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# SAN ANTONIO CORNEJO, GUATEMALA:
# A STUDY OF LIMITED HOUSING ASSISTANCE TO A COMMUNITY

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This study was conducted in December 1976 and January 1977 for INTERTECT as one part of a series of case studies, interviews and reports being prepared for the United Nations Disaster Relief Office (UNDRO) to help determine the role and effect of emergency shelter following disasters. San Antonio Cornejo was selected because housing reconstruction aid was received after the community's initial response to reconstruction following the earthquakes of February 1976.

It is hoped that the study can be of help in understanding disaster victims' response to the need for shelter in the absence of aid, as well as their reaction to a variety of forms of aid received or offered after their initial response.

The study is divided into the following parts:

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## San Antonio Before the Earthquake

### A. Social Realities

San Antonio Cornejo has a somewhat unusual history in that it was formed only in 1955, when the owner of a finca (large farm) lost part of her land by default to the national government, and the latter turned the farm over to its resident workers (called colonos). The fifty-two families each received a four and 3/4 manzana parcel (about eight acres) with a registered title from the government.

San Antonio thus became an agricultural settlement falling under the administration of the municipality of San Martín Jilotepeque (population 33,000), eleven kilometers distant over a country road. However, because it was so remote[1] and dedicated mainly to subsistence farming, San Antonio experienced little contact with the municipality or any other part of Guatemala's mainstream society.

Most of the colonos who were given land were Indians of Mayan descent who spoke a native first language (Cakchiquel) and used traditional styles of dress. There were also some ladinos, people of mixed ethnic background who distinguish themselves from the Indians by their lack of native custom.[2] In both cases, they were landless peasants whose families had come from other more established villages in the past. For this reason, San Antonio lacked the strong sense of village identity known to other communities in the region.

The villagers today say they were given the poorest land on the finca; it is hilly, rutted with gullies, and the soil is loose and rocky. Nevertheless, the families made their homes on their parcels, growing corn for subsistence. The houses were separated from each other by distance and rough terrain. For many years there was no school, church, or any other structure or area common to the inhabitants.

The four or five years prior to the 1976 disaster were marked by two distinct historical trends: first, increasing contact with the mainstream society; and second, increasing population and concommitant decrease of land resources.

During this period, San Antonio received its first elementary school and public water supply from the national government. The Parish in San Martín had planned to aid the village with funds for the construction of a village chapel, which was to begin in 1976.[3] The village also received visits from the representatives of various development organizations operating in the San Martín

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1. Two-and-one-half hour walk; no public transport.
2. See ratio of Indians to ladinos in survey, Question 2, Appendix 1.
3. The project was cancelled after the earthquake due to poor location vis-a-vis quake danger.

area.[4] These agents have had some effect in creating credit-consciousness and fertilizer use, convincing the inhabitants to join rural associations, and enlightening them about resources and markets outside the village. At the same time, some of the younger inhabitants began periodic migrations to San Martín, finding temporary salaried jobs there and/or beyond, in the military service or on coastal plantations.[5]

As a result, San Antonio became more integrated into the mainstream society and more cohesive as a village unit. However, during the same period, new problems were being created. The original fifty-two families had grown to sixty-four by 1976, meaning that the average family had less land than it did in 1955. Even if fertilizer was used, the steep slope of the land, the villagers' ignorance of soil conservation or crop-rotation techniques, and their remoteness from the market, all acted to keep production from rising significantly on such small parcels. Also, prices of agricultural inputs and basic goods produced outside of the village rose sharply in the same years.

The net result was that San Antonio Cornejo before the earthquake was still an extremely poor, remote, unorganized village.

B. Construction of Houses and Their Characteristics

Almost all of the houses in San Antonio Cornejo were built after the 1955 land grant, as the families began to establish themselves on their parcels. Out of fourteen families selected in a random survey, ten had built their houses themselves, with no help from a qualified builder.[6] Most of these were made with rough-hewn wooden posts and tile roofs, with either wood boards or caña (corn or sugar cane stalks) for walls. Some of the younger inhabitants had built their houses with adobe walls and tile roofs. These were larger; more costly; often involved the payment of an albañil (experienced builder not necessarily licensed); and were generally considered more luxurious.

As is traditional in other rural areas of Guatemala, most houses had only one room, which served not only as a sleeping-place, but also as a storage-place for corn and other agricultural products. Most families had an extra hut apart from the main house for cooking and eating.

The general pattern of new construction was for the father to give a plot of land to each of his sons once they married; family resources would then be united to pay for the materials, and all the sons would put in the labor. Building materials were obtained one by one, according to what was available and affordable. For wood, the family often bought a pine tree from the finca and arranged for the chopping and sawing themselves. Prices varied from $20-$50 for the tree, and the lumbering cost the salary of 2-4 men at $1.00 per day. The

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4. These included World Neighbors (USA), CARITAS (a Catholic relief agency), Fundación del Centavo (rural development agency with support from U.S.A.I.D.), and two rural cooperatives.

5. More than 300,00 highlands peasants migrate to the coast for 1-4 months every year to harvest coffee, cotton or sugar cane.

6. See Question 6, Appendix 1.

total cost for wood thus ranged from $25 to $125, depending on the size of the house. Tiles were also purchased from the finca, where they were made, at $25 per 1,000. (Roofs in San Antonio used from 500-2,000 tiles.) The walls would be made with sugar cane stalks, if they were available, or corn stalks. The entire house could be built for as little as $50.[7]

In general, the house was not budgeted in advance according to anticipated cost. Instead, construction proceeded as finances became available. If a family could not meet the asking price for a tree, for example, they would hold off on construction until the total amount could be earned, either through the sale of surplus agricultural goods or through agricultural labor on the fincas.

Houses were built during the dry season (November to May) which coincided with the interim between corn harvesting and planting. If more than one house was going up at the same season, the neighbors might work together in a traditional collective work unit called "Kuchuba'l", first finishing one, then the other. This was apparently more common in generations past when people made roofs of paja, or straw, which was a more labor-intensive process.

In all cases, the individual family who was to occupy the house took primary responsibility for design and construction. However, in the case of adobe houses, most families required the guidance of an albañil. The albañil would oversee and carry out the construction of adobe bricks and the mounting of the roof. He would either be paid by the day (at $1.50/day prior to the earthquake) or by including his fee in the cost of the bricks (at $50 per thousand). The bricks were generally made on the site, requiring dense earth and abundant water. These two requirements limited the production of adobe to sites near the public water supply where the earth is also, conveniently, dense. The cost of an adobe, tile and wood house, including salary of the albañil, ranged from $250 to $1,000.

A large adobe and tile house with plastered walls was preferred for several reasons:

1. non-susceptibility to rot;
2. good insulation;
3. fire resistance;
4. an appearance of permanence and respectability (most fincas in the region had had large adobe and tile houses for their owners since the seventeenth century).

These were considered "formal" houses by the villagers. Out of the fourteen families in the survey, two had built such houses within the past three years. Another was in progress when the major earthquake struck on February 4, 1976. However, the cost of such a house was prohibitive for a majority of the inhabitants.

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7. See Question 8, Appendix 1.

## Initial Response to the Disaster

### A. Villagers' Unaided Response

The worst of a series of earthquakes hit on February 4, 1976, with so much force that it knocked down most of the wooden-post houses as well as the vulnerable adobe. The heavy tiles on both types of dwelling slipped and fell to the ground. The falling objects left six people dead and a score injured.

The tremors continued at varying degrees of strength for nearly two months, thereby keeping the fear alive. Nevertheless, the villagers responded rapidly. Within twenty-four hours, most of the residents had put up emergency shelters using grass, tree branches, bits of nylon and plastic, and wood salvaged from their destroyed houses. In some cases the houses had not fallen completely, but because of the continuing tremors, the families were afraid to re-enter.

Several families moved away from their sites for this reason, or because their houses were on steep hillsides now vulnerable to landslides. When they were members of the same extended family, they grouped together under a common shelter.

The first few days were spent improving the shelters, salvaging possessions from the rubble, and caring for the dead and injured. The dead were buried immediately by family members, almost without ceremony. Those with broken limbs could not be cared for in the village, and the families planned to take them to the health post in town.

The village's deputy mayor played an important role in coordinating this activity. He had gone into town on the first day, returning later that night with the following news: (1) an emergency committee should be formed to coordinate internal and external relief; and (2) since the damage was even worse in town, a group of villagers should go and help with the emergency operations there.[8]

The deputy mayor formed an emergency committee that night, choosing four of his neighbors. The first thing they did was to conduct a survey of the damage, listing it in a notebook to be presented to the municipality. Meanwhile, they checked to see that any orphans were taken care of.[9] Next, the committee members and other volunteers grouped ten of the most seriously-injured and carried them into town.

In San Martín, the group from San Antonio was enlisted along with other rural inhabitants to help carry corpses and emergency supplies for the townspeople. They worked for three or four days in town, expecting to receive emergency supplies for their own village in return, as promised by the mayor. However, when they left town, they were given only a small package of supplies[10] each and told that no more were available.

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8. Three thousand dead and six thousand injured -- one of the hardest hit communities in Guatemala.

9. In every case, the orphans had already been taken in by the extended family or neighboring families.

10. Flour, beans, powdered milk.

Meanwhile, the villagers in San Antonio had seen a number of helicopters flying overhead and were hoping that they would land to bring emergency supplies directly. None of them landed, however; and, according to the villagers' reports, no emergency supplies came to San Antonio thereafter.

According to the survey taken in December, the residents at first did not expect any help. Apparently, they decided they should get it when they discovered that other communities were receiving aid. Many had lost warm clothing, blankets, etc., plus food supplies (corn, animals) in the earthquake and felt that any help would be useful. The fact that they were promised aid in town and never received it made them especially bitter towards the municipality. At that time, they were not aware that some relief agencies were planning to distribute roofing and provide other reconstruction aid.

The villagers thus proceeded with reconstruction on their own. Out of the fourteen families surveyed in December, nine had already rebuilt their houses within a month and a half of the disaster. The remainder rebuilt theirs in the next month and a half.[11]

Because of the newly-recognized unsuitability of steep slopes for housing sites, some of the families moved to new sites to rebuild. In at least one case, three related families which had formerly been separated moved closer together for a combination of reasons, including the unsuitability of old sites, the newly-induced fear of isolation, and the practicality of rebuilding together.

The rebuilding was done in the traditional fashion, with individual families taking the responsibility. In general, there was more organized cooperation among those who lived close together. Three of the respondents in the survey said that they rebuilt as part of a Kuchuba'l, i.e., in cooperation with other families. The others rebuilt individually, using the help of neighbors or of relatives only for certain minor tasks which required their assistance.

Those who had lived in wood, caña and tile houses rebuilt with the same materials. In most cases, one-third or more of the tiles had broken, and several of the timbers were split, meaning that the house could not be as large as before. In addition, efforts were made to fortify the houses. More wood was used to support the roof, and the corner posts were sunk more deeply into the ground. In later interviews, the villagers revealed that they were aware of the danger of tile as a roofing material. Recognizing this fact, some of the inhabitants rebuilt their houses with cane-grass thatch roofs (using the tops of sugar cane in a woven pattern). However, others indicated that they did not see any economic alternative beyond using the already-existing materials. At that time, there was no lamina (corrugated galvanized iron sheeting), either new or old, available in San Antonio.

Those who had lived in adobe houses were in a worse position. The adobes had crumbled in the earthquake and the inhabitants of those houses were afraid to rebuild with new bricks. A new investment in housing materials was needed. Eventually, these families also rebuilt following the traditional model -- wood corner posts and caña walls, but using roofing other than tile. The roofing dilemma was solved by the importation of lamina to the area.

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11. See Question 11, Appendix 1.

The December survey revealed an uncertainty in the minds of the villagers over the possible longevity of the houses they had put up in the early months following the disaster. While most of them did not consider the houses to be "permanent", i.e., a final solution, it is clear that during that time period they saw no alternative other than to reconstruct with what they had, in the strongest, safest and most permanent way possible.

The dilemma, as they expressed it, was an economic one: how could they build a larger, safer, more permanent house without having more money? It is unclear from the data available eleven months later how they intended to build a better house at that time if they had had the money. Presumably, they might have made their houses larger by using more wood; but this would not have solved the problem of being safe from earthquake destruction. In this regard, they could have used materials such as concrete blocks and steel reinforcements, but these materials were not known to them and, in any case, would have been beyond their financial capabilities. Even the alternatives for roofing were unknown. Some had seen lamina roofs in San Martín or elsewhere in Guatemala; but, in general, they were not familiar with it and its advantages with regard to earthquake resistant construction techniques.

In conclusion, it seems that both the lack of money and the lack of technical knowledge prevented the villagers from rebuilding larger, safer and more permanent houses. But the first limitation was so great that they did not even consider the second. They had responded in the traditional fashion -- each family constructing according to what was both available and affordable.

## B. The Search for Aid

While most of the inhabitants of San Antonio were rebuilding under the assumption that no aid would be received, the deputy mayor was looking for aid from outside groups. Having been to San Martín (and passing through neighboring villages), he was aware that a number of outside agencies were operating in the area, offering first emergency supplies and later building materials and even complete houses.

In the first few weeks following the earthquake, the deputy mayor sought emergency supplies from the military in San Martín (they were distributing supplies which had come in from other countries as well as internal supplies). Failing a positive response, he went directly to the capital city (two hours or more by bus from San Martín). At the offices of CARITAS, he looked up a person whose name he had been given by a friend from another village.

By mid-March, CARITAS had worked out a food-for-work plan with the villagers through the deputy mayor. They would work in groups of five in the fields, or on road repair for a minimum of 10 days per month.[12] In exchange, they would each be given 114 pounds of surplus food.[13] Ten groups of five joined the project for four months, until it was ended abruptly when CARITAS made its aid conditional on a weekly work report for each member. The CARITAS official coordinating this aid through San Martín stated in December that the deputy mayor had been taking extra food for himself.

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12. A number of landslides had cut off the road to San Antonio from San Martín.

13. Flour, beans and powdered milk.

The deputy mayor had also looked for housing reconstruction aid during this period. He had contacted CARITAS officials about this, seeing that they were donating houses to a large town closer to Guatemala City. He was told that CARITAS did not plan to aid in the reconstruction of the San Martín area because other institutions were already operating there.[14] However, according to the deputy mayor, they said they might find a way to do so if a group of twenty families or more could be united in San Antonio. The plan was apparently to provide an all-wood house in the style that the owner desired, with the $600 cost split by the owner and CARITAS. The deputy mayor tried to interest the villagers in this plan, but could only find four or five that would join him. Failing to find the necessary number of participants, he could not go through with the plan.

He had heard within three weeks of the disaster that the OXFAM/World Neighbors-supported Programa Kuchuba'l[15] had begun to distribute lamina at a subsidized price to all the inhabitants of the San Martín area. This fact he had passed on to the villagers by word-of-mouth ( no formal announcement). However, very few of them took advantage of the offer at that time. The villagers have since indicated that they had considered it beyond their means to pay $36 (each family had a maximum purchase of ten sheets of lamina at $3.60 per sheet) and carry the load home on their backs.

While the deputy mayor was searching for aid, a number of villagers, following a yearly custom, migrated to the coastal plantations for 30-45 days to earn money for debt payments.[16] Upon their return in late April or early May, the migrants found that San Antonio residents had been provided with a one-year loan so that they might purchase lamina from Programa Kuchuba'l. The loan was provided by a nun from the United States[17] who was living in the San Martín area and had decided to help rural inhabitants who could not afford to purchase the lamina outright.

Using donations from church sources in the U.S., she set up the loans in several remote villages. One of the first villages selected was across a canyon from San Antonio, where some of the San Antonio villagers had relatives and friends. These had apparently passed the word on to the nun that San Antonio had received no lamina. Subsequently the loan was set up, with the deputy mayor as intermediary in his capacity as president of the emergency committee. Individual families were to repay the loan over one year at the rate of $3.00 per month.

The deputy mayor informed the residents about the loan in late April, and a group of them went with him to San Martín to obtain their lamina from Programa Kuchuba'l. For an additional $1.75 each, the group hired a truck to take their roofing back to San Antonio.[18]

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14. Relief agencies had "adopted" certain areas at the suggestion of the National Reconstruction Committee.

15. Named after the Cakchiquel term mentioned earlier, meaning working together.

16. These were repayments to co-ops and other rural credit institutions for the previous season's fertilizer. The villagers needed fertilizer credit for the new season beginning in May and felt they could not obtain it without repaying their past debts. Many credit institutions had extended the payment period after the earthquake, but this fact was evidently not known in San Antonio.

17. Mother Anthony, who apparently received donations from San Francisco, Calif.

18. Those still working on the coast missed the transport arrangement and carried the lamina on their backs.

Although a few residents had already purchased lamina on their own, the loan seems to have been the key factor in awakening the interest of the majority. One hundred percent of the fourteen families surveyed in the study said they had purchased lamina from Programa Kuchuba'l. Eleven of the fourteen had done so through the loan from the nun.[19]

Interestingly, only ten of the fourteen families surveyed in December were using lamina as roofing at the time of the survey. Seven of these used it only as partial roofing, in conjunction with tile (the lamina covered the kitchen area or a second room). The remainder had either stored the lamina for use at a later time, or had used it as walls or as shelters for farm animals.

In retrospect, the villagers seem to have been uncertain at that time about the value of lamina as a complete solution to the problem of unsafe roofing. It was clear to them that lamina had the advantage of being light and easily transported. However, many have commented since on its disadvantages, mainly its poor insulation capability and its tendency towards condensation. Perhaps, in addition, they were not ready to concede that tile was an unusable roofing material.

In any case, their interested approach to the offer of lamina on favorable, pre-arranged terms illustrates their continued response in the traditional pattern, each family designing and rebuilding on its own, using whatever was available and within economic reach. What was changing was the design of the house, influenced by new factors which the inhabitants of San Antonio had never before considered: first, the earthquake; and second, outside aid. The impact of the latter on both housing patterns and social realities is discussed below.

## Reconstruction Aid from Outside Groups

Guatemala's National Reconstruction Committee announced in May 1976 a plan to establish a network of local reconstruction committees throughout the affected areas, with the goal of improving coordination and making reconstruction concommitant with national development. Such committees were to be set up at the departmental, municipal and village levels by social workers, health workers, and other governmental agents.

A delegate from San Martín's health post went to San Antonio in June to inform the residents that it was the government's will that they should form a reconstruction committee in their village. The community held a vote on the spot, electing nine members, three of which had been on the deputy mayor's emergency committee formed on the fourth of February. The deputy mayor himself was not elected.

The Committee's function was to oversee the reconstruction process and to represent the community in dealing with any institution which might provide them with reconstruction aid. The Committee's president was to attend meetings in San Martín for delegates of all the rural reconstruction committees. At these meetings, announcements would be made about various agencies which were able and willing to provide reconstruction aid.

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19. See Questions 16 and 17, Appendix 1.

In practice the meetings did not begin until November (after the rainy season). By that time, many organizations already had their reconstruction plans in operation. Those which offered or extended housing reconstruction aid to San Antonio residents are listed below:

A. CARE (U.S.A.): CARE's policy for reconstruction assistance to the rural areas of San Martín was to donate, free of charge, up to ten sheets of lamina to orphans, widows and families who for any reason had less than ten sheets of lamina in their possession. A condition for the gift was that each family receiving lamina build a wood frame reinforced with cross-braces.

When CARE later began its reconstruction program in the area, San Antonio was not on the list. A CARE extensionist said in January 1977 that San Antonio was neglected until residents of a nearby village receiving aid from CARE informed them of the lack of aid in San Antonio and other small communities in the region. They then contacted the president of San Antonio's Reconstruction Committee, who confirmed the report.[20]

According to the deputy mayor, nine families received CARE lamina in San Antonio. However, the required cross-braced structures were not evident in San Antonio at the time of this survey in December. Speculation on the part of the CARE extensionist is that the families put up the structures in order to receive the lamina, then promptly took them down.[21]

B. Cooperatives and Credit Agencies: Both of the region's peasant cooperatives -- Kato-Ki (supported by OXFAM/World Neighbors) and Flor Chimalteca (supported by U.S.A.I.D.) -- are represented in San Antonio with 16 and 19 members respectively. The Kato-Ki announced its plan for housing loans in July; Flor Chimalteca was initiating a similar plan at the time of the study. The loans were to be separate from agricultural loans, available in any amount, and given at favorable terms (4% annual interest for fifteen years).

Two other rural credit agencies -- the Fundación del Centavo (also with U.S.A.I.D. support) and BANDESA (the National Agricultural Development Bank) -- made housing loans available in 1976. The Fundación del Centavo offered loans to members of peasant groups which had previously obtained fertilizer on credit from the Fundación. The amounts were generally small, with a short repayment period. BANDESA did not in principle restrict its loans to anyone. The terms were roughly the same as those of the cooperatives, although the requirements differed.

The survey of randomly-selected inhabitants in San Antonio showed two residents had used loans from the Fundación del Centavo at $25 and $50 respectively.[22] None of the respondents had used loans from any of the other agencies mentioned above. One resident who was not in the random selection reported that he had

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20. See list of interviews, Appendix 2.

21. Possibly with the intention of using the lamina for a larger house common to the extended family.

22. See Question 17, Appendix 1.

applied for a loan in the amount of $500 from BANDESA, but only received $100. To get the loan, he made several trips to the departmental capital (Chimaltenango) where the bank was located, and spent much time and money preparing a complicated list of legal requirements. He was partially successful only because he was literate and could afford (but only barely) to spend time away from agricultural or wage-earning work.

San Antonio residents say they are interested in the loans, although the majority had not taken advantage of them for two reasons: (1) they were afraid to take on the extra debt; or (2) they did not have the registered land title which is required as a mortgage.[23]

C. U.S. Agency for International Development (U.S.A.I.D.): In November 1976, this agency began selling lamina and wooden posts at a subsidized price through the Flor Chimalteca cooperative in San Martín. Sales were not restricted to the membership. One of the respondents in this survey reported having purchased lamina from this source.[24] A few other residents had purchased posts as well. However, transport to the village remains a problem. In addition, one villager pointed out that the U.S.A.I.D. lamina was shorter in length than the lamina which most had purchased already from Programa Kuchuba'l. This was a limitation for those who needed more lamina for the same roof.[25]

D. Programa Kuchuba'l: This program's sponsors -- OXFAM (U.K., U.S.A.) and World Neighbors (U.S.A.) -- signed an act of commitment with Guatemala's National Emergency Committee in February 1976, pledging to aid the rural areas of San Martín. (The two had been working together in rural development in the area since 1971.) Their plan was, first, to supply lamina at a subsidized price before the arrival of the rainy season; and second, to launch an educational program aimed at the construction of low-cost, earthquake resistant houses. The educational component of Programa Kuchuba'l included the construction of model houses with locally-available materials; instruction in earthquake resistant construction techniques by World Neighbors extensionists using Kuchuba'l's own educational materials; and a builder's apprentice program.

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23. This is often the case with subdivided lands because the registration process is costly and extremely time-consuming. According to Kato-Ki spokesmen, for loans under $1,000, a photocopy of an excritura publica (unregistered title supplied by municipal government) is enough to qualify. This regulation does not seem to be yet well understood by many of the members.

24. See Question 16, Appendix 1.

25. Of greater importance to the villagers was U.S.A.I.D.'s positive answer to their request (through San Martín Reconstruction Committee) for a new school in their village. U.S.A.I.D. reportedly plans to donate a "Butler Building" (pre-fabricated wood-and-aluminum structure imported from the U.S.) as soon as the superintendent of schools approves San Antonio's request for a site change.

Although there was no model house planned for San Antonio and no classes given there, one of World Neighbors' agricultural extensionists informed the Kuchuba'l field director that San Antonio had been neglected. He traveled to the village in late November and gave a class in earthquake resistant construction techniques to ten residents. The Kuchuba'l representative also helped the deputy mayor begin construction on a house using such techniques. By his own choice, the house was to serve as a model for the rest of the village. A number of pamphlets were passed out illustrating the techniques.

The house was nearly complete at the time of this study. It was made according to Kuchuba'l's recommendations, with a lamina roof, non-load-bearing walls of adobe bricks placed on their sides to make for less weight, and cross-brace reinforcements of wood and barbed wire. The wood was treated with creosote to make it last. The community's reaction to this design will be discussed later.

E. Red Cross: The Guatemalan Red Cross (with international donations) has built a number of pre-fabricated wood houses in the country, varying the conditions for their delivery somewhat from town to town. Conditions for the donation in the villages of San Martín were set by the town's reconstruction committee as follows: There were to be only a pre-set number of houses built in each village; the reconstruction committee of San Martín would decide who was eligible for a house after surveying each village; the recipients would be required to pay $6.00 for the house plus six days of labor, as well as cover the transport cost to their site. They would also have to show a copy of their registered land title.

At a meeting in mid-November, San Antonio's representative to the San Martín reconstruction committee was informed that fourteen houses were available for San Antonio. It was subsequently decided that the fourteen should go to all the members of the San Antonio reconstruction committee, the deputy mayor and his assistant, and three others to fill out the total. The residents of San Antonio had no part in this decision. Many of them were influenced by a rumor that the houses would cost $100 apiece.

At the time of this study in late December, none of the eligible parties had opted for the house because either (1) they could not produce a registered land title, or (2) they did not feel that the house was worth it for the price, or (3) they did not like the fact that the selection was made according to office rather than economic situation.

## Community Attitudes and Continued Response

The villagers' response to the various forms of reconstruction aid mentioned above demonstrates their continued reluctance to accept outside aid unless and until they were shown that it could be of benefit to them without causing economic difficulty.

Offers of loans, low-priced houses, and subsidized building materials failed to interest the majority except when they were made extremely accessible, i.e., when CARE brought lamina to the village and when the Fundación del Centavo offered $25 and $50 loans at low interest.

Educational aid on the part of Programa Kuchuba'l generated a strong interest in a short time. The deputy mayor reported that during the month he was building his house, he had daily visitors who were curious to see how it was done. Twelve out of the fourteen respondents in the survey (conducted as the house was being completed) said that they had seen the house. Two of them, or half of those who planned to rebuild a "formal" house in the 1976-77 dry season, said they were going to build according to the design of the model. Two others said they would eventually incorporate some of the earthquake resistant construction principles as they rebuild in the future.[26]

In general, there was a great deal of comment about the house during the time of the study. The villagers reacted favorably to it for three reasons:

1. It made sense to people. They seemed to understand the house's aseismic principles without difficulty.
2. They liked the house's looks and its innovations. It fit their cultural stereotype of what a "formal" house should be, yet it solved the dilemma of reconstruction with adobe because of its innovations.
3. It was the most realistic approach they knew of, given the limitations of money and materials and the desire for a better house.

Despite their favorable reaction, a majority of the villagers will still be unable to build such a house in the immediate future. As was noted above, only four out of the fourteen respondents in the survey said they would rebuild during the 1976-77 season. Five said that they planned to rebuild but would have to wait several years before they could accumulate the money. Five respondents (more than one-third of the total) said they had no plans for further reconstruction of any kind. The reason, in four of those cases, was that they were "too poor" to afford a better home.[27]

The economic problem is a reality. A house such as the one built by the deputy mayor would cost between three and five hundred dollars -- even more if it were larger than one room. At incomes of under one hundred dollars per year,[28] it would obviously take several years to rebuild unless credit were obtained. But increased debt is not attractive to many of the residents, who are already plagued with continual debt on agricultural loans and inflating prices of agricultural inputs, transportation and basic goods.

However, the villagers' ability to build a safer house was not determined only by economic realities. As an extensionist from Programa Kuchuba'l has pointed out,[29] acceptance and use of the innovations the program has proposed was greater in villages whose residents were already organized to make improvements in agriculture and nutrition. Innovations in housing, like innovations in other elements of daily life, were facilitated by a shared sense of priorities and possibilities in these communities. Thus, in such villages, even those who could not afford to build a "formal" house were reinforcing their houses with wood or wire cross-braces because they considered safety to be a high priority problem with available solutions.

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26, 27. See Questions 18 and 19, Appendix 1.

28. Based on limited sample of economic data supplied by villagers.

29. Jose Cupertino Sunuc. See list of interviews, Appendix 2.

Such intermediate solutions to the problem of safer houses were not being practiced in San Antonio at the time of the study. This may be due in part to the lack of community organization there. As we have seen above, the deputy mayor's emergency committee was oriented mainly towards the search for outside aid, and thus had little effect on internal community organization. This was also a problem in the case of the reconstruction committee.

Indeed, beyond the two committee leaders, few of the residents of San Antonio played any role in decision-making concerning what type of aid was needed and what types of community response were possible. Besides the president, the members of San Antonio's reconstruction committee had not dealt directly with aid agencies, nor had they participated in reconstruction meetings in San Martín. One of them had resigned his post by the time of this study.

The survey in December 1976 revealed confusion among San Antonio's inhabitants over the issue of community organization. In response to the question, "Does the village need to organize itself?",[30] six out of fourteen answered "yes", explaining that a body was needed to coordinate common projects such as the re-building of the school. However, the majority (eight) answered that they did not know whether or not organization was necessary.

The confusion was also evident in their response to the next question, "How has the village changed since the earthquake?". While three answered that the town was better off because of the lamina roofs, six answered that they were in worse condition because of increased poverty and inadequate housing. One of the respondents thought that the village was better organized than before, but three others could give no opinion at all. Still another said there was no change since the earthquake. In general, it seemed that the villagers were unprepared as a group to assess their common needs and possibilities with regard to reconstruction. In other words, they were still as unorganized as before the earthquake.

In an interview for this study, the president of the reconstruction committee said he hoped to change the attitude of the community by organizing around the reconstruction of the school and the improvement of agricultural techniques.[31] However, these projects, as he conceived them, were dependent on outside aid for their initiation. Thus, the community's input could only come as a response to a plan formulated outside the village.

Such a problem was unforeseen by the villagers at the time of the study. While they felt uncertain about the future of their houses and the destiny of their community in general, they had maintained control over their traditional pattern of housing construction. Despite the variety of institutions offering reconstruction aid in their midst, outside resources and solutions had not, as yet, been imposed on them; rather, they were simply made available. The community had selected them according to its own established criteria.

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30. See Question 21, Appendix 1.

31. Mainly soil conservation and crop rotation, both introduced in the San Martín area by World Neighbors.

## Conclusions

The study shows that San Antonio residents were able to attend to emergency needs and rebuild houses without the aid of outsiders. Their response (in housing reconstruction) was limited at first by two factors: (1) a lack of economic resources, and (2) a lack of technical knowledge. Once lamina became available to them on credit, their possibilities for reconstruction were broadened. They were extended still further when a representative of Programa Kuchuba'l instructed villagers on earthquake resistant construction techniques using local materials.

However, even with theoretically-extended possibilities, the villagers were still limited to economic realities. Only one-third of the villagers could afford to reconstruct large, safe, permanent houses during the 1976-77 dry season.

The residents' reconstruction progress was also limited by the lack of community organization. This prevented them from recognizing intermediate solutions to safe housing and/or other ways in which to improve housing reconstruction in their community.

The community responded to the post-disaster need for shelter basically by following traditional modes of house construction and decision-making. Individual families took responsibility for reconstruction of their houses, guided by the usual cultural and economic factors; however, in this case there were new factors which had an effect on their response. The first new factor was the disaster itself, which limited the design of the house and created a need for a community response. The second factor was outside aid.

Reconstruction aid from outside groups had a positive impact in the following ways:

1. Providing materials (especially lamina) which proved useful to the villagers in reconstruction and which might not otherwise have been available.
2. Providing technical information (mainly aseismic construction techniques) which helped the villagers make use of locally-available materials and local skills.

However, the same aid agencies contributed towards the confusion of the villagers over their own most appropriate response. A variety of "solutions" to reconstruction were presented to San Antonio, each with its own set of limitations, which were often unexplained to the villagers. For example, lamina was offered to them as a temporary and permanent roofing material, the solution to the problem of roofing in an earthquake-prone environment. Yet there was little discussion of its drawbacks or of possible alternatives. Complete houses were offered as packaged solutions to the problem of reconstruction, yet they did not even have a chance to see such houses before making a decision on the offer. Loans were offered without consideration for the problems in repaying them.

The community's response at the time of this study was still in a state of flux. Some families were already building safe, permanent homes based on the aseismic model. The majority of the residents, however, could not afford to build according to this model for the time being, and were faced with finding intermediate solutions or no solutions at all.

In the long run, no appropriate "solution" to the problem of reconstruction can be found until San Antonio can attack the problems which were its main obstacles to reconstruction in the first place: mainly, being poor, remote and unorganized.

APPENDIX 1

Results of Survey of Residents Selected Randomly

San Antonio Cornejo, Guatemala

Sample size= 14

General Information

1. What is your occupation? Farming: 14
2. Ethnic Background: Indian: 11 Ladino: 3
3. How many people occupy the house? Range: 3-9 Mean Avg.: 5.5

House Before the Earthquake

4. Was it your own? Yes: 12 Renting: 1 Still building, Feb.'76: 1
5. What was it made of? Wood posts with cornstalk walls and tile roof: 6
   Wood posts with board walls and tile roof: 2 Adobe and tile: 5
6. Who built it? We did (owner & family): 9 Father did: 1
   Builder did: 2 Other (don't know): 1
7. How many years ago was it built? Range: 2-18 Mean Avg.: 10
8. How much did it cost? Range: $50-$1,000 Mean Avg.: $326
9. On whose land was it built? My own: 8 Father's: 4 Finca's: 2

Response to the Earthquake

10. What did you live in? Lean-to with tree branches: 3
    Grass hut: 5 Hut with nylon or plastic: 6
11. How long did you live that way? 15 days: 1 1 to 1-1/2 months: 8
    2 to 2 and 1/2 months: 4 3 months: 1
12. What do you live in now? Wooden posts with cornstalk walls and tile roof (lamina used on part of roof or in supply): 7
    Wooden posts with cornstalk walls and lamina roof: 3
    Wooden posts with cornstalk walls and cane-grass roof: 2
    Wooden posts with board walls and tile roof: 1
    Wooden posts with half-adobe and half-cornstalk walls and tile roof: 1
13. Did you rebuild individually or as a group? Individually: 11
    In Kuchuba'l (work-team): 3

Outside Aid

14. Did you receive foodstuffs, clothing, or blankets? Yes, food-for-work through CARITAS: 12 Yes, food and clothing from military in San Martín: 1 No, nothing: 1
15. Did you receive any tents, nylon, or plastic? No: 14

16. Did you receive laminas or construction materials?
Yes, purchased lamina from World Neighbors; 10 sheets for $36: 13
Yes, purchased 20 sheets from World Neighbors: 1
Yes, purchased additional 20 sheets from U.S. AID: 1
Yes, received 14 sheets from CARE free of charge: 2

17. Did you receive any loan or gift for reconstruction?
Yes, $36 loan from Mother Anthony to be repaid $3 monthly for 12 months: 11
Yes, $50 loan from Fundación del Centavo to be repaid in two years at 3% bi-annual interest: 2
No, nothing: 1

Permanent Reconstruction

18. Do you plan to build a "formal" permanent house?
No, I already have one (wooden posts, half adobe and half cornstalk walls, with tile roof; no reinforcements): 1
No, no plans, we are too poor: 4
Yes, will build one in current dry season: 4
Yes, but will have to wait 2,3, or 4 years: 5

19. Have you seen the OXFAM/World Neighbors Model House?
Yes, I plan to build according to model (wooden cornerposts, half adobe and half board walls, lamina roof, x-bracing): 2
Yes, I would like to build that way but don't have the money, will use x-bracing and lamina roof at least: 2
Yes, I've heard about that house: 8
No, don't know anything about it: 2

Social Organization

20. Do you belong to any committee or association?
Yes, Reconstruction Committee: 1
Yes, school festivities committee: 1
Yes, Kato-ki cooperative: 1
Yes, Flor Chimalteca cooperative: 1
Yes, agricultural loan group with BANDESA: 1 (since earthquake)
Yes, agricultural loan group with Fundación del Centavo: 2 (1 since quake)
No: 8

21. Does the village need to organize itself?
Yes (for common projects): 6
Don't know: 8

22. How has the village changed since the earthquake?
We are poorer now: 4
We don't have adequate housing: 2
We have lamina roofs now so we're better off: 3
We are better organized now: 1
There is no change: 1
No opinion: 3

APPENDIX 2

STATISTICAL DATA - SAN ANTONIO CORNEJO

Population: 350 (estimate of 64 families at 5.5 members each)

Access: 50 kilometers via paved highway from Guatemala City to Chimaltenango (Department Capital); 17 kilometers via gravel road to San Martín Jilotepeque (Municipal Capital); 11 kilometers northeast via dirt track to San Antonio Cornejo.

Earthquake Damage: 6 killed, 20 injured
95% of dwellings destroyed, school destroyed

METHODOLOGICAL NOTE

Information for the study was collected in late December, 1976, and early January of 1977 through a survey of 14 randomly-selected residents and formal interviews with the following persons:

Domingo Agüin: Deputy Mayor of San Antonio Cornejo

Benancio Gulajay: President of Reconstruction Committee (San Antonio)

José Cupertino Sunuc: Extensionist for OXFAM/World Neighbors (San Martín)

Manuel de Jesus Huz: Formerly in charge of CARITAS Food-for-Work program in the rural region of San Martín (Contact: Kato-ki Cooperative, San Martín)

Anacleto Sajbochol: Regional Coordinator of Agricultural Extension Program and Reconstruction Program, OXFAM/World Neighbors (San Martin)

Antonio Vancos: CARE Extensionist in charge of area around San Antonio Cornejo (Chimaltenango)

Mario Girón Ochoa: Manager of Flor Chimalteca Cooperative (Chimaltenango)

Alberto Sincal: CARITAS promoter in charge of food program, Chimaltenango Department (Chimaltenango)

Data collection and interpretation was facilitated by Cakchiquel research assistant Melesio Ollej of Programa Kuchuba'l.