

C O U N T R Y   S U R V E Y S

COSTA RICA SURVEY  
NATURAL DISASTERS EDUCATION IN LATIN AMERICA  
January 2, 1990

DISASTER PREPAREDNESS INFORMATION:

The Comision De Nacional Emergencia is responsible overall for disaster preparedness in Costa Rica. They designate responsibility to other institutions, and they require each one to set up an internal and external contingency plan for disasters. They plan to distribute more information about disasters in the form of newspaper pull-outs, pamphlets and posters, and they are talking to PAHO and OFDA about funding.

The Comision Emergencia plans to set up local committees in areas at high risk from volcanic eruptions to teach people how to prepare and protect themselves in the case of a disaster. Once the area has been identified, a local committee is set up and trained by the Comision. Committee members distribute information to the individual at meeting halls, churches, and by going door to door.

.The committees typically comprise members of the Fire Department, the Red Cross, Police, representatives from the health sector and Ministry of Education. This plan is still in the initial stages and does not reach a large portion of the population as yet. Most people do not have enough, or any information about disasters. The Comision Emergencia has only been active for 3 years.

There are no media campaigns that deal specifically with disaster education in Costa Rica. They did broadcast warning information last year during hurricane Joan, but only while the danger was immediate.

LIFENET:

LIFENET was a video teleconference on volcano disaster preparedness. The TV stations that participated were: Inravision in Colombia, Teletic (Ch.7) in Costa Rica, Cultural y Educativo (Ch.5) in Guatemala and Teleamazonas (Ch.4) in Ecuador. It was produced by the Foundation for Global Broadcasting and funded by USAID.

#### DISASTER EDUCATION IN SCHOOLS:

Costa Rica has one of the largest disaster education programs for schools in Latin America: it teaches children about volcanic eruptions and earthquakes.

.The campaign was initiated two years ago and has now reached 50 institutions (approximately 100,000 students). The target is primary and secondary school. Posters, pamphlets and teacher's guides have been distributed through the Ministry of Education and the Comision Emergencia (We have copies of this material).

.Teachers are trained in workshops given by representatives from the Ministry of Education. They use videos and teacher's guides as instructional aids. They are taught how to assess risks to school buildings, how to evacuate, how to protect themselves and how to organize the students into brigades: Each brigade is responsible for a different area such as first aid, evacuation, fire extinction, security and rescue.

\*.It should be noted, however, that they have not published any materials specifically for the use of the students.

.This disaster education program is not part of the school curriculum. It is implemented voluntarily by the schools and the teachers themselves. The Director of the Program, Manuel Ramirez, says he decided not to make it a requirement because he felt that the teachers have been forced to teach so many other shortlived government programs that they were becoming resentful. He claims that they choose to teach this program because they are interested in it.

Most schools in Costa Rica do not have video equipment.

#### SCHOOL CURRICULUM 8-12 YR OLDS:

Spanish, Social Studies, Science, Math. Some schools have computer studies (computers donated by IBM and USAID). In rural areas there may be only one or two teachers per school. Parents are required to purchase textbooks. Spanish is a popular subject -- "some kids are afraid of Math and science, especially in the rural areas".

### WARNING SYSTEMS:

In the case of an impending volcanic eruption, the population in the rural areas are warned by word of mouth, often by a committee member going from door to door. In the larger cities, radio carries the warning. The drawback to radio is that most stations can be received throughout the country; this means that a warning for one area may frighten those people in areas that are not at risk but are tuned in to the same station.

### HOW TO PROTECT YOURSELF DURING A VOLCANIC ERUPTION:

The population is taught to cover their nose and mouth to protect themselves from volcanic ash. They are told where the lava is likely to flow beforehand and where to go to avoid it. Usually they are evacuated before an eruption.

### MOBILE UNITS:

They do not have water trucks, but they do have mobile generators which are sent to rural areas and are deployed by the Red Cross, Fire Dept. and the Electric Company.

### RECENT IMPROVEMENTS IN DISASTER PREPAREDNESS:

The Director of the Disaster Education Program is trying to have it included in University curriculum so that teachers will have this knowledge and training before they enter the school system.

### SCHOOL HEALTH PROGRAMS:

Recent health programs, designed for schools, have been very successful. They found that the students (all ages) were bringing the information home to the family. The Red Cross claims that because of this, youth programs are the best way to reach the largest section of the population. They also claim that the level of nutrition in Costa Rica is very high, due to these school programs. The programs are implemented by distributing information in the form of pamphlets and posters to schools, and by training teachers in workshops.

### TARGET HAZARDS:

Costa Rica is at risk from volcanos, floods and earthquakes; deforestation and landslides are also a problem.

### INDIVIDUAL NEEDS:

The population as a whole is aware of the threat from natural hazards, but there are often problems that they consider to be more pressing. They do not consider this to be an immediate danger.

#### POPULATION SEGMENT MOST EFFECTED BY DISASTERS:

The poor population is most effected by floods and earthquakes because they live in high risk areas. The middle class is more at risk from eruptions because the soil surrounding volcanos is very rich and they tend to settle in those areas.

#### RURAL AREAS:

The three entities with the most influence in rural areas are the school (often one teacher per school), the church and the local doctor. The church was used to disseminate information in rural areas for a campaign for parasite control. The local priest often announces the arrival of the healthcare worker to the community; often these priests are very young and open to new approaches in healthcare.

Because institutions such as the Comision Emergencia, the Red Cross and the Ministry of Health are decentralized, they are able to reach out to individuals in small communities through local committees.

#### LITERACY:

90% of the population can read and write Spanish. There is a small Indian population (approximately 5,000) who speak the local Miskito Indian dialect.

#### TELEVISION:

90% of the population has access to television, and virtually everyone has access to radio. There are five TV stations in Costa Rica: Channel 7 is the largest (they participated in LIFENET). Our main contact in Latin America -- Paul Bell -- knows the president.

TV does broadcast public service announcements, however there are numerous institutions all vying for limited airtime. The Presidential House is the governmental body that makes decisions about who gets on the air. There is one government run TV station.

There are three organizations which handle radio, TV and newspaper public service campaigns. They are: C.A.N.A.M.E.C., Lic Ricardo Daniel Gonzalez, Tel: 22-4820; C.A.N.A.T.E.L., President, Jorge Garro, Tel: 23-7130; C.A.N.A.R.A., Rigoberto Urbino Pinto, Tel: 33-1845.

The TV shows with the highest ratings for 6 to 12 year olds are ALF, EL CHAVO DEL OCHO (Also very popular in Ecuador -- it is a comedy with adults playing kids' roles), GHOST BUSTERS, DISNEY PRESENTS.

.Jacques Cousteau's THE BLUE PLANET is also very popular with adults and kids as well.

.PLAZA SESAMO and SESAME STREET are familiar to 13 -18 year old kids. They call PLAZA SESAMO the "Mexican Sesame Street".

In January, they will broadcast a program about infant mortality titled LET THE CHILDREN LIVE, produced by the Ministry of Health.

#### RADIO:

There are more than 100 radio stations in Costa Rica. Every Sunday, from 7:30PM to 8:30PM, all stations jointly broadcast programs sponsored by the Ministry of Culture and the Ministry of Education.

HCJB radio (out of Quito, Ecuador) reaches Costa Rica, and broadcasts cultural programs. Radio FIDES, which is run by the Catholic Church, might be interested in broadcasting a program about disaster preparedness.

Radio channel 13 is State owned. They broadcast cultural and educational programs: Cultural programs include folk music and history. They also broadcast information on how to improve quality of life, with subjects such as brushing your teeth and deforestation. They produce everything in-house and are very interested in our campaign.

Nowadays kids are more apt to use a walkman than a transistor radio.

#### CELEBRITIES:

-- Franklin Chang, a Costa Rican Astronaut; Sylvia Poll, an Olympic swimmer. Personalities often appear in public service announcements. Soccer players are also very popular: Juan Arnoldo Cayasso, Juan Carlos Anguedas, Carlos Velasquez, Divianny Rodriguez. The former president, who is a Nobel Prize Winner, was also mentioned.

#### SUGGESTED MEANS OF DISTRIBUTION:

Most people agreed that TV would be very effective. Radio is important because it would reach isolated areas. Everyone felt that a school program was sorely needed and would be the best way to reach the largest group. Kids may not be as likely to read a comic strip because they are not used to reading the newspaper.

#### SUGGESTED FORM AND CONTENT OF PROGRAMS:

There was a general consensus that kids in our target age group would respond well to music, and it was often suggested that we create a "hazards theme song" that would be immediately recognizable such as the SESAME STREET SONG. It was agreed that a game for schools would be far more effective than a printed booklet or other such textbook-like material. They hoped that the game would be accompanied by something that each child could take home to the family.

One person suggested creating a story around hobbit type creatures (puppets) who live underground and feel the rumbling of tectonic plates above them. She felt this would be a fun way to introduce earthquakes.

MYTHS AND SUPERSTITIONS:

Sometimes children are taught that disasters are acts of God. No one mentioned any other superstitions.

ECUADOR SURVEY  
NATURAL DISASTERS EDUCATION IN LATIN AMERICA  
November 13, 1989

DISASTER PREPAREDNESS INFORMATION:

Plans have been formulated for a nationwide program for disaster preparedness and awareness, however none have been implemented. A number of pamphlets and brochures have been printed but not widely distributed: This material deals mainly with how to prepare for an earthquake, flood or volcanic eruption. Some of them offer tips about first-aid, and others provide lists of things to do and not to do during a disaster. Other printed materials contain information about preparedness procedures.

. Nothing has been organized on the local level and most of the information has only reached as far as officials and organizers.

. We have copies of two proposals, from local organizations, for multi media campaigns to educate the population about natural hazards: One was funded by USAID -- neither have gone beyond the proposal stage.

. The Defensa Civil is responsible, overall, for disaster preparedness and mitigation. All information is channeled through them. Due to lack of funds, they are not as effective as they would like to be, and they need to develop an organizational structure which will allow them to reach the individual in rural areas. According to Freddy Ehlers, an independant producer, the Defensa Civil has sponsored a program about volcanos and how to prepare for an eruption, which will go into production within the next few weeks. He says the program is funded by USAID.

. The Manoff group has produced a series of 20 minute documentaries about health, which were funded by USAID and produced in association with SENAC (General Secretary of Information). There were also five radio spots, newspaper supplements and posters.

TELEVISION AND RADIO:

The majority of the population has access to television, even in the poorer areas, and the number of households with TV sets is growing every year (90% of the population in the two largest cities have TV). Only the elite schools, however, have TV in their classrooms.

. Shortwave radio is a good way to reach the Indian communities, although even they tend to watch TV at the auto repair shop, or community hall. People will tune in to the radio to hear news of a disaster.



. All TV stations are privately owned. They are required to air a certain number of public service announcements per day, which often run at 2AM.

. There are five national TV stations and four local stations.

. There are eleven major radio stations (one is government owned) and over 300 hundred local stations. Radio stations have been known to run public service announcements if they include P.R. for the station. There is an agreement with local Indian federations to adopt radio programs to Cuechua (the Indian language).

. Every channel has programming for kids from 4PM to 6PM. The most popular kids shows are "He Man" and "Transformers".

. HCJB (a radio station run by American Evangelists) broadcasts children's, and educational programs around the world by shortwave radio.

. Channel 4 (TELEAMAZANOS) is running spots on AIDS which were produced by SENAC.

. The Fundacion Natura, which is an environmental group who put together one of the proposals for a disaster awareness campaign, has an agreement with the TV stations to run their public service announcements in return for a tax break.

#### LITERACY:

The literacy rate is high among our target group and many of the less well educated adults may read at the level of an 8 to 12 year old.

#### MYTHS, LEGENDS, SUPERSTITIONS:

The Indians do have a few superstitions, but that doesn't stop them from knowing what to do during an earthquake or an eruption. In fact, the Indians are supposedly far more knowledgeable about how to protect themselves and prepare for disasters than their poor neighbors of Spanish and mixed descent.

#### WARNING SYSTEMS:

There are no warning systems in place, and no way to link the individual to the process of evacuation and recovery. Knowing where to go during an evacuation is one of the biggest problems; the other is separation from family members.

. Each family needs to establish a meeting point, and the schools should establish safe areas to evacuate to. It was suggested many times by disaster relief officials that the communities should establish a location, familiar to everyone, where children know to go when separated from family, teachers or care-givers.

#### INDIVIDUAL NEEDS:

We will be conducting surveys of schools in each of the five target countries. Questionnaires will be distributed to both teachers and students in grades 3 - 6 in both urban and rural schools. They will provide information about what previous knowledge children have of the nature of hazards, threats from hazards and preparedness procedures.

#### RECENT IMPROVEMENTS IN DISASTER PREPAREDNESS:

The Defensa Civil organized a few "simulations" when it looked like the Pachincha Volcano was about to erupt . The participants were local officials and community leaders -- the individual was never linked to the process.

#### AWARENESS OF NATURE OF HAZARDS THREAT:

The population as a whole is aware of the threat from volcanos and earthquakes but feels there is nothing they can do about it.

#### EMERGENCY SUPPLIES:

The Red Cross and Defensa Civil have published lists of supplies to have in households in case of a disaster, but these lists were not widely distributed. The items in the lists are similar to what we would have in the US with a few exceptions such as bottled water and canned food. Canned food may not be available but dried food and other non-perishables are. They do have means of purifying water.

#### ANIMALS:

Animals do exhibit abnormal behaviour prior to an earthquake -- cows and dogs in particular. Indians look for these signs.

#### TYPICAL SCHOOL CURRICULUM FOR 8 - 12 YEAR OLDS:

The curriculum consists of Math, Spanish, Natural science. It was mentioned by a few teachers that Math and Science were their students favorite subjects. They like to experiment -- touch, feel and see. They also like to play games with maps.

. There are no disaster drills at schools. The children do have a general knowledge of earthquakes and volcanos, but do not know what to do during a disaster.

. Teachers felt that kids would definitely bring home information about natural disasters to their parents. Many parents expect their children to share what they have learned in school.

#### POPULATION SEGMENT MOST EFFECTED BY DISASTERS:

There was no consensus on this; some people felt that urban areas were more at risk because of the tall buildings, others felt that the construction of dwellings in rural areas made them more likely to collapse. Brick dwellings are most at risk, and houses built of traditional materials such as wood or a mixture of earth and sand are the most stable. Brick is a status symbol because it is so much more expensive.

#### TARGET HAZARDS:

People were most concerned about earthquakes and volcanos. The universal answer to how to prepare for an eruption was to evacuate. Earthquake preparedness procedures were obviously much more detailed, and there was unanimous concern about the fact that there are no warnings before an earthquake. Two teachers mentioned fires in schools.

#### CELEBRITIES:

Soccer stars (Armando Raza) are very popular all over Latin America. The marathon runner Rolando Vera is the biggest celebrity -- everyone mentioned his name first, and he is also known throughout the region. He has already appeared in a public service announcement about nutrition. There is a TV show called El Chara Del Ocho ("kids" at #8) in which adults play the role of kids, which is also very popular. They used a comic character in previous public information campaigns to stop people from urinating on the sidewalk. The character was an animated version of a very popular actor, who is now deceased.

#### SUGGESTED MEANS OF DISTRIBUTION:

Besides TV and radio, a number of people suggested comic strips as a possible means of distributing information. The Red Cross produced a comic strip about health which was paid for by a Soap Company. According to the environmental group, graphic material and slide presentations work best in very poor areas where the illiteracy rate is higher. They also claim that pamphlets don't work -- "they are not distributed widely and those who do receive them don't read them".

#### SUGGESTED PROGRAMS FOR DISASTER PREPAREDNESS IN SCHOOLS:

Games were suggested more than once. Children also respond well to puppets, drawings, coloring books, comic strips, and graphics. Printed materials should be accompanied by an explanation from the teacher or field worker.

#### BROADCAST DISTRIBUTION:

There are two ways to get public service announcements on the air in Ecuador: The first is to have SENAC order the stations to run it. This group has abused its power however, and has alienated the broadcasters. The other way is to get the backing of the National Ecuadorian Association of Broadcasters (Mariano Merchan from Channel 8 in Quiyaquil) and have them agree jointly to run the spots.

- . Representatives from TELEAMAZANOS (Channel 4) suggested a co-production deal with broadcasters in each of the target countries. Their reasoning was that each country has different interests and is at risk from different hazards.

- . Health Minutes ran on Channel 8, which also airs Plaza Sesamo .

- . TV stations in the Andean Pact Region bought a documentary series for kids ( we have a copy). It was funded by the Programa De Television Andean.

- . Producers and Ad agencies hire publicity agents to distribute TV commercials, and to conduct surveys.

#### HOW TO PROTECT YOURSELF DURING AN EARTHQUAKE:

We have numerous pamphlets and brochures from Defensa Civil etc. which tell people how to prepare for an earthquake, and how to protect themselves during one. Most of the instructions are similar to what we are taught in the U.S.

5505D

Children's Television Workshop  
Natural Hazards Education for Latin America  
GUATEMALA Survey  
Jon R. J. Dunn, Consultant  
31 January 1990

## THE ENCYCLOPEDIA

Guatemala, located immediately south of Mexico and bordered by Belice on the east and El Salvador and Honduras on the south-east, has an area of 108,780 square kilometers, about the size of Alabama (its companero state in the PARTNERS OF THE AMERICAS). The country has very diverse natural environments (depending on who is counting and how, up to thirteen distinct ecological systems). The country has two coastal plains, divided by a chain of volcanos and three mountain chains, and the Peten, a massive jungle comprising a little less than a third of the total acreage of the country and containing the majority of Guatemala's Mayan treasures. Because of the topology, the area statistics are somewhat deceiving. The volcanic and mountainous regions are characterized by deep ravines, steep slopes, and very difficult terrain. These regions comprise the majority of the surface of Guatemala and contain the majority of the population. The capital, with an estimated population nearing two million, is situated one mile high in the volcanic chain.

The population is around nine million (56% Ladino (mixed) and 44% indigenous, 63% rural and 37% urban). Statistics that cover exactly the target audience (ages 8 - 12) are not published, but one can extrapolate from elementary school data (7 - 14). There are approximately two million individuals in this age group, but only 62% are enrolled in school (urban 79%, rural 53%; indigenous 35%, ladino 82%; male 68%, female 56%). UNICEF projects that the effective enrollment is as low as 50%. Of those children attending, only 51% will finish primary school and only 7% will finish in six years. The average graduate will require 11.6 years of instruction to complete the six year course of study. These numbers are skewed positively by the inclusion of private schools which account for 20% of both the schools and enrollees, but have completion rates over 90%. Also noteworthy is that these 20% of the schools have 34% of the nation's teachers. Some 75% of the public schools have only one or two teachers each.

It is not surprising, therefore, that a World Bank survey indicated, in 1985, 44% of the labor force over fifteen years of age was without instruction, 87% did not complete primary school, and 97% did not complete secondary school. Guatemala has the second highest illiteracy rate in the Western Hemi-

sphere (after Haiti). 51% of the population over fifteen years of age is illiterate, 73% of adult indigenous males, 91% of adult indigenous females. Further complicating communication in Central America's most populous, most indigenous, and second most densely populated (after El Salvador) country is the existence and use of at least twenty-three distinct indigenous languages (only one of which is written). Spanish is the official language, but it is not universally understood. Nearly every community has <sup>some</sup> bi-lingual population and some, like the Caribbean town of Livingston where English, Caribe, Spanish, and pidgin combinations of the three are spoken, are multi-lingual.

There are seven television channels (5 VHF, 2 UHF; 6 commercial - including both UHF's - and one educational/cultural) and 145 radio stations (135 commercial, 10 governmental; 103 AM - 28 in the capital, 75 in the interior; 42 FM - 22 in the capital, 20 in the interior). All the television channels are located in the capital. Channels 3 and 7, with the same owner, and Channels 11 and 13, also with a single owner, have repeaters and both pairs claim the greatest penetration into the interior. Channel 5, the fifth VHS channel and the educational/cultural channel, operated with military management, reaches out to the metropolitan area and through mountain passes to areas east and south on part of the coastal plain. There is some talk of a plan to piggy-back Channel 5 on the commercial repeaters. 35% of the population has access to TV; 97.7%, radio. Cable penetration is 34.1% in the capital, 16.5% in the interior and is rapidly expanding with a full menu of Mexican and United States programming.

The country completed this month its first four year of freely elected, democratic rule after thirty years of military rule, and enjoyed its second straight year of economic growth. There exists a climate of openness to educational, health, environmental, and social reform within the present Christian Democrat government. There will be an election this year, but no one predicts back-tracking in the democratic process.

#### HAZARDS, DISASTERS, PREPARATION (or its lack), AND SOME STRANGE ATTITUDES

Guatemala, for all its truly amazingly beautiful natural attractions, is situated in a particularly hazardous location -- at the intersection of the North American, Caribe, and Cocos plates. The North American is heading west; the Caribe, east. Three major faults parallel this junction. The Cocos plate is moving northeast, subducting the Caribe plate off the Pacific coast of Guatemala and El Salvador. This zone of subduction has a chain of volcanos and a series of smaller faults. This

system has produced at least seventy earthquakes of a magnitude of 6.0 and greater during this century. In 1976, a quake of 7.5 killed between 25,000 and 30,000 people, injured 77,000, and caused millions of dollars in damage along the Motagua fault. In an average year, Guatemalans may feel 100 of the 2,500 measurable seismic events which occur annually. However, during a two week period in May, 1988, the capital and surrounding areas had fifteen to twenty palpable quakes a day.

Paralleling the zone of subduction is a chain of thirty or more volcanos (another case of who is counting what; for example, Santiaguito - which, in the past three years, destroyed El Palmar with boiling water - does not make some lists as a separate volcano and is considered a part of Volcan Santa Maria), four of which are active and considered potentially destructive. The head of the volcanology section of INSIVUMEH (Instituto Nacional de Sismologia, Vulcanologia, Meteorologia E Hidrologia), the scientific side of the team of committees responsible for monitoring all natural risks facing Guatemala and advising CONE (Comite Nacional de Emergencia), the civil side of the team, of impending problems or localizing an event in progress, ranked the four volcanos in order of current activity and damage caused presently - Santiaguito, Pacaya, Fuego, and Tacana. Three years ago, however, Dr. Norman Banks, volcanologist for U.S.G.S., termed the latter two potentially the most destructive in the chain. In any case, the four present a constant threat of death and devastation from the direct effects of their erupting and the potential of affecting a great area with the secondary effects.

The rainy season (May to November) contributes two additional grave risks - flooding and landslides. In September, 1989, all Central America was cut off by land from the North because heavy rains filled every body of moving water, from drainage ditches to rivers, with so much energy that every bridge was destroyed and every road cut wherever water crossed it in neighboring Chiapas. Similar conditions result each year, both on the plains and the narrow mountain river beds of Guatemala, and, with the increased plasticity of the land, hundreds of dangerous land slides occur.

Despite the fact that CONE was started twenty years ago in the wake of a destructive hurricane, hurricanes made no one's list of the natural risks facing Guatemala. Almost unanimously, the rank order was earthquakes, volcanos, flooding, and land slides. Some added red sea contamination and epidemics.

Aside from occasional newspaper features, news coverage at the time of a destructive event, and narrowly distributed pamphlets, virtually no information about the dynamics, consequences, and proper preparation for these natural events is regularly available to Guatemalans. Many attributed the lack of proffered

information to a "mentalidad Chapina" that takes such info as a prediction of an impending disaster. Everyone had, at least, one anecdote about this social phenomenon. One TV producer compared the general reaction to any informative program to the "War of the Worlds" panic. Even information directed at communities most continuously and frequently affected by volcanic activity carries the slogan, "PARA INFORMAR Y NO ALARMAR".

There are no current media campaigns nor programs in the schools. Some remembered that they, as children, had evacuation drills in their schools for a year or so after the destructive quake in Nicaragua in the early seventies. Others described very informal presentations by visiting geologists, et.al. in their children's schools, but in every case the schools involved were private and for, or run by, non-Guatemalans. Effectively speaking, there have been no nation-wide educational campaigns.

C.O.N.E., through CEPREDENAC, funded by a consortium of Scandinavian countries and minor assistance from U.S.A.I.D., is, this week, beginning an educative program for the villages ringing Volcan Pacaya. The first phase is training the officials and more influential individuals what to do before, during, and after an emergency. This program will, eventually, reach the schools affected, as well as the population affected by the other three volcanos. As part of this program, the nation's first horn alarm system will be installed in these villages.

The initial phase of the nation's warning system is good, though underfinanced and understaffed. INSIVUMEH, through a grid of seismic stations, telemetry, and locally based volcano-watchers, maintains a 24 hour observation of volcanic and seismic activity. In conjunction with C.O.N.E., they can order the evacuation of communities when they decide a perilous condition exists. This was done on Tacana some three years ago. However, and obviously, earthquakes and eruptions to a lesser extent defy accurate prediction. In the case of Tacana, despite signs of an impending eruption of major proportions, the activity subsided and the eruption never happened. But even if the technology existed to know of an event one hour before, there is no formal network established to inform the affected communities. Everyone described the press, radio, and TV as being very cooperative during and after an emergency, but, of the three, only radio has country-wide penetration - using many stations - and, as in the case of the 1976 quake which began at 3:01 AM, when nearly no one was listening to radio, the timing of an event in regard to human lives is critical. But even if every radio was turned on, no direct link to the stations exists. The information is generally sent on by telephone and the nation's telephone system is notoriously antiquated and



unreliable. Ironically, sometimes the disaster is its own best warning system. There is a story recounted by various people that the residents of Joyabaj, through whatever acoustical conditions, heard the roar of the '76 quake's advance with enough time to leave their beds and evacuate their houses. Despite the complete devastation of Joyabaj, only one person died - a deaf man who lived alone.

Only in the case of the volcanos is there clear indication of evacuation routes. In all the villages surrounding the four active volcanos, C.O.N.E. and INSIVUMEH, with a small U.S.A.I.D. grant, has posted maps with clear graphic directions for routes of evacuation and posters which explain the various kinds of eruptions and the risks they present. To give notice to the population, however, still demands that emergency personnel travel to the sites in four-wheel drive vehicles and deliver the warning personally. In cases of mass evacuation, C.O.N.E. can mobilize the army, which is very professional and disciplined, and its fleet of trucks.

As stated earlier, there is no concerted education effort, and, aside from posters and pamphlets distributed by C.O.N.E. and the Volunteer Firefighters (in conjunction with a small emergency preparedness program of the Alabama/Guatemala Partners of the Americas), there is no information regarding emergency supplies. Both of these organizations also have fleets of water trucks that can provide emergency water supplies, particularly in the larger communities. Potable water, in many rural areas, is a daily problem not limited to times of catastrophe.

It is fair to say that, except for a truly cataclysmic event, the campesino is most affected by earthquakes, eruptions, floods, landslides, and tropical storms. A major factor is economic. The poor build substandard homes in marginal areas - on the sides and slopes of ravines, on flood plains, on the sides of volcanos. The vast majority of death in 1976 resulted from collapsing tile roofs and poorly constructed walls. Modern structures in the capital suffered only superficial damage. Often this segment is endangered by conditions that the rest of the society hardly notices. Three years ago, during a normal rainy season, most of the houses built along a ravine in the Santa Fe neighborhood, south of Aurora Airport in the capital, fell off the cliff, with heavy loss of life, in the middle of one night. That night's rain did not affect anyone else.

Conventional wisdom is that the more educated urban population would know more of the data regarding the natural hazards of Guatemala and the threats they pose. Unfortunately, there is no evidence to support this. Indeed, given the absence of this kind of instruction and a "I don't think about things I don't think about" attitude of many Guatemalans (for example, the Congress has

no Emergency Committee). the lack of awareness is not surprising. (I did a very informal poll of my classes in two universities and found that no one could accurately describe Guatemala's geology and, aside from the most general of explanations, no one could explain the dynamics of quakes or eruptions and the kinds of hazards they present.) Nor is the urban population more prepared to deal with natural emergencies, it just happens to occupy better constructed buildings on safer ground.

In a country marked by distrust of governmental and private institutions, the Volunteer Firemen stand alone as a respected group. All classes of people donate funds and support their activities. C.O.N.E. was characterized as "Funerales Reforma," someone you think of only at the moment of disaster. The perception of the Red Cross as inept and ineffective was not contravened by their administration's insistence, on three separate occasions that it had no information that would be useful in a study of Guatemala's natural hazards or disaster relief preparedness.

Everyone repeated other people's stories of strange comportment of dogs, caged birds, crickets, cockroaches, etc., but no one had a personal experience. Some, more scientifically oriented, referred to Chinese and Russian studies on the subject. Since nearly all the second-hand stories described people as connecting the behavior to the event after the event, the alarm utility is zero. "Even if the cucarachas were always right in the warnings, I'd rather live without them." (Personal anecdote - on January 25, 1987, thirty minutes before the kickoff of a Super Bowl and as guests were assembling for the party I was hosting, I was hit with an irresistible impulse to go to film Volcan Pacaya. Despite the cries of "Loco!" I went to a site I did not know previously and set up to shoot. Five minutes later began the greatest eruption in the last fifty years' history of the volcano. Later that year I felt the same impulse and, while enroute, the volcano began an enormous eruption of ash. I arrived before the army and taped the damage to the affected village and its evacuation. Therefore, while I certainly do not understand the phenomenon, I am not too quick to dismiss the possibility of an other than fully conscious awareness of an impending event.)

Among the indigenous there are certain anthropomorphic stories regarding familial conflicts among the volcanos and monsters living in the earth where faults occur. These are consistent with the style of Mayan folklore found in the Popul-Vuh. These stories do not, however, pose an obstacle to action in the time of emergency. Some modern "myths" may have some actual basis. Many people report seeing three balls of fire in the sky before earthquakes. Ing. Eddy Sanchez, sub-director of INSIVUMEH, says that the phenomena may well be connected to static electricity produced by the

enormous pressure building up along the fault line.

## EDUCATION (and its lack), KIDS, AND COMMUNICATION

There are no, nor have there been, programs for disaster education in the curriculum which includes language, math, social studies, sciences, home economics, physical education. Even those parts of the curriculum, such as the geography of Guatemala, which could reasonably be expected to contain lessons on the natural processes of the land do not deal with the topic other than to memorize the names of the volcanos and rivers.

Given the low attendance and completion rates, the high illiteracy both among adults and children, and the language problems already mentioned earlier, and an education process which, at its very best, encourages an authoritarian "roteness," no single-track campaign is likely to even reach its intended audience, let alone significantly affect understandings and behaviors.

The wonderfully horrible irony of the formal authoritarian process at every level of education, public and private, is a nearly universal distrust and disregard for authorities while, at the same time, an almost universal conformance with authoritarian values and processes. Therefore an educative process that expects "natural curiosity" to be sufficient motivation and "discovery" to be sufficient reward will prove futile. Of course, a process that not only "teaches" about natural disasters, but encourages a dormant curiosity and helps kids trust their own discoveries and build on them would be more wrenching than the worst earthquake, more explosive than the biggest eruption. Such a process need begin with the learning skills and limitations that exist, and build the new attitudes, skills, and processes. In this context, it is interesting to note that Sesame Street was characterized as a "good" program because it was an "educational" program. But, "no," it did not teach Guatemalans anything because "no toca valores nuestras" - it does not touch our values. There are several directions that the ramifications of these observations take, but two are worth exploring. The first is, for the authority of its reputation, Sesame Street must be respected, even though we think it is useless. The second, more importantly, is the question of the values. Are the objections about the surface "context" values, or the deeper, "process" values? Sesame Street is broadcast at 6 P.M. on Channel 13, an hour when parents are also present in the home.

Referring to question # 3, the predominant response was "personally." That is to say, the majority felt that because of the great and dominating distrust of authorities, the best way to communicate is person to person, in order to establish, first, confidence and, second, a route for the message. Secondly, the most effective type of programs for schools is "mass activity." Among the

strategies, beyond a television series with its attendant delivery problem, is personally going to natural gathering places - markets, churches, community halls, schools - with video projectors and make the campaign a community-wide education. Every village, as stated earlier, has a portion of the population which is bi-lingual, and programs could be understood. Others, with some experience in presenting social programs to indigenous communities, suggested the use of foto-novelas and "historietas" - reemphasizing that information passing in a narrative form, rather than documentary or "educational" form, has a better chance of impacting the audience. The clear recommendation is for visual information over written. A review of available posters and pamphlets show them to be heavily language-loaded even when they attempt to be visual.

The emphasis on mass student activities was thought particularly important when dealing with the psychological damage caused by the experience of disasters. UNICEF cited a program instituted in the aftermath of the Mexico City earthquake, but a thorough preparation could certainly help alleviate more profound "after-shocks" and help kids understand the naturalness of their own reactions and fears.

Most thought that the younger children preferred cartoons like "He-man" and "Super Heroes" and the older children, musical programs on local channels or movies, both on cable and on local channels. There are programs which involve students - Club de los Super Chicos, Talentos y Puntos, Mentas Sanas. Various people mentioned a program that is no longer being produced as being excellent - Monitor with Vida de Paz.

The favorite mascot for such a campaign is, not surprisingly, the national bird, the Quetzal. Everyone thought a mascot was very important and said that, whatever animal was chosen, it must be very "simpatico."

#### TELEVISION, RADIO, AND ARMONILANDIA (for its lack)

Without repeating all the statistics on page two, it is sufficient to say the radio has almost complete penetration in Guatemala, while television reaches but 35% of the population and this population is largely urban. Only Channel 5 has a strong educational commitment, but its coverage is limited to the capital and some adjoining areas. There is a program, Su Mundo Por la Mañana, broadcast weekdays from 8 to 10 A.M. on both Channels 3 and 7, which has informative segments and the capability to receive phone calls for the guest experts, although this capability is not always exploited.

There are a number of stations, undetermined because they are classified with the commercial stations, which function as community information canals, both in Spanish and in indigenous languages and

with a clear, if not stated, educational function through radio. There are also a number of call-in radio programs, the most popular being titled, TGW.

There are no laws requiring public service announcements and the two commercial television groups said that because there are so many deserving public serving organizations, they could not choose one over the other, and, in fairness to all, they help none.

¿Armonialandia?

Only Channel 5 would run, free of charge, programs about disaster preparedness, while many radio stations would cooperate. The management of Channel 5 only prefers series to one-time programs.

There was complete agreement that celebrities would be useless in any kind of campaign. They aren't a part of the commercial scene. The request to name a celebrity brought long silences.

While there are no statistics, it is certain that a large proportion of the radios are battery powered, particularly in the countryside where there is no electric power. Transistor radios may be popular with kids, but precious few can afford them, although they are inexpensive by U.S. standards.

Nobody ever heard of a program called Armonialandia, including a mar from Peru.

#### ADVERTISING AGENCIES AND INDEPENDENTS (and its lack)

The distribution of agency buying last year was TV 39%, newspapers 38%, radio 12%, billboards 4%, magazines 1%, misc. 4%. This reflects their target audience as urban, literate, and economically active. All of the major agencies collect and analyze demographic data. While ads are not extensively pre-tested, the agencies do collect data on their effectiveness in use. There are a few research companies that assist the agencies in the collection of this kind of data.

Adults watch dubbed U.S. series and the children, animations.

The ~~independents~~, dependent on commercials and/or prepaid promotions or ~~documentaries~~ have not produced anything on disasters.