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POST-DISASTER RECONSTRUCTION PLANNING: THE CASES OF NICARAGUA AND GUATEMALA*

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Earthquakes may seriously disrupt the human and ecological equilibrium of entire countries. But in many cases, especially when they strike deprived areas, another important phenomenon occurs: they bring to light a vast number of problems already existent in each country, but which were not normally visible. Thus, massive poverty, growing disparities between the rich and the poor, congested cities, shortage of housing, malnutrition, and illiteracy in countries affected by natural disasters surface and become public knowledge. These deficient conditions are usually kept out of sight by certain institionalized devices, such as slums or squatter settlements segregated in areas where the better-off do not go (Merton, 1969).

In this study two cases in Central America are analyzed in which the effects of an earthquake were compounded with deficient situations which were the result of many years of underdevelopment. The two cases are: Nicaragua after the 1972 earthquake and Guatemala after the 1976 earthquake. The quake in Nicaragua almost completely destroyed Managua, the capital of the country. Its effects were centralized in one area, and it did not have primary effects over the rest of the country. In Guatemala, the quake affected primarily rural areas, it had extensive impacts in different regions of the country, and only some sections of Guatemala City were affected. The subsequent response was as dissimilar as the effects of the two earthquakes. In Nicaragua the processes of relief and reconstruction were shaped by a vertical decision-making structure which led to a highly centralized operation. Maybe the evident failures of the Nicaraguan approach plus structural conditions internal to the particular context led the Guatemalan government to respond to the earthquake in the opposite way. There, decision-making was decentralized, the government almost avoided taking responsibility in the reconstruction process, and the different impacted areas were "allocated" to the relief groups. Thus, the strategies adopted by the agencies in each case varied as well as the results of the policies undertaken (Kreimer, 1977).

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BACKGROUND

Throughout the years Central America has been struck by a number of natural and man-made disasters which had serious consequences. One of the major disasters was caused by the influence of foreign culture, patterns, and plagues brought by the Conquest itself. The Indians had been isolated from the diseases

which struck them after 1492, and as a consequence they had no immunological defenses. Furthermore, the new culture was a major factor in the disruption of the human ecology (McLeod, 1973).

Natural disasters, a frequent event in geologically unstable Central America, were also the cause of serious disruptions. Severe earthquakes, volcanic eruptions, droughts and floods bringing about heavy destruction were factors beyond control which inhibited growth even before the time of the Conquest. In this century, Central America has suffered a large number of earthquakes. It is not the vulnerability to earthquakes that is surprising. What is remarkable is the fact that systematically these quakes had differential impacts according to social stratification; namely, there was a negative redistribution of resources within the population. This phenomenon also occurred in the last two earthquakes which struck Nicaragua and Guatemala.

Two days before Christmas, on the night of December 23/24, 1972, at 12.30 a.m. Managua, Nicaragua, was struck by an earthquake of a 6.25 (Richter) magnitude, followed by two aftershocks of 5 and 5.25 (Richter). Managua was a heavily concentrated city, and the quake killed some 10,000 people and injured 20,000. The earthquake and subsequent fires almost completely destroyed the center of the city, where the government offices, the financial and the commercial centers were located. It also destroyed the residential section of downtown Managua.

On February 4, 1976, a major earthquake – 7.5 on the Richter scale – struck Guatemala. It left about 23,000 dead and 77,000 injured. From February 4 to February 24, there was intense seismic activity with a number of secondary movements, some of which reached an intensity of between 4 and 5 on the Richter scale. The major movement activated a vast series of secondary faults, and as a result the effects of the quake were extensive and affected 16 out of 22 provinces in the country.

SOCIOECONOMIC CONTEXT

Nicaragua

Nicaragua is a small country which in 1974 had a 2.2 million population, with a 49/51 percent urban/rural ratio. The main exports of the country are from extensive mechanized agricultural production: cotton, coffee, meat, sugar.

The income distribution shows a significant disparity among different population sectors. According to a 1975 Vice-Ministry of Urban Planning Census in Managua, 5 percent of the population receives 16 percent of the income while 50 percent obtain 30 percent of it. The pattern of land ownership confirms this disparity: 43.2 percent of farms with less than 7 hectares each take up 2.2 percent of the farmland, 1.9 percent of farms with more than 350 hectares each takes up 47.6 percent of farmland. There are four main groups: (a) a reduced group with economic power who also have political power; (b) a middle class of professionals, merchants, and public employees; (c) a small modern urban and rural working class; and (d) a large proportion of underemployed and unemployed people living at subsistence levels.

Prior to the earthquake Managua was a concentrated city, following a pattern typical of most Latin American cities. Most of the activities and services – governmental, cultural, commercial – were located in the downtown area, which was a center of continuous movement. It was also extremely crowded. The urban development pattern was radial-concentric and the center was the focal point of all trips to the city. Thus, the urban pattern was one of congestion and slow traffic movement.

Managua has experienced ten earthquakes of a magnitude sizeable enough to merit recording since 1900. Over and over again, the city has been rebuilt on the same site, which according to studies is prone to suffer further earthquakes in the future.

It is estimated that a quarter of a million people lost their homes in the earthquake and subsequent fires. This dramatically aggravated the housing shortage which was a serious problem in Managua before the earthquake. To a large extent, the importance of the damages and the almost complete destruction of buildings in the central area was due to the complete lack of anti-earthquake techniques in the construction and the bad detailing prevailing in the pre-earthquake construction. Houses made of "taquezal" suffered heavy damage. "Taquezal" is a wood frame construction with rocks and mud filling the interstices. It does not have cross bracings and it is extremely heavy. Concrete structures also suffered due to lack of or inadequate reinforcement and to the widespread use of pumice as sand and vesicular basalt as aggregate.

Before the earthquake over 60 percent of Nicaragua's commerce was concentrated in Managua, mostly in the downtown area. After the earthquake this acitivity was paralyzed and about 50,000 workers found themselves unemployed as a result (AID, 1974). At the time Nicaragua was already facing a serious unemployment problem – especially in the rural sector – due to the drought of 1972. Thus, the earthquake sharply increased the number of unemployed people from the urban sector, raising dramatically the number of unemployed people in the whole country.

Although the Managua earthquake was not the most intense in recent history, it had particularly damaging effects because it destroyed a highly dense urban area. Given the macrocephalic structure of Nicaragua, with a heavy concentration of productive, social and political activities in the capital, the earthquake disrupted not only life in Managua but in the whole country.

Now, five years after the last earthquake, the central city is a huge, empty, vacant lot with only a few isolated buildings left, dramatic remnants of the once-crowded city. An overgrown vegetation is already falling over the old city, transforming the once busy and super-concentrated capital, into abandoned lands. The widespread idea rooted in the public's opinion is that the process of reconstruction of Managua has not started, that after five years Managua has still not been rebuilt. Contrary to this opinion, however, the new Managua is there. It is a shapeless, overextended, imageless and amorphous entity. The city that was destroyed by an earthquake on December 23, 1972, has been replaced by a number of disconnected, fragmented developments, expensive shopping centers in the periphery of the old city, clusters of housing segregated according to social and economic strata, and a series of rapid traffic roads which systematically ignore the needs of the poor and marginal neighborhoods.

Guatemala

Guatemala is 42,042 square miles, half of which is mountainous. In 1976 the estimated population was 6.3 million. The population is largely rural: 75/25 percent ratio in 1964. Five percent of the population receives 34.5 percent of the national income, and 70 percent receives an average annual income of $ 42; 2.1 percent of landowners own 62 percent of the arable land, 87 percent of landowners own 19 percent of the arable land. The housing situation was very bad before the earthquake: 60 percent of all urban homes had no sewage service, 88 percent of all homes had no electricity, and there was a deficit of 800,000 housing units.

Agriculture is the basis of the economy. Guatemala's major exports are coffee and cotton. These crops are grown in large latifundios, which use the most fertile lands. 87.4 percent are subsistence farmers, many of them Indians crowded in the Altiplano, the mountainous area of the country. On steeply inclined plots or minifundios they grow corn which does not provide them enough income to survive. Thus, in addition to working on

their own plots, the Indians work seasonally on the coffee and cotton plantations.

A very important aspect in the socioeconomic organization in Guatemala is the difference between Indian and ladino, who are the product of racial mixture, dating from the time of the Conquest and still prevalent today. It is primarily a cultural distinction: dress, language and customs set the indigeneous population apart from the others. Today Indian populations have a certain degree of isolation and cultural integrity (Olson and Olson, 1977).

Guatemala's history is marked by major disasters: Ciudad Vieja, the first capital established by the Spaniards, was destroyed by a flood in 1541; Antigua, the second capital, was destroyed by an earthquake in 1773. As a consequence of this quake, the capital was moved to its present site at Guatemala City, also a geologically unsafe location. It has been subjected to frequent earthquakes, the most serious of which was in 1917.

In the February 1976 earthquake, the major cause of death was the collapse of "adobe" wall construction and tile roofs. This construction, like "taquezal" in Nicaragua, is very heavy and not adapted to stand shock. Again, as in the Nicaragua case, the population who uses adobe are the poor, those who cannot afford anti-seismic construction with safe materials and good foundations. Furthermore, this group is the sector which lives in the hazard-prone areas. In Guatemala City the low-income population is located in ravines on the fringes of the city which are geologically highly unstable. Thus, construction methods plus location contributed to stronger effects of the earthquake for some population sectors while others were not affected. And thus, the major impact of the earthquake was on the urban and rural poor, the Indians, and squatter areas where the population lives in substandard housing conditions, and on farmers who live on subsistence agriculture. In general, the middle and upper-middle classes, the export agricultural sector and big industry were not seriously affected. The destruction in Guatemala was clearly a class-based phenomenon.

RECONSTRUCTION PLANNING IN MANAGUA

Deconcentration as a spontaneous development

After the earthquake, early location decisions helped to promote the notions of decentralization, later formally adopted, as well as provided the basis for subsequent urban development guidelines. In a way, the early spontaneous development became later the blueprint for the reconstruction. Early decisions also set a pattern of urban segregation based on socio-economic differentiation. This residential segregation entails a division according to social class as well as differential access to scarce resources such as transportation, education and infrastructure.

The evacuation and relocation of population did not follow any coordinate plan, but took place on an ad hoc basis. The lack of an early planning framework compounded with the lack of organization in guiding the response to the emergency situation. After the earthquake, the tendency of the population abandoning Managua was to locate either in other cities (Masaya, Leon, Granada) or on the periphery of the destroyed city. People who moved to other cities tended to go back to Managua after the first few weeks, but people who moved to the periphery of the old city tended to transform into a permanent location what had been temporary at the outset (Kates et al., 1973; Kessler, 1976).

After the emergency period was over, ad hoc, uncoordinated and fragmentary decisions were made which clearly influenced subsequent stages in the process and which in many cases began to build new shopping centers in the periphery of the old city. Most of these shopping centers were for the upper-income sectors, no market analysis guided these decisions, and the consequence now is an over-

supply of this type of commerce. Concurrent with the commercial development, new traffic arteries were built connecting the shopping centers with the emerging upper-income residential sectors. These roads followed a radial concentric pattern which later became the urban development mode adopted by the Immediate Reconstruction Action Program, thus ruling out any possibilities for a linear development. Las Americas, a "temporary" housing development built by AID, which was transformed into "permanent" low-cost housing for 50,000 people acted as a magnet and attracted low-income housing development in the southeast section of the city. Meanwhile, expensive housing was being built in secluded spots (e.g., Las Colinas), following a decentralized scheme and reinforcing the pattern of residential segregation.

Deconcentration/decentralization as planning concepts

A number of plans and reports have been produced where different international and national organizations discuss the effects of the earthquake and possible strategies for the reconstruction of Managua. The following can be mentioned as the most influential throughout the process:

1. A Master Plan for the Reconstruction and Development of Managua, prepared by a Mexican team, DEPLAN, and consisting of two different proposals, the first one based on a concept of urban concentration but limited urban growth, and the second one on the idea of urban deconcentration.

2. Report by the International Advisory Panel on Reconstruction and Redevelopment, supported by the World Bank and the Organization of American States. The International Advisory Panel, criticized the first Mexican proposal and strongly advocated the idea of a decentralized Managua.

3. Report on a Process of Planning and Urban Design, prepared by Lawrence Mann and Whilo Von Moltke, supported the deconcentration concept and provided guidelines for the urban design of downtown Managua.

4. Program of Urban Relocation and Industrial and Commercial Decentralization, prepared by the Ministry of Economics in Nicaragua, provided guidelines and proposed policies for a strategy of decentralization concerning industry and commerce.

5. The USGS Seismological and Building Code Work. The United States Geological Survey identified alternatives for relocation of the capital; the National Geographic Institute worked on the identificaiton of major and secondary faults, and the U.S. Department of Commerce's Bureau of Standards evaluated the conditions of buildings to determine causes of building failures, and developed recommendations for the new Nicaraguan Building Code.

6. Agenda for Reconstruction and Development Targets and Objectives 1974–1978, prepared by the Centro-American Institute of Business Administration (INCAE), a graduate school and research institute. INCAE had as a task the formulation of a strategy for development, the definition of the external assistance required and the development of reconstruction programs and projects.

7. Managua Periphery Development to 1985, prepared by George Nez, analyzed the feasibility to immediate peripheral expansion up to about 1985, while also preparing for later development of a metropolitan satellite town system.

8. Plan for Immediate Reconstruction and Action (PRAI) of the Vice Ministry of Urban Planning (VMPU). VMPU was created after the earthquake in September 1973 as the organization in charge of planning and development of Managua and its metropolitan system. The PRAI focused on short term strategies for the development of Managua.

9. Master Plan for Development (PGDU), Vice Ministry of Urban Planning, integrated the short-term policies of the PRAI into a long-term master plan.

With the exception of the first Mexican Plan, which proposed concentration of population in high-rise buildings with high-speed roadways following the lines of the faults, all the other plans listed supported the strategy of deconcentration/decentralization. This was also the official policy adopted by the Government.

The reports and plans analyzed base the decision to deconcentrate/decentralize on at least one of the following four objectives: environmental protection, reduced social cost of concentration, regional balance, and nonmetropolitan development (Burton, 1974). In every case, environmental protection has been singled out as either the *most important* or as the *only* objective of the plan.

Although the strategies proposed by the different plans to achieve deconcentration in Managua vary, certain common denominators can be found. Two notions of urban development are proposed: a linear pattern and a radial concentric pattern. Most of the reports propose (1) to reduce the density of buildings, and to drastically reduce public occupancy in the old center; (2) to create a civic center in the old center; and (3) to establish the periphery as a priority for residential location.

The notions of deconcentration/decentralization became words to be found in every report and plan published and in every public speech given. However, words do not have the power to change reality and to guide the course of events by themselves. They have to be complemented by adequate decisions, by a set of regulations, incentives and disincentives. Furthermore, in order to propose a successful policy, prevalent social and economic characteristics in the country have to be considered, otherwise the planning concept may lack the necessary conditions that could support its implementation.

According to the Advisory Panel, the city resulting from a deconcentration strategy would be a more "modern" city with no loss of accessibility. In their words,

> The resulting reconstructed city will be more modern in that it will reflect the tendency observable in all parts of the world toward greater expansion of urban area than in urban population. There should, however, be no loss of accessibility, specifically as good surface transportation is made a top priority and as vehicular ownership continues to grow – which is to be expected (International Advisory Panel Report, 1973).

However, this vision of a "modern" city, another Los Angeles, relying on freeways to provide access and dependent not only upon individual automobile ownership but also upon a good and efficient public transportation system is, in the case of Managua, almost a utopia. This idea in fact applies to and is feasible for the very reduced group within the higher income bracket of the population. According to the 1975 Census (International Advisory Panel Report, 1973), in Managua 53 percent of the population receives 16 percent of the income while 5 percent receives 30 percent. In Managua only 12 percent of the families own an automobile (9 percent according to another source). Given the disparity in income and the low proportion of people who own a car, the expectation that vehicular ownership will grow enough to reach a reasonable level to justify the decision to build a decentralized city with a rapid transit system, is far from being grounded in reality. This inconsistent view of Managua's reality which guided the proposal by the Advisory Panel is again evident when they state that the most potent force working for decentralization in Managua is:

> .... the rising standard of living of the population, which makes possible longer journeys to work, both through the transportation supply effects of higher income and through the rising ability of the population to pay higher travel costs out of wages (1973).

Figures in the 1971 Census contradict the notion of a "rising standard of living" (no up-to-date statistics could be obtained). The bottom 50 percent of the population has a median income of $ 90 a year (15 percent of

the GNP); the top 5 percent of the population has a median income of $ 1800 a year (30 percent of the GNP); 47 percent of the urban homes and 81 percent of those in the countryside have no sanitary facilities; 80 percent have no running water in Managua; 99 percent have no drinking water in the countryside.

It seems doubtful that the bulk of the population living under such conditions would be able to afford higher travel costs out of wages. In terms of transportation supply, the public transportation system in Managua is highly deficient. According to a report by INCAE (September 1973), a deconcentration towards the periphery was not accompanied by a systematic reorganization of the transportation system. Vast low income areas – and most of the squatter and marginal settlements in the city – are not serviced by public transportation. In the areas which do receive the benefit of public transport, routes overlap and there is not a good transfer system. Thus, in many cases the users have to pay more than one fare to reach their destination. Furthermore there are high operation costs in some routes due to lack of paving in substantial sections of the route.

An additional problem which makes the image of the "modern" city more inconsistent is the fact that prevalent risky and aggressive driving in Managua has produced a number of automobile accidents that has reached alarming proportions. In the first semester of 1974, there were 2,833 accidents with 697 persons injured and 49 deaths in Managua (Covian, 1976).

Even though some of the notions underlying the theory of deconcentration have proven inconsistent with the social and economic reality of Managua, it has been implemented to a certain extent. We have mentioned above the fact that early unplanned decisions guided the development of the city. The construction of a system of highways following a radial concentric pattern is one of those decisions. Although this radial concentric pattern is criticized in some of the planning reports in the sense that the natural tendency developed by this pattern would be to concentrate again population and activities in the center, this is the urban scheme adopted by the Vice Ministry of Planning in its Immediate Reconstruction Program.

In other instances, the stated goals of the decentralization policy are contradicted, either by specific steps taken by the government or by the lack of necessary regulations for the private enterprise. For instance, activities related to the Finance sector, which had a 66 percent concentration in Managua before the earthquake, decreased to 21 percent immediately after the earthquake to reach again in 1974 the pre-earthquake proportions (INCAE, September 1973). A large number of industrial activities are located in Managua. In 1974 out of 24 industrial activities existent in Nicaragua, 13 had more than 50 percent of their production located in Managua, and only in 3 activities was the participation in production of Managua less than 25 percent (Arguello and Velasco Arboleda, 1975). Thus, according to Arguello and Velasco, the tendency for all industrial activities in 1973 and 1974 has been to concentrate in Managua. This behavior contradicts the policy of decentralization promoted by the government. However, in order to control this tendency, incentives or disincentives should be implemented, and that has not happened. Comparing the economic base of Managua with six intermediate cities – Granada, Masaya, Diriamba, Jinotepe, Leon and Chinandega – the importance of Managua is evident. Even the deconcentration that took place immediately after the earthquake in 1973 was not enough to increase the participation of other cities in the GNP more than 10 percent for some activities. Unless a firm policy of decentralization of public investment and of control of private investment is implemented, the concentration of economic activity in Managua will not only continue, but it will accelerate in time.

Growth in one area of economic activity entails growth and concentration in other areas as well. The same trend we noted for industry takes place for commerce and services. The peak for the concentration in these activities takes place in the area of the Mercado Oriental and Ciudad Jardin, where the pattern of density and congestion has already reached pre-earthquake proportions. Given that the majority of the population does not have a car and that the mass transportation system is so deficient, a large number of the population tends to concentrate in a chaotic way around Mercado Oriental and Ciudad Jardin and to generate a system of commerce for the low-income sector. Thus in Managua now, there is a dual market formed on the one hand by the shopping centers in the periphery with goods and prices for the upper-income levels and the stores in the Mercado Oriental and in the Ciudad Jardin area, on the other, addressed to the low-income sector.

In spite of the destruction of the old commercial and financial center, the central ring in Managua continues to be the most important net generator of employment per inhabitant. The other rings, as they get farther from the center, become more residential. According to Carvajal and Velasco (1975), this indicates that in Managua, in spite of the urban impact caused by the earthquake, the patterns of economic urban structure common to most Latin American cities are reproduced. That is, heavy concentration of employment and activities in the center and location of residential areas in the periphery. And these activities clearly contradict the postulates of the deconcentration/decentralization policy.

LOW-INCOME HOUSING AND MARGINAL POPULATION

Prior to the earthquake the housing conditions in Managua were extremely deficient. A World Bank survey reports that according to the 1971 Census over a quarter of the housing units in the city were makeshift houses or rooms in cuarterias (Davis, 1973). The latter are old houses containing many rooms, each of which are rented as housing units but sharing toilets and wash basins. As a result of the lack of adequate housing, most of the new migrants either doubled up with relatives or friends in the cuarterias or moved into make-shift and very crowded houses (4.8 people per room) in the southeastern and western fringes of the city. Streets were generally unpaved, there were no sidewalks and, in some areas, water was sold only by the barrel.

This already deficient housing situation worsened considerably after the earthquake. Thus, low-income housing and marginal populations became a basic concern for a number of the planning proposals and reports.

According to the Advisory Panel Report, this area would be given first priority. They state:

> First social priority should be given to the problems of the marginal populations... Without a program for housing this population and without steps to secure the employment of sizeable numbers from its midst, the entire reconstruction program would be subjected to social pressure and the threat of disruption (1973).

Reality again contradicts the proposed strategy. In contrast to the affluent suburbs where the rich live in isolated clusters, the majority of the population – the poor – live either in "temporary" shelters turned into permanent housing or in squatter and marginal settlements. The latter, which have acquired fantastic proportions have no paved roads, no water or electricity, no adequate public transportation and are totally disconnected from the emerging automobile-oriented infrastructure and services of the new Managua.

Acccording to a study by INCAE (June 1974) on the situation of low-income housing, the typical house is poorly built and basic services (water, electricity, sewage system) are seldom available. Alternatives to provide these

services are equally deficient and water has to be bought in barrels.

Given the housing conditions of the low income population in Managua and the importance attached to it by the planning proposals, it is ironic that a large number of low and middle income housing sits vacant because of the prohibitive prices of the housing units which the population cannot afford. The government who rejected the sites and services proposal of the World Bank because they would not meet the expectations of the population in terms of housing, refers to the phenomenon of unoccupied housing as a situation of "surplus" housing. However, the projects, funded by loans from international organizations and built by Nicaraguan organizations in conjunction with private corporations, remain vacant due to their exhorbitant prices determined by the ambitious profit expectations of the construction companies, the obstacles for getting credit mentioned above, plus the accelerated increase in land values and construction costs, both financial and selling costs, after the earthquake. According to *La Prensa* (August 1976), the Housing Bank (Banco de la Vivienda) has not been a good arbiter to control the speculation of the finance corporations and the urban development. According to a special study done by a group of consultants for *La Prensa,* the prices being asked for low-income housing were at least 20 percent higher than the real construction costs. Due to the increase in costs, these houses cannot be afforded by the low-income sector for whom they were originally built. However, for the middle-income group who eventually could be able to buy them, these houses have characteristics of "houses for the poor" they do not want to accept – minimal dimensions, organized in endless repetitive rows, and located in fringe areas.

Several of the proposals and plans for the reconstruction of Managua propose the development of either self-help or training programs. In terms of a service of guidance for construction it should be mentioned that no construction training programs have been implemented. Given the fact that most projects for housing lay outside the economic possibilities of the poor and that the Government is not regulating speculation, the solution to the housing needs of the poor can only be achieved on an individual basis. Thus, organized self-help programs and training programs could in fact be of great value. However, none of the implemented housing projects included training or participation of the users. Thus, it is possible to predict that pre-earthquake building methods have not changed substantially for a large sector of the population who are still building their shacks with the same methods as before.

PLANNING TO DATE: THE VICE MINISTRY OF URBAN PLANNING

The Vice Ministry of Urban Planning (VMPU) has a task to carry out urban planning duties and to administer the new building code. This organization was in charge of the preparation of an Immediate Reconstruction Action Program (PRAI) which was to be the first stage of a General Plan of Urban Development (PGDU). The PRAI contemplated development during the 1975–1978 period and the final version was approved by President Somoza on May 20, 1975; that is, two and one-half years after the earthquake. The idea underlying the generation of the PRAI was that of a document geared to action, without providing global diagnoses on critical socio-economic and physico-institutional aspects (PRAI, 1975). The latter would be the task of the PGDU which was considered more of a master plan for development.

The dominant strategy of the PRAI as in the other plans described above is the deconcentration of urban development. The policies proposed by the PRAI and to be included in

the long term strategies of the PGDU are:

(1) Reconstruction of Managua in the same site with strict seismic and zoning regulations.
(2) Deconcentrated development on the basis of lower densities to increase the safety in case of new earthquakes.
(3) Development of Managua in concentric rings from the destroyed area to the Pista de Circumvalacion with an emphasis on the east–west axis.
(4) Development of Managua as a multi-center city.
(5) Development will occur in the form of urban cells, with housing and services.
(6) Special attention will be given to the needs of the low-income sector.
(7) The urban center of Managua will be rebuilt as a non-residential area, with public buildings, parks and open spaces.
(8) Participation of the private sector will be stimulated during the planning and implementation process.

Given the need of making decisions in a first moment that would certainly affect future development, the idea of a transitory plan to improve the efficiency seems to be very valuable. However, the PRAI was superseded by a myriad of private decisions, and at most, only in a few cases could it provide guidelines for action.

The General Plan for Urban Development (PGDU) (VMPU, 1975) is a long term reconstruction plan elaborated by the Vice Ministry of Urban Planning. The main aspects of the PGDU were identified in February 1974 by representatives from the UN, AID, OAS, and VMPU. The PGDU is conceived as a process of continuous evolution, with the PRAI defining the short term strategies which will define the orientation of the middle and long term policies to be adopted.

The main objectives of the PGDU are the following:

(1) Definition of criteria to satisfy the habitational requirements of Managua's population.
(2) Definition of criteria to satisfy the functional requirements of different urban activities.
(3) Definition of norms of land use, occupation and subdivision.
(4) Definition of infrastructure and equipment necessary to materialize the urban structure.

It is too early to evaluate the effectiveness of the PGDU in guiding development. However, considering the forces and tendencies resulting in ad hoc, uncoordinated decisions, and the delay and virtual impossibility of putting into operation the PRAI, it is not difficult to predict the fate of the PGDU.

The fact that all these plans have only been implemented in a minimal and partial way does not mean that Managua has not been reconstructed. The result is indeed congruent with the process. According to the public opinion, which needs the symbol of the still missing new civic center to perceive the reconstruction as a completed process, the rebuilding of the new city has not started. However, the new Managua has already been built, a new disjointed and fragmented city.

In sum, the process of planning and implementation adopted in the reconstruction of Managua can be characterized as follows:

(1) As an ad hoc process guided by individual profit and by vested interests. This process resulted in uncoordinated investments and fragmentary urban schemes which pose heavy demands upon public infrastructure investments.

(2) A process which reinforces patterns of residential segregation, increasing the marginalization of the poor, and promoting a model of class differentiation which favors the elites in terms of public investment.

(3) A system relying on the transfer of both foreign technology and conceptual models which are not adapted to the concrete situation and context of the country.

(4) A process characterized by a hierarchical structure of decision-making and lack of horizontal connections among the involved agencies.

(5) An effort lacking coordination among the different international teams and experts working on the reconstruction.

The final result of the reconstruction process is (1) a deterioration of services for the majority of the urban population, this population growing as a result of rural migration to the city pushed by the agricultural mecha-

nization in latifundia; (2) an increase in land values in the city and in the periphery as a result of the new decentralization infrastructure financed by external aid and of speculation; and (3) an improvement in the services for the small middle and upper class sectors, which tend to resemble more and more those of suburban areas in American cities.

THE PROCESS OF RECONSTRUCTION IN GUATEMALA

In contrast to what happened in Nicaragua, in the operation of reconstruction, in Guatemala the government adopted a policy of hands-off the problem. The task was left either to individual decisions by the relief agencies or to the communities themselves, with no global guidelines or controls, and with subsequent conflicts and problems arising as a result of this lack of coordination. Some communities were left without aid at the emergency and reconstruction stages. A large number of the rural population had to migrate in search of food and medicine, resulting in a shortage of labor for the harvest, disruption of established markets and exchange patterns, and interruption of life organization. Eventually not only did they have to bear the dislocations brought about by the earthquake, but they also had to rebuild their own houses. In other communities the aid tended to discriminate in favor of certain groups, for instance, those who owned the land (e.g., CARE in Chimaltenango) or those who belonged to a given church (e.g. Mormons). In other areas the aid was given without a unified set of criteria: some groups required full payment of the total cost of the house, others required partial repayment, some gave the materials to the recipient but required a contribution of work, and still others provided financing through BANVI or BANDESA (Thompson and Thompson, 1976).

The process of reconstruction can be characterized as a decentralized operation. On March 18, 1976, the National Reconstruction Committee was formed by President Langerud and headed by General Ricardo Peralta Mendez. In its reconstruction policy the government promised to take advantage of the earthquake to implement housing programs and to benefit the popular sector. Through the Banco de la Vivienda, the Government announced ten programs to build individual and collective housing units, of which only three have been implemented (Marroquin, 1976). The National Reconstruction Committee allocated the affected areas to donor agencies by means of an "auction", that is, portions of the disaster areas were assigned to the different agencies and groups, and the government adopted a policy of hands-off in those areas. This resulted in fragmentary knowledge about the situation in different areas, the programs implemented, and the extent to which donor agencies who had promised to work in given areas were doing so.

Decentralized Reconstruction or Laissez-faire?

The process of reconstruction in Guatemala was handled by the government following a "decentralized" approach. Three weeks after the earthquake, and after the emergency situation, an "auction" took place which allocated the affected areas to the different relief agencies. The following is a list of some of the agencies working on the problem:

> CARE (USA), OXFAM, AID, CARITAS, Red Cross, Central American Mission, Mexican Government, Italian Government, EXIMBAL, Salvation Army, International Disaster Emergency Service (IDES), City of Philadelphia, Spanish Government, Dutch Government, Masonic Lodge, Canadian Government, Wings of Mercy (Calif.), Oxfam/ World Neighbors, Association of Protestant Churches (CEMEC), Adventist Church, Rotary Club, Comite Central Menonita, Bricks for Guatemala, Jewish Central Committee, Committee of Permanent Help (CEPA), Comite Fratelli d'Italia, FEDECOAG (National Agricultural Cooperatives), Fundacion El Centavo, Church of Jesus Christ Latter Day Saints (Mormons), Save the Children Alliance, and Scouts of Guatemala.

Each agency developed their own definition of goals for the reconstruction program, their own approach to the operation, and their own schedule. Charlotte Thompson and Paul Thompson, in a survey of the programs proposed by each relief group, list the different approaches taken by each agency (Thompson and Thompson, 1976). The results of this decentralized operation were varied. In some cases, the objectives were to establish training programs in earthquake resistant construction (Oxfam); in others, to provide one house for every family in a village (Canadian Government in San Andres Itzapa). In some cases, several agencies were working in the same town without coordinating efforts; in other cases, seriously affected populations were left without any aid. Agencies which at the beginning promised to work in given areas never delivered the promised help.

Meanwhile, the government, relying on the external aid, was not undertaking a coordinated and controlled approach to the provision of relief and to the reconstruction effort. Several reports about the situation mention the fact that approaches which tend to generate dependencies between the relief agencies and the population should be avoided, as well as "paternalistic" responses to the reconstruction needs. However, in this case the real problem is not the dependency created between, for instance, the Indian population in a rural town and a relief agency, but between the government towards external aid and towards the myriad of relief agencies operating in the country. Robert McCormack is right when he states in a report written for AID that "most outside groups working in the communities have established highly paternalistic ties with local officials and people. These outsiders are imposing their ideas on the people, however benignly, and usurping local authority from local officials, thus they may use these officials as tokens". However, this thought should be taken one step further and applied to the attitude of the national government of not assuming control of the situation and adopting the "auction" approach. This established a pattern of uncontrolled outside intervention, which should be analyzed under the framework of disequilibriums in the access to resources by different countries and unequal exchanges among countries. The decentralized approach led to a lack of control on the progress of the different groups working in the affected areas.

The Implemented Programs

On their own initiative, some groups implemented very active programs (e.g. Oxfam, Canadian Government, Mexican Government). These programs were based on completely different assumptions, and pursued varied goals, therefore the outcomes of each also differed. For instance, Oxfam's goal was not to build houses but to train the population in safe construction techniques using local materials. With this program in mind, they established demonstration programs where they built model houses in the villages where they were working – San Martin, Jilotepeque, Tecpan, San Jose Poaquil. As an educational device, they have prepared a construction manual following the format of a comic book which was distributed free to the population. As a part of the program, Oxfam also distributed lamina imported from El Salvador for roof construction, which they subsidized and sold at low prices. The Oxfam program was quite influential, and other agencies have adopted the basic principles developed by this group.

The Canadian Government in San Andres Itzapa and in San Jose Poaquil has implemented a program which had as a goal to build a house for each family who wanted to participate in the program. The houses were built of wood panels, imported from Canada, and corrugated zinc. The participants in the town were organized by Canadian technicians into teams of about eight persons each whose

task was to build the houses in one block. Other members of the community worked in assembling the construction elements and the panels in a factory. The results of this program were quite impressive. In San Andres Itzapa, where the destruction had been almost total and where practically everyone in town participated in the Canadian program, the construction was nearly completed in July. The program achieved an overwhelming support from the population in terms of participation and sense of self-esteem. All over town, there were banners praising the work of the Canadians and the expressions of satisfaction with the operation were unanimous. By July, the people of the town had already started to paint and to modify the otherwise homogeneous houses in order to give them their personal touch.

This approach is completely different from the one taken by Oxfam, in that the Canadians based their help on the provisions of imported materials, then closely controlled and organized the reconstruction of the whole town, thus establishing a more "dependent" pattern towards the donor agency, while Oxfam relied on local materials (except for the lamina imported from El Salvador) and training of the population and the organization was left to local groups and cooperatives.

The programs described above are only two among the diversity of approaches implemented in the different areas. Thompson and Thompson, in their study, provide a perspective of the myriad of approaches and objectives that guided the selection of methods and also of the differences in the outcomes. As a result of the overall decentralized approach to reconstruction, no control was established over the different programs. Some areas then received a disproportionate amount of aid (e.g., Chimaltenango, San Martin, Patzuc) when compared to other areas which did not receive enough according to their needs. Similarly, there was not a single criterion followed for allocating housing. The government did not provide guidelines or regulations in that sense and each agency interpreted the concept of need in a different way. Some agencies identified recipients by giving priority to those who were low-income – the definition of this category was unclear – or to those who had no resources to build a house or to those who cared to participate (Thompson and Thompson, 1976). Some programs required a minimum monthly payment, in others every family in the town received a house, and in others only members of a given church qualified. Thus, the decentralized approach, with a large number of agencies operating with *carte blanche* to test their ideas, in no way solved the housing needs of the earthquake victims, but provided solutions for some while leaving many without aid.

Some positive aspects of the reconstruction operation were the following:

1. Emphasis on the utilization of recycled and recovered materials. As opposed to Nicaragua where neither the Reconstruction Committee nor the agencies tried to base their programs on the re-use of materials salvaged from the earhtquake, in Guatemala this was an approach used not only by the affected population but also promoted by some of the involved agencies (e.g., Oxfam). The population was already familiar with building using waste materials, in fact in many cases the destroyed houses had been built originally out of recycled materials. Thus, whatever materials could be re-used from the rubble were salvaged. After the earthquake, the population tended to attack immediately the problem of temporary shelter. In rural areas, in many instances the shacks usually utilized to store tools and seed became temporary shelters. As it was mentioned above, in many instances the population preferred this solution to the temporary shelters provided by the relief agencies.

2. Attemps by several agencies to implement self-help and training programs, and to promote the organization of cooperatives. This is a significant departure from the approach taken in Nicaragua, while there was no attempt at training the population in safe construction techniques.

In Guatemala, there were several programs attempting to involve the local residents in the building programs and in the decision-making process (e.g., Oxfam/World Neighbors working with the cooperative El Quetzal/Katoki). There was a generalized acceptance of the fact that the process of reconstruction should be understood as a complex experience for the affected population and that approaches based on the provision of a final product – a house – undertaken in other disaster situations were not the best possible answer to the problem.

Two problems associated with the decentralized approach undertaken in the reconstruction were:

1. Emphasis in the reconstruction of rural areas rather than urban areas. In Guatemala City, very little has been done to improve the living conditions of the earthquake victims. After the earthquake, the people who were living in hazard-prone areas, on steep ravine slopes, moved to private and publicly owned flat land. These squatter settlements grew at an accelerated rate (the number of improved houses is approximately 20,000), with precarious characteristics and not even adequate to resist weather conditions. Mass migration and land invasions generated conflicts between the invaders and the government and between the invaders and the landowners which resulted in serious repression by the armed forces.

After the earthquake, the Banco Nacional de la Vivienda defined a policy of housing based on ten programs to build temporary houses, to remodel and rehabilitate houses, and to acquire land for future housing development. Three out of these ten programs have been implemented to relocate a sector of the squatter population (Marroquin, 1976). However, most of the squatters in the capital cannot afford either the housing programs promoted by the government nor the land offered at market prices. It is calculated that a total of 30,000 families who were left houseless by the earthquake or who did not have a house before are in this situation. Thus, it is in the capital where the most serious problems of housing and lack of service appear that is the area which has been almost completely deprived of help for the reconstruction.

2. Lack of provision of comprehensive plans for development of infrastructure and social facilities for the communities. Very few of the programs contemplate the provision of services or proceed in response to comprehensive urban plans. Most of the plans only consider the provision of housing without sanitary services, electricity, water, or roads, thus posing a number of problems in terms of providing these essential services. Another aspect which is not contemplated in most of the programs implemented is the provision of facilities for communal life. Therefore, most of the programs do not deal with community needs in a wholistic way.

In sum, the earthquake in Guatemala made manifest the extreme differences and inequalities that existed among the social groups. These disparities are not a new phenomenon in Guatemalan society; their origins date from the Conquest when land was divided into latifundia controlled by the Conquerors and small plots for subsistence farming cultivated by the Indians.

In Guatemala City, in spite of the programs announced for the uprooted, the government failed to provide real alternatives. Thus, living conditions of these groups, which were extremely deficient before the earthquake, have deteriorated since then. The crisis situation also brought to light the lack of a policy for low-cost housing in the country. In spite of the dramatic situation of the victims in Guatemala City, the efforts of the relief agencies

were mainly concentrated in the rural areas. Both during the emergency and reconstruction stages, a centralized control of the operation was lacking. The government adopted a policy of hands-off the relief operation, and agencies defined their own objectives and guidelines for the operation. Thus, programs had different assumptions, pursued varied goals, and had different outcomes.

The policy adopted by the government in the earthquake has been described as a decentralized approach. However, given the systematic neglect to which large groups of the affected population were subjected, it is necessary to question whether it is a decentralized approach, or strategic laissez-faire. The result is a fragmentary approach to the reconstruction and a systematic lack of comprehensive short and middle range policies to solve the housing problems of the poor, both by the bilateral assistance and by the government.

COMMENTARY

Natural disasters are testimonies. They are breaks in the on-going life of a given society, and as such they discover in the affected country aspects which are not normally considered emergencies, although they share some of the characteristics of emergency situations. Housing shortages, lack of essential services, unemployment, health problems, and illiteracy are some of the difficulties common to the dispossessed of the world. One of the impacts of natural disasters in poor countries is that they suddenly reveal these deficiencies. In normal life, these problems are known to those who suffer them. In the event of disaster there is a telescopic effect and they become reported by the international press and widely diffused.

The crises in Nicaragua and Guatemala analyzed in this study can be characterized according to a series of traumatic events which affected each system. Among others, the following can be mentioned:

1. Total or partial paralysis in the functioning of the system. The impact of the earthquake in Nicaragua, although concentrated in Managua had consequences which affected the functioning of the country. Given the macrocephelic structure of Nicaragua, with a heavy concentration of productive, social and political activities in the capital, the earthquake disrupted not only life in Managua but in the whole country. In Guatemala it affected a subsystem: urban poor living in substandard conditions in marginal areas, and rural populations, many of them living on subsistence farming. In general middle and upper-middle groups, the export agricultural sector and the big industry were not seriously affected. Thus the paralysis was only partial and it included the struck area plus communication linkages among areas.

2. General, partial or local lift of organizational inhibitions which permitted hidden capabilities to surface. In Guatemala, the affected populations were in many cases able to react immediately without outside help and to organize the situation in order to consider priorities for action. For instance, the necessity of preserving the harvest after the earthquake in some cases prevailed over the necessity of reconstructing the houses. Thus, the population resorted to any structures they had available such as tool shacks or chicken houses as shelter in order to devote manpower to the sector where it was most needed.

In Nicaragua, the extended family proved to be one of the most important institutions able to immediately organize networks of material and effective relief. In many aspects it provided the aid that the government and official institutions were not able to provide at the emergency stage.

3. Reinforcement of social differences. The impact of the two earthquakes were not homogeneously distributed among the population. They affected primarily the poor. But

also the inefficiencies in the relief systems affected those whose needs were more pressing. In Nicaragua, the reconstruction specially stressed social differences. This was done by spatially segregating groups in the new Managua, and increasing the marginalization of the poor by adopting a pattern of decentralization which favors the elites in terms of public investment and by increasing land values as a result of speculation.

In Guatemala the quake has been defined as class-based in that it impacted the urban and rural poor, Indians, and farmers who live on subsistence farming. These groups not only had to bear the dislocations brought by the quake but also in most cases the costs of rebuilding their own houses. In Guatemala City, where the most serious problems of housing, people without land, and lack of services appeared, land invasions became a phenomenon which created conflicts with the government and with the owners of the land and which generated severe repression from the armed forces.

4. Disruption of locational patterns and generation of both voluntary and involuntary migrations. These processes are in general chaotic and tend to disrupt the organization of life of the population. In the two cases studied migration occurred. The sudden uprooting of large masses in both cases was a serious problem which was not dealt with by the authorities in a coherent way. In Nicaragua the evacuation of the city caused a massive migration to other cities and to the periphery. This relocation took place without a coherent plan and the massive influx of people without housing or employment disrupted the economy of secondary cities.

In Guatemala, although in many cases the harvest became a fundamental concern, in some areas the conditions of deprivation were such that migrations took place with considerable losses in the labor available for the harvest, thus seriously affecting the agriculture sector. Furthermore, large numbers migrated to the capital, increasing the already serious situation of the squatter settlements.

5. Transfer of technology and cultural patterns. Technology and cultural pattern transfer is pervasive in the case of countries whose economies are conditioned by the development of other economies. In the two cases analyzed this phenomenon occurred at different stages in the process. In Nicaragua, this happened not only in the emergency process – polyurethane igloos brought into the country as emergency shelter are one example – but also in the reconstruction process, with the transfer of urban development concepts from other contexts. There, the pattern of a deconcentrated city and the decisions followed to implement it were not congruent with the concrete characteristics and reality in Nicaragua. Thus the necessary resources and infrastructure to support such a system are missing.

In Guatemala, the lack of government responsibility over the reconstruction task resulted in lack of controls over the way in which reconstruction operations proceeded. Thus, some relief agencies showed more concern in avoiding the transfer of technology and in following local traditions, while others evidenced less concern with these issues and proceeded with the traditional pattern of "developed societies provide the best models".

If the consequences of disasters are to be mitigated in the future, then much more thought devoted to the issues of relief and reconstruction will be necessary. An effective interface of international organizations and of governments of the countries involved is essential. In this respect, as the details of each relief operation are exposed, one question is of paramount importance. It recognizes the disparity that exists between the traditional ideas about relief and reconstruction planning and the actual process by which policies are chosen. From a perspective broader than the particular case, the Nicaragua and Guatemala cases illustrate the failures of the local governments concerned.

In Nicaragua the reconstruction process was a conjuncture of influential people making decisions plus a failure on the part of the government to set the necessary regulations to control development. Some of the decisions which affected the pattern of reconstruction were location of major circulation routes, location of shopping centers, construction of temporary housing which subsequently became permanent, and construction of housing for the middle and upper income sectors. This process resulted in uncoordinated investments and fragmentary urban schemes which posed heavy demands upon public infrastructure investments. The consequences of this operation are that benefits of the development are distributed in an unequal manner and those who benefit the most are the elites, those who are politically and economically powerful, and those who are affected are the ones who have the greatest need for government assistance.

In Guatemala, the government did not play the role it should have in overseeing the validity and appropriateness of the approaches taken by the different agencies. The National Reconstruction Committee presumably in charge of monitoring the reconstruction process did not control the diversity of technical judgments made by the relief agencies.

At the same time, in the two cases there was no organization with the necessary resources – expertise, money, power – to examine alternative ways of dealing with the situation or to vocally object to or oppose the adopted strategies and solutions. This raises an important question for the future which is how can international, bilateral agencies participate and organize post-disaster situations with an orientation toward human service, understanding the limitations that sociopolitical contexts impose over relief and reconstruction efforts.

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