

**Education
and Innovation
in a Guatemalan
Community:
San Juan
la Laguna**

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J.D.S.
Los Angeles, May, 1972

PREFACE

In comparison to other Latin American countries, Guatemala has an exceptionally high rate of illiteracy, with the greatest pockets of illiteracy occurring in the rural Indian communities, many of which retain their traditional Mayan culture. One of these villages is San Juan la Laguna, which borders on Lake Atitlán in the western highlands, and whose population is 98 per cent Indian. The Indians of San Juan are descendants of Tzutuhil-speaking Mayas, and the majority of them still speak a Tzutuhil dialect although many have become proficient in Spanish and are thus bilingual.

This study focuses on the impact of formal education (grades one through six, the highest level attainable in San Juan) and informal education (mass media, travel, military service) in respect to innovation in the town of San Juan. Innovation is defined as the adoption of diffused Hispanic culture, and innovation is thus synonymous with acculturation since it does not include independent invention or internal cultural change.

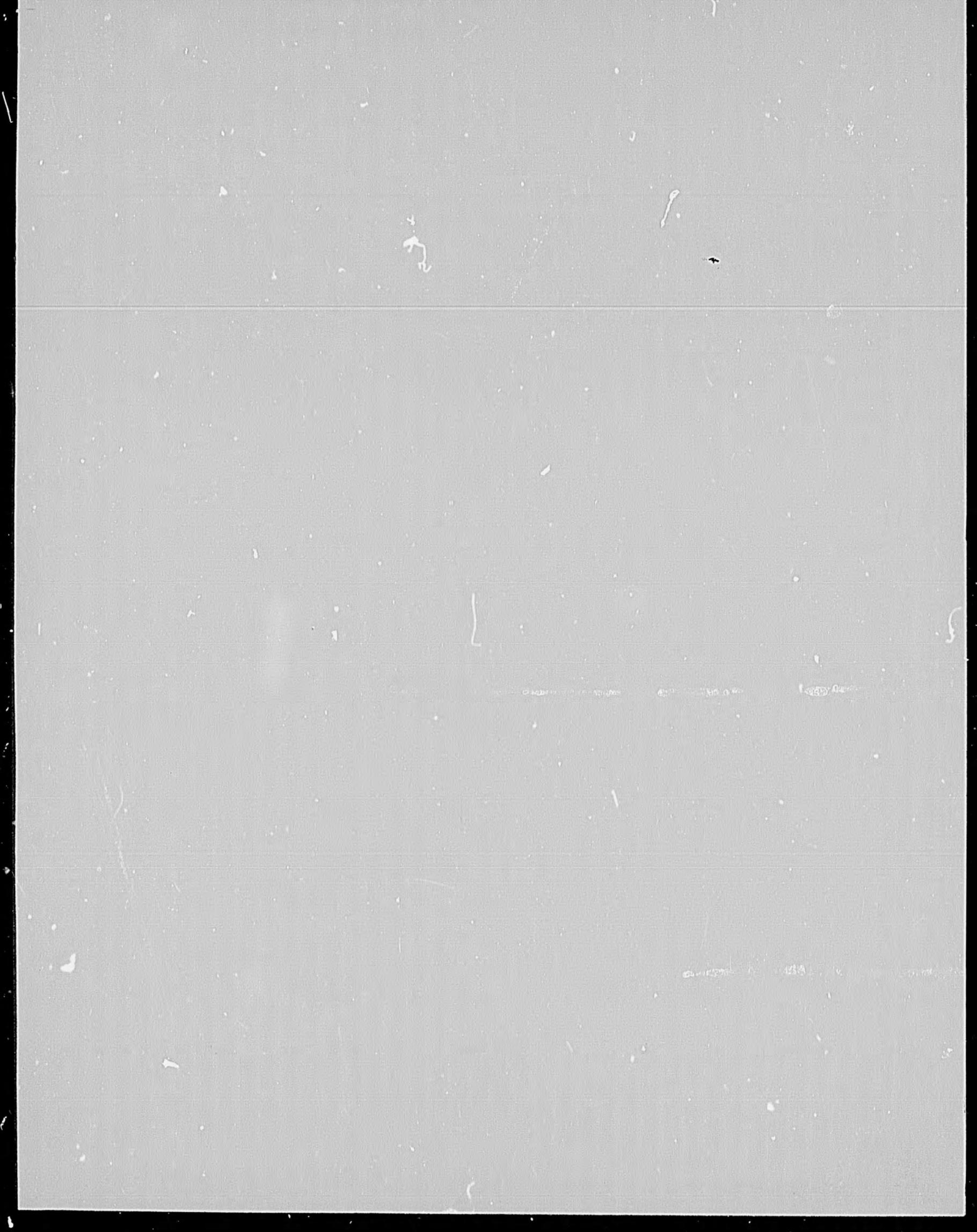
From a review of the relevant literature on education and innovation, four hypotheses were generated for empirical testing, with San Juan serving as a natural field laboratory. The first hypothesis postulates that Protestants, as opposed to Catholics, have a more favorable attitude toward formal education as measured by 1) an attitude-toward-education scale, 2) number of years completed in school, and 3) number of children with a sixth-grade diploma. The second hypothesis states that Indians who have a more favorable attitude toward Ladinos (Hispanically acculturated individuals) also have a more favorable attitude toward formal education. The second hypothesis was tested by employing a scale of hypothetical social interaction with Ladinos and an attitude-toward-education scale. Since both of these measures are perceptual, a third hypothesis was designed to gauge actual behavior and it proposes that actual social interaction with Ladinos varies directly with grade completed in school. The fourth hypothesis postulates that grade completed in school will correlate positively with the degree of innovation. These middle-range hypotheses were tested by using a variety of data gathering techniques including participant observation, analysis of official local records, and systematic collection of interview schedules from both random and purposive samples of household heads in the community.

In addition to describing ethnographic features of the school system in San Juan and to testing hypotheses generated from the literature, the study analyzes grade and innovation in relation to other theoretically relevant variables such as economic status, age, and fatalism. All of these variables are examined with respect to their effect on innovation.

The differing, but complementary, methods of multiple regression analysis and causal model building are employed. The former allows for analysis of several variables simultaneously and the latter permits looking at variables in a sequential manner. The discussion of the results points out how each method is similar yet distinct, and finally a summary and some suggestions for further research are offered.

San Juan is the most remarkable example I know of the negation of diffusion (Sol Tax, 1946).

Con todo y tratarse de una población tzutujil — como San Pedro y Santiago — y participando de los elementos que términos generales tipifican la cultura indígena de Guatemala, los habitantes de San Juan conservaban un traje, una forma dialectal y otras características propias que les distinguían de los pueblos inmediatos y de los restantes. Por estas razones el doctor Tax habló de San Juan como el caso más notorio de la negación de la difusión. (Flavio Rojas Lima, 1968, pp. 304-305).



THE PROBLEM AND RELEVANT LITERATURE

Literacy and Innovation

The roots of education in Guatemala extend back to the early years of colonization with the founding of the Royal and Pontifical University of San Carlos Borromeo in the late 1600's. Although the history of education in Guatemala is long, the majority of Guatemalans, to this day, remain outside the influence of educational processes.

In the 1950 census, 71.7 per cent of the population of Guatemala (seven years of age and older) was recorded as being illiterate, this being one of the highest rates of illiteracy found in the Americas. Of the two major ethnic groups in Guatemala, the Indians, who made up 54 per cent of the population, were reported as being 90.1 per cent illiterate, and Ladinos, who made up 46 per cent of the population, were reported as being 50.5 per cent illiterate (Whetten, 1961).

In the 1964 census, illiteracy declined from the previous census figure of 71.6 per cent to 62.1 per cent (based on population of 15 years of age or more), but this was not enough to remove Guatemala from the notorious status of the Central American country with the highest rate of illiteracy (Roberts and Karplus, 1969). And the ratio of illiteracy between Indians and Ladinos hardly improved. For example, in the state of Sololá, which is reported as 93.8 per cent Indian, 84.9 per cent of the population was illiterate. In San Juan, one of the less developed towns in the state with an Indian population of 98 per cent, an illiteracy rate of 72.3 per cent was reported (Dirección General de Estadística, 1968).

San Juan has been characterized as being one of the most outstanding examples of the negation of diffusion (Tax, 1946; Lima, 1968). Flavio Lima points out that San Juan conserves the typical Indian culture of Guatemala, especially in its distinctive dress, Tzutuhil dialect and other characteristics unique to other towns around Lake Atitlán (Lima, 1968). The apparent reluctance of the inhabitants of San Juan to adopt Hispanic culture (modern clothing, Spanish language, modern house styles, etc.) is not surprising when one considers the high rate of illiteracy in the town. Although literacy is a crucial variable in modernization, it would be extremely naive not to consider it in relation to other obviously important variables such as occupational opportunities and

advantages of formal education, both of which have a heavy bearing on the motivation to become literate.

The statistics and ethnographic observations reported above raise a question for investigative research: What has been the effect of formal education on the Indian communities, in particular San Juan la Laguna? San Juan is one of the few traditional towns and has hardly been studied in regard to acculturation (or Ladinoization) of the Indians. With such a high rate of illiteracy, one would suspect that formal education is having little effect on San Juan and other traditional towns.

The significance of this problem is brought to light by Julio De la Fuente in his statement that formal education is officially recognized as an important means to national integration, and that formal education of the Indian signifies the adoption and transmission of Ladino cultural values to a great extent (De la Fuente, 1967). De la Fuente does not state how much formal education is needed for the adoption of Ladino culture, but if one accepts literacy as an index, one can readily see that there is some variability in the correlation between amount of formal education and the degree of Ladinoization. There are also exceptions to this rule as in the case of San Juan and other towns where a good number of Indians have not automatically become Ladinos simply by becoming formally educated. This problem will be discussed in more detail in another section of the study.

The main focus of this study will be on the problem of analyzing the effect of formal education on innovation in San Juan la Laguna. If formal education is having little effect on modernization, it might account, in part, for why San Juan seems to be one of the most noted Indian towns on Lake Atitlán for resisting innovation. However, other potentially important factors such as external media exposure, economic development, and psychological attitudes of the community must also be examined. All of these variables can be considered motivating influences which may greatly affect the impact of formal education in traditional communities.

One feasible avenue of exploration of the problem is to employ some of the more practical criteria outlined by Jules Henry (1960) and to add others as they become relevant. As Henry notes, much of the material one might wish to include in such a system would be concerned with logical pathways to enculturation such as the conditioning of the young child during the sequential stages of feeding and eliminating (Henry, 1960). However, here the problem arises as to whether the child is being enculturated to traditional Indian culture or to modern Ladino culture.

From field observations and from the ethnographic literature, one would expect that the traditional, predominantly Indian towns are enculturating their children into Indian culture. If this assumption is correct, the first major

exposure to Ladino culture for the child is the first year of formal education. The orientation of the first year in school indicates that this is so since it is called *Castillanizado* (Castillianizing) which aims at teaching the child basic Spanish. This is especially true in the rural areas because, upon entering school, most children know only their native languages such as Tzutuhil, Quiche, or Cakchiquel. Thus, the concern of this research will be with the conscious, formal aspects of education given to the children about the age of six years and older and with the extended effects of this education on adult life.

Henry proposes a rather lengthy outline for crosscultural evaluation of education, but, for convenience, three main categories considered particularly important were selected. They were the following: 1) the curriculum, 2) the teacher, and 3) the students themselves. Three other categories considered significant, but not covered by Henry, were added. They were 4) school attendance (related to the students themselves) but also tempered by 5) the parents' attitude toward school and 6) the school itself, its facilities and financial support. All six of these might be considered to be motivational factors as indicated by a more general attitude toward formal education by the community as a whole.

The School

Only two short articles could be found on San Juan in the literature. In the first, *Los Pueblos de Atitlán*, there was no mention of the school. In the second article, which was found among the microfilm collections of Sol Tax, mention is made only that the teacher lived in San Pablo, another small town about two miles away by a narrow, hilly footpath. No informant in San Juan could say for sure when the school was first introduced, but before 1939 there was a school with only one teacher and no grades. The sixth grade was added as late as 1967, and this is as far as one can go in school in San Juan. (For a history of the school in terms of when grades were added see Appendix B.)

The elementary school has a wing which is only six years old. With a sheet metal roof, plastered walls, and cement floor, this ten-room structure is the most modern building in San Juan. With the *juzgado* (court of justice) and the two churches, the school is one of the few institutions in the town representing Hispanic culture. A *pila* (water faucet) is in the school yard in front of the new wing, and at 8:00 a.m. when school starts, youngsters in *Castillanizado* can be seen washing their faces and behind their ears before the head *maestro* inspects them for cleanliness, a practical lesson in health. (Few families have their own running water, but there are 12 public *pilas* scattered throughout the principal streets of the town.)

In addition to the new wing of the school, the fifth and sixth grades are held in an older, red adobe building. There are plenty of old desks, black-

boards, and maps, but there are hardly any textbooks. Teachers lecture and students take notes in small five cent notebooks. Attending the school is free and mandatory for all children through the ages of 7 to 14.

The Curriculum

A major concern with the curriculum is whether the students and the parents consider it relevant and useful. Nathan Whetten states that reading, writing, arithmetic, history and language are some of the subjects taught to the Indian school children in Guatemala (Whetten, 1961). But these subjects do not necessarily come within the range of the traditional education imparted by the Indian to his child. What is more relevant to some Indian parents is the knowledge the child gains by working with them in the fields, but others believe it better to leave their sons and daughters in school so they can learn Spanish in order to have an easier time in a world largely controlled by Ladinos (Wagley, 1949). Certain women, Charles Wagley notes, who had been outstanding students learned to read and write Spanish well only to forget it all within the period of four years (Wagley, 1949). Wagley does not explain why the girls forgot so quickly, but the author suspects it was from lack of opportunity to use it or from not having learned it well in the first place.

Robert Hinshaw points out that in Panajachel, utilization of educational opportunities is much greater among Protestants than among Catholics, especially nominal Catholics. This difference is found both in the number of each group remaining in school through grade four and in the proportions of each attending school. Hinshaw suggests that the reason for this may be economic. Protestants tend to be more wealthy than Catholics, he argues, and tend to be employed in occupations in which their children cannot participate as they can in agriculture. Since twice as many Protestant as Catholic youths go beyond the third grade, Protestants must be placing a greater value on education (Hinshaw, 1968). As Hinshaw notes, there might be at least two possible explanations: 1) many Protestants realize that literacy has an economic advantage, and 2) literacy also serves those who have the additional motivation to read the Bible (Hinshaw, 1968), as Protestantism traditionally places more emphasis on Bible reading than Catholicism.

Since nothing had been mentioned in the literature about the possible differential effect of religion on education in San Juan, and since San Juan has a comparatively large Protestant sect, this seemed to be a relevant hypothesis to test. Thus, in more formal terms, the following was postulated: *Protestants will display a more favorable attitude toward education than Catholics.* This higher degree of favorableness should manifest itself by higher scores on an

attitudinal scale toward formal education and by more years of formal education actually completed. However, to confirm this hypothesis it will be necessary to test the relationship while controlling for possible intervening or masking third variables such as age and economic status. If this hypothesis is confirmed and if Protestants also turn out to be more innovative, then the belief that ideological systems are an important forerunner of economic change, as suggested by Max Weber (1958) and Everett Hagen (1962), may be supported as opposed to the conflicting position that economic change is the most important variable preceding innovation and consequent ideological change as suggested by Leslie White (1949) and Theodore Shultz (1964).

In San Juan the medium of instruction is Spanish. In all 73 families interviewed, Tzutuhil was the language used in the home. Thus, *maestros* report that young children in the first grades have considerable difficulty in learning Spanish, especially girls who, for the most part, seem to have little motivation to learn. One teacher said that girls are ashamed to speak Spanish. He also stated that he and the other three male teachers knew *lengua* (Tzutuhil) and that knowing *lengua* was both advantageous and necessary.

At the end of each academic year students in all grades are tested by representatives from the *Ministerio de Educación*, not by the teachers who have been teaching them. If passing grades are achieved, students are allowed to attend school in the next highest grade. If the tests are failed, students must remain in the same grade until the tests are passed. Thus, it is not uncommon to see 14-year-olds in the third grade.

After the end of *Castellmizalo*, students are examined on the following subjects: Spanish dialogue, the school system itself, animals, and particular school games. At the end of the first grade, the students are tested in *lectoria escrita* (reading) and mathematics. When the second grade is over, children are examined on the subjects at a higher level of difficulty. This process is repeated when the third grade is completed, but at the end of the fourth grade, the students are tested for knowledge of more subjects. These include the following: 1) Spanish language, 2) mathematics, 3) social studies, 4) physical sciences (natural), 5) etiquette, 6) industrial arts, or education for the home, 7) aesthetic education; plastic arts and music, and 8) health and safety; theory and physical education. At the fifth and sixth grade levels these same subjects are repeated at a higher level of difficulty.

Upon passing from the sixth grade, students receive a diploma awarded by the *Ministerio de Educación*. The nearest high school is in Panajachel, about twelve miles across the lake. High school is neither free nor mandatory, and even if it were free, the launch to Panajachel costs forty cents (one way) and it runs only three days a week.

The Teacher

Whetten reports that the problem of providing trained teachers for the existing elementary schools in Guatemala is a serious one (Whetten, 1961). This is especially true of the rural areas where living conditions are not as attractive to well qualified teachers. In many cases the school administration has no alternative but to hire anyone who is willing to accept a teaching position. In the recent past, if someone could be found who had had two or three years of primary education or who could even read and write and who was also willing to teach, he was likely to be employed without question. Most rural teachers are thus *empiricos*, teachers who have had little education and no training to become teachers but who laid claim to the profession by acquiring a little experience (Whetten, 1961). Today, the situation is not quite as bad as depicted by Whetten since the Guatemalan educational system has not been hiring *empiricos* since 1966. However, a great number of *empiricos* still hold teaching positions, especially in the rural areas.

In some Indian communities, the attitudes of teachers left much to be desired. Wagley reports that five years before he studied the Chimaltecos, the school was apparently run by a drunken Ladino who did not care much whether the children came to school or not and who often neglected to appear himself (Wagley, 1949).

De la Fuente (1967) underlines the importance of the teacher's attitude. He reports that Ladino teachers (and students who were Ladinoized) belittled and mocked Indian students who tried to take up Ladino traits. De la Fuente also claims that some teachers consider education useless for the Indian because of the natural incapacity they ascribe to him. This notion is supposedly reinforced by the difficulty teachers are reported to have in teaching Indians. Such negative attitudes on the part of the teacher toward the Indian children would most likely have adverse effects on their Ladinoization.

It seems reasonable to argue that the teacher's attitude toward his job will considerably influence the quality and quantity of education the pupils receive. Whether rote memorization or the understanding of basic concepts is emphasized, whether the teacher treats the students as social equals or social inferiors, and whether the teacher's own background and training are adequate are also important considerations. Of equal importance is that the instructor know the indigenous language of the Indian children (Turner, 1964; Noval, 1959).

Whetten states that the shortage of competent teachers in Guatemala may be explained by the following three conditions: 1) the emphasis on widespread education is a comparatively recent one, and since 1944 schools have been organized more rapidly than have institutions for the preparation of teachers, 2) the salaries for most school teachers are extremely low, and 3)

there is a tendency for most teachers to shun the rural, isolated areas (Whetten, 1961).

Although *empíricos* have not been hired in Guatemala since 1966, there are four *empíricos* teaching in San Juan, two women and two men. The other two teachers, both male, are *titulars*, that is, they hold official teaching credentials earned by completing twelve years of education. All of the teachers were born in other towns, and only the two males who walk to work each day from San Pedro are considered Indians by key informants. All of the teachers supposedly know Tzutuhil. The head *maestro* is an *empírico* who has been teaching for 36 years and who teaches *Castellano* because he is supposed to know Tzutuhil the best.

The starting salary for a *titular* is \$100 monthly, and for an *empírico* \$70 monthly. These rates are lower than starting salaries received in urban areas on the theory that rural areas are cheaper to live in. Thus, as reported by Whetten, the rural areas usually receive poorer teachers due to lower pay and less attractive living conditions (Whetten, 1961). If the *maestros* receive favorable evaluations by the *Supervisor Técnica Escolar*, (director of teachers in the state of Sololá), they receive a \$20 raise every five years. However, if the director feels a teacher is not performing adequately, he may transfer or fire him (an investigation may be instigated by a letter from the *alcalde*, or mayor). Recently many *empíricos* who were formerly teaching in the lake towns have been transferred to teach in the outlying *aldeas* (small clustered population settlements under the jurisdiction of a *municipio*).

An adequate search for social discrimination by the teachers against the students would require lengthy observation or asking students directly. In the first case, the very presence of an investigator would tend to modify the teacher's behavior, and in the second case asking students such questions might seriously jeopardize the researcher's rapport with the teachers who are the key to access to valuable school records. Thus, observations of social discrimination certainly leave much to be desired from the point of view of proper methodology, but nevertheless the only derogatory behavior observed, if it can be termed derogatory, was remarks to the effect that the students in San Juan do not want an education. The teacher was careful to point out that what students learn in school does not really help them since most of the students remain in San Juan as agriculturalists after completing their schooling. Another young teacher stated in frustration one Saturday morning, "In all the other schools, San Pedro and others, students attend school on Saturdays, but not here in San Juan." In defense of the teacher, the author observed a conspicuous lack of students on Saturday mornings, and this, of course, prompted a search for an answer to the obvious lack of motivation for attending school in general for many of the students.

Attendance and Students

Although school has been mandatory since 1875 in Guatemala, enforcement of the law has been lax or non-existent. Benjamin Colby reports that school attendance at Chilil in the Huista area of Mexico, which is similar culturally to Atitlán, is slightly higher among the poorer families. Colby explains that motivation to learn Spanish appears stronger among the poorer young men because they will not inherit enough land to make a living, and they may have to move to new places where education will be advantageous (Colby, 1961).

Charles Myers notes that the school calendar is a factor which causes poor attendance. He states that in many parts of Mexico the calendar is inflexible and poorly designed to take advantage of the slack period. The beginning of the school year coincides with planting and weeding, and the examinations coincide with harvest. Many of the children are able to attend only during the middle months and their education suffers accordingly (Myers, 1965).

In San Juan, from Monday through Friday during the academic year (January 2 to the end of October) school begins at 8:00 a.m. and lasts until 12:00 noon. After a two-hour recess for lunch, it resumes at 2:00 p.m. and lasts until 4:00 p.m. Few families have clocks or watches so tardiness is common. Although attendance is mandatory for all children of school age, one of the most frequent functions of the *auxiliares* (local policemen) is to walk the principal streets of the town literally drumming out a warning for parents to send their children to school or face the penalty of a *maldamón* (fine from \$2 to \$5).

Official school records are poorly kept and considerable difficulty was encountered in gaining access to the few existing ones. Official statistics of examinations sent out by the *Ministerio de Educación* showed that in 1969 there were reported to be 107 boys and 90 girls in school. However, a computerized census of the town conducted by members of the Stanford University Health Project in 1968 revealed that 26 school-age boys and 67 school-age girls were not even on the school's official attendance records.

Since the academic year lasts until late October in Guatemala, there is some overlap with the seasonal harvest period which begins about October and lasts through December. The head *maestro* confirms that some of the boys have to help cut coffee or harvest maize, beans, tomatoes and onions. It is also reported that men who work on the coast may take their older sons out of school to help with the harvest there. Unlike the single harvest in the highlands, there are two harvests on the coast because of the hotter climate. The first coastal harvest is during January and the second is during August. In addition, students informed the author that many parents take their children out of

school during the month of January to earn cash by picking cotton on the coast, thereby missing the first month of classes.

Community Attitude toward Education

One of the most important aspects in analyzing the effectiveness of education is to look at the attitudes that the parents and other members of the community have toward education. Naturally, if a parent believes that education is valuable and necessary, he will make more effort to see that his children attend school.

In Chiapas, Mexico, which is geographically close and culturally similar to Sololá, Guatemala, Colby conducted relevant research concerning attitudes of the community toward education. Using interview schedules and questionnaires, Colby found a positive correlation between a favorable attitude toward education and a favorable attitude toward Ladinos (Colby, 1961). The significance of the correlation between formal education and acculturation becomes clearer when one looks at some of the social implications.¹

Many Ladinos treat Indians as social inferiors. It is reported that young Ladinos show complete lack of respect for the Indian elder calling him "boy" (Woods, personal communication, 1970). Colby says that the paternalistic and abusive treatment of the Indians by Ladinos has caused tension and anxiety among the Indians although it is usually suppressed (Colby, 1961). In spite of the social distance between the Indian and the Ladino, Tax reports that there is not, and most likely has not been, any serious impediment to the passage of the Indian into the Ladino class "for when an Indian adopts Spanish as his language, Ladino-style clothes, and the Ladino life in general, he is generally recognized as having passed into the Ladino class" (Tax, 1941, p. 79). Furthermore, Tax and Hinshaw report that in Panajachel both Protestantism and formal education have been triggered by contacts with Ladinos (Tax and Hinshaw, 1970).

There is evidence that resistance to passage is apparently strong among many Indians. Louis Lucebtak states that the greatest sin among the Indians, as far as the Indians are concerned, is "showing off and acting like a Ladino" (Lucebtak, 1968, p. 116). Colby and Pierre Van den Berghe add that the barrier between Indians and Ladinos is primarily cultural and that passing does occur through the acquisition of Hispanic culture traits, although it may take more than one generation (Van den Berghe and Colby, 1961). Peter Snyder and Clyde Woods point out the necessity of migration in order to pass from Indian to Ladino class (Snyder and Woods, personal communication, 1970).

Since Indian attitudes toward Ladinos and their contact with Ladinos seem to be important factors in regard to the influence of formal education on them,

the following hypothesis would seem to reveal significant results, especially if tested in San Juan where no similar data has been reported: *Indians who display the most favorable attitude toward Ladinos will also exhibit the most favorable attitude toward formal education.* Of course, in order to confirm this hypothesis, possible intervening third variables such as economic status and age must be controlled.

If the above hypothesis can be confirmed, it would be logical to expect that actual behavior in regard to formal education, which is measured in terms of actual grade completed in school, should correlate positively with actual social interaction with Ladinos rather than with only a perceptual favorable attitude toward Ladinos. It is well known among social researchers that what people say they do, or say they would do, is not always commensurate with what people actually do. Thus, in order to get beyond the mere self-report data of a perceptual nature, the following hypothesis can be used to test actual behavioral relationships: *Grade completed in school will correlate positively with the degree or intensity of actual social interaction with Ladinos.* Again the possible masked effect of hidden third variables such as age and economic status must be controlled in order to support or negate the hypothesis.

THEORETICAL ORIENTATION

The objective of this research is not only to summarize the state of the existing knowledge of the problem as reflected in the relevant literature and to generate some notable hypotheses to be tested, but it is also an attempt to fit formal education into a broader theory of innovation. This theory can be represented by a tentative causal model of change which will be tested for goodness of fit. In general the basic theoretical approach follows the middle-range approach outlined by Barney Glaser and Anselm Strauss (1967) and Everett Rogers (1969). In this approach explanation and prediction are attempted by accounting for the variance in relevant variables.

Before fitting educational variables into a generalized causal model, it is necessary to state basic assumptions and the guiding theory upon which the model is constructed. It is assumed that in order for Indians to accept formal education, they must be motivated to do so. Much of this motivation will depend on the physical facilities of the school, the curriculum and the teachers, but the Indians must also be able to see the tangible benefits of education (Foster, 1962; Goodenough, 1963). Occupational opportunities must be available for the Indian which allow him to put his higher education to use (Anderson, 1967). In other words, Indians must believe the costs of education are worth the returns (Homans, 1967).

A desire to be educated may be brought about by widespread dissatisfaction with the old social order and this dissatisfaction may result from 1) changing social conditions (Goodenough, 1963), and 2) exposure to the outside world through mass media, travel and other contacts with people enjoying superior social and economic status (Rogers, 1969; Tax and Hinshaw, 1970). In addition to these general principles affecting a person's motivation to attend school or to send his children to school, the teacher (De la Fuente, 1967) and the physical facilities (Myrdal, 1968) may prove to be local, idiosyncratic factors in the success of an educational program.

Some of the basic tenets of the theory of functionalism as they apply to social anthropology seem to be in harmony with the theoretical orientation of this paper. That is, the functionalists' contention that the systems of a culture are all interrelated to one another (Radcliffe-Brown, 1952) is accepted. In

other words, educational systems are related to economic systems and economic systems are related to religious systems and so on. As Woods points out, this leads to the notion that change breeds change (Woods, 1969). Thus, changes in religion may lead to changes in economic status (Weber, 1958) which may lead to changes in attitudes towards education (Hinshaw, 1968).

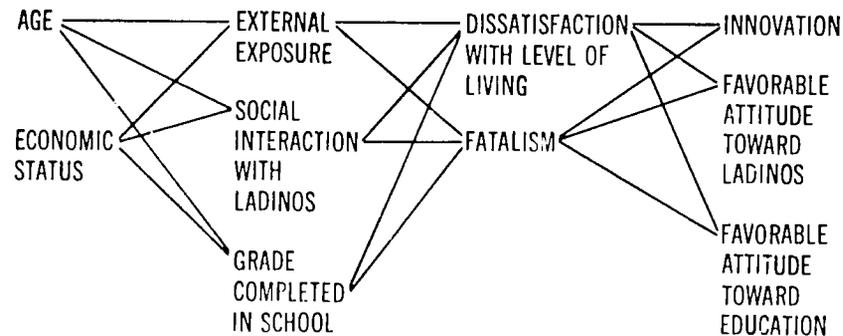
Related to the idea that change breeds change is the theory of the process of change. If Indian communities such as San Juan are rejecting or accepting formal education, it is important to examine some of the variables that may be associated with its rejection or acceptance. By looking at these variables, one may hopefully learn useful information about the process of social change. One would expect to find that individuals with high rates of exposure to the outside world would be the most dissatisfied with the status quo (Rogers, 1969; Dawson, 1969) and thus would be more likely to view formal education as a means of alleviating social disparities.

Fatalism may be an intervening variable in social change (Erasmus, 1961; Rogers, 1969). If individuals are strongly fatalistic, they may accept their social condition even though they may be quite dissatisfied with it. Rogers (1969) and Conrad Arensberg and Arthur Niehoff (1971) believe that fatalism may be less a barrier to modernization than previously thought, but Rogers states that more research is needed before the effect of fatalism is conclusively known.

Rogers (1969) notes that functional literacy can be acquired with less than four years of formal education, the standard requirement of the United Nations Economic and Social Council. Rogers goes on to say that, although there is a positive correlation between formal education and modernization, only one modernization variable seemed to have a very marked take off point after informants indicated that they had gained functional literacy after four years of formal education (Rogers, 1969). In view of this fact, the fourth and final hypothesis to be tested in San Juan may be postulated: *Grade completed in school will vary directly with the amount of innovation.* Innovation in this respect will be defined in terms of the transition process from Indian culture to Hispanic culture. As usual, confirmation of this hypothesis will depend on controlling for possible intervening variables such as age and economic status which could create spurious relationships.

In summary, the following causal model may be presented which is based on the review of the relevant literature and the accepted guiding theory:

Chart I. The Causal Model



In this model age and economic status are the antecedent variables which most likely have a stronger influence on the process of innovation than exposure, interaction with Ladinos and grade, but all five of these variables are at the head of the model and are thought to be antecedent variables. Dissatisfaction with level of living and fatalism are considered intervening variables. After being exposed to other ways of life which may appear superior, at least in material rewards, one might become highly dissatisfied with his standard of living which in turn will motivate him to change or acculturate to the perceived higher life style. This motivating force causes him to view Ladinos (those who apparently have the good life) more favorably and also causes him to have a more positive attitude toward formal education as a vehicle for the attainment of the newly desired cultural traits.

In attempting to explain the process of change in this manner, one must recognize the shortcomings of such an approach. As Rogers notes, this approach 1) oversimplifies reality, and 2) employs a rather arbitrary method in placing particular variables in sequence (Rogers, 1969). Although the arbitrariness is somewhat reduced by justifying the logical sequence on theoretical bases, a more rigid mathematical test of the goodness of fit of the model will be attempted in the analytical section of the paper. It should be pointed out, however, that even this test of fit will suffer the obvious shortcomings of 1) lack of control for time passage, and 2) failure to properly account for feedback between variables.



OPERATIONAL PROCEDURES

Data Gathering Techniques

It could be argued that since the major quantitative emphasis of this study will focus on the adults in the community rather than on the students, one should attempt to reconstruct historically the six variables outlined above as they affected each informant while he was in school. However, since almost everyone interviewed was in school at different times, and since the validity and reliability of historical reconstruction through informant recall tends to be inversely proportional to the length of time lapse of a given event, it was decided to briefly describe the historical aspects of the school as they would apply to anyone attending it at respective time periods. Also the research focuses on the present school system in as much detail as time for the study would allow. This strategy was based on two assumptions: 1) adult informants were subject to their parents' attitude toward education while they were in school just as they now have a great deal of influence on their own children's attendance, and 2) since nearly all the informants had school-age children, and the few who did not at least had relatives or friends who had children in school, there is a certain amount of feedback, although difficult to measure, between children presently attending school and adults in the community. For example, all adults in the community can observe whether students who attain a sixth-grade diploma (the maximum amount of schooling available in San Juan) are able to use this educational advantage in acquiring better jobs or in getting ahead economically.

Data concerning the community was collected by the use of observation, key informants and interview schedules² collected by the author with the assistance of two native research assistants. San Juan was mapped and a random sample of 60 household heads (head of families sharing a hearth) was interviewed. This sample included 7 Protestants. In addition to the 7 Protestants interviewed in the random sample, 13 more Protestants, selected on a purposive or representative basis, were interviewed. Thus, a total sample of 20 Protestants comprising a purposive sample of 67 per cent of the total population of 30 Protestants³ in San Juan was used for comparative purposes with a sample of 53 Catholics.

The random sample of 53 Catholics represents 22 per cent of the total of 195 Catholic households in San Juan. Since the total sample is rather small and since the Protestant sample is not random, some reservation in regard to the significance of the correlations between Protestants and Catholics should be used. But since the representative sample of the Protestants consists of nearly all of the Protestants and since the sample of Catholics is random, statistical analyses of the variables measured may be considered only slightly biased, if at all, and certainly not useless. Moreover, all of the statistically significant correlations in the sample of 73 individuals correlated rather closely with the random sample of 60.

Innovation

According to Webster's definition innovation "is the act of introducing something new or novel as customs or rites." Rogers carries the concept of innovation a little farther in his definition of social change. He defines social change as "the process by which alteration occurs in the structure and function of a social system" (Rogers, 1969, p. 3). Invention and diffusion are the major agents of innovation, and innovation in this paper will be defined principally in terms of diffusion of Hispanic culture to the Indians.

It is not difficult to realize why Tax considered San Juan one of the most remarkable examples of the negation of diffusion that he knew (Tax, 1946). Generally, even today, there is little with which to measure Juaneros in regard to observable information. Household inventories are meager. A few people have clocks, radios, or sewing machines (treadle). But the author saw no *pojos* (a type of wood stove considered modern), only *temales* (a cooking hearth of three stones on the floor). Almost all homes had some kind of wooden beds, tables, and chairs (although some of the chairs were so tiny they looked like doll chairs). Since there is no electricity in San Juan, all the Juaneros use candles for light at night. Most dwellings have adobe or cane walls, dirt floors, no running water, no outdoor toilets, and no glass windows.

Very few women speak Spanish except for responding "*Siber*" (slang for I don't know) when spoken to. However, about half of the men have at least a working knowledge of Spanish and several are fluent. Since most household heads are males, knowledge of Spanish turned out to be a useful, non-material item for an innovation scale.

In regard to clothing, women are again more conservative than men. Although a few wear factory-made blouses, almost all of them wear *colas* (a wrap-around ankle-length skirt) and go barefoot. Only two women in San Juan were observed wearing ready-made dresses. One was the 18-year-old Ladino daughter of the town secretary, and the other was the Ladino wife (born in Santiago Atitlán) of a native Juanero who had been living the past

six years in San Pedro and Santiago Atitlán. However, at least half of the men wore factory-made shirts, trousers and shoes. Thus, the wearing of modern clothing and the wearing of shoes were also selected as good variable items. Table I below shows the items selected¹ and their intercorrelations for an innovation index.

Table I. Innovation Index

A. Items selected:

- 1) Modern Dress
- 3) Speaking Spanish
- 4) Having an outdoor toilet
- 5) Having running water in the *sitio* (home)
- 7) Having a cement floor

B. Intercorrelations:

	Item #1	Item #3	Item #4	Item #5	Item #7
Item #1		.18	.19	.11	.23
Item #3			.07	.01	.09
Item #4				.20	.38
Item #5					.36
Item #7					

(For an examination of the original items used in selecting the innovation index, see Appendix A 9.) Total scores range from 0 to 7.

Grade Completed in School

Grade completed in school was measured by determining the actual grade that each informant had completed, based on whether or not the individual had passed the annual examination given by the state. It was made clear to each informant that grade completed was not to be confused with how long the individual had attended school, since it is not uncommon for youngsters to take several years to complete one level or year of education. For example, some 15-year-old students were still only in the third grade.

Attitude Toward Education

In constructing an attitude-toward-education scale, thirteen forced-choice questions were used. One of the shortcomings of this type of dichotomous scale is that, because respondents are allowed a choice between only two items, responses may be forced to the extent that some individuals will make an indiscriminate choice rather than admit ignorance of items in the question. However, in defense of the "either or" nature of the scale, it was reasoned that

most of the items were rather simple in nature and that most informants would respond with a knowledgeable opinion. Furthermore, a pre-test of each scale revealed those items that were not clearly dichotomous in nature, and the unclear or ambiguous items were modified accordingly before being used in the random and purposive samples. In addition, it was felt that, at the risk of construct validity of the scales, reliability could be greatly increased by keeping the scales as simple and easy to work with as possible, especially since the majority of the subjects and the author would be communicating through a common second language, Spanish. The native tongue of the informants was Tzutuhil and the author's was English. In cases where informants did not know Spanish, the native research assistants were trained to translate into Tzutuhil whenever necessary. Both assistants were fluent in Tzutuhil and Spanish.

All of the items used on the attitude-toward-education scale concerned the curriculum and school attendance, but only 7 items rendered at least 5 per cent variation (see Appendix A-4). A good number of items (1, 2, 5, 6, and 7) were all given nearly unanimously favorable responses and were not used for statistical analyses because unanimously chosen items are only good primarily for describing what the total sample holds in common and not for differentiating between informants. Maximum variance is achieved when 50 per cent of the sample answers favorably to an item and 50 per cent responds unfavorably. The content of all the items in the scale was drawn primarily from the literature reviewed in the problem section above of this study. Table II below gives the items selected and their intercorrelations.

Table II. Attitude-toward-Education Index

A. Items Selected:

- 3) a. Boys should go to school because everything that is learned in school is useful.
b. Boys should not go to school because it is more important to learn the work of their fathers.
- 4) a. Children should go to school to learn arithmetic.
b. Children should not go to school if their parents need them at home.
- 8) a. Girls and boys should go to school only if they are not needed at home.
b. Girls and boys should go to school even if they are needed at home.
- 9) a. Boys and girls should go to high school even though high school is too expensive.
b. Boys and girls should not go to high school because high school is too expensive.

- 10) a. Boys and girls should not go to high school because high school will make them become like Ladinos.
 b. Boys and girls should go to high school in order to learn how to become like Ladinos.
- 11) a. Boys and girls should not go to school because they will turn their backs on other Indians.
 b. Boys and girls should attend school in order to learn how to help the Indians.
- 12) a. Boys and girls should go to school in order to learn how to obtain better jobs.
 b. Boys and girls should not attend school because school will not help them get better jobs.

B. Intercorrelations between the items. (They were dichotomized into favorable and non-favorable responses.)

	Item #3	Item #4	Item #8	Item #9	Item #10	Item #11	Item #12
Item #3		.46	.05	.27	.22	.08	.16
Item #4			.05	.13	.08	.26	.16
Item #8				.04	.10	.16	.33
Item #9					.32	.14	.18
Item #10						.18	.16
Item #11							.38
Item #12							

(For items used in the selection, see Appendix A/4.)

Perceptual Social Interaction with Ladinos

Since the vast majority of San Juan's inhabitants are Indians, it was assumed that, due to a lack of proximity to Ladinos, many would not have the opportunity to interact socially with Ladinos. However, it was hoped that they would answer in respect to whether they would interact with Ladinos if they had the chance. This method of questioning cannot always be relied upon because respondents will not always behave as they say they would. That is, self-report data on social behavior is neither totally reliable nor valid. Although geographical proximity to Ladinos should modify social interaction with them, convergent strategy to get at actual behavior was also employed. By comparing perceptual social interaction with Ladinos with actual interaction with Ladinos, some check of the discrepancy between reported probable behavior and actual behavior was gained. Table III below gives the items selected as a perceptual social interaction scale with Ladinos and their intercorrelations. The perceptual social distance scale is similar to the Bogardus Social Distance Scale (Selltiz, 1959). (For items used in the selection, see Appendix A 2.) Actual social interaction will be discussed in the next section below.

Table III. Perceptual Social Interaction with Ladinos

A. Items selected:

- 1) Would you accept a Ladino as a neighbor?
- 2) Would you play sports with a Ladino?
- 6) Would you take a walk with a Ladino?
- 7) Do you think it is all right for Indians to marry Ladinos?
- 8) Would you accept a Ladino as a son-in-law or a daughter-in-law?
- 9) Would you have a Ladino for a dinner in your home?
- 10) Would you go to a Ladino's home for dinner if invited?

B. Intercorrelations:

	Item #1	Item #2	Item #6	Item #7	Item #8	Item #9	Item #10
Item #1		.39	.40	.48	.66	.24	.55
Item #2			.19	.27	.32	.41	.53
Item #6				.45	.47	.54	.53
Item #7					.77	.26	.64
Item #8						.36	.68
Item #9							.48
Item #10							

Table IV. Actual Social Interaction with Ladinos

A. Items Selected:

- 2) Have you eaten with a Ladino?
- 4) Is your wife Ladino?
- 5) Have you ever worked with a Ladino?
- 8) Are some of your friends Ladinos?
- 9) Have you ever visited a Ladino in his home?
- 10) Have you ever worked for a Ladino?

B. Intercorrelations of the items:

	Item #2	Item #4	Item #5	Item #8	Item #9	Item #10
Item #2		.18	.43	.54	.41	.38
Item #4			.17	.18	.15	.17
Item #5				.25	.33	.89
Item #8					.83	.28
Item #9						.36
Item #10						

(For items used in the selection, see Appendix A/3.)

Actual Social Interaction with Ladinos

The measure of social interaction with Ladinos is similar to a Bogardus Social Distance Scale, but the scale was used more as a measurement for di-

chotomized, favorable or unfavorable, responses to actual social interaction with Ladinos rather than merely as a perceived social distance scale which is cumulative in nature. Much of the content was taken from Van den Berghe and Colby (Van den Berghe and Colby, 1961). Table IV gives the items selected from item analysis and their intercorrelations.

Satisfaction with Level of Living

Rogers defines satisfaction with level of living as "the degree to which an individual's expectations (or standard of living) are fulfilled by his actualities (or level of living)" (Rogers, 1969, p. 379). He goes on to point out the need for a good measure of satisfaction with the level of living and warns that the frustrations of many peasants caught up in the modernization process must not be overlooked lest they explode into violence (Rogers, 1969). This author agrees with Rogers that an adequate measure of satisfaction with level of living has yet to be developed. Since it is difficult to measure a person's expectations, satisfaction with level of living is hard to determine.

For San Juan a scale similar to that used by John Dawson in Australia was employed in which the informant was asked if he were satisfied on a number of issues (Dawson, 1969). This scale proved to be weak and is probably a poor measure. However, the satisfaction index did correlate with a few other variables. Table V below gives the items selected and their intercorrelations.

Table V. Satisfaction with Level of Living Index

A. Items Selected:

- 5) Is there enough work for almost all of the people in San Juan to earn a good living?
- 6) Are the Indians of San Juan treated equal to Ladinos?
- 11) Do the people of San Juan speak enough Spanish?
- 12) Do the Indians have enough material possessions? (For example, clothing, food, furniture, radios.)

B. Intercorrelations:

	Item # 5	Item # 6	Item # 11	Item # 12
Item # 5		.15	.22	.40
Item # 6			.08	.05
Item # 11				.19
Item # 12				

(For the items from which the scale was selected, see Appendix A/7.)

Fatalism

A good definition of fatalism is one offered by Rogers: "the degree to which an individual recognizes his lack of ability to control his future" (Rogers, 1969, p. 273). Throughout the large body of literature on the subject of fatalism, social scientists often state that fatalism is a characteristic of peasant peoples. This trait goes back to the philosophical arguments over free-will versus determinism. Peasant societies are often depicted as lacking a belief in free-will. This belief in pre-determinism, that the future is beyond individual control, is often thought to serve as an intervening variable between modernization and traditionalism.

The underlying purpose of this part of the questionnaire was to measure the "degree" of fatalism. With this objective in mind, a fatalism scale was devised by the author based, in part, on San Luceño (about five miles across the lake from San Juan) belief systems reported by Woods (1969). On the theory that the underlying concepts such as "luck" and "God" in San Luceño systems of belief would be similar to those held by Juaneros, the author selected ten questions that he felt would measure feelings of internal versus external control over life's events. Item analysis revealed that any question involving God was given a unanimous response to the effect that God causes everything. Although these items confirmed a religious type of fatalism, since they offered no variation, they could only be useful for description and not for statistical analysis. Table VI below gives the items selected for the fatalism scale and their intercorrelations.

Table VI. Fatalism Index

A. Items Selected:

- 1) Good luck is more important than hard work in order to gain a living.
- 6) It is possible for a person to lose his luck, but there is nothing one can do to change it.
- 8) A person who works hard enough can do almost anything.
- 10) A person must look for his luck by a lot of work and intelligence.

B. Intercorrelations:

	Item #1	Item #6	Item #8	Item #10
Item #1		-.10	.04	-.23
Item #6			-.11	-.10
Item #8				-.01
Item #10				

(For the items used in the selection, see Appendix A/5.)

External Exposure

San Juan is fairly isolated from the larger, more progressive towns of Panajachel, Santiago, and San Lucas. A single telephone exists, but it belongs to the *juzgado* (court of justice). An official newspaper is received by the town mayor and town secretary, but none are for sale to the public unless sent privately from Panajachel to subscribers. In addition, there are no magazines or books for sale in San Juan. Many Juaneros have portable radios, but music is usually preferred to news. Forty-four of the 73 informants had served in the military, an unusual record for the Indian towns around the lake, which means that the informants had also lived in the larger cities such as Guatemala City, Chimaltenango and Quezaltenango for at least 12 months. In addition, the Guatemalan Army has its own literacy program to train illiterate Indians who join or are inducted into the military. Thus, many of the informants had additional literacy training and exposure in the military which makes the military service an excellent exposure item for research purposes. Table VII shows the items selected for an exposure index and their intercorrelations.

Table VII. External Exposure Index

A. Items Selected:

- 3) Read a newspaper in the last three months?
- 5) Read a magazine in the last three months?
- 7) Listened to the news on the radio in the last three months?
- 8) Served in the military?

B. Intercorrelations:

	Item #3	Item #5	Item #7	Item #8
Item #3		.34	.44	.47
Item #5			.38	.08
Item #7				.31
Item #8				

(For the items from which the scale was selected, see Appendix A/6.)

Economic Status

Relative economic status was measured by rank-ordering all the interviews on the following items: household type, household inventory, income, animal value, land used and family size. The Juaneros lost ownership of most of their land to their richer neighbors, the Pedranos (inhabitants of San Pedro, about a mile away from San Juan) during the *maldamicito* (forced migration to

the *fincas* or plantations) under President Ubico. Several key informants reported that Juaneros harbor very bitter feelings against the Pedranos who they believe paid off the local officials to keep from having to move to the *fincas* and who bought the land the Juaneros were forced to sell. Thus, since Juaneros own little land, a better measure of wealth was the amount of land used.

In more urbanized societies, a large family is often an economic deficit to most people and, hence, family size correlates negatively with economic status. In San Juan, however, family size correlates positively with all of the other economic variables. Here, where the average family subsists on hoe agriculture, each helping hand in the family is apparently an economic asset. Table VIII below gives the items selected and their intercorrelations.

Table VIII. Economic Index (Intercorrelations)

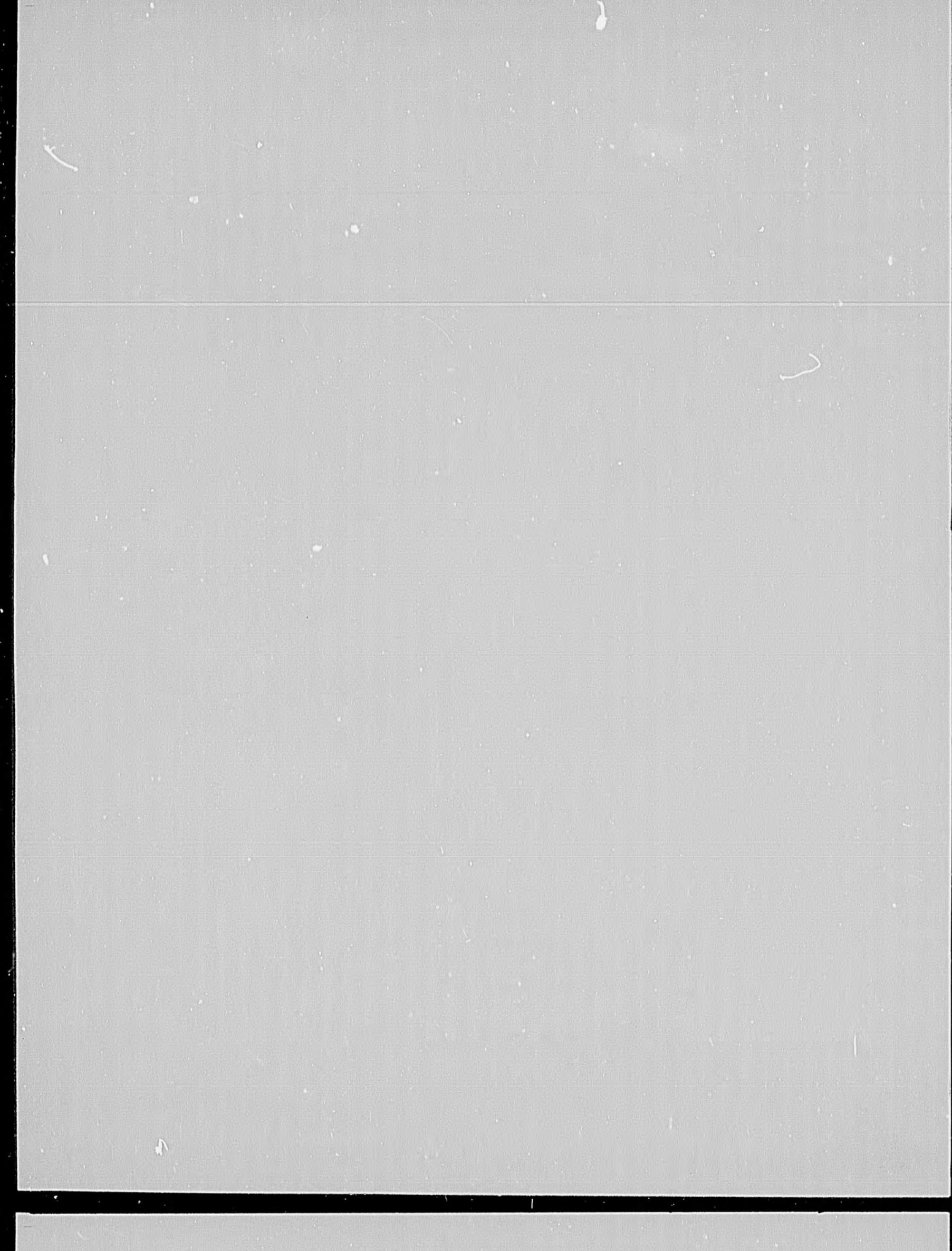
	Household type	Household inventory	Income	Animal value	Land used	Family size
Household type		.50	.42	.51	.47	.43
Household inventory			.43	.39	.35	.45
Income				.46	.59	.37
Animal value					.70	.31
Land used						.28
Family size						

After rank-ordering each informant on each of the variables comprising the economic index, the ranks were added. Next, a final rank ordering was made with the summated scores of each rank. Finally, the re-ranked, summated scores were correlated with other variables in the research design. Such a method of ranking and then re-ranking acts as a leveling mechanism which prevents any one informant from getting a high economic status score with one item alone such as income. However, the assumption is that each of the categories is of equal importance, and this, of course, may be questioned. For example, one might argue that income is more important than animal value or land used.

Age

Age was measured according to the actual age of the informant as the informant reported it. In a few cases where an informant reported a questionable

age, that is, he looked older or younger, the reported age was verified by key informants in the community. Since older people often tend to be the most conservative, or traditional, many of the correlations of age and modern attitudes or innovations turn out to be negative. Usually this is nothing more than as expected, but when applying the concept of age to regression equations or to causal models, one must think in terms of a negative correlation meaning negative with age and positive with youth. Thus, when age is placed at the front of a causal chain leading to innovation and the correlation between age and innovation is negative, the reader needs to reverse his conceptualization of age to actually mean youth. So, in such a case, it is the young who are triggering innovation rather than the aged.



DATA ANALYSIS AND DISCUSSION

To review, the following list summarizes the hypotheses to be tested which were generated from a review of the relevant literature and from the theoretical orientation of the research:

- 1) Protestants will display a more favorable attitude toward formal education than Catholics.
- 2) Indians who display the most favorable attitude toward Ladinos will also exhibit the most favorable attitude toward formal education.
- 3) Grade completed in school will correlate positively with the degree or intensity of actual social interaction with Ladinos.
- 4) Grade completed in school will vary directly with innovation.

Table IX summarizes the results of testing the first hypothesis and related variables.

Table IX. Contingency Coefficients and Percentages Comparing Protestants and Catholics

	Attitude Toward Education	Favorable Attitude Toward High School	Grade Completed	Age (Catholics older)
A. Prot. more than Cath.	.27 (n.s.*)	.32 ($p < .05$)	.48 ($p < .005$)	.44 ($p < .005$)
B. Protestants Catholics		17 per cent of children passed from sixth grade 6 per cent of children passed from sixth grade		

*Not significant at the .05 level or less.

In testing the first hypothesis, a statistically significant relationship was not found⁵ for a favorable attitude toward education measured by the attitude scale (.27, $p > .2$; see Table IX). None of the other variables such as age or economic status was masking a true relationship because, when these variables were controlled, the correlation between favorable attitude toward education and religion (Catholic or Protestant) did not change appreciably. However,

it was unexpectedly discovered that Protestants were economically poorer than Catholics (.33, $p < .05$; see Table IX). Because this finding was contrary to what was expected, it was decided that age might be accounting for this relationship. However, there was no significant difference in the correlation between religion and economic status while controlling for age.

If one were to follow Glaser and Strauss's methods (Glaser and Strauss, 1967), one could pull out item #9 of the Attitude Scale Toward Education and compare Protestants and Catholics with respect to this one question only which asks: Should children go to high school even though high school is too expensive? Such a comparison yields a contingency coefficient of .32 with a significance level of .05. This indicates that, on this one item, Protestants have a more favorable attitude toward higher formal education, and such a discovery warrants further exploration of the relationship.

Further exploration of the relationship supports the view that Protestants are more favorable toward education as indicated by actual behavior rather than self-supported attitudinal behavior. That is, when Protestants and Catholics are compared according to the number of years they completed in school, Protestants completed a significantly greater number of years than did Catholics (.48, $p < .005$; see Table IX). In addition, Protestant families are getting a significantly higher percentage of their children through the sixth grade than are Catholics. Twelve out of 193 Catholic families had children who had graduated from the sixth grade, whereas 5 out of 30 Protestant families had children who had graduated from the sixth grade. Thus, 6 per cent of the Catholic families, as compared to 17 per cent of the Protestant families, had sixth-grade graduates, but no family had more than one sixth-grade graduate. (These statistics are based on school records and key-informant data.) These findings tend to support Hinshaw's observations in Panajachel where he noted that Protestants are getting more of their children through the fourth grade than are Catholics (Hinshaw, 1968).

Table X gives a summary of the second and third hypotheses and their statistical test results in regard to related variables.

In testing the second hypothesis: *Indians who display the most favorable attitude toward Ladinos will also exhibit the most favorable attitude toward formal education*, a significant positive correlation was found (.25, $p < .03$; see Table X). Although the power of the relationship is not strong, the correlation suggests the same relationship as that found by Colby in Chiapas (Colby, 1961). It also seems to support Tax and Hinshaw's data for Panajachel where they found that formal education is stimulated by contacts with Ladinos (Tax and Hinshaw, 1970). More on this relationship will be presented in the section on causal models below. Although the relationship between these attitudes is positive, there are likely to be considerable differ-

ences in the stated self-report behavior of informants as opposed to their actual behavior. Such a discrepancy was suggested in the first hypothesis test.

Table X. Correlations of the Variables in the Second and Third Hypotheses

A. Hypothesis #2			
	Attitude Toward School	Attitude Toward Social Interaction with Ladinos	External Exposure
Attitude Toward School		.25	.03
Attitude Toward Social Interaction with Ladinos			.16
External Exposure			
B. Hypothesis #3			
	Grade Completed in School	Social Interaction with Ladinos	External Exposure
Grade Completed in School		.28	.52
Social Interaction with Ladinos			.43
External Exposure			

Thus, the third hypothesis was designed to account for a possible disagreement between reported and actual behavior in regard to interaction with Ladinos and actual school behavior (grade completed). In testing the third hypothesis: *Grade completed in school will correlate positively with the degree or intensity of actual social interaction with Ladinos*, a positive correlation was found of nearly the same magnitude of the second hypothesis (.28, $p < .02$; see Table X). Thus, in this particular case, actual behavior corresponded closely with reported behavior. In controlling for possible intervening variables such as age and economic status, the only variable which proved to be intervening was external exposure. Controlling for exposure, the correlation between grade completed in school and actual social interaction with Ladinos dropped from .28 to .03, a change of $-.25$. Thus, exposure seems to be causing most of the correlation between grade and social interaction with Ladinos. However, it is difficult to say whether exposure is directly affecting grade completed in school or affecting social interaction with Ladinos.

Logically, it would seem that exposure to the outside world through reading newspapers and magazines, listening to the radio, traveling, and living for periods in urban centers (part of military service experience) would follow primary education in the school. Formal education in the school is received when one is relatively young, and one must have a good command of Spanish (which is taught in the school) before one can understand news on the radio or read newspapers and magazines. But there are some adults who are learning Spanish without going to school, especially Protestants who are being taught to read and write Spanish by their "brothers" in the church. Also, for recruits who need the extra training, the military has literacy programs of its own, and for that reason informants who served in the military are picking up some formal education there. Thus, however desirable, grade completed in school as a measure of formal education may not be completely conceptually distinct from exposure as measured, in part, by military service.

In Chiapas, Colby found a similar relationship as confirmed in the second and third hypotheses. However, Colby's measure of attitude toward education and attitude toward Ladinos did not correlate in San Juan. Colby asked the questions, "Is it good for girls to learn Spanish?" and "Is it good for them to learn to read Spanish?" (Colby, 1961, p. 84). The reader might have already discovered that a similar question (see Appendix A-4, item 6) was asked in the author's educational attitude scale. For this question, the interviewees of San Juan gave 90 per cent affirmative answers.

Table XI summarizes the results of the correlation between grade completed and innovation while controlling for intervening variables.

Table XI. Partial Correlations (of the first order) of Grade and Innovation: while controlling for age, exposure, and actual social interaction with Ladinos, respectively

Independent Variable	Dependent Variable	Control Variable	Correlations		
			New	Old	Change
Grade in School Completed	Innovation	Age	.46	.52	.06
		External Exposure	.29	.52	.23
		Actual Social Interaction with Ladinos	.47	.52	.05

In testing the fourth hypothesis, *Grade completed in school will vary directly with innovation*, it was found as expected that a positive correlation exists ($r = .52$, $p < .001$; see Table XI). However, three variables were found to be intervening—age, external exposure, and actual social interaction with Ladinos.

Thus, it may be concluded that formal education is an important variable in innovation. This supports the findings of researchers who state that formal education varies directly with modernization in other parts of the world (Havighurst and Gouveia, 1969; Kazamias, 1967; Peshkin, 1970). It does not support the finding that village schools tend to be conservative and to reinforce stability (Nash, 1965). However, not all researchers agree on the definition and factors which constitute conservativeness.

Formal education cannot by any means be considered the only important variable in modernization, because its effect is influenced by variables such as a person's age, the amount of external exposure and his social interaction with Ladinos. As a variable, age slightly inflates the correlation between grade and innovation, but since the change in magnitude is small, this is likely indicative of a little random error and not that age is an intervening, or causal, variable between grade and innovation. The young, as expected, tend to be more innovative. Part of the explanation might be in the differences in education opportunities for the young as compared to the old in that when many of the older informants were of school age, there was only one grade available at the school and today there are six.

The two variables, external exposure and actual social interaction with Ladinos, influence the correlation between innovation and amount of formal education. Although the interaction with Ladinos has only a mild effect on the correlation, it is logical to assume that Indians are getting their initial formal education while relatively young and this education is leading to more social interaction with Ladinos later on in life. On the one hand, a somewhat formally educated Indian is likely to interact more with Ladinos due possibly to reinforcement of economic gains. On the other hand, the Ladino is likely to consider an equally educated Indian more socially equal than an uneducated Indian, and this may be reducing whatever social barrier exists between Ladinos and Indians.

Whatever the reason, the effect of formal education on social interaction with Ladinos is not as great as the effect of formal education on external exposure. The correlation between grade and innovation is considerably influenced by the degree to which a person has been exposed to mass media and urban locations. Thus, the data from San Juan supports the conclusions of Rogers (1969) drawn from the data from Columbia in that both indicate that exposure is a crucial variable in innovation.

One might reason that all three items, grade, external exposure and social interaction with Ladinos, are exposure variables and if combined to form a composite exposure measure, the new exposure index should account for considerably more variance than any one item alone. However, when this is done the correlation between innovation and the new exposure index rises only slightly (from .61 to .64). This indicates that there is considerable overlap between each of these three variables and that they are in fact measuring pretty much the same thing. Thus, the original exposure item still accounts for practically all of the correlation in the composite exposure index, and should remain conceptually distinct from the other two items.

Although the correlation is rather high between grade completed in school and innovation (.52) and between exposure and innovation (.63), these correlations account for only 27 per cent and 40 per cent of the variation in innovation, respectively. More of the variance in innovation can be explained by multiple regression which allows consideration of more than one independent variable at a time.

Multiple Regression

One of the assumptions in using multiple regression is that the researcher is dealing with linear relationships. This is, of course, also true in simple regression analysis using only one independent variable to explain the dependent variable, and in both simple and multiple regression, the assumption of linear relationships may be invalid. Since the correlation coefficient simply indicates how well the observations fit a regression line, one might especially suspect a curvilinear relationship when the coefficient is of low magnitude. Also, some researchers might be more interested in the slope of the dependent and independent variables since this indicates how much one changes in respect to the other which is needed for prediction. Other researchers may choose to employ multiple regression in stepwise fashion to determine causality. It will be the primary interest of the author's research to use multiple regression to account for more of the variation in innovation than is possible by using one variable alone. A secondary interest will be to compare a sequence of importance of dependent variables with a sequence of importance of variables determined by Hubert Blalock's methods (1960, 1961, 1968) in the following section of this paper.

Table XII summarizes the results of a stepwise multiple regression using innovation as the dependent variable and variables such as external exposure, grade, and economic status as independent variables.

Table XII. Multiple Regression/Analysis of Innovation

R = Correlation Coefficient

Dependent Variable: Innovation

Variables in the Equation	Multiple R	Variance (R Square)	Percent of Variance Change (R Sq. Change)	Simple R	Regular Slope	Normalized Slope
External Exposure	.63	.40	.40	.63	.23	.31
Grade Completed in School	.67	.45	.05	.52	.30	.38
Economic Status	.73	.53	.08	.29	.01	.27
Fatalism	.76	.57	.04	.14	.32	.21
Satisfaction with Level of Living	.77	.59	.02	.24	.12	.13
Interaction with Ladinos	.77	.60	.01	.40	.07	.13
Age	.78	.60	.00(.001)	-.29	-.03	-.05

Analysis of Table XII above indicates that external exposure, grade and economic status are explaining most of the variation in innovation, in that respective order of importance. Rogers did not define innovation and exposure in precisely the same manner as the author, but his definitions are similar and his results worth comparing. He found that in Colombia exposure (reading magazines and taking trips to the city) accounted for most of the variance in innovation (agricultural and home facilities). Likewise, economic status accounts for the second most variance in innovation in San Juan just as economic status (measured by farm size) accounts for a good deal of the variance in innovation in Colombia (Rogers, 1969).

It is not surprising that innovation and economic status are significantly related since in both the author's and Rogers's measures of innovation, mostly material items were measured. As Rogers points out, good measures of non-material innovation are few. One of the items originally selected by the author to measure nonmaterial innovation was whether the individual was married in church or by a civil officer instead of living together without official sanction (*juntos*) in common-law fashion. This item correlated negatively with nearly all of the other items and with the total innovation score which suggests it was testing another concept. Thus the item was eliminated from the index, but it nevertheless raised the question whether nonmaterial innovations may be adopted in completely different patterns than material ones. The elimination of the marital sanction item left knowledge of Spanish as the only possibly nonmaterial item in the innovation index. Even Spanish ability, it might be argued, is dependent to a degree on economic status since a family must

have a certain amount of prerequisite wealth before it can allow a child to remain in school long enough to master Spanish. One possible nonmaterial innovation, which the author did not employ in his innovation index, was whether an Indian chose to retain the native Indian name as part of his surname.

Although Rogers notes that land size (clearly an economic variable) accounts for a significant amount of variance in innovation, he carefully refutes Schultz's position (1964) that economic variables account for so much of the variance in innovation that researchers can afford to ignore social and cultural factors (Rogers, 1969). Since economic status accounts for only 8 per cent of the variance in innovation in the multiple regression, the data from San Juan supports Rogers's position that social and cultural factors in innovation must be taken into account as well as economic factors.

As indicated by Table XII, formal education accounts for a considerable amount of the variance in innovation, though not to the extent that exposure does. The reason for this may be due in part to exposure and grade being highly related to each other (.52) and due also to the considerable overlap in the multiple correlation with innovation using the two related independent variables. Although the primary school provides the basic foundation for functional literacy, it is the informal education attained through mass media and travel plus additional formal education received in the military which is most crucial to the innovation process. In essence, the importance of formal education to the innovative process in San Juan is similar to the importance of formal education to the modernization process as reported in the Philippines by Frances Madigan (1962) and in India as reported by Y. N. Junghare (1962). It does not, as stated before, seem to support the notion that the school serves as a vehicle for maintaining traditionality.

In the multiple regression, fatalism picks up 4 per cent of the variation. But it should be noted that the simple correlation between fatalism and innovation is positive (.14), although not statistically significant at the .05 level or lower. It is difficult to explain fatalism's positive correlation with innovation since, from theory and rationale, one would expect the opposite. Even to say that those who innovate are fatalistic smacks of tautology, since fatalism has such a strong hold on the traditional town. One should not attempt to predict innovation by belief in free will and then on the basis of a statistically insignificant correlation conclude individuals have innovated because they are fatalistic in outlook. With such circular reasoning, one has explained little, if anything. A more likely explanation is that the positive correlation is simply an error or due to chance alone, or that the scale does not really measure fatalism due to construct invalidity. However, the scale may be at least

partially valid since it did correlate as predicted with other variables — age (.27) and grade (-.22) — although the power of the relationship was weak. In any case, since other researchers, such as Rogers (1969) and Arensberg and Niehoff (1971), have reported difficulty with the fatalism concept and since the positive correlation with innovation does not make good theoretical sense, it was decided that fatalism had to be thrown out of the regression explaining innovation.

Table XII reveals that satisfaction with level of living accounts for nearly 2 per cent of the variation in innovation and that it has a simple correlation with innovation of .24. Like fatalism, this correlation goes in the direction opposite to what was expected, but unlike fatalism, this positive correlation is statistically significant, although the magnitude of the correlation is rather small. Also, unlike fatalism, the unexpected direction in the relationship with innovation is more easily explained. Because there is always the problem of construct validity in research of this kind, it is not unreasonable to argue that the unexpected relationship might be due to construct invalidity. That is, the satisfaction scale does not really measure satisfaction but something else. However, it could be argued, that those individuals who innovate are the happiest although this contradicts some of the literature (Spicer, 1967). The rationale for the argument that innovators are the most satisfied is supported by looking at the correlation between innovation and life satisfaction while controlling for economic status. When partialing out the effects of economic status, the correlation between innovation and life satisfaction drops from .24 to .19 indicating that economic status is slightly intervening but not enough to make the correlation drop to zero. Thus, irrespective of economic status (those with the highest being most innovative and happy), those who are innovating are more satisfied with life.

Table XII shows that actual social interaction with Ladinos accounts for a little (1 per cent) of the variation in innovation. It was expected that interaction with Ladinos would be triggering innovation because Tax and Hinshaw have given Ladino contact heavy emphasis in analyzing modernization in Panajachel (Tax and Hinshaw, 1970). However, it appears that in San Juan the effect of social interaction with Ladinos is much less significant to innovation than in Panajachel because it is one of the variables that accounts for the least variance rather than being one like exposure, which accounts for the most variance. Here again it should be noted that researchers seldom agree on definitions, and Tax and Hinshaw would probably argue that exposure and formal education are both essentially contact factors with Ladinos. In the section on causal models below the effects of all three of these items, exposure, grade and social interaction with Ladinos, will be analyzed from the point of

view of a composite Ladino exposure index.

The final variable, age, in Table XII accounts for the least amount of variation in innovation. Most of the literature on change and modernization (Maier, 1960; Goodenough, 1963; Rogers, 1969; and others) points out that age is a crucial variable with the young people being the early innovators. The multiple regression of innovation would indicate that age is not as important as thought by some researchers, at least not in San Juan. However, age is negatively correlated with innovation ($r = -.27$) indicating that it is indeed the youth, as expected, who are innovating in more significant numbers than the aged. Ideally, with multiple correlations, the independent variables should be highly correlated with the dependent variable, but relatively uncorrelated with each other (Blalock, 1960). However, for the variable age, this is not the case. Age is significantly related to external exposure ($r = .40$), grade ($r = .55$) and fatalism ($r = .27$). Thus, there is considerable overlap between age and these other independent variables which to some extent masks the true effect of age on innovation. One way of uncovering the real importance of interrelated variables which does not show up in multiple regression analysis is to view them from a sequential or causal perspective.

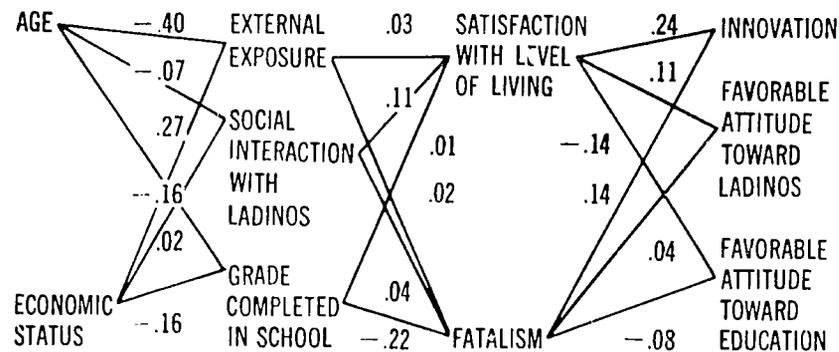
Causal Models of Change

An alternative to multiple regression analysis is to place variables in sequential order based on logic and theory and then to test this sequence for goodness of mathematical fit following Blalock (1960, 1961, 1968). The objective of this part of the study will be to test the fit of the model presented in the theoretical section of the study which was based only on theory and logic and not on mathematical fit. Table XIII shows the untested theoretical model with corresponding correlation coefficients.

Part C of the Appendix gives the matrix of the interrelationships between the variables in the model. In testing the goodness of fit, there are essentially two procedures. First, the correlation coefficients are arranged in a matrix, the ones with the greatest magnitude first from left to right (as the causal process is indicated from left to right) and with the correlations arranged from those of the highest magnitude at the bottom to those of the lowest magnitude at the top of the matrix. Secondly, the arrangement of variables is placed in the same order as in the correlation matrix and the variables are then correlated while controlling for intermediate or middle variables. If the middle variable is causing the correlation between the two adjacent variables, then partialing the middle variable out should cause the correlation between the adjacent variables to drop to zero, or nearly to zero. Likewise correlations at each end

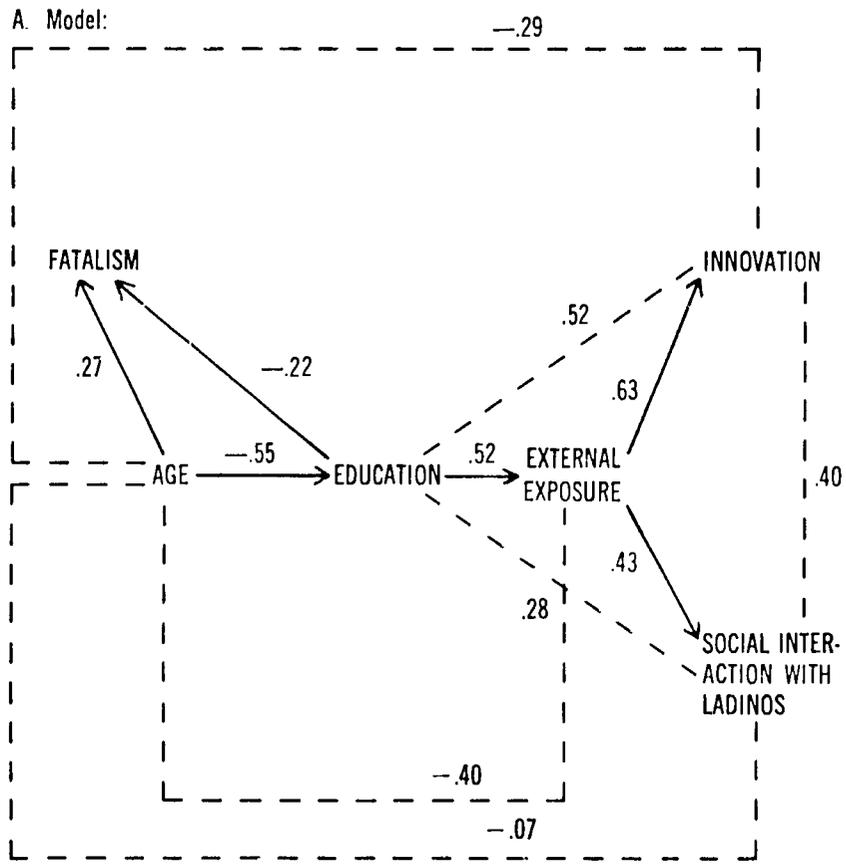
of the model should be less in magnitude than correlations between any variables that are farther apart in the chain.

Table XIII. Untested Theoretical Model



When adjacent variables are multiplied, the product of the correlation coefficients should approximate the actual correlation of the end or outside variables in the chain. The test of fit becomes clearer when one follows an actual case which will be demonstrated below. A more detailed explanation of the process can be found in Blalock (1960, 1961, 1968). Taking the reader through the process of elimination for each possible combination in the model in Table XIV would be cumbersome, and time and space will not allow such an exercise in this study. Thus, what will be shown subsequently is the best fit of the variables in the model, rearranged wherever necessary. Table XIV gives the new model which has been tested for the best mathematical fit. It should be noted that there is no fast rule as to what constitutes the best fit other than that the arrangement of the variables should meet as closely as possible the criteria described above. The arrangement in which partial correlations are closest to zero and the products of end variables are closest to the actual correlation of end variables is the arrangement with the best fit.

Table XIV. The Causal Model, Tested for Goodness of Fit



B. Matrix of Correlations:

	Age	Education	External Exposure	Innovation	Social Interaction with Ladinos
Age		-.55	-.40	.29	-.07
Education			.52	.52	.28
External Exposure				.63	.43
Innovation					.40
Social Interaction with Ladinos					

C. Test of Fit:

Partial Corr.	Actual	Expected	Change
1. Age with Exposure • Education	-.16	0	.24
2. Fatalism with Education • Age	-.08	0	.14
3. Education with Innovation • Exposure	.29	0	.13
4. Education with Social Interaction • Exposure	.07	0	.21
5. Age with Innovation • Education, Exposure	.10	0	.39
6. Age with Social Interaction • Education, Exposure	.17	0	.24

Adjacent Variables	Product	Original Corr.	Difference
(Age, Education) (Education, Exposure)	-.29	-.40	.11
(Fatalism, Age) (Age, Education)	-.15	-.22	.07
(Education, Exposure) (Exposure, Innovation)	.33	.52	.19
(Education, Exposure) (Exposure, Social Interaction)	.23	.28	.05
(Age, Education) (Education, Exposure) (Exposure, Innovation)	-.18	-.29	.11
(Age, Education) (Education, Exposure) (Exposure, Social Interaction)	-.13	-.07	.06

In comparing the predicted model (Table XIII) with the tested model (Table XIV), the reader will first note that the latter model is much more simplified than the former. In testing the predicted model, it was found that several variables thought to be theoretically important did not fit mathematically and were eliminated from the final tested model of change. Thus, economic status, satisfaction with level of living, and favorable attitude toward

Ladinos were all left out of the tested model because of lack of fit. Also, the reader will note that the order of importance of several of the variables has changed, which was suggested by the order of importance of the variables in the multiple regression.

In the multiple regression, economic status accounted for more of the variance than age, but in the sequential model, age is more important. Therefore, it can be seen that the convergent strategy of using multiple regression and causal analysis can reveal the nature of the importance of particular variables which cannot be seen with one method alone. It should be noted, however, that both methods are also complementary in that both tend to point out the most important variables and their order of importance. For example, in accounting for the variance in innovation, the independent variables, external exposure and grade, were the two most important variables, respectively. A look at the tested model shows that these same variables are equally important, having the same order of importance as in the multiple regression. That is, grade completed in school leads to external exposure which in turn leads to the dependent variable innovation. This is the same order of importance, only seen in reverse. Table XII begins with the dependent variable and next shows the most important independent variable and so on, whereas Table XIV begins with the most important independent variable and ends with the dependent. In other words, independent variables are causing the dependent variable and appear first (from left to right) in the tested model. Unlike the multiple regression, economic status does not fit well into the explanation and is left out due to lack of good fit with the other variables. In the regression analysis satisfaction with level of living explained a fraction of the variance (.02), but in a theoretically interesting manner. In the causal model this variable was left out due to lack of fit. Fatalism had to be left out of the analysis in the regression since it made no logical or theoretical sense, but in the causal model it fits rather neatly into a triad with age and formal education, in which age acts as an intervening variable between fatalism and education.

The most striking discovery compared to the regression analysis was the nature of the significance of age. In the multiple regression, age accounted for so little of the variation (.1 per cent) and the standard error was so great in comparison to the magnitude of the slope (indicating that the sign of the regression coefficient cannot be interpreted with confidence, although in this case the sign agrees with the simple regression coefficient) that age had to be eliminated from the analysis. However, age in the causal analysis is of primary importance and it sets off the causal chain. This discovery supports the theory on change in respect to age as most researchers have reported that the

young are the early innovators with the old remaining traditional. The multiple regression would not support this point of view.

Thus, in summary, age is of primary importance in the causal model. It intervenes between the relationship of fatalism and education, but the direction of this relationship appears to be away from innovation on a separate path. Fatalism and innovation are not related, even when education and external exposure are controlled. In the opposite direction age, or youth, triggers formal education which in turn affects fatalism negatively and external exposure positively. External exposure positively affects innovation and social interaction with Ladinos and is an intervening variable between education and innovation and social interaction respectively. Again it appears that social contact with Ladinos is at the end of the chain rather than at the beginning of it as suggested by Tax and Hinshaw (1970). However, a compromise may be reached in the importance of Ladino contact when education, external exposure, and social interaction with Ladinos are combined into a composite exposure index. That is, contact with Ladinos conceptualized in such a manner places it in the middle of the chain, preceding innovation yet still being preceded by age. The following is a matrix of intercorrelations of each of these variables:

	Grade	External Exposure	Social Interaction
Grade		.52	.28
External Exposure			.43
Social Interaction			
With Ladinos			

When these variables are combined into a composite exposure index, there is some change in the magnitude of the correlation coefficients, but not in their direction (positive or negative). The only variable that changes its former position in the first tested model is actual social interaction with Ladinos which now precedes innovation because it is part of the composite exposure index. Table XV gives the second tested model and its goodness of fit.

Table XV. Model With Composite Exposure Index

A. The Model:



B. Matrix of Correlations:

	Age	Composite Exposure Index	Innovation
Age		-.39	-.29
Composite Exposure Index			.65
Innovation			

C. Test of Fit:

Partial Corr.	Actual	Expected	Change
1. Age with Innovation • Total Exposure	-.05	0	.24
2. Fatalism with Total Exposure • Age	-.07	0	.02

Adjacent Variables	Product	Original Corr.	Difference
(Age, Total Exposure) (Total Exposure, Innovation)	-.27	-.29	.02
(Fatalism, Age) (Age, Total Exposure)	-.11	-.05	.06

Thus, if it is argued that grade, external exposure and actual social interaction with Ladinos are all essentially contact items with Ladinos, the case cannot be made, at least with the data from San Juan, that contact with Ladinos is the most important variable setting off innovation as suggested by Tax and Hinshaw when studying the process of change. Age, or whether a person is young or old, is still the most important single variable, and this is of course well documented in other literature on change.

At this point it may be useful to review the advantages and disadvantages of the causal approach. First, it is true that a causal model severely limits the number of variables that will fit mathematically into the model and, thus, greatly oversimplifies reality. However, on the positive side, one can readily identify those variables that fit well into the simplified model as the best predictors which also allow for the accounting of maximum variation in the dependent variable. The validity of these variables can be cross-checked by

comparing variables in the causal model with the same variables in the multiple regression equation.

A second shortcoming of the causal approach is that it does not properly account for mutual feedback effects of variables in the model. For example, it is probable that both innovation and exposure affect each other in a complementary fashion throughout an individual's lifetime. However, a sequential model need not be interpreted theoretically as having one-way causality among variables. It is only the mathematical test of fit that makes this assumption, and even if one assumes uni-directionality in the chain, it is often imperative to rely on theory and rationale to determine which variable is independent (causal) and which is dependent (being affected).

A third problem with the causal approach is that it is not always clear which way the chain should be moving even when relying on rationale and theory. For example, according to the model, fatalism could be reduced by the amount of formal education an individual acquires. But the converse of this could also be true. That is, if a person were basically fatalistic, even at an early school-age (perhaps emulating parental fatalism), he might reason that formal education will not measurably improve his plight and this feeling of fatalism will hamper (or intervene in) his attempts at gaining an education. A fourth problem is the lack of good temporal control, that is, synchronic data must often be used to explain diachronic processes.



SUMMARY

Because Guatemala has a tremendously high rate of illiteracy compared to other Latin American countries, especially in regard to its Indian population, which comprises a majority of all its people, the author decided to study the impact of formal education in a rural community with special emphasis on acculturation to Hispanic culture. Ethnographic field techniques of participant observation, key informant interviewing and analysis of local records were coupled with a systematic collection of a random and a purposive sample of interview schedules in the town of San Juan la Laguna.

It was found that the school's physical facilities were, for the most part, adequate with the exception of a paucity of textbooks. However, Juaneros can only go as far as the sixth grade unless they want to migrate to larger towns such as Sololá. Commuting daily is impossible for most students because of San Juan's relative isolation. The curriculum appears to be adequate although there is some variation in opinion as to the worth of the school in general as reflected in a community attitude scale toward formal education. Some of this variance in opinion may be due to the obvious lack of opportunity to use higher education in San Juan due to its state of underdevelopment. However, some variance of opinion may also be due to the school calendar, which conflicts somewhat with local harvest periods.

In testing hypotheses generated from the literature and from theories on change, it was found that Protestants have a more favorable attitude toward formal education measured in terms of 1) a favorable attitude toward high school, 2) having completed more years of formal education, and 3) getting a greater percentage of their children through the sixth grade. However, it was unexpectedly discovered that Protestants are poorer economically than Catholics.

Indians who have a more favorable attitude toward Ladinos also have a more favorable attitude toward formal education. Grade completed in school varies positively with the amount of social interaction with Ladinos. Also, grade completed in school is positively related to the degree of innovation.

In explaining the variation in innovation by external exposure, grade completed in school and economic status accounted for 53 per cent of the variation, in that order of respective importance. In a causal model of change, tested for

goodness of fit, age was the triggering variable in the causal chain which negatively affected the amount of formal education received, but positively affected the degree of fatalism. Grade completed in school, in turn, positively influenced the amount of external exposure, measured in terms of mass media exposure and military service. Exposure positively affected, in turn, the amount of innovation and the amount of social interaction with Ladinos.

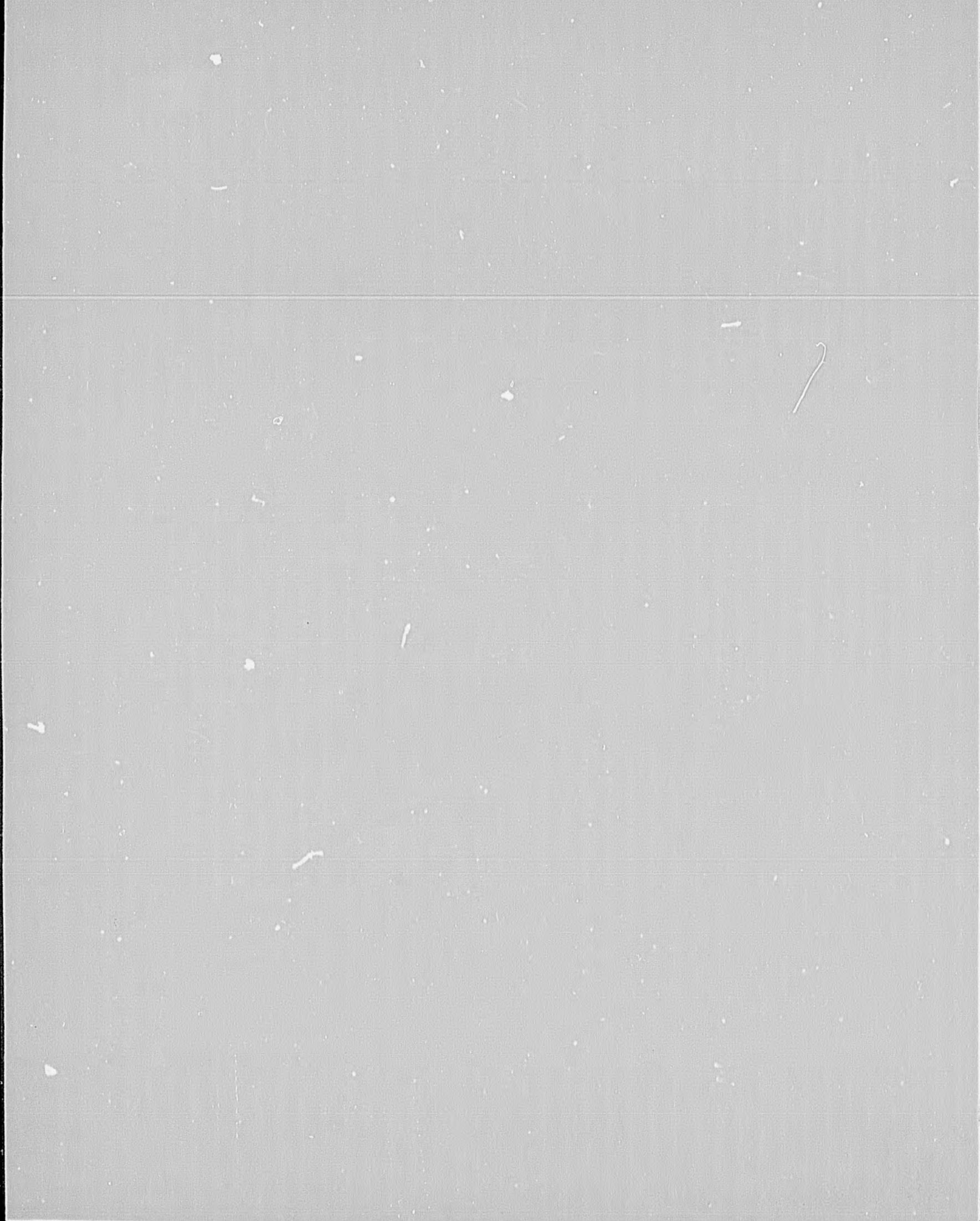
When the variables, grade completed in school, external exposure and social interaction with Ladinos, were combined into a composite index of exposure (Table XV), the composite exposure index acted as an intervening variable between age and innovation. Thus, the convergent strategy of multiple regression and causal analysis was both unique and complementary.

SUGGESTIONS FOR FURTHER RESEARCH

One of the most interesting findings that has emerged from this research is the correlation which reveals Protestants to be significantly poorer than Catholics, but which also shows Protestants to have a more favorable attitude toward education than Catholics. This may be, as June Nash (1960) and Frank Cancian (1965) have pointed out, that Protestants are poorer individuals who wish to escape the expensive cargo system. Perhaps the poorer Protestants are looking to formal education as a possible vehicle for ameliorating their depressed economic condition. It could also be that the correlation was simply a mistake. However, the author's ethnographic observations supplemented and confirmed the statistical findings.

In any case, the fact that Protestants are economically poorer than Catholics raises many new questions. For example, is the difference in the economic status between the two groups to be accounted for by the fact that Protestants have less land than Catholics and, as a result, are forced to view formal education as a means for finding occupations other than agricultural ones? Could the difference mean that the Protestant movement has not yet materialized as it apparently has in Panajachel, and that, in time, the Protestants will surpass the Catholics? Is there simply not much opportunity for either Catholics or Protestants to put higher education to work in a traditional and underdeveloped town such as San Juan where there is a lack of occupations for which a higher education would be advantageous? How does the religious world view affect the modernization process in general? What might be the implications of the joint role of formal and informal education on the modernization process in developing countries such as Guatemala? How do other psychological attitudes, not tested in the present research, such as the Protestant Ethic, achievement motivation and delayed gratification affect both formal and informal education in particular, and modernization in general?

These and other related questions may be answered by comparing San Juan, a relatively traditional town, with Panajachel, a relatively modern town, in respect to how different environments and opportunities affect world view and modernization. These differentially developed towns would serve as an ideal natural laboratory for discovery of correlations which would aid in explanation and prediction of behavior in the innovation and modernization process.



NOTES

- 1 De la Fuente outlines six major distinctions between Ladinos and Indians:
1. The locality of birth or residence --- generally urban (or central) for Ladinos.
 2. The language spoken --- Ladinos speaking Spanish and Indians speaking an Indian language.
 3. Illiteracy --- generally higher among Indians than among Ladinos.
 4. The Indian surname, or the name composed of two names.
 5. Costume --- different between Indians and Ladinos.
 6. Various customs and beliefs --- such as house type, method of cooking, method of burying the dead, celebration of fiestas, and dances.
- (De la Fuente, 1952, p. 77)

De la Fuente admits that these are not rigid distinctions and the emphasis on given traits varies with location. In reading such a classification one can hardly resist asking what the Indians actually think the differences are. The author knows of only two empirical studies which systematically ask the Indian and the Ladino for their own perceptions. These studies are Van den Berghe and Colby's in Chiapas and Wood's in San Lucas.

In an open-ended question Van den Berghe and Colby asked a sample of 91 Indians what Ladinos do that Indians do not. The content of the responses was divided by the researchers into three major categories: 1) abilities, 2) roles, 3) manufacturing of objects. Under the first category, the Indians viewed Ladinos as reading and writing, driving cars, knowing how to make money and where to find meals, speaking Spanish, and playing the marimba. Under the second category, the Indians saw the Ladinos in roles of carpenter, mason, merchant, teacher, blacksmith, highway construction foreman, doctor, barber, engineer, shoemaker, weaver, pharmacist, judge, and president. Under the third category of manufacturing objects, the Indians saw the Ladinos making house tile, shoes, cloth chairs, and books and paper.

When Van den Berghe and Colby asked the Indians, "What do Indians do that Ladinos do not," they got two groups of responses: 1) agricultural activities --- raising corn, including activities of clearing ground, burning, hoeing, weeding and harvesting, and 2) other activities --- weaving palm for hats (one informant). (Van den Berghe and Colby, 1961, pp. 80-81.)

When they asked the question, "How does one distinguish between Indians and Ladinos?" 59 per cent of the informants answered with cultural differences only, and 40 per cent answered in both physical and cultural terms, but none answered in only physical terms (Van den Berghe and Colby, 1961, p. 66).

Also using open-ended questions, Woods asked a sample of Indians and a sample of Ladinos to enumerate the characteristics which can be used to differentiate between Indians and Ladinos. Reporting a wide range of responses, Woods separated the responses into four categories: 1) linguistic — Indians used poor Spanish; 2) cultural — Ladinos had varied and easier occupations, more and better education, superior life style, more and better food, different and better dress, more and better possessions, different and superior customs, better housing, and more wealth; 3) social — Ladinos were more sociable and friendly, higher and more consistent in character, more reliable, and more civilized; and 4) physical — Ladinos were more intelligent, greater in native ability, weaker in blood (got sick more easily), and lighter in hair and skin color (Woods, 1969, p. 63).

2 Part A 1 of the Appendix is the standard part of the questionnaire given by all participants in the research project under the principal directorship of Dr. Clyde Woods with the collaboration of Dr. Peter Snyder, both professors at the University of California at Los Angeles. Parts A 2 -A 9 of the interview schedule were formulated by the author as part of the individualization of the research project.

3 The author found Lima's report of 60 Protestant families in San Juan to be inaccurate (Lima, 1968, p. 306).

4 Item analysis was employed to select the number of items to be used in each scale. In general, A. E. Maxwell's method (1961) was used which basically tests for the unidimensionality of each scale. Each item is correlated against the others to determine if the items are actually measuring the same thing. If the majority of the items have positive correlations, and one or more comprising a minority have negative correlations, then the items with conflicting signs are eliminated on the theory that they are testing something other than the concept they were intended to test. To complement the intercorrelations of the items, each item was also correlated with the total score of the scale with that part of the total score of the item being scored removed. On the same principle, if an item correlated negatively with the total score of the scale, it was removed from the scale on the grounds that it was measuring something other than the concept being tested.

After checking for unidimensionality of the scale through intercorrelations, items not contributing at least 5 per cent of the variance (at least 5 per cent of the respondents answered contrary to the majority) were eliminated on grounds that they were not contributing anything to the analysis of variance since questions in which nearly everyone answered the same were simply inflating the scores (Graves, personal communication, 1971). Researchers such as Maxwell (1961) and A. N. Oppenheim (1966) suggest 20 per cent variance as a cutoff for comprising the best scales, since items with 50 per cent variance (half the informants responding one way and half responding another) give maximum variance and are thus the best discriminating items for scales. One might note that, although items of untested scales may render nearly unanimous responses, these items may be useful in ethnographic description.

5 In this research, the level of significance of the correlation coefficient is the conventional .05 level indicated by $p < .05$. This means essentially that the probability that the correlation derived is simply an error due to chance is equal to or less than 5 times out of 100. The magnitude of the correlation, indicated by "O," a decimal, or unity, ranges from -1 to $+1$. The power of the relationship is considered strongest when the coefficient approaches -1 or $+1$ and weakest when it approaches "0." The slope, or regression coefficient, indicates how much a variable "x" changes in respect to a variable "y." The numerators of the correlation equation and the regression equation are the same, but the denominators are different. Thus, when the correlation coefficient is "0," the regression coefficient is also "0." The correlation coefficient is used for accuracy, indicating how well the observations fit a regression equation, and the regression coefficient is used for prediction, indicating how much a given dependent variable "y" changes in respect to a change in a given independent variable "x." The regression coefficient is also referred to as the slope.

In multiple regression, the same general principles hold as in simple regression except that more than one independent variable may be used in the regression equation. Use of simple and multiple regression coefficients assumes a linear fit of the observations on a least squares regression line of the form $y = a + bx_1 + bx_2 + \dots + bx_n$, where "y" is the mean (average) of the values of the dependent variable "y," "a" is a constant which is the point where the regression line crosses the "Y" axis, "b" is the slope, and "x₁" is the mean of the independent variable "x₁," "x₂" is the mean of a second independent variable "x₂," and "x_n" is the mean of any other additional independent variables. Use of regression equations also assumes a normal distribution.

Some statisticians argue that it is improper to employ Pearson's correlation

coefficients with rank-order data. However, Spearman's rank-order correlations and Kendall's rank-order correlations were compared to the Pearson correlations (see Appendix C), and it was found that in all of the statistically significant correlations (.05 or less), the signs were the same and the correlations themselves were nearly identical. Moreover, Norman Nie *et al.* states: "In actuality there is no firm agreement among practicing researchers on the selection of correlation coefficients -- particularly on the advisability of using Pearson's correlations with ordinal data" (Nie *et al.*, 1970, p. 144). Claire Sellitz also acknowledges the controversy over using "proper" statistics with one's data and confirms the state of disagreement among researchers (Sellitz *et al.*, 1959). Thus, in all but the first hypothesis, the test of significance was made with Pearson's correlation coefficients. In the first, which concerns nominal data at best with Catholic and Protestant groupings, chi-square contingency coefficients were employed.

6 The variance explained by a given correlation is indicated by multiplying the correlation coefficient times itself (squaring the coefficient). Thus, in a correlation coefficient of .4 for variable "x" and variable "y," the variance is simply $.4 \times .4$ or .16. In other words, 16 per cent of the variation among respondents in the dependent variable "y" is accounted for by the independent variable "x." Thus, if "x" is years of education and "y" is income, and a correlation coefficient between the two is .4, 16 per cent of the variation in income is accounted for by the amount of education. Thus, one can predict income by the amount of education, and the greater the amount of variance accounted for with independent variables, the more accurate the prediction. Also one might interpret the variance as the square of the coefficient which indicates how well the scatter of points on a matrix indicating the values of "x" and "y" fit a regression (least squares) line.

APPENDICES

BIBLIOGRAPHY

**APPENDIX A/1:
GENERAL INFORMATION**

		FECHA	POBLACION	ENTREVISADOR	CODIGO	SITIO
1	FAMILIA					
2	NO: NOMBRE					
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
	EDAD					
	PARENTESCO					
	INDIGENA					
	LADINO					
	LENGUA EN CASA					
	CASTELLANO EN CASA					
	HABLAR CASTELLANO					
	LEER CASTELLANO					
	ESCRIBIR CASTELLANO					
	ESCUELA (AÑOS COME)					
	TÍPICO					
	MODERNO					
	ZAPATOS					
	GUARACHES					
	CAITES					
	DESCALZO					
	SOITERO					
	JUNTOS					
	CASADOS					
	SEPARADO					
	DIVORCIADO					
	VUUDO					
	NINGUNA					
	CATÓLICA					
	ACCION					
	CATEQUISTA					
	CENTRO AMERICANO					
	PENTECOSTES					
	BAUTISTA					
	TESTIGO					
	AÑOS EN RELIGIÓN					
	LUGAR DE NACIMIENTO					
	AÑOS AQUÍ					

INTERVIEW SCHEDULES*

SITIO

Si nació afuera de esta comunidad (refiérase a la primera página), por qué vino a vivir a este pueblo? _____

Si ha cambiado su religión (refiérase a la primera página), por qué? _____

ESTRUCTURA	PAREDES	TECHO	PISO
Casa			
Cocina			
Troja			
Galera			

PAREDES: Piedra, Cemento, Bajareque, Caña y Tierra, Madera, Adobe.

Si las paredes están repelladas, apúntelo en paréntesis.

TECHOS: Teja, Lámina, Duralita, Lámina de Cartón, Paja.

PISOS: Cemento, Ladrillo, Madera, Tierra.

VENTANAS: Si la casa tiene ventanas de vidrio o madera, apúntelo. _____

Notas: _____

El sitio es: Propio _____ Alquilado _____ Prestado _____
 Posada _____ Otro (especifique) _____

Si el sitio no es propio, qué arreglo tiene Ud. con el dueño? _____

Si el dueño es pariente, qué clase? _____

* Throughout the Interview Schedule, Spanish has been adopted to conform to local level of linguistic competency.

INVENTARIO DEL SITIO Y LA CASA

Tenamastes	_____	Tapesco de dormir	_____
Poyo	_____	Cama de madera	_____
Plancha	_____	Cama de fierro	_____
Estufa de gas	_____	Cama de resorte	_____
Refrigerador	_____	Cofre	_____
Calentador de agua	_____	Cómoda	_____
Agua de chorro	_____	Ropero	_____
Electricidad	_____	Baúl	_____
Pila	_____	Maleta	_____
Excusado	_____	Valija	_____
Inodoro	_____	Mesa fina	_____
Temascal	_____	Mesa corriente	_____
Radio	_____	Silla fina	_____
Tocadiscos	_____	Silla corriente	_____
Reloj	_____	Candil	_____
Bicicleta	_____	Quinqué	_____
Sirviente	_____	Lámpara (sencilla)	_____
Máquina de coser	_____	Lámpara (Coleman)	_____
Otro	_____		

ANIMALES

Tipo	Numero	Valor (juntos)	Dónde los consiguió

SERVICIO MILITAR

Prestó Ud. servicio militar: _____ sí o no _____ Si sí, en qué lugar(es) ? _____
 Y por cuánto tiempo? _____

MIGRACIÓN

Ha vivido Ud. en otros pueblos? _____ sí o no _____
 En dónde? _____ En qué tiempo? _____ Por qué motivo? _____

Tiene Ud. hijos o hermanos quienes nacieron aquí, pero han salido a vivir a otros lugares? _____ sí o no _____

Nombre	Edad	Año	Parentesco	Solo o familia	Motivo	Lugar
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

SERVICIO CIVIL Y RELIGIOSO

Qué cargos civiles y religiosos ha tenido Ud. durante su vida? (haga la lista cronológicamente)

Año	Tipo	Descripción del cargo	Cuánto gastó
_____	_____	_____	_____
_____	_____	_____	_____

Qué otras clases de cargos ha tenido en su pueblo? _____

TERRENOS

En el año pasado (1969) cuántas cuerdas de terreno ocupó Ud. para sembrar?

Propio _____	Prestado _____
Arrendado _____	Comunal _____
Costa _____	Otro _____

En el año pasado, prestó u arrendó Ud. sus propios terrenos a otras personas? _____ sí o no _____ Si sí, cuántas cuerdas? _____ Qué arreglo tuvo Ud. con quienes trabajaron sus terrenos? _____

En el año pasado (1969) qué cosechas tuvo Ud. (incluyendo productos de los árboles)?

Cosecha	Cantidad	Qué parte usó en la casa?	Qué parte vendió?
_____	_____	_____	_____
_____	_____	_____	_____

ECONOMIA Y TRABAJO

	Tiempo	Ingresos
Trabaja en sus terrenos (propio, arrendado, etc.)?	_____	_____
Manda a otros a trabajar en sus terrenos?	_____	_____
Alquila sus propios terrenos?	_____	_____
Trabaja en terrenos de otros aquí (jornalero)?	_____	_____
Trabaja en la costa (terrenos prestados)?	_____	_____
Albañil?	_____	_____
Machetero (corta y carga leña)?	_____	_____
Comerciante ambulante?	_____	_____
Cantero?	_____	_____
Molinero?	_____	_____
Canastero?	_____	_____
Panadero?	_____	_____
Carpintero?	_____	_____
Trabaja en tienda? propia _____ de otro _____	_____	_____
Otros? _____	_____	_____

De las ocupaciones, cuál le toma más tiempo durante el año? _____
 De las ocupaciones, cuál le proporciona más ingresos durante el año? _____
 Notas: _____

**APPENDIX A/2:
 PERCEPTUAL INTERACTION WITH LADINOS**

	N = 60		N = 73		N = 60	
	Sí	No	Sí	No	Per Cent	
1. Aceptaría usted un Ladino como un vecino?	57	3	70	3	95	
2. Le gustaría usted jugar con Ladinos?	53	7	65	7	88	
3. Bailaría usted con un(a) Ladino(a)?	45	15	45	28	75	
4. Aceptaría usted un(a) Ladino(a) como un padrino (una madrina)?	56	4	56	17	93	
5. Sería usted un padrino (una madrina) a un(a) Ladino(a)?	53	7	53	20	88	
6. Caminaría usted con un(a) Ladino(a)?	53	7	53	20	88	
7. Aceptaría usted un(a) Ladino(a) como un yerno (una nuera)?	55	5	68	5	91	
8. Cree usted que es bueno para Naturales casarse con Ladinos?	52	8	65	8	86	
9. Tendría usted un(a) Ladino(a) por comida en su casa?	46	14	57	16	76	
10. Iría usted a una casa de un(a) Ladino(a) por comida si le invita?	56	4	69	4	93	
11. Visitaría usted un(a) Ladino(a)?	58	2	71	2	96	
12. Recibiría usted un(a) Ladino(a) que quiera a visitarle en su casa?	59	1	72	1	98	
13. Trabajaría usted con un(a) Ladino(a)?	59	1	70	3	98	

APPENDIX A/3:
ACTUAL SOCIAL INTERACTION WITH LADINOS

	N = 60		N = 73		N = 60	
					Per Cent	
	Sí	No	Sí	No	Sí	
1. Ha bailado usted con un(a) Ladino(a) ?	<u>17</u>	<u>43</u>	<u>18</u>	<u>55</u>	<u>28</u>	
2. Ha comido usted con un(a) Ladino(a) ?	<u>38</u>	<u>22</u>	<u>48</u>	<u>25</u>	<u>63</u>	
3. Tiene usted un(a) Ladino(a) por yerno o por nuera ?	<u>5</u>	<u>55</u>	<u>6</u>	<u>67</u>	<u>8</u>	
4. Es su esposa(o) Ladina(o) ?	<u>3</u>	<u>57</u>	<u>3</u>	<u>70</u>	<u>5</u>	
5. Ha trabajado usted con un(a) Ladino(a) ?	<u>38</u>	<u>22</u>	<u>47</u>	<u>26</u>	<u>63</u>	
6. Ha tenido usted un(a) Ladino(a) por un(a) padrino (madrina) ?	<u>15</u>	<u>45</u>	<u>15</u>	<u>58</u>	<u>25</u>	
7. Tienen usted sus hijos un(a) padrino (madrina) que es Ladino(a) ?	<u>20</u>	<u>40</u>	<u>20</u>	<u>53</u>	<u>33</u>	
8. Son algunos de sus amigos Ladinos ?	<u>37</u>	<u>23</u>	<u>46</u>	<u>27</u>	<u>62</u>	
9. Ha visitado usted un(a) Ladino(a) en su casa ?	<u>42</u>	<u>18</u>	<u>52</u>	<u>21</u>	<u>70</u>	
10. Ha trabajado usted para un(a) Ladino(a) ?	<u>39</u>	<u>21</u>	<u>49</u>	<u>24</u>	<u>67</u>	

APPENDIX A/4:
ATTITUDE TOWARD EDUCATION

	N = 60		N = 73		N = 60
	Si	No	Si	No	Per Cent
(Si is equivalent to favorable, no to unfavorable)					
1. A. Hijos que asisten a la escuela son industrioso.	60	0	73	0	100
B. Hijos que asisten a la escuela son perezosos.					
2. A. Hijos deben asistir a la escuela para aprender Castellano.	60	0	73	0	100
B. Hijos no deben asistir a la escuela porque Castellano no es necesario.					
3. A. Hijos deben asistir a la escuela porque todo que es aprendido en escuela es útil.	56	4	69	4	93
B. Hijos no deben asistir a la escuela porque es más importante aprender el trabajo de sus padres.					
4. A. Hijos deben asistir a la escuela para aprender aritmética.	56	4	69	4	93
B. Hijos no deben asistir a la escuela si sus padres les necesitan en casa.					
5. A. Hijos deben asistir a la escuela para aprender a leer y a escribir Castellano.	60	0	73	0	100
B. Hijos no deben perder tiempo en escuela porque escuela no es útil.					
6. A. Hijos deben asistir a la escuela para aprender a leer y a escribir Castellano.	54	6	57	6	90
B. Hijos no deben asistir a la escuela sino quedarse en casa y ayudar sus madres.					
7. A. La mayor parte de materia (o cosas) que hijos aprenden en la escuela es útil.	60	0	73	0	100

	N=60		N=73		N=60	
	Sí	No	Sí	No	Per Cent	
					Sí	
B. Poco de lo que hijos aprenden en la escuela es útil.						
8. A. Hijos e hijas deben asistir a la escuela solo si ellos no son necesitados en casa.	<u>48</u>	<u>12</u>	<u>59</u>	<u>14</u>	<u>80</u>	
B. Hijos e hijas deben asistir a la escuela aun si ellos son necesitados en casa.						
9. A. Hijos e hijas deben asistir al colegio aunque el colegio es demasiado caro.	<u>30</u>	<u>30</u>	<u>41</u>	<u>32</u>	<u>50</u>	
B. Hijos e hijas no deben asistir al colegio porque colegio está tan caro.						
10. A. Hijos e hijas no deben asistir al colegio porque el colegio los hará como Ladinos.	<u>39</u>	<u>21</u>	<u>49</u>	<u>24</u>	<u>65</u>	
B. Hijos e hijas deben asistir al colegio para aprender a llegar a ser Ladinos.						
11. A. Hijos e hijas no deben asistir a la escuela porque ellos volverán las espaldas a los Naturales.	<u>51</u>	<u>9</u>	<u>62</u>	<u>11</u>	<u>85</u>	
B. Hijos e hijas deben asistir a la escuela para aprender como ayudar los Naturales.						
12. A. Hijos e hijas deben asistir a la escuela para aprender como conseguir trabajos buenos.	<u>55</u>	<u>5</u>	<u>68</u>	<u>5</u>	<u>91</u>	
B. Hijos e hijas no deben asistir a la escuela no les ayuda a conseguir trabajos buenos.						

APPENDIX A/5:

FATALISM

	N = 60		N = 73		N = 60	
	Si	No	Si	No	Per Cent	
1. Buena suerte es más importante que mucho trabajo para ganarse la vida.	44	16	57	16	73	
2. El porvenir es por Dios a decir.	56	4	69	4	93	
3. La gente que tienen mala suerte pueden a censurar (castigar) solo ellos mismos.	21	39	31	42	35	
4. Un hombre tiene buena suerte porque el vive correctamente.	59	1	72	2	98	
5. Durante tiempos malos una persona debe buscar a Dios por ayuda.	60	0	73	0	100	
6. Es posible por una persona perder su suerte, pero hay nada una persona puede hacer para cambiar su suerte.	51	9	60	13	85	
7. Una persona que se conduce mal será castigada con enfermedad.	53	8	65	8	87	
8. La persona que trabaja bastante puede hacer casi algo (todo).	58	2	71	3	97	
9. El porvenir depende más de varón que suerte o Dios.	2	58	2	71	3	
10. Una persona debe buscar su suerte por mucho trabajo e inteligencia.	56	4	65	8	93	

**APPENDIX A/6:
EXTERNAL EXPOSURE**

	N=60		N=73		N=60
	Sí	No	Sí	No	Per Cent
1. Ha visitado usted pueblos otros? Si sí, cuáles? (three or more equivalent to yes, less than three, equivalent to no)	<u>53</u>	<u>7</u>	<u>65</u>	<u>8</u>	<u>87</u>
2. Ha leído usted un diario durante el mes pasado?	<u>12</u>	<u>48</u>	<u>17</u>	<u>56</u>	<u>20</u>
3. Ha leído usted un diario durante los tres meses pasados?	<u>12</u>	<u>48</u>	<u>17</u>	<u>56</u>	<u>20</u>
4. Ha leído usted una revista durante el mes pasado?	<u>10</u>	<u>50</u>	<u>14</u>	<u>59</u>	<u>17</u>
5. Ha leído usted una revista durante los tres meses pasados?	<u>13</u>	<u>57</u>	<u>18</u>	<u>55</u>	<u>22</u>
6. Ha escuchado usted las noticias en un radio durante el mes pasado?	<u>33</u>	<u>27</u>	<u>43</u>	<u>30</u>	<u>55</u>
7. Ha escuchado usted las noticias en un radio durante los tres meses pasados?	<u>34</u>	<u>26</u>	<u>44</u>	<u>29</u>	<u>57</u>
8. Ha servido usted en ejército (excluyendo San Pedro)?	<u>34</u>	<u>26</u>	<u>44</u>	<u>29</u>	<u>57</u>

**APPENDIX A/7:
SATISFACTION WITH LEVEL OF LIVING**

	N=60		N=73		N=60
	Sí	No	Sí	No	Per Cent
1. Está la gente de San Juan feliz?	55	5	66	7	90
2. Es la gente de San Juan demasiado pobre?	58	2	71	2	3
3. Quiere usted que más Ladinos vivan en San Juan?	(Sí = dissatisfied)				
	53	7	66	7	89
4. Quiere usted que más Naturales vivan en San Juan?	(Sí = dissatisfied)				
	58	2	70	3	97
5. Hay bastante trabajo por casi todo de la gente para ganarse la vida buena?	(Sí = dissatisfied)				
	22	38	29	44	37
6. Tratan los Naturales en San Juan igual a Ladinos?	19	41	28	45	32
7. Tienen los Naturales bastante dirección política sobre sus propias vidas?	0	60	0	73	0
8. Necesitan los Naturales más educación?	(Sí = dissatisfied)				
	59	1	72	1	98
9. Necesitan los Naturales de San Juan más postes (cargos) de autoridades?	(Sí = dissatisfied)				
	58	2	63	10	97
10. Necesita la gente mejores casas?	(Sí = dissatisfied)				
	60	0	73	0	100
11. Habla la gente de San Juan bastante Castellano?	10	50	17	56	17
12. Tienen los Naturales bastante posesiones materiales (por ejemplo, ropa, comida, mueble, radios)?	5	55	5	68	8
13. Necesita San Juan mejores escuelas?	(Sí = dissatisfied)				
	59	1	72	1	98

**APPENDIX A/8:
SCHOOL ATTENDANCE**

	N=60		N=73		N=60 Per Cent		
	Si	No	Si	No	Si		
1. Number of informants who went to school (From Part A/1 of Interview Schedule)	<u>49</u>	<u>11</u>	<u>61</u>	<u>12</u>	<u>82</u>		
2. Reason for not continuing in school.	1	2	3	1	2	3	
1= did not like school	<u>3</u>	<u>49</u>	<u>8</u>	<u>4</u>	<u>55</u>	<u>14</u>	<u>5</u>
2= too poor							
3= no higher grades available.							

**APPENDIX A/9:
INNOVATION
(From Part A/1 of Interview Schedule)**

	N= 60		N= 73		N=60 Per Cent		
	1	0	1	0	1		
1. Dress (1= modern [including mixed], 0= typical)	<u>29</u>	<u>31</u>	<u>39</u>	<u>34</u>	<u>48</u>		
2. Shoes (1= shoes, 0= barefoot)	<u>24</u>	<u>36</u>	<u>34</u>	<u>39</u>	<u>40</u>		
3. Spanish (1= speak, 0= lengua only)	<u>52</u>	<u>8</u>	<u>63</u>	<u>10</u>	<u>87</u>		
4. Excusado (1= have, 0= do not have)	<u>2</u>	<u>52</u>	<u>4</u>	<u>69</u>	<u>3</u>		
5. Agua de chorro (1= have, 0= do not have)	<u>8</u>	<u>52</u>	<u>10</u>	<u>63</u>	<u>13</u>		
6. Lámina (1= have, 0= do not have)	<u>21</u>	<u>39</u>	<u>26</u>	<u>47</u>	<u>35</u>		
7. Cement floor (1= have, 0= do not have)	<u>3</u>	<u>57</u>	<u>4</u>	<u>69</u>	<u>5</u>		
8. Married in Church (1= yes, 0= no)	<u>51</u>	<u>8</u>	<u>61</u>	<u>11</u>	<u>85</u>		

**APPENDIX B:
HISTORY OF THE SCHOOL
IN TERMS OF WHEN GRADES WERE ADDED**

DATE	GRADE
Before 1939	No grades, just a school
1939	First Grade
1940	Second Grade
1952	Third Grade
1960	Fourth Grade
1964	Fifth Grade
1967	Sixth Grade

**APPENDIX C:
CORRELATION MATRIX**

		GRADE	ECONOMIC STATUS	INNOVATION	SATISFACTION	PERCEPTUAL LADINO INTERACTION	ATTITUDE TOWARD EDUCATION	FATALISM	AGE	TOTAL EXPOSURE INDEX	ACTUAL SOCIAL INTERACTION WITH LADINOS
EXPOSURE	P	.52	.15	.63	.03	.16	.03	.02	-.40	.80	.43
	K	.42	.17	.58	.00	.12	-.01	-.01	-.34	.65	.34
	S	.49	.21	.65	-.00	.15	-.02	-.01	-.42	.77	.43
GRADE	P		-.16	.52	.01	.05	.23	-.22	-.55	.70	.28
	K		-.11	.45	-.00	-.06	.16	-.18	-.49	.59	.26
	S		-.15	.51	-.00	-.08	.18	-.20	-.57	.71	.30
ECONOMIC STATUS	P			.30	.28	.00	-.21	.03	.15	.01	.02
	K			.24	.20	.04	-.11	.03	.11	.04	.04
	S			.30	.27	.04	-.15	.04	.15	.04	.05
INNOVATION	P				.24	.05	-.10	.14	-.29	.65	.40
	K				.22	.05	-.02	.13	-.27	.56	.37
	S				.25	.06	-.01	.14	-.35	.68	.49
SATISFACTION	P					-.15	-.14	.04	.10	.08	.11
	K					-.04	-.14	.07	.04	.03	.09
	S					-.04	-.17	.08	.04	.03	.11
PERCEPTUAL SOCIAL INTERACTION WITH LADINOS	P						.25	-.04	-.01	.31	.42
	K						.08	-.02	-.04	.17	.31
	S						.09	-.02	-.05	.21	.35
ATTITUDE TOWARD EDUCATION	P							-.08	.13	.17	.13
	K							-.11	.08	.07	.01
	S							-.12	.11	.09	.02
FATALISM	P								.27	-.05	.04
	K								.18	-.03	.05
	S								.21	-.03	.06
AGE	P									-.39	-.07
	K									-.30	-.07
	S									-.38	-.07
TOTAL EXPOSURE INDEX	P										.81
	K										.69
	S										.82

P : Pearson Correlation Coefficients, with N = 60. .21 is significant at the .05 level.
 K : Kendall Correlation Coefficients, with N = 60. .14 is significant at the .05 level.
 S : Spearman Correlation Coefficients, with N = 60. .21 is significant at the .05 level.

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