

National early warning systems are clearly inadequate in terms of promoting agile and timely responses from menaced populations. The lack of well articulated systems which guarantee the passing on of precise information related to the when and where of menaces at a local level; the distorting role of intermediate message carriers (press, television, radio, etc.) and other factors, create a milieu where messages are not internalized in such a way that the population believes or reacts to them. Or, these messages are overridden by the prevailing socioeconomic conditions of the population which results in them staying in their homes to the last minute to protect their property, rather than moving and possibly saving their and their family's lives.

Beyond the particular problems associated with the implementation of different structural and non-structural measures there exists, from our perspective, two overriding situations which severely limit any present or future capacity for action.

Firstly, the highly centralized nature of the Central American government structures, with weak intermediate (Provinces, Departments, etc.) and almost inoperative local levels (municipalities). The erosion of power of the municipalities over the last century, their increasing subjugation to national political dictates and their, in general, increasingly weak budgetary situation guarantees their ineffectivity in terms of representation of genuine local interests and the impossibility of implementing development schemes of benefit to the local population.

Perhaps only in Nicaragua during the 1980's, was any real attempt made to increase the role of municipal governments and link them directly to local as well as national needs. In Guatemala, legislative reforms in 1986 dictated the channelling of 8% of the National Budget to the municipalities, but this has not been adhered to (Gellert, 1990); whilst in Costa Rica, attempts over the last five years to pass a similar law for 10% of the budget have not met with success to date.

Secondly, the levels of popular organization and participation through autonomous community groups is extremely precarious in a good part of the region and particularly in those where repressive military apparatuses have dominated or played an overweighted role in internal politics (Noriegan Panama, Guatemala, Honduras and El Salvador). Even in Costa Rica, with its well established civil liberal democracy, state intervention or political control of local community based organizations has been indicated to limit their effective role as representatives of local popular interests (Lavell, Valverde and Arroyo, 1991).

The weakness of local government and popular base groups can be considered of singular importance as regards the possibility of implementing and administering prevention and mitigation schemes in countries where, as we have seen, physical risk is an inherent component of the daily lives of millions of Central Americans and hundreds of towns and communities. This is especially relevant given the high levels

of centralization of government decision making and administration now existing, and the lack of any government organization which is encharged with compatibilizing diverse sectorial approaches to disaster prevention and mitigation within a common framework, intimately linked to development planning at a national and regional level.

b) Emergency preparedness and attention of disasters

The absence of governmental organizations explicitly concerned with and adequately prepared to consider the problems of disaster prevention and mitigation, runs parallel to the existence of intersectorial organizations established primarily to deal with emergencies or disasters once occurred and with tasks relating to rehabilitation and reconstruction of disaster declared areas following the ending of emergency conditions.

These go under diverse names in the different countries and are formally linked to differing governmental ministries or institutions, as follows:

<u>Panamá:</u>	National System for Civil Protection (Ministry of the Interior)
<u>Costa Rica:</u>	National Emergency Commission (Ministry of Public Works and Transport)
<u>Nicaragua:</u>	Civil Defence Committee (Armed Forces)
<u>Guatemala:</u>	National Emergency Committee (Ministry of National Defence)
<u>El Salvador:</u>	Committee for National Emergencies (adjuncted to the National Presidency and presided by the Minister of the Interior).
<u>Honduras:</u>	Permanent Committee for Contingencies (formally Permanent Committee for National Emergencies, presided by a high official of the Armed Forces)

Although the majority of these organizations have began to consider measures for prevention and mitigation they are not well equipped for such tasks on a general basis due to lack of resources and trained personnel. Basically, these activities have revolved around the as yet relatively unfruitful attempt to organize permanent regional and local emergency commissions, to promote educational activities among populations at risk and in the shared promotion of training for medical personnel (principally stimulated by the first class work of the Pan American Health Organization).

In their major area of preoccupation, the attention of emergencies, numerous questions can be raised as regards their scope of action, organizational structures, institutional affiliations, the forms of budgetary assignation, and in the logistics of the operations they implement and the relationships established with other important organizations involved in relief and reconstruction work (internal and external).

Certain common problems exist amongst all of the Commission or Committees.

In the first place, as regards their governing structures, all are subject to changes of personnel dictated politically. This in itself is not necessarily a problem given there are clear advantages in terms of needed relationships of confidence with national government power structures. However, such changes become onerous where there is a lack of an adequate, permanent, well trained and well financed technical base to the institutions, as is generally the case in Central America.

Secondly, the problem of hierarchical levels in decision making and in the direction and orientation of emergency operations can be seen as an important problem. In those countries where the armed forces play a somewhat predominant role in the Commissions and their activities (Noriegan Panama, Honduras, Guatemala, Nicaragua and El Salvador) conflicts are less likely in terms of hierarchical levels and operative control, but not necessarily so in terms of the orientation of relief operations.

This can be accentuated due to the overall low level of confidence of the population in the castrian institutions. Moreover, in terms of emergency preparedness, the dominant role of military institutions is not conducive to the promotion of popular based, local emergency organizations, given the historically repressive nature of the military in much of the region.

In this context, an undoubted exception must be made as regards the role of the military in Nicaragua during the 1980's and early 1990's. Thus, the combination of a generally popular based, well respected and well organized armed forces, in conjunction with well organized local base groups (Sandinistas Defence Committees, in particular) was of particular importance in the success of emergency operations related to the severe flooding in North Western Nicaragua in 1982 and Hurricane Joan in 1988 (see Bommer, 1985; ECLA, 1988). The experience and discipline of the Popular Sandinista Army has recently played a critical role in the relief operations in Limon province, Costa Rica, following the April 22nd. earthquake. Helicopter crews have received a general acclaim for their professionalism and dedication, and army engineers have played an important role in the provision of temporary bridge structures.

In Costa Rica and present day Panama, countries where the civil authorities play a dominant role in the Emergency and Civil Protection organizations, differing

problems arise as regards decision making, coordination and overall logistics related to preemergency and emergency relief operations.

The fact that the Commissions have different sectorial or agency representations on their governing bodies, all with attributions in terms of disaster activities (Ministries of Health, Public Works and Education; Red Cross; Police and Fire Departments, etc.) a need exists for clear guidelines on hierarchical levels and well designed contingency plans for emergency situations with established functions and forms of operation. This intersectorial makeup can inevitably create situations of tension between the different components and, in determined situations, lead to political pressures in terms of the orientation of actions taken during relief operations.

During the recent relief operations developed following the April 22nd earthquake in Limon (Costa Rica) and Bocas del Toro (Panama), numerous indications of logistic and operational conflicts have surfaced, and although no serious well documented evaluative study has as yet been produced to substantiate many of the comments which freely circulate, the press, in particular, has brought to light a number of apparent problems within the framework of what most would consider a highly committed and serious attempt at relief operations.

In particular, in the case of Costa Rica, observations have been made as regards:

- * Conflicts between the authorities of the Emergency Commission and the Red Cross in terms of priorities and logistics.
- * Overall problems of leadership, hierarchy and strategies. In fact, the Emergency Commission's coordinating role was in many ways subverted when the President of the Republic named one of his Ministers overall coordinator of operations, on the fourth day of the emergency.
- * The supposed political pressures on the part of certain National Deputies as regards the distribution of food, clothing and other materials.
- * An initial overconcentration of relief efforts in Limon City to the detriment of outlying areas (to the south of the province; indigenous areas in Talamanca, etc.).
- * Logistical problems and overly bureaucratic procedures in the assignation of transport for relief operations.
- * Priorization of the needs of powerful economic interest groups as opposed to the population in general.

Undoubtedly, many of these problems did exist, at times a product of inexperience with relief operations during the aftermath of a major disaster. The evaluation of these aspects will, it is hoped, provide important lessons for improving the operational model in the future.

Finally, a third generalized problem relates to the as still overly centralized nature of the activities developed by the Emergency Committees with very limited advances in terms of regional decentralization, local and popular participation.

There can be no doubt, in general, that the structures, organization, objectives and levels and forms of financing of the emergency organizations need to be closely evaluated and modified. The need to pass from a conception based on Emergency relief (or civil defence) to one which integrally considers more wideranging coordinated activities related to prevention and mitigation, can be considered of great importance.

In this sense, attention will have to be paid to the institutional affiliation of any new organization which should develop in the future. Here, direct hierarchical links to such ministries as Public Works, the Armed Forces, and the Ministry of the Interior would seem inappropriate and a move should be made to link such organizations to agencies concerned with the overall planning and coordination of development activities or government action (the Ministries of Planning or of the Presidency for example).

c) Technical and Research Orientations: Nature and Society, an Unequal Balance

A dynamic and productive link between knowledge and action, and between the research and practitioner communities is of vital importance in terms of the postulation and improvement of policies and activities related to disaster prevention and mitigation and emergency preparedness and attention.

The research experience in Central America related to disaster planning has been very much lopsided, with a relatively long and consolidated history in terms of geophysical and geodynamic processes (vulcanicity, seismicity, geomorphology, land movements), and an almost inexistent attention to the multiple areas of concern to the social sciences (non structural prevention measures, social communication, education, organization, administration, popular participation, etc.).

The existence of various university and non-university institutions dedicated to basic and applied research, to the monitoring of earth dynamics and climatological processes, and to training activities has ensured a permanent, if still insufficient advance in our knowledge of the physical (natural) triggering mechanisms of disasters. This is the case, for example, with the Geo Sciences Institute and

Engineering Faculty at the University of Panama; the Seismic and Volcanological Observatory (National University), the Central American School of Geology (University of Costa Rica), the Department of Geology at the Electricity Institute and the Meteorological Institute all in Costa Rica; the National Institute for Territorial Studies in Nicaragua; the Geotechnics and Natural Resources Research Centers in El Salvador; and the Seismological, Volcanological and Meteorological Institute in Guatemala.

A number of these institutions, which undoubtedly lack sufficient financial and human resources, receive scientific, technical and material support from sister organizations in North America, Europe or Japan. Moreover, their activities have been supported and strengthened during the last two years with the creation of the Coordinating Centre for Disaster Prevention in Central America (CEPREDENAC). This Centre, created by an intergovernmental agreement has been financed initially by the Swedish International Development Agency (SIDA) and has also recently received support from the Norwegian and Danish governments. With its headquarters in Guatemala, the Centre has promoted and financed varied technical and training activities and provided infrastructural support throughout the region, almost exclusively within the broadly interpreted basic or earth sciences and with, till date, only a very limited amount of attention paid to the social aspects of disaster prevention and planning.

This earth sciences approach is reflected in the composition of the Centers governing body which, in addition to representatives from the National Emergency Committees, is made up of representatives of the university and non-university institutions mentioned above, and from the Autonomous National University of Honduras.

In addition to the earthsciences approach, institutions such as the Faculties of Engineering and Architecture, at the different national or private universities and the Seismic Engineering Laboratory at the University of Costa Rica have made important advances in the research on more secure construction techniques in the region and on the design of seismic codes.

From a broadly interpreted social sciences perspective (economy, sociology, geography, anthropology, ecology, administration, laws, etc.) no single institution exists in the region with an ongoing and consolidated research programme in action; whilst only a very limited number of individual "autoctonous" researchers have touched this theme, particularly as regards the perception of risk, within a traditional geographical approach and the politics of disasters.

This critical situation was one of the principle motivations behind the promotion of the CSUCA study; a study which was undertaken in an "information vacuum" and which faced the need to continuously prepare and capacitate

researchers from the social sciences with very few antecedents in disaster research (including the author of this paper who functioned as the overall coordinator of the project!?).

Within the framework of this broad regional situation, the only significant social science research undertaken in Central America has been achieved by a limited number of North American and European researchers and the Economic Commission for Latin America (see Abril Ojeda, 1982; Bates, 1982; Bommer, 1985, 1987; Killian, et.al., 1982, 1984; Peacock and Bates, 1982; Peacock, et.al, 1987; Snarr and Brown, 1979; Taylor, 1978; Thompson and Thompson, 1976; Economic Commission for Latin America, 1973, 1974, 1976, 1986, 1988). The majority of these studies have been conjunctural, undertaken in the aftermath of the larger disasters that have affected the region, and have, despite their excellence, had little impact in terms of the promotion of an incipient or even less so, lasting research tradition in the region.

From our perspective, the imbalance between the research tradition and technical activities emanating from the earthsciences and from the social sciences must be redressed. The undoubted importance of the earthsciences in terms of the increasing information offered of potential utility for the prediction, prevention and mitigation of disasters is obviously reduced to the extent that this is not transformed into information which is accessible and internalized socially.

And, unfortunately, too many examples exist in the region of the lack of an adequate relationship between scientific knowledge and social action. Risk mapping is achieved in a social vacuum; early warning on risks of flooding, volcanic activity or avalanches is not transmitted adequately to the population; infighting amongst academic or technical institutions and unnecessary professional jealousies generate conflicting messages and uncertainty amongst the population; and research results are not transmitted in accessible terms to potentially affected populations.

In the preparedness for and attention of emergencies many of the schemes for promoting disaster contingency plans, organizing local or regional action committees, implementation of the logistics of disaster relief, etc. are undertaken by well meaning professionals but who, in many cases, are "amateurs", unprepared and basically insufficiently trained for the tasks they are commended.

IV. AN AGENDA FOR CHANGE: SOME CONCLUDING COMMENTS

The analysis and observations made throughout our paper perhaps transmit implicitly or explicitly the fundamental aspects of an agenda for change in the Central American region. In this concluding section we will attempt to succinctly summarize the principle areas of concern insinuated previously.

Obviously no simple formula exists for promoting needed change. However, it is clear that this must include fundamental changes in terms of central and regional government organization and orientation, a concerted effort in terms of local and popular participation, and a redressing in the imbalance in orientations of research and technical activities. This is of course far easier said than done.

At a government level we believe that significant change will only be achieved to the extent that disasters and their mitigation can be transformed into a significant ongoing political and economic problem, and an integral part of any development planning framework. To isolate disasters and make them a "special" conjunctural problem is in itself an invitation to disaster. To the extent that governments, operating under precarious economic circumstances and with multiple social demands to be satisfied, can be convinced that investment in disaster prevention will bring real, accountable, tangible benefits as regards development at a local, regional and national level, some advance may be made. Whilst they continue to be seen as "abnormal", "unpredictable" and "uncontrollable", little will be achieved. In this context it is necessary that governments recognize that the ongoing social and ecological processes are increasing the vulnerability of their nations and exposing more and more population to increasing risks. The multitude of lower or medium level events which annually affect the region must be seen as the forerunner of potentially far larger events in the future. This is particularly so as regards flooding, drought and avalanches or landslips. We need to install the idea of a disaster continuum running inexorably from small to large events, all of increasing significance in terms of the possibility of achieving or not, development objectives.

At a local level, wideranging differences in social conditions and levels of human vulnerability; differing population, ethnic and class structures; differential access to resources and power, differing levels and forms of social organization, amongst other factors, will, many times, make the application of a single homogenous model of participation inappropriate or inapplicable. As in many other regions, Central America, despite the limited size of its constituent countries, exhibits an extreme regional and local diversity in socioeconomic, educational and ideological structures which will have important repercussion as regards global vulnerability to extreme geophysical or anthropically generated risks and, also, in terms of the capacity to absorb and react to the impacts of such events. These factors will have an influence in terms of the possibilities for and forms of popular organized participation at a local level (see Maskrey, 1989).

As at the government level, it is our belief that in the majority of cases attempts to introduce disaster oriented activities in an agenda for popular participation at a local or regional level is not viable isolating this problem and making it an object of action in itself. Community organization should be stimulated within a broad development framework in which disaster prevention and preparedness is seen as a component of global social change, and including the

promotion of improvements in housing, employment, education, environmental management and health.

As regards more precise topics of discussion we consider the following aspects to be of great importance:

a) Information

- * The promotion of a regional documentation centre accessible to researchers and practitioners in the different countries and adequately stocked with multi disciplinary bibliographical materials.
- * The promotion of centralized geographic information systems with continuously register data on the occurrence, locus and impacts of physical processes in the human milieu and as regards the social and economic characteristics of the population under risk.

b) Prevention, mitigation and preparedness

- * Promote the creation of organizations and legislation directly referred to the problem of disasters with special emphasis on prevention and mitigation, also guaranteeing the existence of a planned and coordinated activity on the part of the multiplicity of sectorial, regional and local agencies with prerogatives in the planning for disasters.
- * Take determined actions to strengthen intermediate levels of decision making and action at a regional, municipal and community level.
- * Promote generalized changes in terms of the curriculum at the primary, secondary and university educational levels, whereby the problem of the physical vulnerability at a local or zonal level is considered within the framework of environmental studies.
- * Promote the establishment of early warning systems which adequately transmit reliable information through socially accepted media, to local populations.

Finally, it is important to consider that given the existing high levels of physical and social vulnerability (population location, inadequate construction techniques, high levels of morbidity, poverty, etc.) the implementation of adequate schemes of prevention and mitigation is onerous in the short and medium term. Thus, although the promotion of an integral approach to these aspects should be seen as a priority need, in the short term outstanding attention must be given in terms of

the promotion of actions that guarantee an adequate response in the moments of premergency, emergency and rehabilitation and reconstruction of disaster areas.

Popular education and training at a local level, adequate early warning systems, the logistics and planning of organized actions, the design of contingency plans, and systems for the equitable and efficient distribution of humanitarian aid must be prioritized in the short term, accompanied by gradual progress related to the implementation of an integral model of prevention and mitigation.

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