CORABASTOS, which is the central agency for food marketing, places Boyacá among its leading suppliers along with Cundinamarca, Meta and Valle (CORABASTOS 1976).

Regionalization of Boyacá

The land and the people vary widely in Boyacá. Several regions are loosely identified on the basis of natural, and cultural criteria. The largest proportion of the territory is made up of mountains. Two-thirds of the area are cool highlands and páramos.

One of the regionalization schemes proposed for Boyacá is Acevedo's (1952:20) "regiones fisiográficas," in which ten natural regions are identified with "well defined characteristics and differences among them." Such regions are (1) the Magdalena Valley rain forests, (2) the Western slopes, (3) the Valley of Chiquinquirá, (4) the Moniquirá basin, (5) the central plateau, (6) the Ramiriquí plateau, (7) the <u>páramos</u> of the main range, (8) the southern eastern slopes, (9) the eastern foothill transitional zone, and (10) the Llanos. Irrespective of the validity of the scheme, the last region obviously is no longer of concern since the segregation of Casanare.

The regions which Acevedo named the <u>Altiplanicie</u> <u>Central</u> (central plateau) as well as the <u>Páramos del Cordón</u> <u>Magistral</u> (bleak cold areas on the main range) are partly included in the region of this investigation. Another classification painstakingly endeavors to integrate geomorphological, climatological and land use criteria to subdivide the territory into seventeen regional units. No specific purpose for such regionalization was stated (Bernal and Alvarez 1971:31-32).

In an OAS report (Martinez Palacios 1967) exploring development potentials in Boyacá another scheme of regionalization is proposed without any stated rationale. Simplistically, four major regions were established, with relative location apparently being the only factor taken into consideration. Region "A" grouped eleven municipios (Puerto Boyacá, Otanche, San Pablo de Borbur, Briceño, Buenavista, Coper, Maripí, Muzo, Pauna and Tununguá), whereas region "C" was integrated with the municipios of Pajarito, San Luis de Gaceno, Labranzagrande, Paya, and those now included in Casanare. Region "D" was simply the municipio of Cubará, "for which no concrete data are available." A region "B" (central) comprised all municipios excluded from foregoing regions (Martinez Palacios 1967: 58a, 219-224). Allowance was made for sub-regionalization, which further yielded eleven "B"-subregions.

A grouping of <u>municipios</u> into provinces is convenient for study or planning purposes. After all, this is the "model" empirically agreed upon by the people themselves. Through a number of years this classification has been refined by actual adjustments to real-world

problems. Criteria used are not only relative location but also local integration in terms of physical features, transportation lines, urban nuclei, and political and economic characteristics. There is no official subdivision of Boyacá into provinces. But political decision-making, government allocation of services and public investment more frequently are based on consideration of the provincial frame of reference.

The Central Boyacá Region

This investigation is not principally concerned with urban problems. Rather it applies to rural environments and peasant problems. However, in the delimitation of the region in which these problems were studied, the most important criterion used was the interaction of the countryside with urban places. After all, the central question of the research, peasant modernization, was hypothesized as representing a function of city influences.

Central Boyacá is defined as the region comprising areas adjacent to three medium-size urban centers in the Upper Chicamocha Valley, namely Tunja, Duitama, and Sogamoso (Figure 2).

To define the region, direct strong influences were assumed to spread out from those urban places into the surrounding countryside, villages and towns. A precise identification as to the extent and intensity of such influences is very difficult. Commercial and cultural



Figure 2 The Central Boyacá Region

relationships were used to approach a measure of urban influences, but still the problem remains as to the spatial extent of the rural hinterland of each city. A gradient of the decline of urban influence away from the center eventually will lead to transitional zones into other hinterlands. Therefore, the boundary delimiting the region should be conceptualized as an unprecise zone of transition and overlapping.

The criteria of assumed influences were tested by direct questioning of the rural population. However, a regional framework had to be hypothesized in advance. Therefore, based on his empirical knowledge of Boyacá, the author took into consideration geographical and historical elements which occur conspicuously in the basin of the Upper Chicamocha River. On the other hand, the traditional delimitation of provinces held by the people helped in making a decision as to the extent of the region.

The region thus defined encompasses almost all those <u>municipios</u> customarily included within the provinces of Centro, Tundama, Sugamuxi and Valderrama. Tunja, Duitama, and Sogamoso are the provincial "natural capitals" of the first three. Paz del Río has gradually taken over such function from Socha as the main urbanizing center in the Valderrama province. This province, however, depends in many ways upon either Sogamoso or Duitama, and Paz del Río is far from being a competing place with any of those

cities. As a direct component of Boyacá's industrialization trend, Paz del Río and the province at large should definitely be a part of the region.

The validity of the region thus defined was confirmed with the research. Maps were compiled which show a distinctive tributary area of the main cities roughly coincident with the region hypothesized. No doubt, these cities must be expected to perform service functions to other rural areas not included in the region. However, these areas are outside the basin of immediate influence of the regional cities and are parts of neighboring provinces (like Márquez to the south, Occidente in the west, Ricaurte in the northwest, and Norte to the north) in many respects very different from Central Boyacá. Municipios which are usually included in the province of Valderrama, like Pisva and Paya, or in the province of Sugamuxi, like Pajarito and Labranzagrande, on the eastern slopes of the main range, evidently are relatively remote to have any significant interaction with the main cities. Therefore, they were excluded from the study.

In summary, the Central Boyacá region comprises thirty-five <u>municipios</u> distributed among the provinces of Centro (eight <u>municipios</u>), Tundama (eight <u>municipios</u>), Sugamuxi (fourteen <u>municipios</u>), and Valderrama (five <u>municipios</u>). Table 2 summarizes the basic data concerning the region in question.

No.	Municipio	Sq. Km.	Total Population	Village or City	Rural Areas	No. of Rural Families
1	Aquitania	428	24 041	3 867	20 174	3 307
2	Relén	106	8,051	2,538	5, 513	1,180
ĩ	Betéitiva	115	3,422	153	3.269	722
4	Busbanzá	35	793	203	590	108
5	Cerinza	116	6.737	1.090	5.647	1.031
6	Cómbita	143	8,580	309	8.271	1.589
7	Corrales	- 57	2, 598	1.345	1,253	267
8	Cuítiva	35	2,697	171	2,526	491
9	DUITAMA	186	48,459	36,551	11,908	2,109
10	Firavitoba	76	5,281	1,276	4,005	990
11	Floresta	85	5,028	1,004	4,024	887
12	Gámeza	88	6,112	1,108	5,004	1,197
13	Iza	44	1,682	568	1,114	187
14	Mongua	426	6,146	1,483	4,663	996
15	Monguí	80	4,241	2,012	2,229	502
16	Nobsa	65	10,294	2,583	7,711	1,512
17	Paipa	424	16,974	4,260	12,714	2,292
18	Paz del Rio	106	7,736	3,464	4,272	889
19	Pesca	101	11,119	2,134	8,985	1,030
20	Samaca Samta Pasa da Vit	100	11,129	1,074	9,255	1,993
21	Santa Rosa de Vit.	107	9,201	4,017	5,104	1,013
22	Socoté	16/1	2,722 12 28/L	092	11 202	2 261
とう	Socha	1 51	8 713	2 511	6 160	1 271
25	SOCAMOSO	132	67 738	48 801	18 847	3 385
26	Sotaquirá	197	7.673	577	7,006	1 208
27	Tasco	167	9,929	1.310	8,619	1.765
28	Tibasosa	75	6.936	1.737	5,199	1.030
29	Toca	165	8,132	1.656	6.476	1.137
30	Тбрада	37	3.255	750	2.505	605
31	Tota	314	4.986	484	4,502	965
32	TUNJA	479	77,473	51,620	25,853	4.746
33	Tuta	162	7,602	1,146	6,456	1,254
34	Tutazá	135	3,294	156	3,138	606
35	Ventaquemada	167	11,323	617	10,706	1,9 <i>5</i> 8
35	Total	5,513	435,614	185,122	250,492	48,526

Table 2.--Municipios of Central Boyaca: Basic Data.

Source: Population data are from DANE (1974) according to preliminary aggregated data of the 1973 census.

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The Urban-Industrial Corridor

The urban-industrial corridor of Central Boyacá is an emergent spatial structure defined in terms of a linear arrangement of the three main urban centers, and such new industrial sites as "Metalúrgica"² (Tuta), "Maguncia" (Sotaquirá), "Termopaipa" (Paipa), Bonza (Duitama), "Cementos" (Nobsa), Belencito (Nobsa), "Malterfa" (Santa Rosa de Viterbo), and Paz del Río. All of them are linked together by the <u>Carretera Central del Norte</u> (Northern Central Highway) and the <u>Ferrocarril del Nordeste</u> (Northeastern Railroad) or their auxiliary transportation lines (Figure 3).

Although the urban-industrial corridor is a basic element of the region, it is still far from being a conspicuous feature of the landscape. However, villages and modern construction are developing along the highway and the railroad with functions which are typically nonrural. The changing pattern is of course more noticeable and intensive in places located near the cities. In other words, a process of suburbanization is sprawling out in association with the transportation network, and villages sprout in the countryside as a sequel of industrial plants established along the same transport routes.

²These toponyms do not yet have an official sanction by government agencies dealing with cartographic surveys or planning. But popular usage is gradually making them proper terms. Of course, they correspond to the name of an industrial plant.


The Physical Environment

The ensuing description is intended to aid in understanding the spatial association of physical and cultural phenomena pertaining to rural change. The description provides the physical framework of the study.

Landform Setting

Unlike a plateau, Central Boyacá is an elongated intermontane basin. It is drained through a river system articulated about Chicamocha Valley. Gentle gradients are observed along the stream, recorded as 2,800 meters above sea level in Tunja, 2,570 in Sogamoso, 2,200 in Paz del Río, and about 1,700 meters in the gorge closing the basin to the northeast between Socotá and Sativanorte.

The basin is enclosed between two major ranges which parallel each other in northeasterly direction. In the northwest and north a chain of mountains (Consuelo Range) forms a natural boundary between the region of Central Boyacá and the Department of Santander. On the opposite side, the main Andean range is actually the continental divide separating the watersheds draining toward the eastern plains and the Orinoco, and toward the Magdalena River and the Caribbean. Consequently, Central Boyacá is a part of the Magdalena drainage system.

The two main ranges display successive series of <u>páramos</u>, usually at altitudes higher than 3,000 meters above sea level. The morphology of the terrain above 3,200

meters clearly bears evidence of Pleistocene glaciation (Brunnschweiler 1970; Rucinque 1967). The desolate, cold and windy <u>páramos</u> acting as geographical barriers have contributed in large measure to the stagnant and marginal character of several isolated peasant communities. The high <u>páramos</u> themselves are largely unsettled. Those few people who have adapted to this harsh environment depend on sheep and potatoes for their subsistence. It is most likely that the lowest levels of modernization are to be found in the páramo.

From the main ranges a number of hills and uplands branch into the basin. These secondary ranges have compartmentalized Central Boyacá into several minor basins. Each of these usually matches the perimeter of a <u>municipio</u>. Therefore, <u>municipios</u> are relatively isolated from each other by the lines of hills perpendicular to the Chicamocha River which are their natural boundaries. Accessibility is good on the sides facing the river and the urban-industrial corridor. It follows, then, that the corridor is a cultural backbone regionally integrating the <u>municipios</u> whose interaction which each other is otherwise very weak.

The main intramontane portion of the Chicamocha Valley is a land of relatively complex features. For the sake of generalization, the Valley may be subdivided into two units:

- 1. Secondary ranges and slopes descending toward the river. In some instances these landforms are rough enough to discourage settlement, or they have been badly eroded after centuries of cultivation and overgrazing; in other locations the terrain is gently inclined and undulating, as in the rich lands surrounding the town of Toca.
- 2. The flats of the valley floor vary in extension from a few meters downstream from Corrales to a width of near eight kilometers at Sogamoso and Duitama. These lands consist of rich alluvium but are occasionally affected by flooding.

This morphological arrangement significantly bears on the settlement and land use patterns. The hillsides are intensively used and fragmented into the tiny plots associated with peasant, <u>minifundio</u> farming. The flat lands are generally divided into large units, contrasting in every respect with the peasant farms, and are owned by <u>ganaderos</u> (cattlemen) or commercial cultivators. The flats support important, though still extensively managed, dairy herds. Gradually the valley floor is being encroached by different types of urban land use.

Climate and Biota

Climatic characteristics of Boyacá are those typical of low-latitude mountains. Dominant features are the seasonal pattern of precipitation and isothermality. The annual range of temperature is insignificant. Since the main control for variation is altitude, a vertical zonation of climate is readily apparent. In a four-fold zonal model in which temperature values are inversely related to altitude, a mountain is theoretically divided into a <u>tierra caliente</u> (hot) zone at the lowest level, followed by intermediate <u>tierra templada</u> (temperate) and <u>tierra fría</u> (cool) zones, and a <u>páramo</u> (cold) zone at the highest level. Each zone has an elevational spread of approximately 1,000 meters.

The typical climate in Central Boyacá, according to such a zonal model, is that of the tierra frfa variety. Elevations range from 2,000 to 3,500 meters above sea level, and average temperatures from 16°C in Paz del Río (2,200 meters) to 13°C in Tunja (2,880 meters) and to 11°C in Aquitania (3,030 meters). In the paramos surrounding the basin average daily temperature may drop to 5°C or less. Frost is frequent in the high valleys. However, this feature has never been considered when analyzing land use patterns in Colombia. While the slopes are relatively protected from killing frost, valley floors are badly hit as cold air from the mountain peaks drains down during clear nights. Only grasses can stand this type of mountain frost without much damage. Being well aware of the effects of this phenomenon, peasants prefer the slopes for their subsistence gardens. Only wealthy farmers can afford

to put expensive flat lands into extensive use, such as for pasture.

Central Boyacá is a sub-humid area. The annual record for Tunja is only 553 mm of rainfall. While the surrounding mountains receive greater precipitation, still a remarkable contrast is noticeable between windward slopes on the boundary in Santander and across the continental divide in the main Andean range. In either case, the slopes belonging to the basin receive the least rainfall.

In addition to the relatively low precipitation, a component of seasonal concentration occurring between May and June, and from October to early December, creates problems of water shortage for several months. Since increased urbanization may be expected in the future, as well as more intensive land use for commercial agriculture, provisions have to be made in order to bring additional water into the basin from the rainy slopes of the mountains outside the region. A good prospect in this respect is the Lake of Tota. This lake is in the basin and already provides water for the steel mill of Belencito and the city of Sogamoso. If additional streams can be diverted into the lake, it might provide water for most of the basin since it lies at 3,000 meters in elevation. Water from the Upper Cusiana River, which now flows to the Llanos, might be brought into the lake by means of a tunnel built

under the <u>páramos</u> of the continental divide. This or other projects will have to be implemented in the not distant future. The most frequently mentioned problem that the peasant confronts is water shortage. Furthermore, Tunja and the other cities have already been seriously affected by it. The Chicamocha River is already heavily polluted, and irrigation from this source is no longer feasible.

The natural vegetation of Central Boyacá has been obliterated from centuries of deforestation for firewood and agricultural purposes. Thus, classifications of natural ecosystems such as Espinel's (1965) are merely theoretical exercises. Such associations as the bs-MB (bosque seco montano bajo) covering most of the valley of the Upper Chicamocha River according to this author, should be dealt with in a historical context, since such "submontane" dry woods have been nonexistent for centuries. Some of the slopes and <u>páramos</u>, however, still have parts of the original vegetation cover. The ecological adaptation of grasses and shrubs in the <u>páramo</u>, with the typical <u>frailejón</u> (Ezpeletia) dominant, is rated unique in the world.

The <u>tierra fría</u> landscape has been modified since the end of the last century. <u>Eucaliptus</u> and kikuyo grass (<u>Pennisetum clandestinum</u>), introduced from Australia and East Africa, have become ubiquitous. It is actually hard to find a tree which is not an eucaliptus, except perhaps

for a few relict tropical oaks (<u>Quercus humboldtii</u>) and encenillos (<u>Weinmania</u>) isolated on the steepest slopes. The kikuyo grass, though praised by cattlemen for its endurance and nutritious quality, is considered a nuisance by many cultivators.

Mineral Resources

Numerous studies of prospective natural resources in Boyacá have accumulated since the early reports of <u>Servicio Geológico Nacional</u> in the 1920s. Recently, Marikovsky (1963) in a general synthesis, compiled most of the pertinent information contained in the literature. His account is relatively free of the speculation which has become rampant as to the resources supposedly available in the department of Boyacá.³

Probably the most significant association of resources available in the Central Boyacá region is that of iron ore (Paz del Río), coal (Samacá, Tasco, Tópaga), and limestone (Nobsa). The establishment of a steel industry, which bears decisively in the modernization of Boyacá, was possible due to the closeness of these resources to one another. Iron ore reserves are estimated to be as

³A large majority of the articles and books concerning Boyacá invariably touches upon the issue of its "fabulous riches." For example, Acevedo (1952:35) wrote "without exaggeration" about the abundance of mineral resources of this "proviliged region;" Fals Borda (1957:13) rated as "fabulous" the iron-ore deposits of Paz del Río; Mendoza Neira (1962:2) stated that in Colombia there was "no other region as generously endowed by nature as Boyacá."

high as 50 million tons (Acevedo 1952:28). If not comparable to deposits found elsewhere in Latin America (Venezuela and Brazil, for instance), the proved iron ore reserves in Paz del Río appear large enough to satisfy the domestic demand of the iron and steel industry.

Limestone reserves in Nobsa are equally sufficient to supply the needs of the steel mill of Belencito as well as a cement factory. Prior to these modern industrial concerns, entrepreneurial <u>campesinos</u> of Nobsa processed limestone to extract lime for agricultural uses. Their primitive furnaces still can be seen along the highway processing limestone.

Coal is indeed Boyacá's most valuable natural resource. In the area between Sogamoso and Tasco, alone, the reserves of coal beds suitable for coking amount to over 1,900 million tons (Acevedo 1952). Between Duitama and Ventaquemada there are proved reserves as high as 60 million tons (Pereira 1973). Considering what appears to be an inevitable worsening of the world's energy problem as well as the relative scarcity of coal in other Latin American countries, it is not out of reason to expect anything but a promising future in regard to exportation of this mineral wealth. With this forecast in mind, a new trans-Andean highway has been proposed to provide a direct outlet for coal to Venezuela, from the northern provinces of Boyacá to the Upper Arauca River (Pereira 1973). For

all practical purposes the Colombian petroleum industry will come to an end in the early 1980s, which will result in the necessity either to partly substitute oil usage with coal, or to trade the latter for petroleum on the world market. In either case, an increase in the mining and processing activities of coal will certainly occur in Central Boyacá in the near future.

The Cultural Environment

The cultural landscape of any region is the result of the interplay of human and natural factors through time. The historical perspective is basic to the understanding of the present association of socio-cultural elements in the natural setting, which has been described above. A brief account of the evolution of cultural factors in a historical framework is therefore in order.

Historical Background

The highlands of Boyacá are an important part of the pre-Hispanic realm of the Chibcha Indians. The Chibcha had developed a relatively advanced form of civilization second only in South America to the Inca (Steward 1946; Ghisletti 1948; Triana 1951; Pérez de Barradas 1952; Friede 1966). Loosely subdivided into a number of tribes--originally named <u>Muisca</u> or <u>Moxca</u> by the Spanish <u>conquistadores</u>--the Chibcha settled in several basins comprising most of the territories of what today are Boyacá

and Cundinamarca. This Indian country was one of the most important settlement regions of Andean South America.

At the time the Spaniards arrived the Chibcha were struggling to resist the pressure of lowland, war-like, tribes of Carib and Arawak stock. The fertile lands and settlements in the plateaus and high valleys were very attractive to the new wave of migrants--hunters and gatherers--who were probably treking the same route that the Chibcha ancestors had followed. Until the end of the fifteenth century, the Chibcha succeeded in keeping their enemies at a distance and were fundamentally a peaceful agriculturalist people.

At the time of the Spanish invasion, two strong Chibcha overlords rivaled in power: the Zipa of Bacatá and the Zaque of Tunja. Bacatá was in control of the southern Chibcha territories, namely the basins of the Rivers Funza and Blanco, the Upper Suárez River, and the region surrounding the marshes of Fúquene. Hunza (Tunja) on the other hand, controlled a large area comprising the upper basins of the rivers Chicamocha, Garagoa and Guavio. Within the area influenced by the Zaque, three <u>cacicazgos</u> (Indian chiefdoms) were relatively independent: Sugamuxi-Iraca, Tundama, and Guanentá, all of them along the Chicamocha River (Friede 1966:19).

It took the Spaniards only a single expedition to subdue the Indian chiefdoms of Hunza (Tunja), Tundama (Duitama), and Suamox (Sogamoso) in 1538. Most of the <u>caciques</u> (chiefs) were killed, even if no resistance was offered against the conquerors. Immediately the Spanish leader Jiménez de Quesada proceeded to distribute among

his men land grants as well as Indians in a system of encomienda (Friede 1966:178).

On August 6, 1539 one of Quesada's captains, Don Gonzalo Suárez Rendón, founded the city of Tunja in the exact location of the Indian town of Hunza. From then on, Indian culture was systematically eradicated. In general the socio-cultural assimilation of the native population was accomplished quickly and, from the Spanish point of view, smoothly. Since the Chibcha were already accustomed to the ruthless domination of their own Indian lords, they apathetically tolerated their being turned into serfs by the new rulers of the highlands. This pattern of behavior persisted generation after generation and may manifest itself today in the passivity of the Boyacense campesinos.

The Boyacense People

Ethnic and demographic evolution are important factors in the development of the campesino system in Boyacá. Estimates about the Indian population at the onset of the Colonial period vary a great deal. Altogether for the new Granada (roughly today's Colombia), Jaramillo Uribe (1964) has grossly calculated a total Indian population of 500,000 by 1580. This historian quotes archival

data which discriminate the population given in <u>encomienda</u>⁴ as follows:

 Region of Tunja: 33,386 <u>tributarios</u>, i.e., taxpaying Indians included in encomiendas;

2. Region on Santa Fé (Bogotá): 20,566 tributarios.

These data point to the greater importance of Tunja during the early colonial period, at least in terms of number of Indians who had to pay taxes. The usual ratio was about one tax-payer for every three Indians. Therefore, Jaramillo Uribe deduced that Central Boyacá could have had a population of around 100,000, shortly after the conquest.

Data gathered by other historians for the whole region of Boyacá are considerably larger than those of Jaramillo. According to Friede (1965:17), the following was the distribution of people by region at the arrival of the Spaniards:

- 1. Region of Tunja 230,000
- 2. Region of Tundama 228,000
- 3. Region of Sugamuxi 105,000

The Indian population sharply decreased in the two centuries following the conquest due to a combination of causes such as war, hard labor, and diseases, in addition

⁴The <u>encomienda</u> was a system whereby entire Indian communities were given in protection to a Spanish settler. In practice, the grantee became the owner of lands and Indians alike.

to miscegenation. Most towns were decimated by small-pox in 1566 and 1587 (Jaramillo Uribe 1964:268). The decrease in Indian population was documented by Friede on the basis of old files dealing with reports of administrative officers. Friede's findings are summarized in Table 3 (Friede 1965:13).

Year	Population	Percent decrease	Percent decrease of 1537 population
1537	232,407		
1564	168,440	27.5	27.5
1636	44,691	73.5	80.8
1755	24,950	43.8	89.3

Table 3.--Indian population in the region of Tunja 1537-1755.

Source: Friede (1965:13).

It might appear, then, that the processes of miscegenation and acculturation replaced Chibcha culture in Boyacá in a relatively short period of time. The Chibcha language quickly disappeared, except for a large number of coponyms and surnames. In contrast to what occurred in Peru, Bolivia, Ecuador, Guatemala, and several regions of Mexico, after the seventeenth century not a single spot in ighland Boyacá remained in which the Indian language was sed. The Roman Catholic Church, on the other hand, not Inly managed very effectively to convert every Indian to Christianity but to serve as a supporting socio-economic force in shaping a new feudal order. In many instances the local priest was the undisputed authority in practically all spheres of social, economic and political life. The Church itself became one of the most powerful latifundistas (large-estate owners). Thus, everything seems to have been Europeanized very effectively. But still, many traits were transmitted from one generation to another and kept hidden in the consciousness and behavioral patterns of the peasants. Indian and mestizos were always a marginal subculture and as such developed social mechanisms of self-defense by preserving tradition. Theirs was a structural marginality in the socio-economic sense of those theories pioneered by Park (1928) and especially Stonequist (1937), and in many ways a geographical marginality, too, as illustrated in studies dealing with land use distribution (Adams and Schulman 1967; Smith 1967).

In any case, Indian culture left its imprint on the peasant. And the view that "not even the landscape remains of the Chibcha," as Arciniegas puts it (1961), is to be taken very cautiously. A study still awaits research in the historical geography of the Chibcha, which might shed much light on the Indian background of modern Colombian culture.

It is almost impossible to ascertain with precision the racial composition of the Boyacense peasantry.

However, any observer would agree that there is a notorious dominance of mestizo stock, i.e., the undefined mixed race coming out of European and Indian miscegenation. The prevalence of mixed blood is an undisputed fact in reference to the Colombian population at large. Estimates for the country place the mixed group at 69 percent, against 25 percent whites, 4 percent blacks, and 2 percent Indian. Mixed racial types in Colombia are the <u>mestizo</u> (52 percent), mulatto (14 percent), and the zambo, i.e., black plus Indian ancestry (3 percent), approximately (Pérez Ramírez 1962:43). There is no evidence of mulatto and <u>zambo</u> communities in Boyacá,⁵ but mestizo population may well be over 70 percent.

Socio-Cultural Evolution

There is a great deal of agreement that present socio-economic characteristics of Boyacá, as well as other Colombian regions of old settlement, are rooted in the manorial system introduced by the Spaniards (Fals Borda 1957, 1973; Smith 1967). Boyacá and Cundinamarca are still referred to as the reino, the kingdom, by people

⁵Although as late as 1835 some 331 slaves were reported by the official census in Boyacá (Medina 1936:114), there is no indication as to their race. Indian legal enslavement was avoided in general in the highlands. But if those slaves were black, their racial impact in the population should have been gradually absorbed by the racial blend dominated by Indian and white elements. In general, the Colombian highlands east of the Magdalena River have always been nonblack.

from other areas. This is due to the fact that Spanish rulers had their stronghold in these highlands, and indeed the colonial grip there was always extremely tight. The European settling of Boyacá began with the founding of Tunja in 1539. In 1540 conquistador Jerónimo Lebrón brought to Boyacá a party of white women with the idea of encouraging soldiers to marry and settle down. There is not much information as to their social status but presumably they were of the same low-class strata as those women who arrived in the Caribbean Islands at that time. Lebrón is also credited with the introduction of such European crops as wheat, barley, chickpeas, broad beans (known as habas in Spanish), peas, onions and cabbage (Henao and Arrubla 1938:57). Some of these readily supplemented such native crops as maize, beans, potatoes, squash, arracacha (Arracaccia xantorrhiza), ibias (Oxalis tuberosa) and other tubers which probably were first domesticated by the Chibcha. In time, a mixture of Indian and European staples became firmly integrated and still constitute the food diet of the campesinos. The usual association is corn, broad beans, potatoes and sometimes squash. Either barley or wheat provide flour for baking or preparing soup. Small production surpluses of these cereals as well as potatoes and occasionally chickens and sheep are sold in the local market. These yield the little cash needed to Satisfy meager wants of the peasant family.

A dispersed type of settlement became dominant in Boyacá. Some towns were founded in the same sites of Indian villages, and eventually the clustering of small farmers (<u>minifundistas</u>) around some <u>hacienda</u> houses originated, in time, other towns. However, towns did not grow much. Even the cities were stagnant. Tunja, for instance, remained only as a sort of over-grown village, in spite of the fact that only two years after its foundation it was granted the official title of "city" by Emperor Charles V (later in time another royal decree proclaimed it <u>muy</u> <u>noble y muy leal ciudad</u>, "very noble and loyal city"). Actually, many towns declined, probably because most activities were geared about the hacienda rather than the town, as Fals Borda noted (1957, 1973:60).

In the countryside, dispersed, isolated settlements eventually evolved into two distinct patterns. One is the truly dispersed form where large landholdings are dominant, as in the flats of the Chicamocha Valley floor. Houses in this case are widely spaced. The second kind is the typical peasant neighborhood, or <u>vereda</u>, in which houses tend to cluster as a result of the small acreage of each family plot. The contrast between these two patterns of rural settlement is clearly apparent when flatlands around Paipa, Duitama, and Sogamoso are compared in their rather sparsely distribution of farmsteads with those densely settled communities of Ventaguemada, Cómbita,

Gámeza or Socotá. So heavy is the density of rural population in some of these neighborhoods that they actually resemble large, haphazardly patterned villages. In those cases, the name of the <u>vereda</u> becomes as important as the village proper--a situation of which local politicians are very well aware when they are searching for votes shortly before every election.

Therefore, the city as a form of settlement has been an important phenomenon only in the most recent past. Boyacá, in general was a typically rural region--and still is in many respects, as will be discussed later.

Population Patterns

Only fragmentary data are available as to the demographic evolution of Boyacá during the colonial period. The first systematic, though incomplete, census was taken in 1778, when viceroy Antonio Caballero y Góngora decided that a population count would improve the administration of his Colony. The province of Tunja (roughly present day Boyacá) recorded a population of 258,817 inhabitants. Of that figure, only 36,386 were classed as "pure" Indians, in contrast to more than 112,000 mestizos (Medina 1936:114).

The first census of the post-independence period took place in 1825. The province of Tunja had then 190,000 inhabitants. Unfortunately, the territorial base was different and no discrimination by <u>municipio</u> is available as to make this figure comparable to that of 1778. The

decrease may partly be attributed to actual diminution of the population as a consequence of the wars of independence. Successive censuses were taken in 1835, 1843, 1851, 1870, 1905, 1912, 1918 and 1928. Censuses applying modern techniques of enumeration and data processing and presentation are those of 1938, 1951, 1964, and 1973. Very unstable political circumstances made the 1951 census rather incomplete, but at least it serves the purposes of showing the marked decline of population in many municipal <u>cabeceras</u> (towns) of Boyacá. Political violence had forced the population to flee.

There was little change in the population of Boyacá during the nineteenth century, as can be seen in Table 4 compiled from Medina (1936). There is a consistent pattern of decreasing proportions of the Boyacense population as compared to the rest of the country. The general pattern of course, portrays the gradual settling of other regions, especially in Western Colombia. Needless to say, those censuses prior to 1938 are gross estimating and should be taken cautiously only as indicative of very general population trends.

The recent demographic characteristics of Boyacá, and particularly of its core region, reflect important socio-economic changes which have taken place there during the last decades (Table 5).

Year	Colombia Total	Boyacá	Percent of Colombia
1825	1.228.259	189.682	23.8
1835	1,686,038	269.299	16.0
1843	1,955,264	308,461	15.8
1851	2,243,064	361,109	16.0
1871	2,951,111	482,874	16.3
1905	4,303,687	513,254	11.9
1912	5,472,604	570,183	10.4
1918	5,855,077	637,437	10.8
1928	7,851,000	924,783	11.7
1938	8,701,816	705,060	8.1
1951	11,548,172	770,531	6.6
1964	17,482,420	991,548	5.6
1973	21,070,115	994,659	4.7

Table 4.--Census Figures in Boyacá in 150 Years.

Sources: Data from 1825 to 1928 are from Medina (1936). Other data: DANE (1955, 1969, 1974). Where possible, data have been adjusted to conform with Boyaca's current geographic configuration.

Administrative Characteristics

Boyacá's core region became one of the provinces of the so-called kingdom of New Granada, when this Spanish colony was raised to the category of a viceroyalty during the first half of the eighteenth century.

Shortly after August 7, 1819, when the final battle for independence was won in Puente de Boyacá, a republic-the Great Colombia--was consolidated with the states of Quito, Venezuela, and Cundinamarca. The latter consisted of the former colonial provinces of New Granada, with Tunja being one of them. In 1821, the Great Colombia was Table 5.--Demographic Evolution by Municipalities, 1938-1973.*

No.	Municipal		1938	F	951	1	964	1	973
	Unit	Center	Rural Area	Center	Rural Area	Center	Rural Area	Center	Rural Area
	Regional Total	45494	202611	66446	224944	145323	270508	185122	250492
-	Aquitania	623	11103	625	11576	2945	15878	3367	20174
N	Belen	985	4753	882	5219	1911	5671	2538	5513
r	Beteitiva	210	3804	165	3673	180	3529	153	3269
4	Busbanza	87	974	140	860	147	957	203	590
ſſ	Cerinza	401	3313	411	3866	737	4416	1090	5647
9	Combita	140	5942	142	6253	940	7634	309	8271
7	Corrales	1262	2282	1226	2189	1378	1787	1345	1253
Ø	Cuitiva	181	2035	315	2022	318	2307	171	2526
σ	DUITAMA	3773	9221	7723	10765	31865	20672	36551	11928
10	Firavitoba	950	6049	780	5803	1107	4919	1276	4005
11	Floresta	442	5084	441	4577	597	4845	1004	4024
12	Gameza	530	4596	598	5384	759	4978	1108	5004
13	Iza	438	1739	546	2311	606	1676	568	1114
14	Mongua	624	4375	069	5684	883	6254	1483	4663
1- 10	Mongui	885	2841	859	2754	1349	3091	2012	2229
16	Nobsa	412	2433	548	3003	2686	6508	2583	7711
17	Paipa	1006	8967	1293	10564	3105	11638	4260	12714
13	Paz del Rio	194	4363	650	4740	2748	5855	3464	4272
*Dat	ta were adjusted	to confo	rm with 1	the 1973	territoria]	l subdivi	sion.		

• cN	Municipal	-	938	195		19	64	19	73
	Unit	Center	Rural Area	Center I	Rural Area	Center	Rural C Area	enter	Rural Area
19	Pesca	1143	9519	1 9 86	13404	2591	14996	2134	8985
20	Samaca	710	5550	659	6638	1489	8993	1874	9255
21	Santa Rosa	2119	3632	2228	4215	3656	5722	4017	5184
22	Siachoque	497	4470	562	5655	611	5618	642	5313
23	Socota	856	11440	722	12581	919	12392	982	11302
24	Socha	874	6024	975	6538	2120	7378	2544	6169
25	SOGAMOSO	5216	16463	13574	15503	32274	19365	43891	19847
26	Sotaquira	340	5752	348	6247	556	7402	577	3 60
27	Tasco	575	5631	565	6951	1175	7827	1310	8619
28	T1basosa	691	4003	768	4248	1275	4979	1737	5199
29	Toca	786	4656	766	5216	1282	6684	1656	6476
30	Topaga	533	2508	491	2961	629	2923	750	2505
31	Tota	380	5648	281	6152	449	5524	484	4502
32	TUNJA	16597	20081	23008	21242	40451	28454	51620	25853
33	Tuta	597	4754	760	5141	1058	6595	1146	6456
34	Tutasa	193	2106	140	1815	168	2604	156	3138
35	Ventaquemada	244	6500	348	9194	359	10437	617	10706
So	urces: Departam	ento Admi	nistrati	vo Naciona.	l de Est	cadistica,	DANE (1955	i, 1969,	1974)

Table 5.--Continued.

subdivided by a new law into the departments of Cundinamarca, Boyacá, Cauca, Magdalena, Orinoco, Venezuela, and Zulia. Thus the regional importance of Boyacá was legally confirmed.

As has been documented by Pardo (1972:20-21), since that time Boyacá remained a distinctive part of different regional denominations adopted in 1824 (<u>departamento</u> of Boyacá), 1831 (<u>provincia</u> of Tunja), 1857 (<u>estado federal</u> of Boyacá, subdivided into the <u>provincias</u> of Tunja, Tundama, Vélez, and Casanare), 1886 (<u>departamento</u> of Boyacá), 1905 (<u>departamentos</u> of Boyacá and Tundama). In 1909 the <u>departamento</u> of Tundama was again integrated with Boyacá after an abortive attempt to further split the region into four <u>departamentos</u>, Tunja, Chiquinquirá, Santa Rosa, and Vélez.

Since 1909 Boyacá has remained a <u>departamento</u>. But its size has changed with the vagaries of politics in Bogotá and Tunja. The case of Casanare as a trans-Andean territory of Boyacá, a sort of cattle-ranching colony most of the time under the personal control of a few privileged Boyacense cattle barons, has already been mentioned. On the other hand, the seeds of territorial instability have sprouted time and again in secessional movements. There is a definite tendency to city rivalry, particularly strong in Sogamoso with respect to Tunja. In a number of occasions there have been talks of secession. The prospect, though,

seems to have lost ground with the creation of the <u>intendencia</u> of Casanare--a territory which had been looked upon as the spatial raw material for a <u>departamento</u> of Sugamuxi. The idea is far from being new. There actually existed a unit called that name from 1881 to 1886, with Sogamoso, of course, serving as the departmental capital. For other reasons, mostly geographic isolation from Boyacá proper, the Territorio Vásquez, in the Western lowlands, has also been concerned with <u>independencia</u>, with the new city of Puerto Boyacá heralding the desire of becoming the administrative center of a <u>departamento</u> of the Middle Magdalena Valley.

Administrative instability has been also present in the municipal subdivisions. This is to be expected in peripheral areas which eventually reach settlement maturity and thus become eligible for municipal status. Thus, during the past two decades a few <u>municipios</u> have been created in the Territorio Vásquez and in the eastern slopes of the main Andean range. A very unusual situation existed in the <u>municipio</u> of Tunja. By decree the late dictator General Rojas Pinilla decided to enlarge its municipality by annexation of seven surrounding <u>municipios</u>--Sora, Cucaita, Chíquiza, Motavita, Oicatá, Chivatá, and Soracá. In 1976, 23 years later, someone filed a suit contesting the constitutionality of that decision and a judge has

ordered that the original status of those former <u>municipios</u> be restored.

Internal and External Relationships

Tunja is only 170 kilometers from Bogotá. Today Central Boyacá is probably one of the best served regions in transportation. The Central Highway is paved and relatively well maintained, and it is paralleled by the Northeastern Railroad.

Most likely, the nearness to Bogotá has prevented the success of air transportation in Boyacá. Airports were built in Tunja and Sogamoso, and even a regional airline (TABOY) was organized with official funding in the early 1960s. However, the operation became bankrupt, mostly because of lack of passengers.

Until the turn of the twentieth century Boyacá was linked with Bogotá through the <u>camino real</u> (Royal Trail) which had been built in colonial times, connecting Bogotá with Caracas and Quito (Pardo 1972).

The <u>Carretera Central del Norte</u> (Northern Central Highway), following approximately the old trail route, was completed to Tunja in 1908. The Boyacenses were astonished when President Rafael Reyes, a native of Santa Rosa de Viterbo, made the inaugural trip to his <u>departamento</u>. He spent only six hours riding in a French automobile. That was a true record, since previously it took two Strenuous days on horseback to reach the nearest railroad

station, in Nemocón, not very far from Bogotá (Santos 1962). The transportation situation was improved when the railroad was extended to Boyacá as the <u>Ferrocarril del Nordeste</u>. In the early 1930s, Sogamoso was finally linked with Bogotá by rail. Internally, feeder roads were gradually built in the 1940s and 1950s. In time, almost every village was linked with the central transportation network. And more recently, since the mid-1960s, the implementation of a program of <u>caminos vecinales</u> (rural trails) has delivered the jeep and the truck, at least during the dry season, to almost every rural neighborhood.

The improvement of the transport infrastructure has resulted in a serious man-drain from Boyacá. Increasing accessibility occurred simultaneously with the spectacular urbanization drive of Bogotá since the 1950s. Furthermore, in the late 1940s and early 1950s, due to widespread political violence many villages that were predominantly affiliated with the Liberal Party were deserted. Bogotá was the ultimate place to find protection, and there townspeople and peasants alike went.

The good transportation network serving Boyacá, then, has been used mostly as an outlet which hides the basic dynamism of the Boyacense people. Population has been rapidly growing in Boyacá--but many Boyacenses simply do not stay home. Uncounted families gradually shift domicile from the rural neighborhood, to the local village,

to the provincial city, and eventually to Bogotá and elsewhere--a process indicative of their geographic as well as social mobility.

CHAPTER IV

FACTORS AND INDICATORS OF RURAL CHANGE

Change in rural areas can be conceptualized as the cumulative response of its inhabitants to exogenous stimuli. Furthermore, such responses can be hypothesized as dynamic aspects of the society. Their variability may be thought of as a function of several factors, some playing the role of facilitators while others act as deterrents.

In this investigation industrialization is assumed to trigger rural transformations. A descriptive model has been designed to outline the major steps of the process of change for a region in association with city growth (Figure 4). A similar sequential schema is Myrdal's 1957 model of circular or cumulative upward causation of earlystage regional development (Keeble 1967:258).

In the proposed model, urbanization is induced as a result of industrial activity initiated in the provincial, pre-industrial town, theoretically increasing the demand for goods and services of the countryside. By cumulative causation, rural people moving to the city eventually contribute to the process of city growth, thereby further increasing economic pressures on the rural



Figure 4 Regional Development Induced by Industrialization.

Simultaneously, to facilitate city-hinterland areas. interaction, transportation facilities are gradually improved. New functions are likely to be performed by the city to satisfy new wants of the rural population. The outcome is envisioned as a system which exhibits regional harmonization of functions, metropolitanization, and rural modernization. When all the feedback mechanisms and growing integration of the economic and social forces have fully operated, a condition of regional development is assumed to have occurred. Remnants of traditionalism and enclaves of marginality would be eliminated. In this chapter some of these processes will be examined, and the findings and manifestations of change and modernization presented.

The Sources of Change

Several factors are contributing, directly and indirectly, in the modification of Boyacá's "traditional order." Those factors which are usually thought of as material sources of change, industrialization, the allocation of investments in physical infrastructure, and the provision of basic public services, are examined. The research makes no attempt to delve into many subtle stimuli carried out through the channels of personal and mass communication, and the country-wide and oftentimes world-wide instillation of societal evolution.

Industrialization

Frequently manufacturing is regarded as the prime mover of development in the Third World.¹ Increased participation of the industrial sector in a developing economy generates forces which precipitate a transition from traditionalism and modernity. Manufacturing is of course the decisive factor that brings about the end of a distinctive set of social, economic, and political phenomena characterizing the pre-industrial city (Sjoberg 1955). Beyond this, a third categorization, that of post-industrial cities is gaining popularity in developed economies where manufacturing is superseded by tertiary activities.

The direct impact that industrialization may have upon peasant communities is relatively limited. Rather, it is the indirect effects of the process which count more. Thus, modernizing effects should be seen as stemming from urbanization as a by-product of industrialization.

In Boyacá, industrialization began as a major economic trend when the blast furnace of Acerías Paz del Río, S.A., a government-sponsored corporation, was fired in the steel mill of Belencito (<u>municipio</u> of Nobsa), in 1954. Before that time, some industrial activity occurred

¹Actually, in the final analysis the primary carriers of modernization are science and technology as applied to the satisfaction of human wants. Industrialization and urbanization, then, are merely instruments of the process of diffusion of the prime factors (Berger et al. 1974).

primarily in food processing--beverages, flour milling-and textiles.² A handicraft tradition existed in this region within the economic framework of a typical preindustrial society. But, the Paz del Río iron and steel industry precipitated an entirely new economic and technological order.

The Belencito plant enabled Colombia to become practically self-sufficient in the production of iron and steel, and generated a number of important ancillary industries (Birbragher 1965; Acerías Paz del Río 1976; Colombia Information Service 1976). Currently, the factory processes some 700 tons of iron ore, coking coal and limestone per day brought to Belencito from Paz del Río, Tasco and Samacá, and Nobsa, respectively. As reported recently, "plans have been drawn up for increasing Paz del Río's steel producing capacity. The short run effect, upon completion in 1979, will be to attain an overall yearly capacity of 400,000 metric tons to keep the steel supply in balance with the installed capacity of the rolling mill.

²The town of Samacá, due west of Tunja, was about to become the iron capital of the region a century ago. A law was passed in 1879 establishing a <u>ferrería</u> (smelter) in Samacá but the initiative never prospered (Acerías Paz del Río 1976:2). More important in the exceptional history of this village was the development of a textile factory, a unique feature in Boyacá's economy. The plant was established in 1895 and became one of the most important in the country. Due to competition of better plants in western Colombia, this factory eventually was closed in the early 1950s. Since 1968 the plant is active again, with modernized machinery and new management.

In the long run, plans are under consideration to expand production of steel ingot, bringing capacity up to one million metric tons per year" (Colombia Information Service 1976).

According to data obtained directly with Acerfas' Economic Studies Division in Bogotá, the corporation's current payroll amounts to 7,000 people, of which 5,200 are production workers assigned to the processing plants of Paz del Río and Belencito as well as to the mines of Tasco, Paz del Río, Nobsa, and Samacá. Nearly 81 percent of this labor is Boyacense, coming mostly from the Central Boyacá region. This means that about 5,000 families-over 20,000 people--depend on Acerías for their livelihood. Although no data as to origin of the workers is available, officials at Acerías' presume that the majority of the firm's laborers are former peasants.

While this may provide an indication of the current numbers of rural people directly experiencing the effects of industrialization, it must be realized that two decades of aggregated effects would have had greater significance. Actually, the main job boom associated with Acerfas took place in the early 1950s when the plants were being built. At that time thousands of peasants were hired for unskilled construction jobs. Nearby towns and villages prospered by the influx of new money into the area. Sogamoso, the Self-proclaimed ciudad del acero, the steel capital,

overnight was transformed from a quiet agricultural service center into a bustling, boom town.

Acerías has done more than merely paying good salaries to former peasants. Since the very beginning a Human Resources Division was organized to improve the general socio-cultural conditions in the region. For all practical purposes, by 1976 illiteracy had been eliminated among its workers. Since Acerías provides education for its employees and their families, today there are some 1,600 children enrolled in the corporation's elementary school system. Technical training is provided through the SENA (National Apprenticeship Service), which is located near the Belencito factory, as well as through schools of mining. An engineering school was recently founded in Sogamoso as an extension of the University of Tunja system.

The socio-economic status of the people employed by Acerías is the highest in the region. Salaries are reported over 30 percent above those in any other local industries. This accounts for Boyacá's third place ranking in labor income, after Antioquia and Cundinamarca.

Moreover, the impact of Acerías Paz del Río in Boyacá is visible in the number of ancillary industries developed in the Upper Chicamocha Valley. A sizeable number of small metal-working plants (talleres) employing less than ten people are flourishing in the Central Boyacá's

three main cities, Tunja, Sogamoso, and Duitama. The most significant industrial developments are, nonetheless, those of <u>Metalúrgica Boyacá</u>, <u>Indumil</u>, and to a lesser extent Sofasa.

Metalúrgica Boyacá is a private corporation operating on the North Central Highway, some 30 kilometers northeast from Tunja. This factory, established in 1961, produces approximately 45,000 tons of high quality laminated steel yearly. Several improvements introduced in its equipment since 1974 have placed this factory among the best of its kind in South America. According to data supplied by the corporation's President. Metalúrgica Boyacá employs 645 workers, and in his words, these "workers are almost entirely native to the region where the factory is They are former agriculturalists who shifted to located. manufacturing jobs, without losing their customs nor leaving the region. These people have substantially raised their cultural and economic standards" (Londoño, Eduardo, personal interview, 1976). A sample interview taken among the workers confirmed these remarks. About 86 percent of these workers were of rural extraction, and most of them indicated they would rather keep earning a fixed salary in the factory than returning to subsistence farming.

Another important metal-working industry is Indumil, located in a semi-rural place between Sogamoso and Belencito. The factory specializes in cast iron works
to produce parts for different types of machinery. In late 1976 the Indumil plant employed 420 laborers. A random sample of the workers revealed that 87 percent were born in the Central Boyacá region, and of this group, 64 percent were born from peasant parents. They were relatively satisfied with the salaries paid by Indumil (an average \$2,600 pesos per month), but approximately 15 percent declared they might eventually return to their home area in the countryside. The rest were considering the prospect of moving elsewhere--Duitama, Bogotá, and even Caracas.

Somewhat related to the foregoing industries is Sofasa (Sociedad de Fabricación de Automotores, S.A.), which operates a plant in Bonza, between Duitama and Paipa. Sofasa produces engines for the Renault automobiles which are assembled in Antioquia, western Colombia. The plant was a controversial issue, and as it developed its location turned out to be a political compromise. The engines are manufactured in Bonza while the automobiles are assembled in Antioquia.

The Bonza plant gives employment to 750 people, the majority of whom are skilled labor who average salaries of \$4,700 pesos per month. Seventy-one percent of the laborers were Boyacense, and of these, 80 percent came from the Central Boyacá region. The average salary earned by Boyacense laborers in Sofasa was under \$3,500 pesos

per month, which is indicative of their little qualified skills. In this particular case, only 40 percent were of rural extraction.

Of several other industries established in the Central Boyacá region such as Cementos Boyacá, Bavaria beer (Duitama), Malterías (Santa Rosa de Viterbo), Empresa Licorera de Boyacá (Tunja), Embotelladora de Coca-Cola (Duitama), Caolines Boyacá (Tunja), Ladrillos Maguncia (Sotaquirá), as well as the thermoelectrical plant of Paipa, the distinguishing feature is the absolute dominance of Boyacense laborers in their payrolls. Of these industries, Cementos Boyacá is the most important, employing 314 workers. Cementos Boyacá is a semi-official corporation which began production in 1962, taking advantage of rich limestone deposits of the municipio of Nobsa. Currently, about 360,000 tons of cement per year are produced, and it is expected that by 1977 the output will expand to 420,000 tons. Data supplied by the corporation indicate that in 1975 it contributed to the regional economy over \$100 million pesos in different expenditures (near \$26 million in salaries alone).

If to the number of laborers employed in these industries are added those Boyacense laborers employed by Acerías Paz del Río, and those presumably of Boyacense origin working in many small plants scattered throughout the Upper Chicamocha Valley, a decisive impact of

manufacturing on the region's economy as well as on its societal characteristics should be expected to have occurred.

Regional Infrastructure

A concomitant development of the industrializing trend initiated in Boyacá in the 1950s has been the transformation of its physical infrastructure. The major developments concern transportation and energy.

Up to the 1950s the only relatively passable highway was the <u>Carretera Central del Norte</u> connecting Duitama, Sogamoso, and Tunja with Bogotá. It was, however, a narrow, winding road designed and paved for another era. Shortly after the heavy trucks transporting products from Belencito began rolling, the pavement badly deteriorated. In the following years traffic grew in such a way that plans had to be drawn to rectify the design and to widen and repave the road.

By 1957 the sector from Bogotá to Villapinzón (in the nearby department of Cundinamarca) had been completed and work was under way in the sector westward from Tunja. In 1960 this part was completed, and from then on gradually the highway from Tunja to Duitama and Sogamoso was allocated investments. President Carlos Lleras inaugurated the whole system in 1970.

The new highway made traffic easier not only for cargo but for passenger vehicles. Communication between Boyacá and the rest of central Colombia was greatly enhanced. Eventually passenger service on the railroad was eliminated. Acerías Paz del Río extended the railroad for about 30 kilometers away from Belencito to the iron ore mines. Since the 1950s use of the railroad has decreased considerably because the highway not only attracted passenger traffic but also a large proportion of the cargo of cement, steel, and the agricultural goods produced in the region. Duitama and Tunja have become important transportation nodes both for passengers and freight. Each constructed a central bus station to handle the operations serving the rest of Boyacá and the departments of Santander, and Norte de Santander.

The second major transformation which occurred simultaneously with industrialization was that related to output and its transmission. By 1953 Boyacá produced some 2,214 Kw by means of small diesel plants, which were insufficient to meet regional needs (Reyes 1954:Lxvi). Until that time Tunja, the capital city, was well-known in the country for its chronic shortages of water and electricity--to say nothing of the other towns.

Beginning in 1954 a plan of expansion of energy sources was effectively carried out by <u>Electraguas</u> (the national agency specializing in energy problems, now known

as Icel),³ and Electrificadora Boyacá, a semi-official company which own and operates de public electrical system. Successively, thermoelectric plants were built in Tunja and Paipa, and a huge hydroelectric operation in the eastern Andean slopes, on the Batá River, was about to begin production in mid-1977. The main benchmark in Boyacá's electrification process was the construction of the plant at Paipa, completed in 1963. The unit produces 33,000 Kw (Montejo 1973), and is connected with the national energy network. A twin unit was added in the early 1970s, making Paipa a key energy center of the Regional Electrical System of the Northeast. ICEL has provided the investments needed to construct a 220 Kw transmission line interconnecting Bogotá, Tunja, Bucaramanga, and Cúcuta. A similar line 120 kilometers long will shortly interconnect Paipa with the hydroelectric plant of Chivor, on the Bata River, making available for the system 200,000 Kw additional (Monteio 1973:6).

Socio-Economic Factors

All levels of government generally have failed to provide adequate public services to the rural areas of Central Boyacá. Frequently, this occurs where peasantries constitute the bulk of the population. The countryside is

³Actually, Acerías Paz del Río began the process of large-scale electrification of the region when it built two thermoelectrical units in 1953 yielding 25,000 Kw. The whole output, though, was coped by the Belencito plant.

afflicted with poverty and backwardness because the provision of public services is assigned to the regional government, which in turn has to finance its administrative and investment programs on the basis of revenue from the countryside. Therefore, to say that governmental agencies are chronically short of funds is an understatement. During the pre-industrial era there was actually little pressure for funded governmental action, and the peasantry subsisted in relative isolation with little or no wants beyond the community's own resources. However, highway construction brought to an end the region's isolation. As a result, through increased interaction with more developed areas, local leaders and the general population realized the need for improvement in their socio-economic infrastructure.

Education

However, a minimum infrastructure of social services in the region has been developed by the local government over the past few decades. In spite of deficiencies and limitations, today there is a marked contrast in qualitative and quantitative levels of education and health services in comparison to those found in the late 1940s. And presently the government is promoting local community action programs.

An effective educational system is vital to transform any society. Education has been a major concern in

Boyacá, at least in terms of training people for instructional careers. This trend was so prevalent that some people used to disparingly comment that Boyacá's only production lines were school teachers and policemen. Many teachers indeed were born and trained in Boyacá, but migrated to other departments.⁴

However, by 1950 Boyacá was desperately lacking in educational facilities. The 1951 census established that almost 60 percent of its school-age population (over seven years of age) was illiterate. This condition, of course, was more of a problem in the rural areas, where the illiteracy rate rose to almost 65 percent in 1951 (DANE, 1955:224). Three examples from typically rural <u>municipios</u> are illustrative of the high illiteracy in the 1950s: Socotá (63.5 percent), Betéitiva (68.0 percent), and Tota (69.5 percent). The rural areas of Duitama, Sogamoso and Tunja were not much better off than the rural <u>municipios</u>, with percentages of 47.2, 57.2 and 60.8, respectively. Even in Tunja, the regional capital, the illiteracy rate was 41.2 percent (DANE 1955:224).

⁴Teachers had been trained in Boyacá since 1872 when a Normal School was founded in Tunja (Suárez 1939:16) Under the direction of a German educator, Ernst Hochike, the <u>Escuela Normal</u> was a success since the beginning. The school earned national reputation with another German teacher, Julius Sieber. Eventually the Normal School evolved into a college of education which later was annexed to the National University in Bogotá.

Since the 1950s important changes in education in the Central Boyacá region have occurred. First of all, the Universidad Pedagógica was established in Tunja in Initially, it was a college of education exclusively 1952. dedicated to train high school teachers. In 1960 a school of agronomy was added to the system, later to be supplemented by specializations in engineering, economics, and nursing. Although no evaluation has been attempted to ascertain the impact which the university may have had on the gradual transformation of Central Boyacá, it is believed to have been instrumental in the development of Tunja as a growth pole. Perhaps the roles in which the university could have better served the region are in the fields of research and agricultural extension, but thus far they have been meagerly pursued.

The Universidad Pedagógica y Tecnólogica--as it was named when agronomy was added to its programs--has established two branch campuses in Duitama and Sogamoso that specialize in mines and electrical engineering. A technical vocational school, attached to the Duitama campus, plays an important role in training technicians at the intermediate level, many of whom are of peasant extraction. Needless to say, these educated peasants remain in the cities because their training is geared toward urban employment.

Other important educational developments which have occurred during the last guarter of a century include the creation of the Escuelas Radiofónicas de Accion Popular, a system of mass education by radio developed by a priest in Sutatenza, in southern Boyacá; the extension to Boyacá of the SENA system (Servicio Nacional de Aprendizaje, or National Apprenticeship Service); the organization of several consolidated high schools; the creation of new elementary schools in the rural neighborhoods (some of them with direct involvement of the community); and the organization of the Instituto Tecnológico Agrícola, ITA, in Paipa. The latter, as well as a vocational school located in Toca, emphasize agricultural training of students along with the regular high school curriculum. ITA may become a crucial factor in future rural transformations.

There are indications that changes in the rural educational system of Boyacá have taken place but at a slow pace. Little progress was achieved during the 1950s. In fact, by 1963 it was estimated that the illiteracy rate of the population older than seven years had been reduced to near 55 percent (Martínez 1967:v.2:iii-1). Furthermore, "out of 227,293 school-aged children only 105,104 were enrolled, which leaves 53.75 percent out of the schools. This percentage, however, compares favorably with the 1951 figure which was 79.95 percent" (Martínez 1967:v.2). The 1963 aggregate data improved sensibly four years later

when the DANE estimated the illiteracy rate for population older than seven years at only 38.46 percent (DANE 1969:74).

More recently, in a research project sponsored by the University of Tunja, further improvement was noted. The number of children attending school increased from 105,101 in 1963 to 144,461 for 1971, an increment of 37.3 percent in eight years (<u>Ofisel</u> 1976).

Although the regional framework defined by <u>Ofisel</u> for its <u>Altiplanicie Central</u> unit does not entirely match the Central Boyacá region used in this investigation, its data can give an approximate indication of the educational infrastructure of the latter (<u>Ofisel</u> 1976). It is evident that, except for Paz del Río, the largest student concentrations in the Central Boyacá region are found in cities and towns (Table 6). The largest percentages of schools are found in the rural areas, a circumstance which is explained on the higher student/school ratio found in the cities. While the rural schools serve relatively large, sparsely populated areas, the cities have school concentrations of several hundred students usually from a very compact, densely populated neighborhood.

The problem of an adequate education for their children is a very important concern of some peasants. Twenty-two percent of the respondents during the field work regard education as one of the basic social needs of the community. Although apparently there is no serious

A. Schools						
Sub-Region	To	tal	Ru	ral Areas	Cities	& Towns
	No.	Per cent	No.	Per cent of Sub-Region	No.	Per cent of SubRegion
Tunja	263	41.9	197	74.9	66	25.1
Sogamoso	143	22.8	102	71.3	41	28.7
Duitama	103	16.4	74	71.8	29	28.2
P az del Rio	119	18.9	106	89.1	13	10.9
Total	628	100. 0	479	76.3	149	23.7
B. Pupils						
Tunja	30,384	42.2	14,377	47.3	16,007	52.7
Sogamoso	19,782	27.4	9,153	46.3	10,629	53.7
Duitama	12,329	17.1	5,375	43.6	6,954	56.4
Paz del Rio	9,571	13.3	5,584	58.4	3,987	41.6
Total	72,066	100. 0	34,489	47.8	37,577	52.2

Table 6.--Schools and Pupils in Rural and Urban Areas of the Central Boyaca Region in 1971.

Source: OFISEL (1976:77).

shortage of schools (only 20 cases out of 887 surveyed had no school in their immediate neighborhood), some children must walk long distances. In 36 cases such "walking distance" was longer than five kilometers, five of the cases up to eight kilometers. Such instances, however, were found in the remote <u>páramos</u>, a very sparsely populated area.

The quality of the rural school system is highly questionable. More often than not the school is so poorly equipped that it barely can be distinguished from a peasant farmstead. In quite a few instances the peasants complained that the appointment of the teachers was delayed for several months, in others that teachers tend to reduce their work load thereby enabling themselves to travel to a nearby city where they study or hold a part-time job.

The spatial organization of the elementary school system in Boyacá is very inefficient. The <u>Ofisel</u> (1976) study concluded that a rational regionalization is basic to any serious attempt to improve the system. It probably will require little new investment in personnel, but a real effort at a consolidation plan is needed where a single school complex could more adequately serve the nearby residents than several separate units. A new climate at the bureaucratic level in Tunja might help in this direction. Effective in 1977 the elementary school system is no longer the responsibility of the departmental

government. After nationalization of this basic social service, school construction and location, as well as teacher appointments, are now less affected by provincial political interferences and intrigues.

Health Services

The social infrastructure of Central Boyacá includes other services such as health care, agricultural extension, credit, applied research, and regional organization.

Health programs in the region are coordinated through a Public Health Bureau, which technically is a dependency of the Ministry of Health. The operation of the service is carried out through hospital and health centers. An official branch of the regional administration called the <u>Beneficencia</u> is in charge of funding hospitals. Its sources of revenue are the regional lottery and income produced by rent of buildings owned by this agency.

Although Central Boyacá is relatively free of many diseases which are commonplace in the lowland tropics, the region lacks adequate health and medical services. At the beginning of the 1970s Bernal and Alvarez (1971) reported that there was only one hospital for every 40,000 people in Boyacá, but that only 54 percent of the available hospital beds were used each year. They concluded that the relative underutilization was due to the inaccessibility of the service to patients living in remote areas.

Health and medical facilities are one of the most important needs in rural Boyacá. The survey indicated that these wants ranked fourth immediately after electrification, water supply, and communications. One third of the peasants interviewed listed health as one of their basic needs. Again, as in the case of education, hospitals and health centers are there, but they lack in sufficient equipment and adequate personnel.

Central Boyacá can be subdivided into health service regions on the basis of residence of actual or potential patients. The health care poles are Sogamoso, Tunja, and Duitama, and to a lesser extent Paipa and Santa Rosa de Viterbo. Sogamoso is the center of the largest health service region. The service areas of Tunja and Duitama are smaller than in the past decade, because part of their clientele is being served by relatively new hospitals in Paz del Río, Santa Rosa de Viterbo, Paipa and Samacá. However, with respect to specialized medical care, Tunja still is the undisputed regional pole.

Other Services

Several government agencies have the responsibility to provide agricultural extension services. For example, the Secretariat of Development is staffed with veterinarians, agronomists and agricultural technicians assigned to such functions. The <u>Caja Agraria</u> (Agrarian Loan Bank) is also involved in agricultural extension. Agents of

this Bank conduct field demonstrations, explain the use of new inputs, and diffuse new farming techniques. The School of Agronomy at the University of Tunja trains its students in agricultural extension work by means of actual practice in the field. Since 1967 SENA (National Apprenticeship Service) is conducting a "Rural Mobile Program" supposedly among "marginal rural populations." It seeks to modernize the agricultural sector by disseminating "technological packages" and modern marketing techniques. From 1967 to 1976 SENA claims to have given instruction to near 47,000 individuals in short courses (Sarmiento 1977). INCORA (Land Reform Institute) is another agency that deals with rural problems of the region, but its activities deal more with irrigation projects than in the area of technical assistance. ICA (Colombian Agricultural Institute), which is the leading farm research organization in the country, has been involved in both applied research and extension work in the Central Boyacá region. Based on its experimental station of Surbatá, between Duitama and Paipa, this agency has worked for three decades on technology transference to minifundist peasants (Zapata 1976:3).

Thus, it would seem that the rural areas are well served by a variety of extension organizations. At the grass-roots level, however, the situation is far from encouraging. In all, only 129 farm units out of 887 (14.5 percent) have received, or participated in agricultural

extension practices. There appears to be a definite inverse relationship between distance from the main urban centers and the number of extension services provided. Thus, in the Tunja-Ventaquemada area, twenty cases of extension services were reported, twenty-seven in the Paipa-Duitama area (ICA's immediate zone of influence), and merely five cases in Sogamoso. In the peripheral municipios of Socotá and Socha only three farmers out of seventy interviewed reported extension services received. Iza, Corrales, Paz del Río, and Tutasá reported no cases of peasant contacts with extension agents.

Credit is an important factor related to rural modernization. Although the region is well served by the <u>Caja Agraria</u> and other banks today, that was not always the case. Prior to the 1950s it was difficult for the rural sector to receive credit. Now the region has a fairly large number of banking facilities specializing in credit functions for the rural sector. This of course, does not mean that credit opportunities are available to everybody. Local banks are highly selective to whom they lend money. For Boyacá as a whole as well as for the region being studied, remarkable increases in banking services occurred in recent years. Since 1950, the Caja Agraria, a semi-official bank specializing in rural credit and development, established fifty new branches in Boyacá in contrast to only nine available before. In the Central

Boyacá region fifteen cities and towns now have offices of the Caja Agraria, 12 of them founded after 1950. Needless to say, the three old offices were those located in Tunja, Duitama, and Sogamoso.

Applied research is restricted to the ICA experimental station of Surbatá (Duitama). Since 1946 research in this station has concentrated on cereals, peas, and vegetables, and more recently on dairy cattle and fruit trees. Concrete results of years of investigation have led to the development of fourteen improved wheat varieties, one improved corn variety, and the genetic fixation of the most widely accepted barley strain cultivated in Boyacá (Zapata 1976). In 1976, however, the station of Surbatá had funding and administrative difficultues, which were endangering its survival.

Regional Development Plans

No comprehensive program of regional development has been implemented in the study area. A few attempts, however, were made in the past to obtain such commitment. For instance, in 1962 a bill was introduced in the House of Representatives to create the Upper Chicamocha Valley Regional Authority with the purpose of designing and implementing an integrated plan of regional development (Rincón Galvis 1962:7). The bill did not pass. Then, in 1964, the first Liberal governor of Boyacá in more than two decades, Dr. Gustavo Romero, attempted to initiate

basic changes in the economic structure of the department. Not only did he encourage industrialization, but introduced the idea that sectoral and regional planning were crucial preconditions for development. An agreement with the Organization of American States to secure technical assistance at the international level was signed in 1964. The result was a voluminous report on resource evaluation of Boyacá (Martínez Palacios 1967). Among other strategies, the OAS mission recommended the creation of a special planning bureau as well as the creation of a financial regional corporation.

As a result, the <u>Oficina de Planeación</u> and the <u>Instituto de Desarrollo de Boyacá</u> (IDEBOY) were established. The role performed by these two agencies thus far is rather disappointing. To add to regional frustrations, both agencies have become the bureaucratic prey of local politicians. As a result, these agencies are affected by frequent changes of directorship. For example, during the year of the field work for this research there were three different directors of IDEBOY. To make matters worse, these agencies are not properly funded.

Expressions of Change

Change manifestations in Central Boyacá were identified for both the urban and the rural areas. Direct observation and interviewing, as well as secondary sources were used. In the remaining part of this chapter a

description and qualitative examination of the processes leading to rural transformation are presented.

Urbanization Trends

Against a demographic background which was always dominated by rural population (75.5 percent of the Boyacense lived dispersed in the countryside or in settlements less than 1,500 inhabitants when the last census was taken in 1973), city growth is an outstanding manifestation of changes affecting the region in the very recent past.

Although in Boyacá's core area the proportion of rural people still is high (61 percent in 1973), the situation is now very different from previous decades when the proportion of rural population was well over 80 percent (Table 7). The increase of urban population from 11.1 percent in 1938 to near 40 percent in the mid-1970s is associated with the growth of the three principal cities of Central Boyacá--Tunja, Sogamoso, and Duitama (Table 8). There are only two other cities of comparable size outside the central region: Chiquinquirá (21,727 inhabitants), and Puerto Boyacá (11,617 inhabitants). These data are from the 1973 census. The urbanization trend is noticeably strong since the early 1950s.

The recent demographic expansion of the cities has been accompanied by transformations in their physical and socioeconomic structure. But, in many respects, Tunja, Sogamoso, and Duitama still conform largely to

Table 7		in Rural and	Urban	Population	in Boy	aca, 193	8-1973. ^a		
Census		Departme	nt of	Boyaca		Centr	al Boyaca	L Regio	ц
Year	Total	Rural	Fer cent	Urban*	Per cent	¥ of Boyaca	Total Region	% Rural	Urban
1938	705,060	657,511	93.3	47,549	6.7	35.19	248,105	<u>88.9</u>	11.1
1951	770,531	6 95 , 986	90•3	74,545	9.7	37.81	291,390	83.4	16.6
1964	991,548	807,135	81.4	184,413	18.6	41.94	415,831	69.6	30.4
1973	99 4,6 59	750,035	75.4	244,624	24.6	43.80	435,614	61.0	39.0
Sources:	Colombia for the are prel	-DANE (1955) 1964 data; C iminary cens	for tl olombia us out	he 1938 and a-DANE (197 put.	1951 (4) for	data; Co the 197	lombia-DA 3 data. T	NE (19 he lat	69) ter
of the t of Casan	^a Data wer erritory. are were	e adjusted t Data pertai excluded.	o confe ning te	orm with th o municipio	e 1976 s now a	adminis ascribed	trative d to the <u>1</u>	ivisi o ntende	n ncia
1,500 in	*Urban po habitants	pulation is , which is the termination of terminatio of termin	define he cri	d on the ba terion of t	sis of he Cole	agglome: ombian c	rations o ensus bur	f over eau (D	ANE).

Bertone and Cittee	1938	-1951	1951	1964	1964-	-1973
	Absolute Population Increase	Percent Growth Rate	Absolute Population Increase	Percent Growth Rate	Absolute Population Increase	Percent Growth Rate
Central Boyaca Region	43,285	1.23	124,441	2.73	19, 783	.5 .
Rural Population	22,471	47.	46,608	1.35	-23,613	1 16° -
Urban Population	20,814	4.31	77,833	7.36	43,396	3.28
Tun ja	6,411	2.51	17,443	4.34	11,169	2.70
Sogamoso	8,358	7.35	18,700	6.66	16,617	4.61
Duitama	3,950	5.51	24,142	10.90	4,686	1.52

Intercensal growth rates were computed.

Table 8.--Population Growth in the Three Principal Cities of Central Boyaca.

characteristics typifying the preindustrial city. Sjoberg (1955) defines the pre-industrial city as the urban component of a large "feudal" socio-economic and spatial structure. Some of the relationships structuring that kind of system still exist in Boyacá. Following Sjoberg's characterization, the physical structure of these cities still is dominated by narrow streets, low buildings, and compactness; the CBD is a subrogate of other focal points of community life (the central plaza and the cathedral); a large proportion of people earn their livelihood on handicrafts and household industries; and the social organization is run by the literate elite, with positions in the government, the church, etc., largely held by members of the sociedad (the "society" as the elite is generically identified as different from el pueblo, the people, the masses).

The church has much influence in running the city affairs. Here again Sjoberg's (1955:443) remarks are pertinent: "Religious activity is not separate from the other social action but permeates family, economic, government and other activities." However, the contrast between the church's influence in Boyacá in the early 1950s and today's is evident.⁵

⁵The regional archbishop used to command more power than the governor. He arranged for the appointment and dismissal of rectors of the university, mayors, and school teachers alike. He was feared and reverenced not only by the clergy but by almost everybody. In general the church's

Physically the cities have grown. New architectural styles are evident not only in the middle and lower class <u>barrios</u> being developed in the urban fringe but in some buildings replacing old colonial structures in the downtown areas.

Urban sprawl in Boyacá tends to follow the highways. In Tunja this trend is evident in the housing developments built along the main highway to Paipa as well as on the highway to Bucaramanga. A similar situation is observed in Sogamoso along the old highway to Belencito and on the road to Firavitoba (Williams 1974). It does not take much imagination to envision the coalescence of the urban areas of Sogamoso, Belencito, and Nobsa. In the outskirts of Duitama suburbanization is underway, especially along the highways to Sogamoso and Paipa.

As might be expected, wherever a factory is built in rural locations a village eventually develops. This is

involvement in politics was a fact known by all but never admitted in public. No one would dare to earn Bishop Angel María's animosity by denouncing it. Then, all of a sudden the traditional ecclesiastical apparatus and its monolithic hold of the Boyacense society began to weaken. In the mid-1960s a young priest, Martín Amaya, serving as the university chaplain in Tunja, openly challenged the archbishop's authority. By 1971 the students angrily notified the bishop to refrain from participating in university affairs--and no church representative has attended a meeting of the university higher council ever since. The most daring challenge to the bishop's ruling of the community occurred in 1976 when civic organizations in Boyacá threatened with a general strike if an empty seminary building were not given back to the people to be used as a hospital (Sánchez 1976). The building has been constructed with popular donations but never used.

occurring near the thermoelectric plant of Paipa, near the brick factory of Maguncia (Sotaquirá), and in the surroundings of "Metalúrgica Boyacá," in Tuta. Little development has occurred in Paz del Río, partly because the site is not well suited for urbanization and partly because personnel working in the iron-ore mines commute daily to nearby towns and rural communities.

Peasantry-City Interactions

As a result of improvements in the transportation network and because of the growing attraction of the industrializing cities, the interactions of the peasantry with the city has increased. Especially during the market days, peasants contribute with growing numbers to the increase in commercial activities. For instance, in Tunja's Fridays the streets are crowded with peasants not only from the local rural areas but from relatively distant places.

Urban Hierarchy

In the context of regional development the relationships of the three main cities among themselves and with other towns and rural communities have experienced some important changes. Today there exists considerable competition and specialization among the major urban centers. Sogamoso is becoming the regional industrial capital and is the closest commercial center for the eastern plains of Casanare. Duitama, on the other hand,

has evolved into an overland port where important lines of transportation converge from the department of Santander, northern Boyacá, the Paz del Río area, and Sogamoso. Eventually Duitama might coalesce with Paipa further adding to the metropolitanization of the valley.

Tunja remains as the political-administrative center of Boyacá. Most likely its significant role will remain as a university center serving the whole region of southern Santander, the Llanos and, of course, Boyacá.

A cursory survey of the Central Boyacá region shows a trend of service hierarchization. Some villages are taking shape as secondary centers--relative to the regional cities--at strategic geographic locations, to perform functions among rural communities increasingly prone of urban goods and services. Samacá and Toca are now playing such role with respect to Tunja, and the same thing do Santa Rosa and Belén as intermediate centers in the Duitama area, and Aquitania and Pesca in Sugamuxi. Paipa and Paz del Río are centers whose spatial hierarchical ties are unprecisely determined towards either Tunja or Duitama in the former, and Sogamoso or Duitama in the latter. Thus, the increase of urban-rural interaction has not only unleashed the functional expansion of the three principal cities, but has set the conditions favorable for an urbanization takeoff of a few villages. This, on the other hand, has been detrimental for many small villages

which barely had survived since colonial days. Now their chances for growth are almost nil. Many <u>pueblos</u> simply have been bypassed by the prosperity accruing to others. They do not belong to the modern era. "The slow tempo of life in the rural town and the leisurely way in which economic activities are performed are not geared to efficiency" (Alers-Montalvo 1967:65).

Other impacts of modernization upon the rural environment stemming from city growth are observed increasingly with concern. Actually, not everyone shared the enthusiasm for industrialization of the early 1950s. Some writers even warned of the side effects of the process. Bernal Jiménez (1954), for instance, feared that the many virtues of the Boyacense peasant could be easily lost as a negative sequel of progress. Presently, concern for pollution is not restricted to only the physical environment, since writers resent the manner in which peasants are being "contaminated" by modernization. Caballero-Calderón (1976:4) complains of the pervasiveness of the city, whose influences are "staining the countryside":

Nowadays the city is making its way to the remotest corners and villages of the country. It gets there in the form of shabby, trembling, overheated, noisy and crazy buses, overcrowded with a melancholic populace that is simultaneously ashamed of still being peasants and proud of starting to become urbanites.

The transition is under way. A former Ministry of Education and Rector of the University of Tunja charged in

his speeches that his department, cities and rural neighborhoods alike, were in the process of being dominated by what he called cultura del overol y del chofer (a truckdriver and blue-collar culture). This evolution is real and, to quote Odell and Preston (1973:55), "can be described by the elephatine term embourgeoisement that French social scientists have used." No doubt in this time of change, the peasant is under the stress of conflicting interests and attitudes, consciously or not, trying to remain loyal to his own values and traditions while at the same time tempted by the amenities of urban life found in the distant city. The peasant's psycho-cultural conflict can be defined by what Gould (1970:138) has called his "admixture of centripetalness and centrifugalness," evolving to alienation or "homelessness" (Berger et al. 1974:184) among those who have actually fled the countryside.

Other tangible problems engendered by urbanization are just in their beginnings. A few peasants already cited environmental deterioration in their account of local problems and needs. Such complaints are confirmed by observation of unarrested air pollution in Nobsa (cement factory) and Tunja (kaolin processing plant). The Chicamocha River is also a sad casualty in this confrontation of an agricultural environment with uncontrolled development. Industrial waste and sewerage from the urbanindustrial corridor are disposed of in the stream without

any control. In mid-1976 an exploratory panel comprised of representatives of several agencies identified the problem but offered no concrete solutions.

Expectations and Frustrations

The effects of change can be identified in the people's own perceptions of their wants, problems, and hopes, as well as in their expectations of the public sector's role in bettering their socio-geographical environment.

In 1967 Carlos Lleras signed a presidential decree creating an organization called Asociación Nacional de Usuarios Campesinos (ANUC), literally meaning the association of peasants using public services. The idea was to allow the peasantry an active participation in, and control of, the decision-making and implementation processes related to governmental activities addressed to the rural sector. The decree (Colombia-Presidencia de la República 1967) specifically determined ANUC's functions in sixteen areas of activity including credit, technical assistance and extension, education, marketing, housing, public utilities, experimental stations, health services, farm insurance, electrification, water projects, forestry programs, wildlife, and communications. If such a comprehensive integration of the peasantry in the mainstream of modern life could have been implemented, one of the

so-called "peaceful revolutions" would have come into being in this country.

When ANUC was introduced to Boyacá, the system had already lost the support of the succeeding conservative Misael Pastrana administration. It barely survives although somewhat attached to conventional programs of community action. As a vehicle of peasant participation in running his own destiny, ANUC has been ineffectual. Not more than twenty peasants interviewed for this investigation knew of ANUC's existence.

Therefore, decisions concerning peasant affairs in Boyacá continue to be unilaterally adopted outside the rural community. The peasants simply do not count--they tend to be regarded as minors for whom someone else should do the thinking. Furthermore, in Boyacá campesino is a pejorative synonym of indio, "Indian," irrespective of the actual racial stock of the peasant. It is commonplace for urbanites of all classes to refer generically to the peasants as indios brutos, brute Indians. Without probably knowing of it, Rogers' peasant subculture conceptualization is deeply embedded in the Boyacense urbanite. A member of the local gentry, for instance, portrays the Boyacense peasant as humble and resigned, individualistic, reluctant to accept technological innovation and participate in community cooperation, affected by a strong complex of inferiority, undernourished and uneducated, and easy prey

of diseases and political manipulation by local and provincial bosses (Castro 1967:59).

Therefore, governmental action in the rural areas more often than not is biased with urban prejudices. The peasant is expected to comply, to follow suit, to surrender, to reason only through the mind of some intermediary, at best. His destiny is led on the basis of vertical dependence within a hierarchy of <u>patrones</u>. Such type of structured community's relationships with the outside world is termed <u>clientelism</u>, as very aptly documented and analyzed for Colombia by Miranda (1976).

Against such a background, allowance was made in the research to try to identify, with the peasants themselves their basic needs, problems, and expectations. It required open-end questions whose processing was timeconsuming in extreme. But the findings are worth the effort.

Every family head was asked to identify the three principal needs of the community, and then to indicate what he or she would think was the government's role in relation to the peasantry at large. While the first question allowed the peasant to be objective and evaluative of first-priority wants of his local social environment,

the latter somewhat forced him to think on behalf of fellow peasants living elsewhere.⁶

Answers ranged from complete ignorance of even the most local needs, and indecision about what to expect from government, to acute awareness of the general role of public agencies in rural development. Some examples will illustrate the point:

An old woman in the Cómeza-Vaho <u>vereda</u> of Socotá, instead of providing an answer, replied: "You know more about our needs than we do. So please answer for me. And, ask a lot of things for us in your book, sumerced."

Another peasant in Gámeza bruskly remarked: "You have been walking around, haven't you? Then the answer is simple. We need everything. We have nothing, and your government remembers us for just only one thing--taxes!"

Another woman in Cómbita disassociated herself of any relationship with the outside world. She avoided any itemization of needs and expectations by saying: "God, myself, and my field plot." A whole philosophy of traditionalism, individualism, and self-sufficiency was thereby beautifully summarized.

⁶To facilitate comprehension of the question, the peasants were directed to think that the interviewer was the "governor" touring their region and giving them an opportunity to ask for his help on behalf, not only of the peasant's family and community, but of the Boyacense peasants in general.

Still another woman in the Callearriba <u>vereda</u> of Tasco interrupted her husband to tell of their living as <u>empeñados</u>, an arrangement whereby interests on personal loans are waived in exchange for rent-free occupance of a small plot. She then responded to the question of the government's role in rural affairs by indicating: "I think it must do as much as it can for us the poor." And then cautiously added: "And for the rich too, so that they don't oppose . . . "

On the other hand, an opinionated peasant of the San Francisco <u>vereda</u> of Duitama talked about neighborhood roads, rural aqueducts, a new approach for a functional elementary school curriculum, and above all, the need for a rural development program run by the peasants themselves "who are the ones who really know what ought to be done around here." He would not mind agricultural technicians to serve there as assistants.

Though these examples of the peasants' reactions may not appear sufficiently sophisticated for a piece of scientific research, they are important for the understanding of the problem. They convey the notion of a peasant's world in transition, full of contrasting images, conflicting attitudes, hope, suspicion and skepticism.

Table 9 summarizing the peasants' view of their community problems and needs, portrays fairly well their inclination towards modern ways. Throughout the area a

Rank	Needs and Problems	No. of citations	Per cent
1	Electricity	502	21.20
2	Water: domestic and irrigation	501	21.15
3	Roads and transportation	337	14.23
4	Health & Sanitation; Physicians	277	11.70
5	Technical assistance; Extension	197	8.30
6	Education (primary and vocational)	196	8.30
7	Rising costs of farm inputs	163	6.90
8	Extreme poverty conditions	30	1.26
9	Agricultural credit	27	1.14
10	Crop failure	26	1.10
11	Rising costs of living	25	1.05
12	No answers	10	.42
13	Others	77	3.25 ^a
	Total	2,368	100.00

Table 9.--Peasants' Perception of Regional Needs and Problems in the Central Boyaca Region.

^aOther needs and problems mentioned were: low prices of agricultural products, scarcity of labor due to migration to the cities, poor quality of some fertilizers, housing, crop disease, agricultural cooperatives, mechanization, rural insecurity, pollution, and government negligence. consistent want for electricity is observed, perhaps overemphasized by the novelties which no doubt the peasants associate with this element of modern technology. Some small appliances, however expensive they may be, are too tempting for a family that always has been modest in furniture and gadgetry belongings and truly humble in material wants. Electricity ranked equal to what seems to be the prime consideration for every farmer: water. The peasants rightly believe that a large project to store and distribute water is an immediate need for the area to be provided by the government.

Transportation and road construction and maintenance are another main concern of the rural population. They realize that they cannot longer afford to be isolated. By strengthening the program of rural road construction (<u>caminos vecinales</u>) the government would not only facilitate marketing and be better able to provide other services, but also would create an additional source of employment.

This survey also helped to identify the peasants' concern for the rising costs of agricultural inputs, which provide an additional indication of their commitment to modernization, but likewise indicate the lack of protection of the rural sector in the market relationships. Higher costs of inputs is a relative matter, namely these costs do not keep balance with prices for agricultural products.

This is further evidence that the peasants are easy prey of the unscrupulous comerciantes of the cities.

In Table 10 peasants' expectations of the government's role in the rural areas are summarized. This provides another indication of the integrative drive of the peasantry within the national economy. It confirms assumptions set forth in Chapter III, in the sense that water supply is the crucial problem of the region. Most other items listed by the respondents as areas where they expect the government to do something, underline a definite trend toward commercialization of their activities. They expect the public sector to set the rules of the market, to provide communication infrastructure, electrification, education, and technical assistance.

Still it must be pointed out that levels of entropy, understood here as the ability of the individual to assume someone else's role, are relatively low in the marginal regions. A paternalistic outlook remains very strong when a conceptualization of the government's role is attempted. Some of the peasants interviewed (about 12 percent of the responses) were unable to go beyond their own personal needs. There were, of course, peasants who believed that the government's role should be to provide direct help for the poor (6.2 percent).⁷ Those items

⁷However, if the circumstance that poverty was widely observed among the predominant small peasants is taken into consideration, the proportion of paternalistic expectations is relatively low.

	According to the reasants fer	ception.	
Rank	Expected Role	No. of Citations	Per cent
1	Finance water & irrigation project	s 141	13.29
2	Price regulations; marketing	123	11.60
3	Roads and transportation	115	10.84
4	Electrification	106	10.00
5	Education of all types	87	8.20
6	Technical assistance	71	6.70
7	Health and medical services	67	6.31
3	Direct economic help for the poor	66	6.22
9	More concern for peasant problems	55	5.18
10	Low-interest credit	35	3.30
11	Access to modern farm inputs	32	3.00
12	Housing	15	1.41
13	No clear idea, or no answer	127	11.97
14	Others	21	1.98 ^a
		1,061	100.00

Table 10.--Government's Expected Role in Rural Affairs According to the Peasants' Perception.

^aOther role areas expected were: keep the peace, change the government, marketing through co-operatives, salary regulations, and to give land for the poor.
representing less than 1 percent of the total number of possible governmental roles include such things as the maintenance of peace and security, increasing the minimum rural salary, to promote co-operatives, to provide marketing controls, and land grants for the poor. A total of seven peasants (.6 percent) pointedly suggested the greatest need to be "change the government!"

To summarize, it appears from the evidence that an important trend of transformation exists in Boyacá's urbanindustrial corridor as well as in its rural hinterland. Some indicators of rural change were identified. The following chapter will be dedicated to the analysis of the spatial distribution of a package of modern agricultural inputs.

CHAPTER V

RURAL MODERNIZATION PATTERNS ANALYZED

No simple formula has thus far been developed to measure a set of phenomena as complex as modernization. There are too many factors involved in it--environmental, economic, social, political, and cultural. Several of these are far from being value-free, making the objective evaluation of the process an almost impossible task, if the analysis is to be comprehensive. Therefore, when dealing with problems of measurement one has to rely, not only on quantitative procedures, but on intuition and nonquantifiable considerations.

A simplified operational definition of modernization on the basis of tangible technological elements, however, can provide an objective, measurable clue on the basis of which the developmental process may be analyzed in conjunction with other factors.

The Adoption of New Technology in Boyacá

Considering the accessibility factor with respect to regions relatively advanced in farm technology (e.g., the Bogotá plateau), Central Boyacá has been well exposed

to important sources of innovation during the last quarter of a century. One then may suppose that modern farm techniques and implements have diffused through the study region and that advanced managerial and production techniques, as well as other traits associated with modernity, may be found in Boyacá. The modernization scale ranges from those peasants having a very low level of subsistence, who cultivate their plots as did their Indian forefathers, to farmers approaching the level of green revolution entrepreneurs.

The investigation established the occurrence on individual farms of such elements as pest controls, animal health techniques, modern fertilization practices, improved crop varieties, selective cattle breeding, modern machinery and implements (tractors, combines, milking machines, electrically-controlled grazing systems, irrigation waterpumps, motor vehicles), housing quality and basic public utilities (electricity and running water), as well as managerial techniques (consultation with farm specialists, and the existence of farm records). These elements were selected because (1) they have been identified in the related literature as modernization indicators, (2) there was empirical evidence of their variable distribution in the area surveyed, and (3) all these items can be objectively identified in the farm and their occurrence is relatively easy to quantify. Moreover, discussions with

personnel knowledgeable of problems of the region were of great help in selecting the list of modernization components.¹

In general, it is believed that the transference of those implements and techniques has trickled down gradually from a selective number of early adopters, usually progressive hacendados, to some campesinos. As is normally the case, the wealthy farmers are the first to receive the benefits of technological modernization. These farmers are usually well educated, have easy access to the different sources of innovation, obtain credit, are generally oriented toward efficiency and optimization, and above all, have the means to purchase the innovations, and have sufficient economic backing to cover risks of adoption. Eventually, alert peasants realize that they cannot afford to continue farming without the application of a minimum of modern technology. After all, peasants are no longer selfcontained units who can cope with all their needs in an isolated ecological niche. They have had to become involved in the market economy. And, within the context of a capitalist economy as Colombia is, it is necessary for peasants, in order to survive, to make re-adjustments in farming methods, technology, and production orientation.

¹Valuable on this respect was the exchange of ideas with the Secretary of the School of Agronomy at the University of Tunja, Sr. Heriberto Buitrago. He is an agronomist with experience in agricultural extension work in Central Boyacá.

The sequential process of adoption, however, is slow and highly selective.² Under spontaneous conditions innovations may diffuse widely and appear haphazard in location. But, a composite form of adoption in the manner of technological packages is rare and controlled by several economic and social variables which must occur in conjunction with the farmer's willingness to adopt.

²Thiesenhusen (1972:2) analyzes such selective adoption process in dealing with the diffusion of green revolution technology in Latin America, as follows:

Even though seeds and fertilizers are divisible and theoretically useful on small farms as on large ones, for several important reasons they are not neutral to scale in most of Latin America. In the first place, credit institutions and organizations that are charged with diffusing technical information are usually designed to help the large-scale farmer. Furthermore, only men of means have the time and education to cope with the red tape and delay endemic to many lending agencies. At the same time, highyielding grains usually require from three to four times the amount of fertilizer than that which farmers are currently using, which means they need credit in greater amounts than ever before. This would restrict the Green Revolution to an even smaller group than that which regularly used more conventional inputs. Furthermore, credit institutions designed for the small scale farmer are often so undercapitalized that they either cannot serve the many campesinos who need loans or they give many so little that credit has a negligible impact on income. If credit is available, the necessary seeds may not be at hand or supervisors may not know the proper agricultural practices -- or at least may not be skilled at communicating them to campesinos. Seeds and fertilizers may be neutral to scale, but if credit and technical assistance favor large enterprises, small farmers will be unsuccessful adopters, nonadopters, or at the very least, late adopters. Added to these problems, adequate irrigation facilities are often available only to large holders because they control local water associations (Thiesenhusen 1972: 2-3).

Modernization, as the dependent variable of this study, is a composite of the number of occurrences of those items referred to as indicators above. Theoretically, a farm unit possessing a majority of the indicators would classify as <u>very modern</u>, whereas one with none would classify as <u>very traditional</u>. In the middle, of course, there lies a gamut of transitional categories.

Aggregate values of technological modernization obtained at random are presented in Table 11. A first approximation to these findings indicates that a certain degree of rural modernization does exist in several parts of Central Boyacá. Among those elements that make up the modernization value, the use of pest and disease controls is a practice widely held among peasants, so much that they might be classified as an adopted innovation in several municipalities. Nearly 85 percent of all farms surveyed follows these practices. Advertising runs continuously in radio stations serving Central Boyacá on various competing plant sprayers and products of veterinary use. An indication that demand exists for these products among the rural clientele.

Spraying and veterinary care were found to range from 56.5 percent of the sample in the municipality of Socotá, to 99 percent in the area adjacent to Tunja. Actually there were only two more <u>municipios</u> besides Socotá recording less than 70 percent usage of these

	Code	Municipio	No.of Cases*	Counts Recorded**	Mean
1234567890 10	AQ BL BU CE CM CO CU DU FI	Aquitania Belen Beteitiva Eusbanza Cerinza Combita Corrales Cuitiva DUITAMA Firavitoba	56 23 13 4 18 23 7 9 37 17	92 34 19 7 39 69 10 19 113 34	1.64 1.47 1.46 1.75 2.16 3.00 1.42 2.11 3.05 2.00
11 12 13 14 15 16 17 18 20	FL GA IZ MI NO PR FE SA	Floresta Gameza Iza Mongua Mongui Nobsa Paipa Paz del Rio Pesca Samaca	17 43 18 10 20 44 17 31 35	43 68 346 32 69 138 18 66 135	2.52 1.58 1.00 2.55 3.20 3.45 3.13 1.05 2.12 3.85
21 22 23 25 27 29 20 30	SRI STC GOSICP TTC P	Santa Rosa de Viterbo Siachoque Socota Socha SOGAMOSO Sotaquira Tasco Tibasosa Toca Toca	18 22 46 24 57 22 34 20 20 20 12	60 66 42 37 165 53 51 51 69 21	3.33 3.00 .90 1.54 2.89 2.63 1.32 2.55 3.45 1.75
31 32 3 3 34 35	TO TJ TT VQ	Tota TUNJA Tuta Tutasa Ventaguemada	18 77 22 11 39	34 283 52 23 135	1.98 3.67 2.36 2.09 3.46
		Total	387	2,195	2.47

Table 11.--Aggregate Values of Modernization Indicators by Municipal Regions.

* Number of farms surveyed.

** Total number of indicators identified in <u>municipio</u>.

inputs, namely Socha (66 percent) and Tasco (67 percent). The three of them are contiguously located in the northeastern corner of the study region, making up the least developed sector of such a region. The flood plain of the Chicamocha River narrows here to only a few meters. Steep slopes and mostly stony soils are the typical features of the physical environment on both sides of the valley downstream from Corrales and Tasco. Crops cultivated are mostly subsistence and consist of corn, broad beans, peas and squash, usually planted intermingled in tiny fields. To the author's knowledge, nowhere in Central Boyacá are sprayers used on these crops anyway. Peasants more often than not keep two or three head of cattle that occasionally are inoculated or receive other types of veterinary care.

The areas with the highest levels of adoption of pest and disease controls are located in the province of Tunja, particularly where potatoes are the dominant crop. Potato fields are easily infested with a fungus disease locally called "gota" (<u>Phytophthora infestants</u>), and a host of worms, bugs and parasites (Fals Borda 1957:171) requiring frequent application of chemical controls. In the <u>municipio</u> of Siachoque it was reported that the average potato crop should be sprayed at least eight times. The other two principal crops, wheat and barley, are epidemically attacked by rusts, but losses used to be mild and peasants cared little to apply remedies. The 1975-76 crop

of barley, however, was hard hit with losses amounting to 80 percent in the areas of Tunja, Toca, and Paipa. Because of this disaster, affected farmers committed themselves to adopt spraying controls from then on.

Chemical fertilizers are another component of the package of modern technology found in the more advanced farms. Although many peasants have adopted the use of this input, especially since national plants made fertilizers available at reasonable prices (Atkinson 1970), there is concern among rural developers for the wasteful application of chemical fertilizers. Peasants tend to rely more on the word of their neighbors than the technical advice prescribed by professional agronomists. Therefore the proper, prescribed, use of fertilizers was considered in this study a good indicator of rural modernization.

In selected <u>municipios</u> peasants utilized little or no chemical fertilization. The highest levels of adoption of the practice of using fertilizers according to prescribed instructions were found around Tunja (58 percent), Duitama (50 percent), Ventaquemada (48.7 percent), Samacá (47 percent), and Paipa (38.6 percent of the farmers interviewed). For the Central Boyacá region as a whole, nearly 30 percent of the farmers followed this practice. In a few cases of very modern medium-sized farms, fertilization was based on soil analyses. Obviously, productivity in such instances obtains nearly the maximum returns possible

because the application of this input concurs with other technological components as well as operational expertise. By contrast, the illiterate peasant who indiscriminately applies type "X" fertilizer, may receive little benefits from his investment. It might be that in some cases certain fertilizers are improperly manufactured, or their quality downgraded by retailers; but, probably many of the peasants' complaints about low quality of fertilizers can be explained as a result of misapplication.

The green revolution breakthroughs represented by seeds of improved varieties made available through ICA, seem to have produced little impact in Boyacá. It is not very important that a peasant obtains improved seeds varieties, if complementary technology, credit, technical assistance, and marketing facilities are not available. For green-revolution farming to succeed, the adoption of technological inputs plus technical assistance should concur (Thiesenhusen 1972), along with effective educational campaigns which may change in the minds of the peasants a background of routine deeply embedded in their traditions. Such favorable circumstances indeed are rare among Colombian campesinos in general.

In this survey improved seed utilization and/or selective cattle breeding were found to be practiced by only 16 percent of the farmers. Among potato growers the adoption of improved varieties is a cyclic practice. A

new strain is adopted and successively planted until it loses resistance to diseases. Then, there occurs a general shift to a new variety developed by ICA. Generally speaking, the subsistence peasant does not buy improved seeds from a commercial dealer but instead obtains these from his neighbor when the quality of his own production was not good enough to save a part of the harvest for seed. Commercially-oriented farmers, on the other hand, tend to obtain their seeds from a commercial supplier. In Toca, for instance, over 50 percent of the farmers were buying improved varieties of barley seed. Such practice has been promoted by <u>Pro-Cebada</u>, the national association of barley growers, and the peasants are now convinced of its advantages. As a result, Toca has become the leading producer of barley in Boyacá.

As was expected in a region where small cultivators predominate, the use of modern machinery is limited. The vast majority of peasants still cultivate their plots by hand. Theirs is a typical hoe-farming culture. The Spanish introduced the plough and oxen, an innovation which received universal adoption. And even today, the classical campesino of these highlands is portrayed with his oxen pulling a wooden plough on the mountain sides. But peasants use modern ploughs pulled by tractors, too. This farming innovation is controlled by physical rather than economic factors. Peasants rent tractors where topography

permits its use. Under favorable circumstances of terrain, they tend to prefer a tractor because the job is done rapidly and the ploughing is deeper.

Tractors are sometimes used in conjunction with combines in medium-size farms and, of course, in the <u>haciendas</u>. Wealthy farmers have found a good source of income in the renting of machinery to their neighbors. Tractors are rare in areas of rough relief as found in Betéitiva, Paz del Río, Socotá, and Tasco, whereas their use is commonplace in <u>municipios</u> of flat or rolling terrain, especially in Cómbita (over 80 percent of the farmers used tractor), Siachoque (80 percent), Toca (76 percent), and Samacá (58 percent).

Considering that most farmers list water shortages as one of their most serious problems, it is surprising how little modern irrigation technology has been adopted in Central Boyacá. Only 42 out of 887 farmers have purchased water pumps for irrigation. Therefore, for watering the fields over 90 percent of the peasants must depend either on rain or on small irrigation channels locally called <u>tomas</u>. Except for the valley of Samacá which solved its irrigation problems by means of a dam on the Gachaneque River, almost nothing has been done in this aspect of rural development. Another dam built on the Chicamocha River in Tuta by INCORA has not produced the expected results due to insufficient runoff. On the other hand, no

evidence of tapping underground sources was found during the field work.

Concerning other types of machinery, little of significance was detected. Motor vehicles used for farmrelated activities, for instance, amount to only 37 cases. Only ten farmers reported ownership of combines. Eight dairy farmers were grazing their cows with electricallycontrolled devices, and two of them had introduced in their farms the use of milking machines.

Seeking advice from professional individuals with the purpose of bettering farm operations can be considered an indication of change from traditional routine to modernized farming. There is evidence that some accomplishment along these lines is being made as more peasants have to consult with veterinarians and agronomists. Participation of technical specialists in the agrarian economy other than those assigned to agricultural extension work will probably grow in importance as credit institutions now require their borrowers to obtain technical assistance. Large commercial farmers now hire their own agricultural experts, or occasionally go into partnership with them. For the small peasant, however, such practice is beyond his financial reach.

Another element which was incorporated in the research as an indicator of operational modernization was that of record keeping. This turned out to be a rare

practice in rural Boyacá since only 21 cases, less than 3 percent of the sample, reported regular records of farm operations. The peasant normally ignores in detail how well or badly he is doing in his farm economically speaking. Most data on income obtained from peasants are, therefore, rough approximations. For a subsistence peasant who is illiterate, who does not pay income tax, and who depends little on the market, record-keeping is meaningless. But record-keeping is a good indicator of management modernization.

The peasant house usually reflects a standard of living which can be correlated with the occurrence of other economic and technological indicators. Three items were considered in this respect: house appearance and quality, electricity, and availability of running water. Housing conditions in the region have improved notoriously since the 1950s. The traditional peasant <u>rancho</u>,³ a hut of straw roof, mud walls and dirt floor which remained unchanged for centuries, has gradually been replaced by more substantial dwellings. Today, walls more than likely are made of brick or adobe, and practically all houses have tiled roofs. This type of architecture is now widespread. As a result houses resemble each other in appearance, design,

³In Colombia the term <u>rancho</u> does not identify a relatively wealthy, extensive <u>cattle</u>-raising operation as in other Latin countries. A ranch in Colombia is referred to as a <u>hato</u>. The word <u>rancho</u> applies to a humble, rustic rural dwelling.

and even in the rustic furniture and household belongings. A growing number of campesinos take pride in keeping their houses clean, and in some cases have made further improvements by adding cement or tile floors, a separate kitchen, and an outside toilet. For the region as a whole, nearly 18 percent of the houses surveyed were in this improved category. The highest percentages of housing modernization were found in the municipalities of Mongua (44 percent) and Ventaquemada (30 percent), but no definite regional trend is apparent. Furthermore, it was found that although the most modern and wealthy farms usually have the best houses, there were some middle-size farms with relatively high levels of technology that exhibited very poor housing conditions.

There are only two public utilities which are being made available to rural communities in Colombia, electricity and running water. These elements were included in the group of indicators of modernization because they provide standards of living comparable to some extent to those enjoyed by urban dwellers. On the other hand, programs of rural development elsewhere in Colombia (e.g., the Bogotá plateau, and the Cauca Valley) have strongly stressed these services among the set of modernization elements to be provided to the rural population. The fact that several households did have these utilities served is indicative that action in this direction is underway in Boyacá. The proportion of peasants enjoying these utilities is, however, very small. The case of Ventaquemada, where 46 percent of the houses have electricity and 18 percent running water is certainly atypical. Factors explaining such percentages there may be the high density of the rural population and the geographic location which facilitates the provision of these services.

By contrast, relatively remote <u>municipios</u> are lacking of these services. In Socota, for instance, not a single rural household has electricity, and only 10 percent of them have running water. In the municipality of Tunja percentages were 20 and 11 for electricity and water, respectively, whereas those in Sogamoso amounted to 17.5 and 31.5 percent, and Duitama 34.2 and 18.5 percent, respectively.

Electrificadora Boyacá, the electrification agency, eventually will provide energy for practically every peasant household wanting to pay for this utility. On the other hand, if public funds are adequately allocated for water projects in conjunction with programs of community action groups, it is likely that a larger number of rural neighborhoods will build their own aqueducts. The latter, however, also depend on physical factors, and probably an efficient network of water pipelines will not be feasible until a

comprehensive regional program of water provision and management is designed and implemented.

From the peasant's point of view water is a crucial service. As noted earlier, almost everywhere this factor was listed as the fundamental local necessity. Electricity, on the other hand, is perceived mostly as a luxury item. In some instances it was found that, although available, electricity was not used or had been discontinued when the peasant could not pay the bill. It matters little, it was claimed, because peasants go to bed early and the only electrical gadget they generally use is the radio which, just as easily can be operated by battery. Therefore, a costly investment in infrastructure to made electricity available to these houses was in vain, and chances are that many low-income households will end the same in this respect.

The Spatial Distribution of Modernization

The areal spread of modernization as operationally defined in this research is controlled by several factors, distance from the regional center hypothesized as the crucial one. A spatial order rather than randomness in the distribution of the phenomenon is presupposed.

To test the principal hypothesis in a descriptive way a model was designed (Figure 5), which is in part inspired by the von Thünen model of rural land use (von Thünen 1826; Chisholm 1962; Hall 1966). The focal point of



the schema which will guide the qualitative analysis is, of course, the city. The rural hinterland is assumed to be differentially affected by urban influences, and technological modernization is one of the results of such influences. Assuming that the intensity of urban influences varies inversely with distance to the regional center (the modernization nucleus), technological modernization should decrease toward the regional periphery. Theoretically in time a spatial pattern of concentric zones will develop, each zone with a distinctive level of agricultural technology. In principle, the model should assume factors other than friction of distance as constant.

Theoretically, as the process of urbanization unfolds, especially as a result of industrialization, a regional schema may evolve into a classical five-fold pattern resembling the von Thünen model (Figure 5). The ideal concentric-zone pattern includes:

1. A zone of <u>suburban peasant assimilation</u> characterized by a clustering of small farms performing semi-urban activities. Some farmers may have intensified their farming practices, although the size of the plot discourages utilization of modern inputs. Part-time urban jobs may further deter modernization in farming, but housing standards, use of public utilities, and basic social services

are at levels relatively similar to those of lowincome sectors of the city.

- 2. A ring of <u>intensive commercial agriculture</u> engaged in intensive farming of perishable goods for the regional center. This is a highly modernized zone. Agricultural land use here may be interspersed with urban-industrial enclaves, which lead the way of urban encroachment upon agricultural land.
- 3. A modernizing belt is a zone of commercial agriculture in which several modern technological elements have been adopted. Some strategically located villages may exhibit significant growth and become secondary service centers.
- 4. A <u>transitional zone</u> is an area in which medium-size to large haciendas coexist with minifundia. Urban influences are still important there, but increasing distance lowers land values, thereby permitting more extensive, i.e., less modern, farming.
- 5. A zone of marginal peasant communities and villages with little urban influence. Traditional farming and subsistence-oriented activities are dominant.

The value of this geographic schema lies in its

ability to identify departures from the basic model. Physical factors distort the concentric zoning of the distributions (relief, rivers, lakes, soil types, etc.). Aside from those physical distortions, cultural factors may

be more influential in distorting the regularity of the model. The uneven growth of the city, the growth of competing centers, or the development of new towns, as well as the expansion and improvement of the transportation network, all modify the idealized zonal pattern. An important line of transportation will tend to stretch the zones. If new towns grow along a highway between cities of competing size and influence, the areas of greater modernization surrounding the cities will tend to coalesce along the transportation route (Figure 6). A corridor-like spatial arrangement develops under such cultural circumstances.

Intuitively from field observations the zonal patterns appear to be operative. For example, surrounding Sogamoso and Duitama there exist areas occupied by peasants whose lifestyle is suburban in the sense that they hold urban jobs while continuing to cultivate their small plots. Their children attend school in the city, and other members of the family may also hold urban jobs. Some of the more progressive peasants take economic advantage of their location near the city by producing vegetables and fruits for the nearby urban market. Many of the amenities of the urban center are available to these peasants, and basic public utilities are commonplace among their households. Tunja, however, lacks this zone of "suburban peasant assimilation." A large part of the rural area surrounding



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this city is badly eroded, greatly restricting intensive agriculture. Moreover, flat terrain is frequently flooded, and a sizable part of this land is owned by hacendados who raise cattle. Recent prospects of city expansion have also increased land values placing suburban areas beyond the financial reach of the peasantry. Even so, there is a zone of minifundia in Motavita, within the municipality of Tunja, in which peasant assimilation to city ways occurs. Here many peasants commute daily for city jobs in Tunja.

With reference to zone two of the model, the area of modern intensive commercial agriculture assumed to develop beyond the suburban zone is not very conspicuous. Probably two sets of factors explain this departure from the theoretical construct. First, the cities have not reached the size of a large-scale market that encourages nearby intensive farming. Second, there are physical and cultural factors which inhibit more intensive land use. All three regional centers are located near hilly lands of little agricultural value, whereas nearby arable land is owned by cattle raisers who in general are not prone to intensification. Traditionally, hacendados show little inclination to engage in crop cultivation due to cultural prejudices. Low land taxation, a local market insufficiently developed, and perhaps the perspectives of speculating with land as urbanization proceeds, all tend to delay intensification in the larger estates.

A modernized zone of commercial agriculture corresponding to zone three of the model exists where new technology is utilized. In the case of Tunja's hinterland, this modernizing belt is exemplified by the rural neighborhoods of Soracá, Chivatá, and Oicatá, as well as in the municipalities of Samacá, Ventaquemada, Toca, and Cómbita. In the case of Sogamoso, such a belt is somewhat apparent in parts of Firavitoba, Tibasosa, and Nobsa. The corresponding zone in Duitama's hinterland would be represented by parts of Santa Rosa de Viterbo, and Paipa (Figure 7).

The transitional zone of the model is identified with those <u>municipios</u> where peasant agriculture predominates, but adoption of modern traits is in its incipient stage. Siachoque, Tuta, Pesca, Firavitoba, Sotaquirá, Floresta, Busbanzá, Tópaga, Mongua, Monguí, Belén, and Cerinza are included within this category.

Finally, remoteness yields a belt of municipalities which are both geographically and technologically marginal, with little or no traits of modernization. The <u>municipios</u> of the northeast such as Corrales, Gámeza, Betéitiva, Tasco, Socha, Paz del Río, and Socotá, as well as those surrounding Lake Tota (Aquitania, Cuítiva, Tota), typify the outer ring of the model.

It is clear that by aggregating data at the municipal level important details of the spatial dispersion of modernization are suppressed. Therefore, a more empirical





approach than the zonal model was attempted by means of a map based on the statistical unit used in the research, the household. Isolines (connecting farms that recorded the same number of indicators) were drawn which disclose the clustering of the levels of rural modernization. Once the data were ranked according to the number of modernization indicators found in each farm, a five-fold categorization was adopted. The distributions exhibit discontinuities in their cumulative percentages which can be used as a basis of classification. Since the modernization levels ranged from 0 to 9, ten categories were theoretically possible. But it was realized, after preliminary mapping trials, that five categories were a good choice to clarify the spatial arrangement of the phenomenon studied. Three transitional categories depict adequately the levels of technological change intermediate between extremes of the most modern farms, and those where traditional peasant agriculture is still dominant (Figure 8).

Central Boyacá, then, is subdivided into five types of "modernization regions" discontinuously distributed throughout the entire region. The following is the characterization of those regions:

<u>Region I</u>. Relatively <u>modern</u> regions are characterized by an association of technological and managerial elements in the farm, making it an efficiently productive unit.



- <u>Region II</u>. <u>Modernizing</u> regions are made up of communities in which the adoption of several technological elements by a large number of farmers is leading this particular region to further modernization.
- Region III. Transitional regions are those in which most of the peasants have adopted only a few elements associated with the modernization process.
- Region IV. Little changed regions are those containing the majority of the population. The adoption of a very few technological elements has just begun.
- Region V. Traditional peasantry areas, are characterized by the predominance of peasant farms recording practically no modernization traits.

By province, associated modernization elements yield the following spatial patterns.

Province of Tunja

In the eight minicipios comprising this province (Tunja, Samacá, Ventaquemada, Cómbita, Sotaquirá, Tuta, Toca, and Siachoque), two areas can be identified as relatively modern (Region type I).

1. The area adjacent to the departmental capital (Tunja) as well as most of the <u>veredas</u> located to the east of the city surrounding the villages of Soracá, Chivatá, and Oicatá. The land is partly flat and partly rolling, with relatively fertile soil, though erosion has become a severe problem in selected locations. Landholdings range in size from 50 to 500 hectares, owned by progressive <u>hacendados</u> who increasingly have turned to mechanization. Farmers in this region depend primarily on wage labor rather than on family labor, and most of the production, of course, is destined for the market. Some cultural characteristics of these farmers are their close association with city life (through frequent trips and in many instances because they have relatives settled in urban areas) and considerable exposure to the mass media.

2. The second major modern area in the province is the Samaca Valley. Here the land is level, the soil rich, and farms benefit from an irrigation project administered by INCORA. The bulk of the land is used for dairying and the growing of cereals. Beyond the flat terrain, eroded hills and the <u>páramos</u> are occupied by subsistence farmers whose standards of living sharply contrast with the hacendados' in the valley floor.

Apart from these two discontiguous modernized areas, in the province of Tunja are found densely settled communities of minifundia in Motavita and parts of Siachoque and Cómbita. However, one can find a few modern farms in juxtaposition with subsistence landholdings. Many campesinos

living in this region have assimilated technological elements from the progressive farmers. Ventaquemada typifies this category (III).

Eastward from Tunja the municipality of Toca exhibits technological levels slightly less developed than those of Tunja's modern agricultural region. Therefore, Toca is classified in Region II of the categorization proposed above (modernizing). A pattern closely similar to that of Toca can be observed in parts of Siachoque, as well as parts of Tuta. In the relatively inaccessible <u>páramos</u> lying on parts of the periphery of the province of Tunja characteristics are typically peasant (groups IV and V).

The generalized pattern indicates that the province of Tunja conforms to a large degree with the view that the adoption of modernization elements is mostly a function of nearness to the city. The cartographic generalization, however, leaves cases whose spatial location is anomalous in terms of the hypothesis.

Province of Sugamuxi

Fourteen of the sixteen municipalities of the Sugamuxi province were included in the analysis (Sogamoso, Nobsa, Tibasosa, Firavitoba, Iza, Cuítiva, Pesca, Tota, Aquitania, Monguí, Mongua, Tópaga, Gámeza, and Corrales). The general picture for the province indicates relatively less development than in the province of Tunja (Figure 8).

There is only one modern area (Region I) in the province comparable to those which surround Tunja and Samacá. The Sugamuxi modern area stretches on flat terrain from the outskirts of the regional center, Sogamoso, toward the towns of Tibasosa and Nobsa, as well as in a southerly direction to Firavitoba. East of Sogamoso, mostly on hilly land, the modern region is interrupted by <u>veredas</u> occupied by modernizing campesinos (Region Type I).

The remaining part of the municipality of Sogamoso lies in rough terrain. Instead of a clear pattern corresponding to one of the regional categories of modernization outlined above, one finds a variety of levels of modernization, which range from little changed minifundium (IV) to modernizing farms (II). The traditional peasant (V) gradually becomes dominant as distance increases from Sogamoso toward the boundary with the municipality of Aquitania.

Flood-plain lands of Nobsa, Tibasosa, and Firavitoba contain farms that are in the process of becoming modern (II), or already are classifiable in the more advanced category (Region I). On the hill sides of these municipalities, however, conditions of extreme poverty and backwardness are frequently found (IV and V). The same is true for the municipality of Cuítiva and for a large part of Tota. Monguí and Mongua have their own core areas of modern farms that contrast with hilly peripheries which

are occupied by subsistence peasants (IV). Aquitania, a large municipality located in the southern part of the Sugamuxi province, clearly stands out as an area of peasant agriculture with little or no modernization (Region Type V). In Aquitania peasant communities are largely subsistenceoriented, except for those located on fertile flats left behind as a result of the shrinkage of Lake Tota in recent years. Onions are now intensively cultivated here on tiny plots and the entire harvest is shipped directly to Bogotá or to Bucaramanga, in the neighboring department of Santander. The village of Aquitania, meaning "city of the waters," is a relatively prosperous center serving not only its own municipal hinterland but also part of Tota. Aquitania has a small hospital, a local radio station, and is the pride of local leaders who are trying to develop it as a "new" town. Formerly, Aquitania was named Pueblo Viejo, the "old town." West from the municipality of Tota is Pesca. This town plays a role similar to Aquitania's for its own rural hinterland. Pesca is transitional (Region Type III), since its prevalent pattern is one of modernizing farms mixed with traditional peasant holdings.

Northeastward from Belencito's industrial complex lies a hilly region whose lands in general have relatively little agricultural value (Figure 8). Tópaga, Gámeza, and Corrales, even though located a short distance from the regional center of Sogamoso (the road is paved from

this city to Tópaga), are characterized by levels of little or no rural modernization (Region Type V).

Province of Valderrama

The same conditions of low modernization levels of Corrales and Gámeza extend into the municipalities of Tasco, Betéitiva, Paz del Río, Socha, and Socotá belonging to the province of Valderrama. All this region falls within the category of traditional peasant communities (Types I and II), where transitional or modernizing farms are rare. Evidently, the village of Paz del Río, in spite of its industrial plants processing minerals for the steel industry of Belencito, is a world in itself apart from the surrounding mountains. Even though many peasants are employed in the mines, or maybe because of that, change accruing to the countryside in those municipalities of the Paz del Río area is nil. As was noted earlier, soils in this area are generally poor. The peasant who can obtain employment in the mines tends to depend exclusively on this source of income, leaving his farm largely unused. During the field work it was established that many farms are entirely abandoned. With better income and a new social status, the miners have moved their families to nearby towns. In summary, rural modernization in Valderrama is at the traditional-peasant subsistence level, with no area identifiable as a core of farming modernized as apparent in other provinces.

Province of Tundama

Finally, the province of Tundama has its own core of rural modernization (Region Type I), although it is somewhat decentralized with respect to the regional center (Duitama). A cluster of farms applying advanced technology occupies the flood plain along the North Central Highway, within the municipalities of Duitama and Paipa. The ICA experimental station and a horse-breeding estate owned by the army, as well as ITA, a rural-oriented high school, are located in this region.

South of this modern sector appear the hilly areas of Paipa, in which modernizing farming (Region Type II) is interspersed with pockets of little-changed communities (IV). The northern part of Paipa (Palermo) is marginal in terms of technology and accessibility. Santa Rosa de Viterbo has its own small pockets of rural modernization (I and II) near the town and in flat terrain located in the extreme south of this municipality.

Field work indicates that on flat terrain between Cerinza and Belen there exists another stretch of modernized farms, but bordering this enclave conditions of underdevelopment are evident in the traditional minifundium which crowd the hillsides. Tutasa is a municipality typically subsistence-peasant, in spite that beyond the <u>páramos</u>, on the road to Soatá, a few isolated farms exhibit modernizing and transitional (III) traits. The remainder of the

province of Tundama, Floresta and Busbanzá, are municipalities partly modernizing (II) and little-changed peasantries, respectively.

Testing the Hypotheses

A statistical test of the relationship between modernization and selected independent variables was undertaken in order to support the qualitative analysis.⁴ Seven independent variables were employed, all being elements mentioned in the literature as factors associated with the diffusion of innovation process (Table 12).

The selection of the independent variables appears to be correct from the statistical point of view. A multicollinearity check among variables included in the correlation matrix shows no high values in the coefficients relating independent variables to each other. The only correlation which is significant is that between family income and farm size (\underline{r} coefficient = .331). Therefore, independent variables considered in the test can be thought of as truly statistically independent.

It is evident from the correlation matrix (Table 13), that simple linear relationships between modernization and some of the variables selected indeed exist. At a .05 level of significance, zero-order correlation coefficients indicate that there are weak but significant relationships

⁴The Pearson's correlation model contained in the SPSS (Statistical Package for the Social Sciences) was used (Nie et al. 1975).

Code	Variable Definition			
DIST	Distance from the nearest regional center in kilometers			
AREA	Farm acreage measured in <u>fanegadas</u> *			
PHY	Composite value of physical attributes of the land			
INC	Family income in thousands of 1976 pesos**			
AGE	Age of family head			
FAM	Resident nuclear family size			
CUL	Percent of farmland in crops in 1976			
MOD	Modernization composite value (Independent Variable			

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Table 12.--Independent Variables Correlated with Rural Modernization.

*A fanegada equals 2.4 acres.

**The 1976 rate of exchange was about 37 pesos per one dollar.

between the dependent variable modernization (MOD), and four out of seven independent variables: distance from farm to nearest regional center (DIST), physical attributes of farmland (PHY), family income (INC), and farm acreage (AREA). Family size (FAM), age of the family head (AGE), and percentage of land in crops (CUL) show very weak correlation with modernization.⁵

⁵The significance of the relationship determined in spite of its apparent weakness is due to the large number of cases considered. For a given confidence level, as the sample size increases, the F-test critical value will decrease, and it will become easier to reject the null hypothesis of no significant difference between the Pearson's correlation coefficient and zero.
Selected With Modernization of **Correlation Coefficients** --Pearson's Variables 13 Table

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Analysis of Relationships

The correlation between distance from the nearest regional center and farm modernization is the starting point of the statistical analysis. The distance variable was calculated by measuring the number of kilometers from the individual farm to the urban center. Adjustments were made to compensate for the increased friction of distance that results from the varied types of road surface and trails. This weighting procedure has precedents in the literature, having been used by OFISEL (1976) in its study of the rural educational structure of Central Boyacá.⁶

The principal hypothesis is confirmed, namely that as distance from the regional center to the farm increases, the level of modernization decreases. The correlation coefficient (\underline{r}) of -.331 statistically supports such a contention. This negative relationship agrees with the earlier cartographic analysis, pointing out that in general the highest levels of modernization occur adjacent to the cities of Tunja, Sogamoso, and Duitama, whereas predominantly unchanged peasant communities are typical of the more distant locations.

D = (P) + (1.4G) + (2.0T)

⁶Actual distance remains constant for paved roads (P) which are assumed to cause the least friction in travel effort. A factor of increased effort derived empirically is added to gravel roads (G), and an additional factor is derived for trail (T) distance. Therefore, the adjusted distance variable (D) was estimated by applying the following simple formula:

As was indicated in a previous chapter, the areas surrounding the regional centers are highly accessible since the best transportation facilities are available to The rural population living there benefits from them. direct contact with the sources of technological innovation as well as from the availability of services important to farmers. On the other hand, distance decay indeed applies to the provision of technical assistance, agricultural extension, and specialized education. These services are readily furnished near the cities but are nearly nonexistent in the regional periphery. Furthermore, the additional costs of farm modernization are successfully met and higher profits obtained near the larger regional centers, where the farmer saves in transportation costs. Moreover, the higher value of the land factor in these privileged locations, along with higher taxes, create the incentive to increase farm output, which obviously should necessitate further modernization in the farm.

These reasons support the results of the correlation test corroborating the stated linear relationship between modernization and distance. However, the strength of the negative relationship proved to be weaker than first anticipated on the basis of the author's knowledge of the study region. The correlation coefficient is lower than expected because, on the one hand, there exists a large number of small peasant holdings recording relatively low

technological levels, that are found near the regional centers. On the other, several modernized farms are found at considerable distance from the regional center. The reasons for these "anomalous" locations are various, but fundamentally this is a matter of the physical quality of the land. Sectors of sloping and rough terrain located near the regional centers historically have been settled by subsistence farmers. In the past, these campesinos were symbiotically tied to the haciendas that occupied the best lands, and presently they depend on the city for different forms of livelihood. Away from the cities, what good agricultural land there is, generally is occupied by commercially-oriented farmers, prone to innovation. Their farms constitute pockets of modernization within the prevailing types of less developed communities, where the level of modernization gradually lowers with increased distance to the regional center.

It is the purpose of the last part of the analysis to delve into the influence of other variables that determine the location and intensity of rural modernization levels. It is obvious that distance from the regional center can only "explain" part of the spatial variation of rural modernization. The analysis of other factors will supplement the interpretation provided thus far.

Other Factors Affecting Modernization

Other variables were tested to determine the relationship with the dependent variable. Of these, the variable physical attributes of the land (PHY),⁷ exhibits the strongest correlation coefficient (.440).

Indeed, farmlands endowed with the best physical attributes in general are the most likely to be modernized. In the study region the best lands tend to coincide with the immediate surroundings of the places where regional centers are located. Actually, the selection of city emplacements (and the sites of Indian villages anticipating them), was determined by the availability of good agricultural lands, in the particular instances of Tunja, Sogamoso, and Duitama.

It stands to reason that the highest levels of agricultural modernization should be found where land with the best characteristics also exhibits locational advantages. This is precisely the leading attributes of some areas located near Tunja, near Sogamoso, and between Duitama and Paipa, as was established by means of field observation and cartographic analysis. Exceptions occur where lands

⁷The variable "physical attributes of the land" (PHY) was derived by scoring values for such characteristics of the farmland as topography, soil quality, water supply, and accessibility to a highway. Each one of these attributes was measured on a 0-4 scale, scoring their apparent quality as poor (0), deficient (1), average (2), good (3), and very good (4). The scores were added to obtain the PHY value.

of this locational and physical qualities are either subdivided into small plots or persistently maintained by traditional <u>hacendados</u> for relatively extensive land uses in the face of urban sprawl. On the other hand, on lands located at considerable distance from the regional centers, other patches of good-quality land usually produce modernization enclaves. In this case, the relative locational disadvantage has been overcome by distance minimization through improved transportation. Examples occur in the modernized valleys of Samacá, Cerinza-Belén, and to a lesser extent, in the municipio of Toca.

Corroborating ample documentation in the literature, the correlation matrix makes evident a moderate positive relationship between family income levels (INC) and rural modernization (MOD) ($\underline{r} = .368$). This correlation was expected, and indicates that those commercially-oriented farmers making the highest income largely do so by means of modern techniques of management, production and marketing. Peasants at lower levels of modernization obtain incomes which barely reach the subsistence minimum. Income data were supplied directly by the farmers.

The analysis of income in association with modernization levels and farm size (AREA) is important because the relationship confirms the existence of serious structural socio-economic problems. Several studies on rural development coincide with the view that, under conditions

of undirected modernization, it is the farmers with the highest income who first receive the benefits of agricultural innovations, thereby widening the technological and economic gaps existing between wealthy farmers and the poverty-stricken traditionalist campesinos (Thiesenhusen 1972).

Although the strength of the relationship between income and rural modernization is statistically moderate, it is strong enough to suggest a serious economic cleavage in the region of Central Boyacá, considering that peasants absolutely constitute the bulk of the rural population.

The correlation between modernization and farm size is relatively weak, although a positive trend emerges from an \underline{r} coefficient of .265. Not always the largest farms are the most modernized. In peripheral locations, <u>páramos</u>, actually the opposite may be true. In other cases of large estates relatively well located with respect to a regional center, pastures tend to predominate, a type of land use in which the association of modern technological elements is not too large. This is especially the case of <u>haciendas</u> specializing in beef production. There is now, however, a marked tendency in the level lands of the Chicamocha Valley for large farms to increase the use of modern implements and techniques as the extra-regional market for milk products is continually expanding. Increasing land value and the adoption of expensive graded milking breeds probably

will induce more capital-intensive operation in dairy farms. On the other hand, it is likely that pressing policies of land reform and taxation may induce a further breaking down of the remaining large estates. Since as a rule these are the best lands of the region, their exploitation for commercial purposes will probably be increasingly modernized.

To summarize, the correlation test of the hypotheses provides clues to verify that a moderate relationship exists between the occurrence of modern traits in the farm and its distance from the nearest regional center. The test also indicates that definitely the intensity of the level of rural modernization correlate with the physical quality of the land, as well as with income levels. The leading hypothesis, then, is confirmed, and the explanation of the spatial distribution of modernization supplemented with other significant clues.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Latin America needs increased total agricultural output, increased employment, and increased productivity per worker. The combination of all three is unlikely to be achieved without expropriation of many of the Modernization without reorganization may large farms. yield increases in the output of some crops and in labor productivity for a select group of skilled However, it may reduce rural employment workers. opportunities and throw the full burden of adjustment on the disadvantaged who join the ranks of the landless, become migrant workers, continue to crowd into existing small farm areas, move out to a rapidly shrinking frontier, or join the underemployed in the cities.

Dorner (1971:xvii)

Several basic facts were established by this investigation concerning the region of Central Boyacá. From these facts a set of conclusions and recommendations are derived. Summarizing, these facts are as follows:

1. In terms of the spatial framework of the study, the existence of a degree of regional cohesiveness was detected in this research area of Central Boyacá, where rural hinterlands are integrated around service centers--the cities of Tunja, Sogamoso, and Duitama--which in turn are articulated with each other by means of a modern

transportation network. In historical perspective, the geographic conceptualization of such a region, defined on the basis of physical and cultural factors, can be confirmed as a functional region. A highly integrated infrastructure connects the three urban nodes and their manufacturing satellite towns to form an urban-industrial corridor.

- 2. Changes in the Central Boyacá region have been increasingly intensive since the 1950s, occurring simultaneously with the beginnings of industrialization. The expressions of regional change are evident in urbanization, growth of secondary service centers, increases in the provision of basic social services, the development of physical infrastructure in transportation and energy, and rural modernization. Although presumably other local and exogenous factors should have had bearing on this, there appears to be a causal relationship between industrial development and the processes of regional change.
- 3. Rural modernization is taking place. Although the vast majority of peasants has not adopted modern agricultural practices, especially toward the regional periphery, a few farmers generally located near the regional centers, have successfully applied a package of modern farm techniques, implements,

and management practices. These same farmers also have available good marketing facilities. In comparative sense, between the modern farmers and the traditional peasants, a sizeable number of relatively progressive campesinos can be classified as transitional.

- The transformational process in the rural areas is 4. spontaneously generated by economic forces operating both at the regional and the national levels, and through different communication and interactional channels. Although various governmental agencies perform functions in the region related to rural development, with varying intensities and continuity, they tend to act independent of one another. No systematic program of deliberate and comprehensive rural transformation has ever been implemented in this region with one possible exception. Four centuries ago the Spanish committed themselves fully to obliterate the Chibcha culture and to impose on the Indian population a self-perpetuating agrarian feudal system.
- 5. An inverse relationship between distance from the farm to the nearest regional center and level of modernization is evident. Some departures from the zonal model proposed are caused by physical and cultural factors. The influential weight of the

physical variable is reinforced by the improved transport and communications network.

- 6. A marked contrast in relative regional development is apparent. When the level areas adjacent to the urban-industrial corridor are compared with similar areas toward the periphery, a regional cleavage becomes obvious. Regional disparities are emphasized by a concentrated provision of social overhead and physical infrastructure in the corridor which results in what Soja (1968b) identifies as geographically uneven modernization.
- 7. Finally, the research identifies the most pressing needs of the rural communities and enunciates peasant expectations as they apply to the government's role in bringing development to the countryside. Water supply, electrification, technical assistance, education, and health care are utmost in the minds of the peasants. This, and the spatial distribution of levels of modernization, should be of prime concern in any serious attempt to design policies of rural development in this region of Central Boyacá.

Implications of the Study

This research tested the significance of spatial factors in addition to other forces frequently assumed to play a key role in the rural modernization process. In

general the study area typifies Andean rural Latin America. It is predominantly peasant, with a background of semifeudalistic institutions, relatively self-sufficient in terms of the limited wants of its population, and characterized by the striking contrast existing between the poverty of the bulk of the population and the wealth of a minority of large-estate owners.

The last characteristic should be stressed because the unfolding of the process of modernization is very much influenced by such socio-economic structure. At the national level two types of rural subsectors are believed to coexist, a "traditional or subsistence" subsector, and a "modern" one, according to the typology recently adopted by the Colombian Department of Planning to distinguish between farms characterized by the application of advanced technology and high productivity, and the peasant subsistence farms (DNP 1975). The actual situation in Boyacá is much more complicated, however, because apart from the minority of farms in the modern subsector, a wide gamut of technological gradations was found to exist between such subsector and the purely subsistence, traditionalist peasantry. Those intermediate levels, or subsectors, of "semi-development" can be defined as manifestations of structural heterogeneity of the society, rather than simple socio-economic dualism. As defined in a United

Nations report on Latin America (UN 1975:291), structural heterogeneity refers to

situations of wide differences in productivity or 'modernity' between as well as within sectors of economic activity, but accompanied by complex ties of interchanges, dominance and dependence within a national socio-economic 'structure' as opposed to presumed 'dualistic' situations in which two socioeconomic structures--'modern' and 'traditional' or 'primitive'--coexist in a national territory with only limited interchanges and little influence on each other.

Colombia, as most developing countries, will continue to depend heavily on its agricultural sector for foreign exchange earnings and to capitalize other sectors of the economy. Moreover, the prospect indicates a growing domestic demand for farm products, mostly food, for the rapidly increasing urban population. Therefore, a consistent effort is required to expand farm productivity. Important as it is, however, the agricultural sector is highly inefficient. Changes, then, cannot be further delayed in the rural sector. To date, ideas, experiments, and applied programs have been advanced by national agencies in the fields of rural services, community action, agricultural co-operatives, agribusiness (agro-industrias), and especially integrated rural development. To this end the government is now assembling a program to coordinate rural functions of several national and local agencies in order to induce change in the countryside. However, a few crucial measures are lacking to bring about change in the agrarian structure of the country. Greater involvement of

the peasantry especially in the decision-making process should be encouraged through the revitalization of the <u>Asociación Nacional de Usuarios Campesinos</u> (ANUC). Furthermore, the Colombian Land Reform Institute (INCORA) must be allocated the power to carry out a long neglected program of land redistribution. Dorner and Kanel (1971:55) have dealt with this problem in the Latin American context, and their conclusion fully applies to the case of Boyacá:

There [in Latin America], if the agricultural sector is to make a greater contribution to overall development, basic reorganization and redistribution of land and capital are required in order to: productively employ more people in agriculture, contribute more to capital formation in both the agricultural and the industrial sectors, and provide the income distribution necessary for broadening the market for locally manufactured goods as well as for the increased production from agriculture.

There appears to be no alternative to rural modernization, irrespective of the ideological and political framework of the developmental process. At this point in time it is impossible to disassociate any region from the mainstream of national economic life, more so in the particular case of Central Boyacá, a region which lies adjacent to the Colombian capital city. The research is conclusive in the contention that the process of rural modernization, when it occurs outside the framework of a coordinated regional policy is highly ineffectual in utilizing the existing resource base, public services and investment. The same lack of functional coordination tends to perpetuate and even intensify the regional coexistence of socio-economic and cultural disparities, which are "chronic and not merely transitional" according to Singer (1970).

To summarize, rural modernization is an irreversible process in developing economies. Twentieth-century "epochal innovations" are available for operation in peasant societies, for better or for worse, and it is up to policymakers to harness the power of change associated with new technology. The idea is to make change an instrument of stable economic progress and social justice, rather than reinforce inequalities, and at the same time provide the means to encourage rural communities in the preservation of their own cultural endowment.

Conclusions

On the basis of the most important findings of the research, the following conclusions are derived:

- Change occurs in the rural sector of developing regions with varying intensity in part as a result of increased urban-rural interaction, greater demand for rural goods and services, and the overall intensification of economic activities associated with city growth.
- 2. The spatial variation in such rural transformation can be stated as inversely proportional to distance from the farm to the urban node. As exemplified in the case of Central Boyacá, the ideal

linear relationship is distorted by the influences of other cultural and physical factors.

- 3. Regional changes thus generated by city growth impose technological and economic re-adjustments on the agrarian economy, requiring financial and technical assistance, education and other services, particularly for the mass of subsistence peasants. Such functions are still poorly served by the government in Central Boyacá.
- 4. Spontaneous modernization is bound to widen the economic, social and technological gaps between the few wealthy farmers and the bulk of the rural populace. While wealthy farmers readily have their farms modernized as innovations are available, peasants either disassociate themselves of the general process of development as a marginal subculture, or become only partly transformed. The latter situation has been termed "dysrhythmic change" (Whitaker 1967; Migdal 1974), and will induce further migration of dissatisfied peasants to urban centers, or create a source of mounting socio-political unrest and nonconformity in the countryside.
- 5. While in general industrialization in Central Boyacá has unleashed a chain-reaction leading to important changes in the region, its direct impact

on the countryside has been comparatively limited. The impact of heavy industrialization, moreover, tends to be a negative one in some cases, since peasants who are able to find employment in manufacturing generally abandon the rural regions. Even if in a few instances industrial jobs helped to solve problems of rural underemployment, in several municipalities the consequences have been identified as serious shortages in the agricultural labor force. On the other hand, since the mid-1970s the rate of industrialization has decreased in the region and therefore the ability of the manufacturing sector to absorb redundant labor (unemployment caused by capital-intensive changes in selected agricultural areas) has been greatly diminished. While mining and processing of coal operations will probably increase in the near future in the Upper Chicamocha Valley, modernized mining systems most likely restrict the generation of additional employment from this source.

6. If present trends continue, further migration of peasants will remain a problem for the cities, not so much at the regional level, but mostly for the country's capital, Bogotá, which is constantly affected with the heavy burden of providing

services and employment for the endless stream of campesino migrants.

Recommendations

Several recommendations concerning problems of the study region are implicit in the conclusions. It is appropriate, however, to formulate a set of considerations based on policy priorities which could be of assistance in devicing plans conducive to rural modernization.

First of all, from the geographic point of view, a close scrutiny of the areal arrangement of phenomena directly or indirectly associated with rural change may prove useful. This spatial analytic approach is necessary to evaluate regional disparities, needs, and potentials, and to decide on the most adequate framework to set forth priorities and strategies of regional development.

Secondly, a sound approach to rural development should be preceded by additional research in the fields of agricultural economics, anthropology, and sociology, a role which in the case of Central Boyacá must be assumed by the University of Tunja. Moreover, pilot projects should be initiated to test specific strategies of directed and semi-directed rural development.

Thirdly, a self-help policy (Katz and Bender 1976) would imply the involvement of the peasantry, or at least genuine communal leaders, in the process of determining major needs and assets of the community, and in implementing the projects designed to induce change.

Underlining the recommendations suggested above, a <u>sine qua non</u> point of logistics is paramount--program leadership. In order to shield the development program from political interference, funding problems, and misapplication or duplication of services, it would be advisable that these types of projects depend on interinstitutional sponsorship. Whether this coordinated effort is funded directly by the national government within the DRI (Integrated Rural Development) framework, or is dependent upon a regional authority is not too important as long as several local and national agencies and expertise are involved.

As an area of mature settlement, all of Central Boyacá's lands have been occupied and are more or less permanently cultivated. Thus, any significant expansion in farm acreage within the region is impossible for all practical purposes. There is no colonization frontier remaining in these highlands. But, the potential exists for a more rational and productive utilization of the resource base. As Street (1976:543) indicates, the alternative therefore lies in implementing the concept of "the vertical frontier of internal development"---implying such things as community cooperation, modern farm techniques, management, marketing organization, intensification. And indeed, if these enduring peasants of Central Boyacá have succeeded in taming horizontal frontiers elsewhere, in pioneering areas and in cities alike, why can they not succeed at home in conquering these new frontiers facing them--those of vertical development? APPENDICES

APPENDIX A

GLOSSARY OF SPANISH TERMS AND ACRONYMS

APPENDIX A

GLOSSARY OF SPANISH TERMS AND ACRONYMS

1. Spanish Words

Altiplanicie	A plateau; as used in Colombia, the term applies to stretches of elevated and relatively extensive level land, such as the Bogotá plateau.
Barrio	Urban neighborhood or district.
Boyacense	A native from Boyacá, Colombia.
Caballero	Nobleman; a member of the gentry.
Cabecera	City, town or village serving as a municipal capital.
Cacicazgo	An Indian chiefdom.
Cacique	Indian chief; currently the term applies to a political boss.
Caja Agraria	Short name for <u>Caja de Crédito</u> <u>Agrario, namely Agrarian Loan Bank,</u> a Colombian banking institution specializing on rural affairs.
Camino Real	Literally, Royal Trail; it applies to public trails.
Camino vecinal	A public rural road, frequently con- structed by the community with technical and financial support from the government.
Campesinado	The peasantry.
Campesino	A peasant; a rural dweller.

- Campo The countryside, the rural areas; also used to identify the field plot.
- Chibcha The major Indian cultural family in Andean Colombia; also identified as Mwiska, Muisca, or Moxca.

Comerciante A merchant, trader or dealer.

Comisaría A regional-administrative category in Colombia, applicable to national territories. The regional hierarchy places <u>Departamentos</u> in the highest order, followed by <u>Intendencias</u> and <u>Comisarías</u>; these major divisions are broken down into municipalities.

Conquistador A Spanish conqueror.

- Departamento Department, a state-like unit (see Comisaría, above).
- Encomienda A manorial system introduced by the Spanish in their colonies, whereby Indian communities were placed under the protection of a white settler. Although the lands in <u>encomienda</u> were supposed to remain out of the direct control of the <u>encomendero</u> (grantee), in practice he was a lord owning land and Indians alike.

Ferrería A small smelter.

Ganadero Cattleman, as the opposite of agricultor, crop farmer.

Haba A broad bean species, which is a staple in the highlands of Colombia.

Hacendado A large-estate owner.

Hacienda Large estate, usually self-sufficient and self-contained. Also referred to as <u>latifundio</u>.

Hato A cattle ranch, or any medium-sized to large farm used for cattle raising.

Indio An Indian; as used in Central Colombia, the term applies to any humble dweller of the rural areas. Intendencia A regional subdivision, next to Departamento in the administrative hierarchy (see Comisaría, above). Latifundio Latifundium, large estate. Smith (1967:28) defines it as the "large landed property which is deliberately withheld from productive purposes." A person of mixed blood. The term Mestizo usually applies to people of Spanish and Indian descent. Minifundio A small, subsistence-oriented farm owned by a campesino. Minifundista A subsistence peasant; the opposite is latifundista, somewhat equated to hacendado, especially when the owner keeps his estate idle. Muisca See Chibcha, above. Municipio A municipality, sometimes defined in English as a county-like regional subdivision. Páramo A bleak, cold area usually at elevations higher than 3,000 meters, above the tierra fria (see below). Patrón A landlord; the term also applies to define a person of certain status in the hierarchy of clientelist relationships in rural Colombia. Pueblo A town or village. The Spanish equivalent of village, aldea is not used in Colombia. Pueblo also defines the people, in general. Rancho A humble dwelling. Reino A loose regional term applicable in general to the highlands of Central Colombia which comprised the Reino (Kingdom) of New Granada.

- Sociedad Literally, society. La sociedad, refers to the upper class, as a generic qualification.
- Sumerced Also <u>su merced</u> or, more formally, <u>vuestra merced</u> (now obsolete). This is the way a respectable person is addressed by the peasants.
- Tierra caliente Hot land; applies to the warm, tropical lowlands.
- Tierra fría Cool land; areas of mild, springlike climate in the highlands of Colombia.
- Tierra templada The zone of temperate climate located between the tierra fría and the tierra caliente.

Toma An irrigation ditch.

- Tributario In colonial times, an Indian who was forced to pay taxes to the Spanish administration.
- Vereda A rural neighborhood or community; the unit areas into which <u>municipios</u> are subdivided.
- 2. Acronyms
 - ACOGE <u>Asociación Colombiana de Geógrafos</u> (Association of Colombian Geographers), the leading professional organization of geography in Colombia.
 - ANUC Asociación Nacional de Usuarios <u>Campesinos</u> (National Association of Peasants Using Public Services), a kind of peasant union designed to increase the participation of the peasantry in its own betterment.
 - CBD <u>Central Business District</u>. In Spanish the equivalent is the <u>centro comercial</u> or, simply, the <u>centro</u>, referring to the downtown area where most of the city business occurs.

CEPAL	Comisión Económica para la América Latina (United Nations Economic Commission for Latin America, ECLA).
CLAG	Conference of Latin Americanist Geographers, a United States-based organization of geographers special- izing on Latin American issues, with increasing membership of Latin geographers.
DANE	Departamento Administrativo Nacional de Estadística, the leading statis- tical agency in Colombia.
DNP	Departamento Nacional de Planeación, or Colombian Planning Department.
DRI	Desarrollo Rural Integrado, Inte- grated Rural Development, a newly designed program to induce modern- ization of the rural sector.
ICA	Instituto Colombiano Agropecuario, Colombian Agricultural Institute; this is the most important agrarian research agency in Colombia.
ICEL	Instituto Colombiano de Electricidad, Colombian Institute of Electricity; the leading development agency in charge of electrification.
IDEBOY	Instituto de Desarrollo de Boyacá, Boyacá's Institute of Development.
IGAC	Instituto Geográfico Agustín Codazzi. The Colombian geographic institute is an agency dealing mostly with cartographic research.
INCORA	Instituto Colombiano de la Reforma Agraria, Colombian Agrarian Reform Institute.
INDUMIL	Industria Militar, a factory special- izing in the production of military equipment and various metal-working activities. It is located in Sogamoso.

ITA	Instituto Técnico Agropecuario, a rural-oriented secondary school located near Paipa, in Central Boyacá.
OFISEL	Oficina de Investigaciones Socio- Económicas y Legales, a provate firm for Socio-Economic and Legal Research of Bogotá, Colombia.
SENA	Servicio Nacional de Aprendizaje, or National Apprenticeship Service. This is an agency in charge of pro- viding adult continuing education, especially in technical fields.
SOFASA	Sociedad de Fabricación de Automotores, S.A., a government- sponsored corporation specializing in the production of Renault auto- mobiles.
ТАВОҮ	Transportes Aéreos Boyacenses, a government-sponsored airline which operated in Boyacá in the early 1960s.

APPENDIX B

INTERVIEW SCHEDULE

APPENDIX B

INTERVIEW SCHEDULE

Observation Un	nit No
Municipio	
Interviewer	
Date	

Administered in Spanish*

NOTE FOR THE INTERVIEWER:

Unless otherwise indicated, clearly <u>circle</u> the number in parenthesis corresponding to the respondent's option.

1.	Age in years	•	2.	A native	from Boyacá?	Yes (1);	No	(2)
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J. DEX: MAIE [1] FEMALE	(2).
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- 4. Married (1) Single (2) Other _____ 3.
- 5. Person in charge of directing the farm operation:

Family head (1) Relative (2) Other	<u> </u>	•
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6.	Could you please list what you consider the three most important
	needs of the peasantry in your community?
	(a)

(ъ)	

(c) _____

^{*} The Spanish version of the questionnaire asked for additional data gathered in support of future research.

7. What would you expect the government to do for the betterment of the peasantry--not only yourself or your community, but of the Boyacense peasantry in general?

- 8. Are there any other holdings separated from this one that belong to you or your spouse? Yes (1) No (2).
 9. How did you acquire this farm?
- Inherited (1) Purchase (2) Rented (3) Sharecropper (4, 10. How large is the farm? _____ fanegadas, or ____ hectares.
- 11. Concerning the size of the farm:
 (a) It has been always the same size (1)
 (b) It was part of an estate subdivided recently (2)
 (c) It was consolidated from several small plots (3)
- 12. Currently, this holding is occupied for the following uses:

Use	Pastures	Cereals	Vegetables	Fruits	Woodland	Idle
Per cent	(1)	(2)	(3)	(4)	(5)	(6)

In general, how would you classify your farm in terms of the predominant land use? Consider investment and production.
 Crop cultivation (1) Livestock (2) Mixed (3)

- 14. Approximately, what is today's percentage of your farm used in crops? _____ per cent.
- 15. Which is the cash crop most frequently planted in your farm? Barley (1) Wheat (2) Corn (3) Peas (4) Potatoes (5) Beans (6) Vegetables (7) Fruit trees (8) Other _____(9).

1 6.	How much of the crops harvested in the farm is direct	tly
	consumed by the family?	
	(a) Everythingwe do not sell anything	(1)
	(b) About three-quarters are consumed by family	(2)
	(c) Approximately one half	(3)
	(d) About one-quarter is consumed by the family	<u>(4)</u>
	(e) Almost nothingeverything is for the market	(5)
17.	What is the main purpose of your livestock operation	?
	Beef (1) Dairy (2) Other	(3).
18.	What kinds of cattle do you have in this farm?	
	Graded dairy breeds (1) Graded beef (2)	Mixed (3)
19.	How many animals are there in the farm?	
	Cattle; Sheep; Swine; Chicken	;
	Horses; Other	•

20. Indicate the origin of your water supply:

Origin	Aqueduct	Dam	Communal ditch	Spring	River
Domestic use	(1)	(2)	(3)	(4)	(5)
Animals	(1)	(2)	(3)	(4)	(5)
Irrigation	(1)	(2)	(3)	(4)	(5)

21. Where do you market your farm products?

Location	Crops	Cattle	Milk	Other
In farm	(1)	(1)	(1)	(1)
Town				
City				

(Circle number 1 whenever products are sold in the same farm; otherwise write the name of the town or city).

22.	Name	cities or towns most frequently visited for the foll	.owing			
	purp	purposes:				
	(a)	To purchase farm inputs (fertilizers, etc.)				
	(b)	General shopping				
	(c)	To obtain banking services				
	(d)	To obtain technical assistance				
	(e)	To consult with physicians and dentists				
	(f)	To obtain hospital services				
23.	Identify implements and techniques found in the farm or					
	freq	uently utilized in the operation of the farm:				
	(a)	Soil analysis by qualified personnel	(1)			
	(ъ)	Fertilizers technically formulated and applied	(2)			
	(c)	Sprayersfungicides and/or herbicides	(3)			
	(d)	Parasite control in animals	(4)			
	(e)	Livestock inoculation	(5)			
	(f)	Use of improved seeds obtained in the market	(6)			
	(g)	Cattle breeding: selected sire or artificial insemination	(7)			
	(h)	Cattle grazing electrically controlled	<u>(8)</u>			
	(i)	Tractor and modern ploughs	_(2)			
	(j)	Combine	(10)			
	(k)	Milking machine	(11)			
	(1)	Irrigation water-pump	(12)			
	(m)	Motor vehicles for farm-related activities	(13)			
	(n)	Other farm machinery	(14)			
	(o)	Other modern farm technique	(15)			

2 ¹ +.	Do you have in your house: (a) Electricity (1)
	(b) Running water (2)
25.	(Interviewer: record housing characteristics observed;)
	Walls brick (1) adobe (2) mud (3)
	Roof tile (1) straw (2) other (3)
	Floor cement (1) wood (2) dirt (3)
	Bathroom W.C. <u>(1)</u> outside toilet <u>(2)</u>
26.	(Grade the general housing quality by design, appearance, and
	maintenance with scores ranging from 0 to $3:$)*
	(0) Poor; (1) Average; (2) Good; (3) Excellent.
27.	Do you usually consult with professional agronomists and/or
	veterinarians about your farm problems? Yes (1) No (2).
28.	Do you keep written records of your farm operations?
	Yes (1) No (2)
29	Do you participate in any of the following activities?
27.	(a) Possantis Day (Día dol compacino) (1)
	(a) reasant s bay (bia dei campesino) (1)
	(b) Field workshops (<u>Dia de campo</u>) (2)
	(c) Community action groups (3)
30.	Are you a member of ANUC (peasant union)? Yes (1) No (2)
31.	Are you member of a farm co-operative? Yes (1) No (2)
32.	Have you ever received any technical assistance from extension
	agents? Yes (1) No (2) From which agency?

33. How far from the farm is the nearest school? _____kilometers.

* House quality scoring should be done by interviewer.

- 34. (Interviewer: Record the approximate trail distance to nearest all-weather road: Kilometers _____ Record in map, too).
- 35. How many members of your family, including yourself, usually live in this farm?
- 36. Do you know how to write and read? Yes (1) No (2)
- 37. The following members of my family read and write: Spouse (1); _____ children out of ____.
- 38. Do you have any close relatives living in a city? Yes (1) No (2)
- 39. (Interviewer: Crade the physical attributes of the farmland with scores ranging from 0 to 4, as follows:

0 = poor 1 = deficient 2 = average 3 = good, and 4 = very good.

The grading should consider <u>soil</u> characteristics and fertility; <u>water</u> supply (permanency, usable for irrigation, etc.); <u>topo-</u> <u>graphy</u> (slope); and <u>accessibility</u> to an all-weather road.

- (a) Soil quality ____
- (b) Water supply ____
- (c) Topography ____
- (d) Accessibility ____

40. What is your family income after expenses in farm operations are subtracted?

NOTE FOR INTERVIEWER: Indicate the attitude of the respondent and your general observations:
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