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# Urban Economic Growth and Changes in Rural Stratification

## Rio de Janeiro 1953 — 1962\*

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*Archibald O. Haller*

The effects of economic growth on stratification is presumably a topic of considerable interest to sociologists concerned with social change. Surely the changes occurring in stratification systems are among the most pervasive influences in "transitional" societies. Indeed much of the political and economic rhetoric of the developing societies centers around changes in strata that are believed to result from economic growth. At times, this thinking is little more than uncritical reflection of major contemporary ideological positions. But by

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- This project was initiated by the late J. H. Kolb of the University of Wisconsin while he was in residence at the Rural University of Brazil. It was then financed by the Conselho Nacional de Pesquisas. The present writer was supported by the Organization of American States and by the Educational Commission of the United States in Brazil (the Fulbright Commission). The project has also received financial support from the Institute for Agricultural Economics of the Rural University of Brazil, the Office of International Programs of Michigan State University (East Lansing) and the Ibero-American Studies Program of the University of Wisconsin (Madison). Invaluable advice, as well as moral and logistical support, were provided by Rectors Aurelio Rocha and Iderzio Luis Vianna as well as Agricultural Economics Professor Romulo Cavina of the Rural University of Brazil, and of personnel of the Latin American Center for Research in Social Sciences, especially Dr. Manuel Diegues Junior and Sugiyama Iutaka, as well as the Department of Agricultural Economics of the Rural University of Minas Gerais. Over the years, the project has repeatedly been aided by João Gonçalves de Souza's enthusiastic support. Special debts of gratitude are owed to him, and to Dr. João Bosco Gueddes Pinto, the late Dr. Francisco Escobar Duarte, and to the able and loyal students who did the interviewing and performed many other helpful tasks.

no means all such speculation is naive. At any rate, sociologists have contributed little to thinking on the topic.<sup>1</sup>

The objectives of this paper are 1) to present a set of concepts for assessing changes in stratification of rural peripheries which are consequences of economic development in urban centers; and 2) to present data regarding changes in stratification which have occurred in one such rural area during a period of rapid economic growth in the region's urban center. The findings should be compared with those of research in other areas of the world before generalizations are drawn. In any case, the present paper is limited to changes in *stratum* phenomena; it is not concerned with classes as groups with conflicting interests,<sup>2</sup> although these, too, might be usefully studied by techniques comparable to those used herein.

The hypotheses assume the existence of centers of economic growth whose influence radiates to peripheries.<sup>3</sup> Internationally, whole countries or even groups of countries are considered as such centers in relation to other countries.<sup>4</sup> Within countries, centers may be regions,<sup>5</sup> cities or groups of nearby cities. The periphery is, of course, the region surrounding the center. For in-

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1 Wilbert E. Moore has examined published statistical data on nations, using a fairly systematic set of concepts and hypotheses. His main concepts are evidently derived from Marx although he does not say so. They parallel those of the present paper, but are not presented in their most general form. See his "Developmental Change in Urban Industrial Societies" in Arthur Gallaher, Jr., ed., *Developmental Change* Lexington: University of Kentucky Press, forthcoming.

Torcuato S. DiTella is another sociologist who has conducted research on this topic. His work is useful in that it is one of the few by sociologists which raises the question of possible disfunctional consequences of economic development. It suggests the possibility that urban economic development may result in a polarization of the occupational strata. (Interestingly, the most highly developed areas on which he presents data are clearly exceptions to the generalization in that have they large middle classes). See his *Economía y Estructura Ocupacional en un País Subdesarrollado*, *Desarrollo Económico* 1, 1961, pp. 123-153, esp. Figure 1, p. 132.

Finally, Glaucio Ary Dillon Soares is comparing occupational strata under varying conditions of economic development. He appears to find that between nations, economic development leads to an increase in the middle classes (and, in the underdeveloped areas, to an increase in unemployment), while among provinces within nations, level of economic development is negatively correlated with the size of the middle class. See his "Economic Development and Class Structure", in Reinhard Bendix and Seymour Martin Lipset, *Class, Status and Power*. New York: The Free Press, rev. ed. 1966, pp. 190-199. This work also appears to include a comprehensive bibliography.

2 This paper follows Rolf Dahrendorf's terminology and is concerned with "stratum" as opposed to "class" phenomena. See his *Class and Class Conflict in Industrial Society*: Stanford, California: Stanford University Press, 1959, pp. 75-76.

3 For the seminal treatment of this issue see Raul Prebisch, *The Economic Development of Latin America and Its Principal Problems*. New York: United Nations Economic Commission for Latin America, 1950.

4 See, among others Raul Prebisch, *Commercial Policy in the Underdeveloped Countries*, *American Economic Review, Papers and Proceedings*, May, 1959, Vol. XLIX, No. 2, pp. 251-273.

5 In Brazil this type of analysis has been used by Celso Furtado. See esp. his *Formação Econômica do Brasil* (Rio de Janeiro Editora Fundo de Cultura, 1959) esp. Chapt. 36.

dustrial nations it includes the nonindustrial nations; for groups of cities in a region, it includes outlying regions and their cities; for cities, it includes the rural hinterland. The periphery usually supplies the centers with agricultural and other raw materials, and it may serve as a market for manufactured goods.

Many North American and other Western economic experts believe that the economic growth of a center is automatically beneficial to its periphery. In terms of stratification this would mean that in the surrounding rural area, economic growth in the center would produce a general enrichment: a rise in real (monetary and non-monetary) income of people at all social levels. In the extreme, this position may imply that the lower strata will contract and the middle and upper strata will expand (which, for example, appears to have happened in the United States during the last half century). On the other hand, there are those who doubt that enrichment necessarily occurs. Perhaps taking some of their cues from Marx, they appear to point to three processes which are thought to occur. The first is the process of *proletarianization*. In general, this means that an increasingly large proportion of the population gains a livelihood by selling time and skills, "labor power", to an entrepreneur.<sup>6</sup> The second is the process of *impoverishment*. This holds that the lower and lower middle strata become increasingly poor, that is, that real income — monetary and non-monetary — will decrease among the lower income levels. The exact meaning of "lower" is not clear, but it could conceivably include three-quarters or more of the population. The third process is *polarization*. This holds that the distance between strata will widen, the level of the upper strata rising while that of the lower strata is falling.

Apparently these processes are thought to occur within the centers themselves. Certainly they are believed by many to occur in the peripheries, perhaps especially in nations such as Brazil where the topmost families in the upper strata of the rural periphery frequently form part of the business and governmental elite of the urban centers.

### Concepts

The latter three concepts provide an approach to more systematic formulations. First, it is clear that they are analytically independent, though they are often confused. Logically, persons may become proletarians while their real income increases or decreases. Or the proletariat may come closer to, or move away from, the upper strata on any stratification variable. Also, the various strata may either approach each other or separate while all strata are becom-

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<sup>6</sup> Here we follow the definitions of Alfred Meusel in "Proletariat" *Encyclopedia of the Social Sciences*. New York: MacMillan Company, 1933, reprinted September 1951, pp. 510-518. However, it should be noted that his definition is not accepted universally. Mills, for example, refers to those who sell their labor as a "class-in-itself" which has not yet become class-conscious. For him, class-conscious wageworkers are the proletariat. C. Wright Mills, *The Marxists*, New York, Dell Publishing Company, 1963, p. 83.

ing either richer or poorer. That is, proletarianization, impoverishment, and polarization, do not necessarily vary together.

Second, though properly stated as variables, each of these terms focuses attention on an overly restricted range of possibilities. That is, terminology for such concepts should immediately suggest the whole range of possible variation. The opposite of impoverishment is enrichment. Some have assumed that economic growth impoverishes the relatively poor, some seem to think that it enriches them. Similarly, the opposite of polarization is equalization. It may be thought that stratum polarization is a necessary concomitant of economic growth. But whether it is or not is an empirical question, not a logical necessity. Logically, the strata may tend to polarize, may stay as they were, or may tend to come closer together. Thus we have two meaningful variables which are logically unrelated to each other, except in that they both describe states of stratification systems. Impoverishment-enrichment is one such variable and polarization-equalization is another.

Proletarianization, however, has no single opposite. It implies that some people work for others and that they are paid in money. Slaves and serfs are kept, and are paid in kind if at all, rather than wages, and they work for others. Of course, strictly speaking, slavery and feudalism no longer exist anywhere in the Western world. Some regions, however—including Brazil—have semi-feudal agricultural systems in which, though legally free, the workers (sharecroppers and hired hands) are often paid in kind rather than/or in addition to money. Thus proletarianization may mean a shift from slavery, serfdom, or semi-serfdom to wage labor. It may also mean a shift from self-employment as an artisan or professional to salaried employment. In other words, proletarianization implies one type of shift from non-monetary payment to money income, and another from self-employment to work for others. Unlike the other two major stratification factors treated here, proletarianization is not a unitary dimension.

Moreover, proletarianization refers to but one aspect of a stratification system. It bears no logical relation to absolute levels of real income, prestige, life-chances, etc. Its general importance lies in the fact that as proletarians become class-conscious, they may organize to change their power relations with employers or to abolish the latter altogether. It is included here partly because of its possible implications for political sociology. In addition, in agricultural areas the sharecropping stratum is not wholly bound to a money economy. But as that stratum declines, its population must go to another, and the wage working stratum, or proletariat is one of the main alternatives. Today this usually means that the exsharecropper becomes more dependent upon the money economy. In the region of this research it is widely believed that farm wage labor is an even more precarious existence than sharecropping, because landlords are thought to provide sharecroppers with important non-monetary benefits.<sup>7</sup>

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<sup>7</sup> Some of the non-monetary benefits a sharecropper may, in feudal-like fashion, receive from his patrão, the landlord, are mentioned in Benno Gajart, *Class and Following in Rural Brazil, America Latina* 7, July-September 1964, pp. 3-24, esp. p. 5.

The impoverishment-enrichment factor is less complex than proletarianization, but it has characteristics which need explication. It is clearly hierarchical, unlike proletarianization. Also, it consists of only one class of stratification variables, real income or access to valued goods and services. Obviously, it does not apply directly to other stratification factors such as prestige and power. It includes monetary income such as wages and profits, as well as non-monetary income such as free medical care, education, etc. Impoverishment of a whole system consists simply in the downward movement of the whole hierarchy. Enrichment consists in the hierarchy's upward movement. Obviously, strata may experience different levels of impoverishment or enrichment at the same time.

The polarization-equalization change applies to any hierarchical stratification variable. It implies that persons or other social units may tend to separate or to come together on one or more stratification variables. Because it applies to any stratification system and all hierarchical variables, it is more general than the other two processes. (The present paper, of course, is concerned with changes in polarization and equalization of objective stratum variables, not with Marxian class polarization.)

Much of the rhetoric concerning changes in stratification assumes combinations of the above. For example, some speak of "relative impoverishment". This means that though the income of the lower strata is rising, that of the higher strata is rising faster.<sup>8</sup> Clearly, this is only one of four logical categories. That is, what is called "relative impoverishment" is the combination of enrichment and polarization, or perhaps no change at all in relative standing. In cases where economic decline takes place, impoverishment would be certain, but it might be with any level of polarization-equalization. (The antecedents and consequences of each of the combinations of these variables is a subject which bears further exploration.)

Strata or levels in different stratification systems range from those that are consensually defined by the participants to those that are arbitrary constructs of the researcher. Consensual definitions tend to be cast in terms of broad occupational groupings which are correlated with income, prestige, power, etc.: landlords and sharecroppers, managers and laborers, white-collar and blue-collar, owners and workers.<sup>9</sup> In this paper, broad hierarchical occupa-

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8 See Harry Schwartz, article in the New York Times, March 4, 1962, quoted in Gustavo Lagos, *International Stratification and Underdeveloped Countries*, Chapel Hill: University of North Carolina Press, 1963, p. 31 note 7.

9 Occupational strata have probably never been characterized by such a high degree of consensus that the exact stratum of each member of a social system could be ascertained immediately by any other member, except in rigidly controlled subsystems such as armies. A certain amount of ambiguity of placement, perhaps more in some strata than others, is more common. For example, free men and slaves have unambiguous statuses vis-a-vis each other but there may be great differences among free men, or even among slaves. More germane, sharecroppers form a fairly well defined stratum. So do landowners. So also do farm wage-laborers. Nonowners who control the use of land are somewhat more ambiguously categorized. Even among such strata as these, there can be a certain amount of confusion, however, because the same person may be a member of more than one stratum.

tional strata are treated as the primary organizing principles of the stratification system. Combining named occupational strata with the impoverishment-enrichment variable yields other useful terms. *Stratum impoverishment* or *stratum enrichment* refers to the absolute change in real income of a certain occupational stratum. Logically—though perhaps not empirically—there is no necessary relation between changes in the level of income of two different strata. *General impoverishment* or *general enrichment* refers to the change in real income of those at any point of the entire stratification system. These distinctions are necessary because some of the positions seem to hold that economic growth results in general enrichment and others that it impoverishes some strata while enriching others.

The various combinations of these concepts and variables lead to a number of possible effects of a center's economic growth on stratification in the periphery. At present there appears to be no defensible theoretic basis for expecting that any particular combination will obtain in any one situation. Therefore, the paper makes no such attempts. It should be added, however, that many people who are concerned with development seem to believe that one or another of the possible outcomes is likely. Several of the more current possible outcomes are listed here, disregarding the fact that some are contradictory. (For convenience these are stated as if they were hypotheses.) 1) Most of the population of each stratum of the periphery will be enriched. 2) Most of the total population of the periphery will be enriched, irrespective of stratum (poorer strata may tend to disappear). 3) Most of the population of most of the strata of the periphery will be enriched. 4) The population of the periphery will tend to become proletarianized. 5) The strata of the periphery will tend to polarize; and 6) either the population of each stratum of the periphery will be impoverished; or 7) the population of the lower strata of the periphery will be impoverished. 8) If the growth of the center is so vigorous as to overcome both the absolute impoverishing effects on the lower strata and the absolute impoverishing effects on the periphery as a whole, there will be an extreme polarization in the periphery together with a tendency toward general enrichment.<sup>10</sup>

#### Data

Besides gross statistical data on the economic growth of a center, the analysis requires data collected by comparable sampling techniques at different times in the rural hinterlands. The sampling technique should permit generalization to the peripheral region as a whole. Questions eliciting the basic information should be identical. The data should permit ordering the respondents into meaningful, ranked occupational strata, and should permit measurement of proletarianization, polarization-equalization, and impoverishment-enrichment. Indices of monetary and non-monetary income, as well as other status charac-

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<sup>10</sup> This is the so-called "relative impoverishment" hypothesis.

teristics, should be included. The present research attempts to meet these specifications.

Interview data for this project were collected in July of 1953, and July of 1962. In both cases, the aim was to interview the head of household (or someone who could speak for him) in a random one-fifth sample of households falling within the rural trade-areas of the seats of each of four *municípios* in the hinterland of the city of Rio de Janeiro. (In 1962, the sample in one area was one-sixth.) Care was taken in 1962 to use the same boundaries as were used in 1953, except where the central urban area had expanded into what had earlier been the countryside. In the latter case, new rural-urban, or inner, boundaries were established. The outer boundaries were unchanged. The final sample sizes were 588 in 1953 and 584 in 1962 (slightly smaller base frequencies are used in the analysis because of missing data).

The questions used were identical in the two time periods, even when a certain wording was thought to yield responses of low reliability or validity. That is, every effort was taken to obtain comparable data of the same levels of reliability and validity in each time period.

The four sampling areas (communities) differ greatly in ecology and in agriculture. One, on the top of the coastal escarpment, is a dairy area wholly in a temperate climate. Two have mixed economies corresponding to variations in altitude within each. Bananas constitute the main crop on the slopes, while foothills or lowlands are mixed. The fourth is a coastal plain area specializing in sugar cane and oranges. The areas varied from about 60 to 120 km. from Rio de Janeiro, one west along the coast from Rio, one north of the city, and two east along the coast. In both periods their *sedes* were connected to Rio by paved roads and railways. These were in daily use. The areas are suppliers of foodstuffs for the urban population and they are consumers of goods manufactured in Rio, its satellite cities, or São Paulo (which is the second pole of Brazil's Rio-São Paulo industrial axis). Thus these areas are part of the meaningful periphery of the center.

*Statistical Generalization.* The logic of the research requires that we generalize to the entire peripheral region of the urban center of Rio de Janeiro. Obviously, data drawn from four widely scattered rural trade communities are much less than ideal for this purpose. For this paper it was arbitrarily decided to pool the samples from the four areas, disregarding differences among communities. It is believed that generalizations based on the approximately one-fifth N<sup>th</sup> case sampling of heads of households in each community provide a fairly accurate base for estimating gross differences among the four major strata for most of the rural areas of the state of Rio de Janeiro to a distance of perhaps 150 to 200 kilometers from the center of the city. Because of the sampling technique, formal tests against the null hypotheses are not appropriate, and are not presented.

*The Independent Variable.* Though it is hard to measure it precisely, there can be little doubt that the economic growth of the center between the sampling years of 1953 and 1962 was substantial.



From 1953 to 1960, Brazil's gross domestic product appears to have grown at an overall rate of 6.1 percent per year, which is a per capita increase of 2.8 percent per year.<sup>11</sup> Most of this increase was in industry.<sup>12</sup> The per capita income of a state is a good index of its level of participation in the economic growth of the nation. In this regard the small State of Guanabara, which comprises most of the growth center of the city of Rio de Janeiro and its environs, had a far higher level than any other state in each year from 1950 to 1960. It varied around 300 percent of the natural average income.<sup>13</sup> There is no reason to doubt that increases on this order continued through July of 1962, when present data were collected. We may summarize as follows: 1) Even on the per capita base, Brazil's production grew rapidly during most or all of the period between 1953 and 1962. 2) The city of Rio de Janeiro was one of the leading centers of this growth.

*Occupational Strata.* For most purpose in this paper we use a set of four strata which seem meaningful in this area. These are based on three fundamental agricultural strata: land-owners, sharecroppers, and farm wage laborers. There are also occupational categories in agriculture which appear to be closer to land-owners than to either of the other two. These are renters and administrators of moderate to large farms. In the present research, renters and administrators were added together with the farm owners to form stratum called "farm operators." This is a heterogeneous group ranging from owners of three hectares to a small number of owners of very large pieces of property. Naturally, it includes people who control land owned by others. The sharecropper stratum is much more definite. It consists of those who live on someone else's property and work a portion of it in return for part of the proceeds. The farm wage labor stratum is also relatively homogenous. It consists of agricultural workers whose only source of income is outright sale of their labor to land-owners. The farm age laborers have no such rights. The fourth group is perhaps even more heterogeneous than the farm operator stratum. It consists mostly of common labor in industry, sales or services, together with a very small percentage of owners of very small businesses, such as fruit stands, shoe shine stands, etc., and an even smaller percentage of managers and owners of industry, business, and services. In the region, it is generally believed that on the average, farm operators tend to have a higher status than do the rural nonfarm workers, who in turn have a higher status than do the sharecroppers. The sharecroppers are believed by people in the region to be of higher status than the farm wage laborers. (Data from the present project on income, access to services, etc. support this general belief. In point of fact, the sharpest break is between the nonagricultural workers and the sharecroppers.)

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11 J. Gómez-Quiñones, *Statistical Abstract of Latin America*. Los Angeles: University of California Latin American Center, 1964. Table 65, p. 106.

12 Stefan Robock, *Brazil's Developing Northeast*. Washington, D. C.: The Brookings Institute, 1963.

13 *Ibid.*, Table 2.5, p. 36.

*The Dependent Variables.* 1) Proletarianization. The key to defining the term "proletarianization" is a definition of the term "proletarian." It is doubtful if any perfect operational definitions are possible with these data, yet the above detailed categories can be combined in such a way as to arrive at a fairly reasonable set of operational definitions. For this part of the analysis, we have regrouped the sample to yield three strata: the proletariat, the employers, and the subproletariate. It is called here the "three strata" grouping. (We refer to the basic four strata system as the "four strata" grouping.) Clearly, all common laborers in nonfarm occupations belong to the proletarian group in that they work for others and are paid in money. The farm wage labor group is also clearly proletarian by the same definition. By a precise definition farm managers are also considered to be proletarians. On the other hand, farm owners and renters, owners of businesses and industry or managers in industry, commerce, etc. are clearly not proletarians. The employer stratum is the name we give to this group. There is a third stratum, the sharecroppers, who are subproletarian. On the one hand, they qualify as proletarians in that they work for others. On the other hand, since in fact a great deal of their payment is in kind and other benefices provided by the patrão or landlord, they do not fully meet the definition of proletarian.

Proletarianization, following the above definitions, consists of an increase in the number or proportion of proletarians in the population. (Note that the three strata system is used only to measure proletarianization.)

*Impoverishment-Enrichment.* Impoverishment-enrichment refers to positive or negative changes in real income. Real income is defined here as access to valued goods and services. This implies that both monetary and non-monetary income should be used as operational measures of the variable. Monetary income was measured by the question "How much do you earn per month?"<sup>14</sup> In both 1953 and 1962 the monetary unit used was the Cruzeiro. Responses given in time units other than months were prorated to a monthly base. There was considerable inflation between July 1953 and July 1962. To standardize the inflationary effect, the Brazilian Cruzeiro was stated in American dollars (at the free exchange rates) for the months of July 1953 and July 1962. At the earlier date, 43.28 Cruzeiros was equal to one dollar and at the later date 366.86 Cruzeiros was the equivalent of one dollar. This standardizes Cruzeiro to the dollar. The dollar, too, inflated to a degree in the same period. The dollar inflation between the two periods was standardized against the consumer price indexes for the respective months. According to this calculation, the July 1962 dollar was worth about 89c of the dollar of July 1953. All monetary income figures were translated into dollars of July 1953. To yield roughly balanced marginals in both years, a monthly income of \$23 (actually \$23.08 — or about \$275 per year) was used arbitrarily as a cutting point to divide the population into those having "high" versus "low" monetary incomes.

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<sup>14</sup> Obviously this question will not yield highly reliable responses. But the reliability should be about the same in both periods and comparability is the crucial issue here.

Non-monetary income was measured by reported land ownership, dichotomized into those having any land at all versus all others. ("Any land at all" was defined operationally as 1/100th or more of a hectare.) Another measure of non-monetary income was education of the head, dichotomized into those that had had at least some formal schooling versus those who had had none. Literacy was a third measure of non-monetary income, dichotomized as those who reported they could read and write and those who reported they could not. A fourth was radio listening, divided into those who reported they listened to at least some programs versus those who reported that they did not listen to the radio. A fifth is cooperative membership, dichotomized into those who were and those who were not members. A sixth was contact with agronomists or veterinarians, again dichotomized into those who reported receiving at least one visit per year versus all others. A seventh measure of non-monetary income was whether or not the family sent the children to school. The eighth was whether the family contacted a qualified doctor or pharmacist in the event of illness or accident. The last was whether or not the wife went to the hospital to bear her children (persons without children were excluded).

People were classified as to whether they were "high" or "low" on each of the above indicators of monetary and non-monetary income. (Obviously, the cutting points between "high" and "low" are quite low when compared to richer regions of the world.) Thus it was possible to calculate the percentage who were high in any one stratum or in the total group, in each time period. If the percent high on a certain variable in 1963 exceeded the percent high on that variable in 1953 this was considered to be evidence of enrichment. If the percent high in 1962, on the other hand, exceeded that of 1953 this was considered to be evidence of impoverishment.

*Polarization-Equalization.* Polarization occurs when the distance between levels on a variable increases or when certain strata tend to gain a monopoly over a valued variable. Equalization is the opposite. It is the case where levels of a variable come together or where strata tend to approximate each other in levels of a valued variable. Because the four basic rural occupational strata are our main point of reference in this study, we are mainly concerned with *stratum* polarization or *stratum* equalization; that is, the tendency of strata to separate or come together on valued variables. This means that in any one time period there should be a certain degree of positive association between occupational stratum and any other stratification variable. A tendency to polarize would be indicated by a higher positive association between occupational stratum and another stratification variable in the second time period than was observed in the first. On the other hand, a lower coefficient of association in the second time period would be evidence of equalization. This can be roughly summarized by subtracting the coefficient of association measured in 1953 from that measured in 1962. If the difference is positive, there is a tendency toward polarization. If the difference is negative, there is a tendency toward equalization. In this project the changes in the coefficients of association<sup>15</sup> of

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15 Thomas C. McCormack, *Elementary Social Statistics*. New York: McGraw-Hill Book Co., Inc., 1941, pp. 206-207.

occupation with education, race, income, literacy and land ownership are used as indicators of stratum polarization-equalization. This is augmented by other information in those cases where changes substantially affecting a relatively few people would not be reflected to any important degree in the analysis based on changes in extent of association.

Polarization-equalization is a variable which applies to any stratification criterion not just income. For this reason, it is appropriate not only to look at what we have called *stratum* polarization-equalization, but also polarization-equalization as a whole. This implies that the change in degree of association among all major stratification variables over the two time periods should be measured. This was done for the most discriminating stratification variables. These include income (here treated in four categories of approximately equal sample sizes), land owned, formal education, and reported literacy.

A general conclusion regarding polarization will be drawn based on the directions and size of the differences in coefficients of association in the two time periods. If, for example, a substantial number of the differences in coefficients of association are high and positive, we shall conclude that polarization has in fact occurred. If, on the opposite hand, substantial numbers of the differences in coefficients of association are high and negative we shall conclude that equalization has occurred. Finally, if most of the differences in correlation are very low, alternating almost evenly between positive and negative, we shall conclude that there had really been no change in the degree of polarization or equalization.

## Results

*Proletarianization.* The data on proletarianization are presented in two ways (see Table 1). In either case they consist of changes in the numerical composition of occupational strata between 1953 and 1962. The stratum names which are appropriate locally are not directly germane to the proletarianization hypothesis as it is usually conceived. For this reason, we offer the data in two forms, as indicated by Sections A and B of the table. The operational definitions of stratum terms were given above. In Section A, which is used to assess proletarianization, the "employer" category includes all of the following: farm owners and renters, owners of very small businesses, managers in industry, business, or services, and owners of industries or businesses. In both 1953 and 1962, almost all of the people in the category were owners or renters of some kind of farm. The term "proletariat" includes all farm managers, all common laborers in industry, business, or service, and all rural wage laborers. The term "sub-proletariat" includes only sharecroppers. They are excluded from the proletariat stratum because they are not wholly dependent upon the money economy. In effect, both Section A and Section B of the table tell exactly the same story. In Section A the "employer" stratum has also changed very little. For Section B the farm operator stratum has changed but little between the two time periods. The big decrease is in the stratum called "sharecroppers" in Section B, who are exactly the same people as those called "sub-

**TABLE 1**  
**Proletarianization: Changes in Stratum Population**

<i>Stratum</i>	<i>P e r c e n t</i>		<i>Change</i>
	1953	1962	
<i>A. A Three-strata Grouping</i>			
Employers	23	22	— 1
Proletariat	50	69	+ 19
Sub-proletariat	27	9	— 18
<i>B. A Four-strata Grouping</i>			
Farm Operators	24	21	— 3
Nonfarm Workers	23	38	+ 15
Sharecroppers	27	9	— 18
Farm Wage Laborers	26	32	+ 6
T o t a l	100 (582)	100 (576)	—

proletariat" in Section A. This group decreased by 17 or 18 percent of the total sample population (the difference is due to rounding error in percentages). The great gainer is the proletariat, which moved up by 19 or 20 percent of the total population.

Many people appear to assume that proletarianization of regions such as this automatically implies a fall in status. If we can assume that nonfarm workers in fact constitute a higher stratum than the sharecroppers and that farm wage laborers constitute a lower stratum (an assumption that evidence presented incidentally in Table 2 supports on the whole), then we can conclude that the proletarianization of this population tends mostly to involve a rise in status rather than a fall, though a certain proportion have, in fact, fallen.

In general, we may conclude that there has been a substantial proletarianization of the population during the nine year time period of this project.

*Impoverishment-Enrichment.* Data bearing on the impoverishment-enrichment issue are presented in Table 2. The left-hand column of the table pre-

TABLE 2

Impoverishment-Enrichment: Changes in Percent Scoring "High" on Ten Indicators of Real Income

<i>Stratum</i>	<i>Income \$23 and Over</i>	<i>Land Owning &gt; .01 Hect.</i>	<i>Formal Education &gt; Zero</i>	<i>Literate: Can Read and Write</i>	<i>Listens to Radio</i>	<i>Member of Co-op</i>	<i>Visited by Agronomy or Veterinary</i>	<i>Sends Children to School</i>	<i>Consults Trained Medical Personnel</i>	<i>Children Born in Hospital</i>
<b>Farm Operators</b>										
1962 (N = 121)	69	69	62	74	96	25	22	97	94	19
1953 (N = 141)	73	72	54	68	57	24	10	80	96	13
Change (> ± 05)	—	—	+08	+06	+39	—	+12	+17	—	+06
<b>Nonfarm Workers</b>										
1962 (N = 218)	68	29	61	69	72	05	06	85	92	21
1953 (N = 134)	66	16	45	54	50	03	08	72	91	09
Change (> ± 05)	—	+13	+16	+15	+22	—	—	+13	—	+12
<b>Sharecroppers</b>										
1962 (N = 54)	31	07	30	44	86	76	06	91	81	13
1953 (N = 156)	23	00	20	32	40	06	01	80	85	05
Change (> ± 05)	+08	+07	+10	+12	+46	—	—	+11	—	+08
<b>Farm Wage Laborers</b>										
1962 (N = 183)	19	10	33	45	88	02	04	69	83	09
1953 (N = 151)	38	12	31	32	71	04	01	53	83	08
Change (> ± 05)	—19	—	—	+13	+17	—	—	+16	—	—
<b>Total</b>										
1962 (N = 576)	48	30	49	60	83	08	08	84	89	16
1953 (N = 582)	48	25	36	48	53	10	05	69	88	09
Change (> ± 05)	—	—	+13	+12	+25	—	—	+15	—	+07

sents the occupational strata, together with the years (1962 and 1953, and the change in percentage of variables indicating real income. The column headings are for income variables. The first variable is *reported monthly income* translated into U. S. dollars of 1953. All other variables are used as indicators of non-monetary income. The second column is *land-owning*, defined as reporting ownership of 1/100th or more of a hectare. The third column is *formal education*, treated as those as having any at all. The fourth column is *literacy*. The fifth column is *radio listening*. The sixth column is *membership in cooperatives*. The seventh column is *the person's report that he is visited by an agronomist or a veterinary*. The eighth column is *sending one's children to school*. The ninth column is *consulting trained medical personnel* in the event of an illness in the family. The tenth column is *having one's children born in the hospital*. Each cell has the possibility of three figures. The top figure is the percentage reporting a certain level of the income indicator in 1962. Below that is the percentage reporting the same thing for 1953. This is followed by the difference between the two percentages, if it is greater than  $\pm 05$ . Impoverishment-enrichment is measured by the change figure in the bottom row of each cell. An indicator is considered to have changed appreciably only if the difference is greater than  $\pm 05$ .

The first thing to be noticed is that something over half of the cells indicate an appreciable change. In every instance but one this change is positive. More specifically, six out of the ten cells for farm operator show an increase between two time periods. The same is true for the nonfarm workers. For the sharecroppers, seven out of the ten cells show an increase. For the farm wage laborers, three of the ten cells show an increase and one shows a fairly substantial decrease. The decrease was in perhaps the most important single variable, namely, reported monetary income.

On the whole, these indicate that to the extent that any appreciable change occurred in the top three strata, it was toward the stratum enrichment end of the variable rather than stratum impoverishment. The case is not so clear for the lowest stratum, the farm wage laborers. In that stratum there were three non-monetary income variables that showed an increase while monetary income showed a fairly substantial decrease.

Disregarding particular strata and looking at the total figures (those in the bottom cells), we see that on the whole, too, all of the major measurable changes which occurred were in the direction of general enrichment.

It is to be noted that perhaps the two most important income variables—monetary income and land ownership—show little or no measurable change. Also, participating in co-ops, being visited by agronomists or veterinarians, consulting trained medical personnel, and having one's children born in the hospital, show very little change, though such changes as exist are all positive. Without doubt, the most impressive changes are those non-monetary income variables presumably indicating the possibility of increasing one's mastery over his environment through knowledge. Radio listening shows the largest gain of all, followed on the whole by sending one's children to school, then by reported literacy and finally, reported formal education. Among various possible mean-

ings of these data, one that stands out is the evidently increasing ties of the rural population to the total society through the wider horizons provided for them by radio and education.

We have seen that there tends to be a general enrichment and, for most variables, there is a tendency for stratum enrichment. Now, it will be recalled that there was a sharp increase in proletarianization, such that the share-cropper stratum lost membership, most of which was gained by the nonfarm worker stratum. We conclude from this that there has been a double gain in the real income of the population of the rural areas. It was brought on by the increase in non-monetary income coupled with the net shift of the population to higher strata. (This observation should be tempered with the recognition that the farm wage laborer stratum has also increased slightly in numbers and the evidence of the enrichment of that stratum is much less clear.)

In sum, the general conclusion to be drawn is that there has occurred a slight tendency toward an increase in non-monetary income which has provided a general enrichment as well as enrichment of at least three of the strata. On the other hand, there was almost no evidence of general or stratum impoverishment except for the decrease in monetary income in the lowest stratum. In a few words, the economic growth of Rio de Janeiro has resulted in a corresponding general and stratum enrichment in the rural periphery, and this enrichment tends to be in non-monetary income rather than monetary income, especially those factors probably measuring access to knowledge.

*Polarization-Equalization.* Data on this factor include occupational stratum and the four other variables which appear to be the most important stratification criteria in the region: reported monthly income, education, literacy, and land-owning. All operational definitions for the variables are the same as in previous tables except that of income, which was split into four categories instead of being dichotomized. The cutting points were set so as to yield approximately equal marginal totals in both of the two time periods for all four levels of income.

To hold that polarization is occurring is in effect to argue that some strata tend to be gaining a monopoly over the high levels of another variable while other strata tend to increasingly lack that variable. Equalization is the opposite trend. Thus, in effect polarization is indicated by a positive change in the amount of association between a pair of stratification variables while equalization is indicated by a negative change.

The data regarding the polarization-equalization issue are presented in Table 3. Table 3 is an association matrix, having on the left-hand margin the major categories of income, education, literacy, and land-owning, with minor categories of  $\bar{c}$ 1952,  $\bar{c}$ 1953, and the difference between the two ( $\bar{c}$ 1962 -  $\bar{c}$ 1953). These are given for all four of the major categories. Across the top we have occupation, income, education, and literacy. This matrix permits us to compare the C values and the differences between them for each of the five major stratification variables. We report the difference figure only if it is equal to or greater than  $\pm .05$ .



TABLE 3

Polarization-Equalization: Differences in Degree of Association, C, Between 1953 and 1962 for Five Stratification Variables <sup>a</sup>

	<i>Occupation</i>	<i>Income</i>	<i>Education</i>	<i>Literacy</i>
<b>Income</b>				
C1962	+.53			
C1953	+.52			
Difference	—			
<b>Education</b>				
C1962	+.37	+.44		
C1953	+.35	+.42		
Difference	—	—		
<b>Literacy</b>				
C1962	+.36	+.36	+.94	
C1953	+.41	+.46	+.94	
Difference	— .05	— .10	—	
<b>Land-owning</b>				
C1962	+.59	+.50	+.43	+.23
C1953	+.76	+.55	+.27	+.14
Difference	— .17	— .05	+.16	+.09

<sup>a</sup> A difference in C coefficients of associations between 1953 and 1962 is reported only if it was  $> \pm .05$ .

It will be noted that between the two periods there is no appreciable change in the degree of association between occupation and income or occupation and education. On the other hand, there is a slight tendency toward equalization in the relationship between occupation and literacy and a fairly substantial tendency toward equalization in the relationship between occupation and land-owning. The data on polarization-equalization among the other factors—income, education, literacy and land-owning—show mixed results. There is neither polarization nor equalization in the relationship between income and education. There is a slight tendency toward equalization in the relationship between income and literacy and in the relationship between income and land-owning. There is no change in polarization-equalization regarding the relationship between education and literacy. There is a moderate tendency toward polarization in the relationship between education and land-owning, and a slight tendency toward polarization in the relationship between literacy and land-owning.

On the whole, there are ten different pairs of possible polarization-equalization relationships. In four of these there is no evidence of an appreciable change in the factor. Four others show tendencies toward equalization and the remaining two show tendencies toward polarization. Probably the most important are the trends regarding occupational strata. These either show no change or a tendency toward equalization. Thus, present data provide little support for contentions that either polarization or equalization necessarily occurs in the periphery when a center is undergoing rapid economic growth.<sup>16</sup>

16 Color is another important stratification variable in the region. In order of status, the main categories recognized are white, mulatto, and black. At present there is no reason to suppose that it has the importance of occupation as a basis for defining strata, but the possibility that it would become so always exists—witness the case in the United States, not to mention China's attempts to use color-consciousness as a basis for international stratification. Presented below are the corrected coefficients of contingency for race by each of the five variables for 1953 and 1962, as well as the change between periods as indicated by the difference. Within the time periods, a plus sign means associations of lightness of color to higher levels of other variables. Between time periods, a plus sign indicates a change toward polarization and away from the equalization end of the variable, or  $C_{1962} > C_{1953}$ . A minus sign means the opposite.

C and Difference Between C's (if  $> \pm .05$ ),  
Race by Other Variables, 1953 and 1962.

	$C_{1953}$	$C_{1962}$	$(C_{1962} - C_{1953})$
Occupation	+ .27	+ .31	--
Income	+ .30	+ .28	--
Land-owning	+ .36	+ .26	-.10
Education	+ .25	+ .30	+ .05
Literacy	+ .31	+ .25	-.06

## Conclusions

This paper attempts to indicate some of the possible ways that rapid economic growth of a dynamic center may influence the stratification system of its rural periphery. An optimistic position would hold that enrichment is a result while a more pessimistic position would suppose that impoverishment occurs. Some of the pessimists expect a proletarianization of the rural population and some might expect polarization. A variation on the latter themes holds that, with vigorous growth, general enrichment may occur, together with polarization. This is called "relative impoverishment". Moreover, the schools of thought which would hypothesize that the supposed deleterious effects of rapid economic growth are to be felt most strongly by the lower strata also would be expected to hypothesize that such effects will be felt on the peripheral populations as wholes. If this were the case, it seems to follow that the condition of the lower strata in the peripheral areas should surely be deteriorating: that is, that while proletarianization is occurring, impoverishment and polarization would also be occurring together.

As is frequently the case in social research, the facts present a much more ambiguous picture. In the first place, a rapid proletarianization has occurred between 1953 and 1962 in these areas. It consists primarily of a shift of people from a subproletarian stratum of sharecroppers to the stratum of nonfarm workers living in rural areas, and secondarily, of a slight shift from the subproletariat to the stratum of farm wage laborers. Next, there has been a slight but quite noticeable increase in levels of the variables we have used here to indicate non-monetary income for all strata and for the population as a whole. Finally, there is no defensible evidence of either polarization or equalization on an appreciable scale. This implies, too, that the so-called "relative impoverishment" hypothesis is untenable among strata in this region.

There is no way of knowing the extent to which these results are generalizable. Indeed, the safest guess is that they are not. However, they do indicate the possibility that even in an underdeveloped area which is thought to have a relatively rigid social structure, the rapid economic growth of a center of industry and commerce can have substantial effects on the stratification in the surrounding rural area. In this region there was a sharp proletarianization. There was also a relative enrichment of all or most of the strata and of the population as a whole. Yet there is no uniform evidence of either polarization or equalization. Without the long-term research that is required — hopefully using better samples and better measures of the variables than were

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The results show that color was related to other stratification variables in each time period. But no general tendency toward color polarization or equalization has occurred. It should be noted that here, as elsewhere in Brazil, the population is tending to become white, or at least be reported as whiter. The percent "white" changed from 47 in 1953 to 58 in 1962 while the percent "mulatto" changed from 31 to 21. There was no appreciable change in the "black" group. Does this mean that "whitening" — long observed in Brazil — is a form of color polarization?

## Resumen

Se estudia los efectos del desarrollo económico en la estratificación social. Se presenta: a) un conjunto de conceptos para identificar cambios en la estratificación de las periferias rurales que son consecuencia del desarrollo económico de centros urbanos; b) datos referentes a cambios en la estratificación ocurridos en una área rural durante un período de intenso crecimiento económico de un centro urbano.

Los datos son comparados con los de otras investigaciones en otras áreas del mundo, pero apenas limitados al fenómeno *stratum*, sin hacer referencia a clases como grupos de interés en conflicto. Las hipótesis presumen la existencia de cen-

tros de crecimiento económico cuya influencia irradia para la periferia.

Se procura indicar algunos de los posibles medios a través de los cuales el rápido crecimiento económico de un centro urbano influencia el sistema de estratificación de su periferia rural. Se discute la posición optimista de enriquecimiento, y la pesimista de empobrecimiento. Proletarianización, polarización e igualación son discutidas delante de los datos de investigaciones realizadas en 1953 y 1962 en la misma área. Concluye que usando mejores muestras y instrumentos de medida, y utilizando los mismos conceptos o conceptos similares, investigaciones futuras serán capaces de precisar mejor y determinar las relaciones entre estratificación y crecimiento económico.

used here — or in the few other available works on the topic — it will be impossible to learn the true range of effects of economic growth on stratification. The present research will have served its purpose if, using these or similar concepts together with better data, future research workers are able to make more precise determination of the relations of stratification to economic growth.

## Résumé

On étudie l'influence du développement économique sur la stratification sociale. On présente: a) un ensemble de concepts permettant, dans la stratification des périphéries rurales des centres urbains, l'identification de changements qui sont une conséquence du développement économique des villes; b) des données concernant les changements survenus dans la stratification d'une aire rurale, durant une période de remarquable croissance économique d'un centre urbain.

Les données sont comparées à celles obtenues par d'autres recherches réalisées dans d'autres aires du monde, mais elles se limitent aux changements dans le phénomène *stratum*, sans faire référence aux classes comme des groupes d'intérêt en conflit. Les hypothèses supposent l'existence de centres de croissance économi-

que dont l'influence s'étend vers la périphérie.

On s'efforce de montrer quelques uns des moyens possibles à travers lesquels une croissance économique rapide dans un centre urbain influence le système de stratification de sa périphérie. On discute la position optimiste d'enrichissement, ainsi que la pessimiste d'appauvrissement. Prolétarianisation, polarisation et égalisation sont examinées d'après les données de recherches sur le terrain réalisées en 1953 et en 1962 dans une même aire. On arrive à la conclusion que dans le futur, des recherches basées sur de meilleurs échantillons et qui emploient des instruments de mesure plus précis, pourront avec l'aide de ces concepts ou de concepts similaires, mieux déterminer et spécifier les relations entre stratification et croissance économique.

## Resumo

Estudam-se os efeitos de desenvolvimento econômico na estratificação social. Apresenta-se: a) um conjunto de conceitos para a percepção de mudanças na estratificação de periferias rurais, que são consequência do desenvolvimento econômico de centros urbanos; b) dados referentes a mudanças ocorridas na estratificação de uma área rural, durante um período de notável crescimento econômico de um centro urbano.

Os dados são comparados com os de outras pesquisas em outras áreas do mundo, mas limitados apenas ao fenômeno *stratum*, sem referência a classes como grupos de interesse em conflito. As hipóteses presumem a existência de centros

de crescimento econômico, cuja influência irradia para a periferia.

Procura-se indicar alguns dos possíveis meios através dos quais o rápido crescimento econômico de um centro urbano influencia o sistema de estratificação de sua periferia. Discute-se a posição otimista de enriquecimento e a pessimista de empobrecimento. Proletarização, polarização e igualação são discutidas, diante dos dados de pesquisas realizadas, em 1953 e em 1962, na mesma área. Conclui-se que empregando-se melhores amostras e melhores medidas, e utilizando-se os mesmos conceitos ou conceitos similares, pesquisas futuras serão capazes de melhor precisar e determinar as relações entre estratificação e crescimento econômico.