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**COMMUNITY PARTICIPATION IN THE REDUCTION
OF CHILDHOOD MORBIDITY: OPERATIONS RESEARCH COMPONENT**

Concluding Report and Recommendations

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A. INTRODUCTION

1. Overview

During its implementation, this project changed significantly, in rationale and method, from the original plan. Two major changes occurred in response to on-going analyses of events, activities, and data: one was a reformulation of our operational problem from 'selection criteria for type' to description and facilitation of developmental 'process' of Community Organization (CO); the second was an increased emphasis upon Community Health Worker (CHW) training. The focus upon process meant a mid-project re-appraisal of the theoretical and methodological approaches to our task which, in turn, was reflected by a gradual shift of emphasis in data collection. As will be explained below, this project appears clearly to have demonstrated that the variables which are most important in determining the effectiveness of community organizations are related not to their final forms but, rather, to the ways in which these forms develop.

This developmental process does not lend itself to mensural description but, instead, suggests social science methods for 'sequential portraiture'. The method is in the ethological tradition of naturalistic description, and the data analysis is, for the most part, not statistical. Although the brevity of the project precluded strong 'outcome' conclusions (and, hence, this proposition remains to be tested), the conceptual shift from type to process appears also to demand a change in how we assess the utility of a CO. In brief, the hypothesis is that if natural evolution is to be preferred over 'forced' production, then assessment criteria related to health functions may have to be indirect. Stated differently, target tasks for CO cannot be scheduled from outside; i.e., a health agenda cannot simply be imposed/inserted without regard to the natural pace and order of development and, consequently, an organization's strength at a pre-determined time may not be measurable in relation to health activities.

The project's adjustment toward greater emphasis upon CHW training was a response to the evident need for indirection, to a greater than anticipated need to 'prepare' Primary Health Care (PHC) teams for community involvement, and the CHWs' needs for more skills in dealing with such a complex process.

The presentation of analyses corresponds to the conceptual model which emerged from this project. To make the report easier to understand, the model is presented at the beginning. The measures outlined in the original project protocol are also presented with critical analyses.

This is intended primarily as a technical-scientific report which will also serve as background for the recommendations being offered to the Grenada Ministry of Health. Given the amount and complexity of information gathered during the project, this must be considered a first analysis. Although it is inconveniently long for Ministry purposes, and incompletely analyzed, we wish our Ministry colleagues to be as fully informed as possible, so that they will be in a position to consider the 'next steps' which arise out of this work.

2. History of the Project

This project was embedded within a larger project, begun in 1981 with the aim of developing methods for the reduction of Diarrhoea Complex Morbidity

(DCM) in early childhood. The strategy of the overall project was to establish Health Behaviour Education and Oral Rehydration Therapy (ORT), based upon effective community participation. The baseline morbidity survey and pre-testing of methods were underway at the time of the 1983 intervention, and completed in the Spring of 1984.

The work reported here began during the Autumn of 1984, with the aim of determining how to select optimum forms of CO for the distribution of ORT materials. During the course of this project, two other components of the overall project came on line: one for the development of methods and materials for CHW training, and another for the field-testing of a risk-assessment instrument for CHW use.

Thus, this PRICOR project began during the interim administration which was in place between the intervention and the elections of December 1984. The government, existing community organizations, and the Grenadian people themselves were pre-occupied with the elections for several weeks before, and with adjusting to the new administration for several more weeks afterward. This period of anticipation-and-adjustment straddled the 1984 Christmas and New Year's holidays, and took place at a time when several kinds of reconstruction were actively underway, so that the project was interrupted for about four months. The development of COs was peculiarly vulnerable to the disruptions which occurred during this period.

3. PROJECT PLAN

1. Original Plan and Rationale

The purpose underlying the original project protocol was to examine how to establish and maintain the most useful types of CO for the effective delivery of ORT. This was an operations research component within an on-going effort to address the complex of early childhood morbidity resulting from the interaction of diarrhoea, malnutrition, and infectious disease; i.e., Diarrhoea Complex Morbidity, or DCM. Initial determination of the operational problem had involved the analysis of health system and community survey data within a socio-ecological systems framework, resulting in the development of four alternative CO forms: pre-primary schools, community health committees, community members in health teams, and health auxiliaries. These alternatives were to be field-tested using a parallel single-case-study design with four communities, employing a fifth as a quasi-control. Data were to have been collected for certain 'outcome' measures: community organization performance, ORT use, health system utilization, and health status.

The operational problem had arisen from our original presumption, supported by the literature, that real community participation was a prerequisite for success in any programme involving either primary prevention through changes in community health behaviours, or secondary prevention through the use of ORT. However, despite fervent advocacy of this view in the literature, there was/is scant empirical justification for choosing any specific approach to the development of such participation. It had become clear in the preparatory phase of the overall project that existing community organizations were not sufficient to provide the necessary support and, thus, needed 'development'. This work also had indicated the communities' preferred forms of organization, and we were impressed with the general

readiness of people in the communities both to think creatively about child health problems and to work cooperatively for the resolution of a number of issues.

A 'test' of the comparative utility of these different forms seemed therefore to be a sensible way to suggest policy directions for the Grenada Ministry of Health, and to expand knowledge in this important area. The quasi-experimental design for the evaluative part of the project was necessary because a truly controlled study would have been impractically large and complex. It had another advantage: we suspected from the beginning that each 'form' might turn out to be particularly applicable to certain situations, and that none would emerge as clearly superior to the rest; i.e., it was advantageous to be able to evaluate each 'intervention' independently.

The specific parts of the overall health problem addressed by this OR exercise were diarrhoeal dehydration, and diarrhoea itself. The ultimate target population was children up to the age of five (for dehydration, especially under three), particularly those at greatest risk (e.g., with unsupported or teenage mothers, and in unserved communities) in rural and peri-urban locales. The primary action targets were Community Child-Care Givers (CCGs) and CHWs. The specific 'intervention' described in the original protocol was "Community Organization to facilitate the cost-effective delivery of ORT". By "effective delivery" was meant appropriate use, early, in sufficient quantities, and accompanied by suitable ancillary behaviours, all taken to imply acceptance, understanding, integration with the PHC system, adequate monitoring, and compliance.

Before starting actual work in the field, an important modification to our plan occurred when we accepted the proposal reviewers' suggestion that we focus upon testing criteria for selecting organizational models for specific community settings, rather than attempting to determine the 'best' community organizational alternative. However, as subsequently became clear, there were implicit assumptions behind the word "selecting" which would determine the real dynamics, and problems, of project implementation. These assumptions, and their effects, are described below in Section C2: "The Active Design Process". A large part of the planning effort was devoted to the strict scheduling of activities. The schedule was tight, and our supposition was that sound management methods would result in the succession of goals being met on time. Unrecognized by us, there was an implication buried within this management attitude (i.e., that we were to do the organizing) which directly contradicted our beliefs about how important it is to help communities become the authors of their own good fortune.

2. Project Management

Within the overall "McMaster Child Health Project", this OR project was conceived as a collaboration between the Grenada Ministry of Health and four universities (McMaster University, the University of Toronto, the University of Waterloo, and the University of the West Indies) which had their project headquarters at McMaster University in Hamilton, Ontario, Canada. During the final months of the project, the Technical University of Nova Scotia was also involved (see Section D8: "Community Centre Design"). The Principal Investigators were Norman F. White (Professor, Faculty of Health Sciences) and S. Martin Taylor (Professor, Department of Geography) of McMaster University, and the co-investigators were John W. Frank (Assistant

Professor, Department of Preventive Medicine and Biostatistics) and Jay S. Keystone (Director, Tropical Disease Unit) of the University of Toronto. The Field Director in Grenada was Joyce E. Myers (Medical Geographer), with Rick L. Czerniejewski (Pediatrician) as Co-director.

The overall direction of the project was determined by the McMaster-based principals and consultants, with day-to-day decisions in the field by the project team. During the time covered by the project, there were ten trips by one or more of the principals to the project site in Grenada, and three trips by members of the field team to McMaster. It became very quickly evident that the large team and separated project sites would mean substantial logistical, data management, and budgeting problems which would, in turn, require frequent adjustments to the original management plan. Moreover, there were two unanticipated factors (described below) which substantially complicated these adjustments: shifts in social and political circumstances in Grenada; and the clear lesson emerging from the project that the basic strategy had to be re-examined in mid-course.

3. Adjustments in Response to Events

Between October 1984 and April 1986, Grenada was a country recovering from what many Grenadians called "the dark days"; haltingly, not always confidently, with new people and old people in new offices and old offices, an unsure combination of what-had-always-worked-before and creative trial-and-error, and drawing upon a limited pool of experience and expertise. The overall effect in communities was an unsureness which, although taking only a historical moment, consumed scarce project time.

The Ministry with which the project was collaborating has responsibility for health, nutrition, housing and community development, and women's affairs. During the final two-thirds of the project's 18 months, new senior personnel in the Ministry, with inadequate resources, strove to bring all the social welfare concerns implied by this very broad mandate under policy control. Considering the circumstances under which they were working, and looking at matters within a historical perspective, they did this quickly and well, but this settling-into-place resulted inevitably in some slippage in coordination with project activities.

There were also festive events which play a large part in the national and community life of Grenada. Each would eliminate a working week and, in toto, their time subtraction was substantial: two Christmas-New Year holidays, one Easter, one carnival, one Queen's visit, and one President's visit.

During the project period, there also were three major events which had a large impact on the conduct of the work:

- the election of December 1984
- the departure of the American Forces in June 1985
- the fall in diarrhoeal morbidity during the 1985-1986 dry season

From the beginning of the summer of 1984, the prospect of an election was on the minds of everyone in government, in communities, and in the ranks of potential office-holders. From the end of summer, when the December date was known, everyone became increasingly preoccupied with the coming election and, within the Ministry, the primary concern was understandably to leave things in order for the in-coming administration. During the last few weeks

before the election, it was impossible to do anything but the simplest maintenance business with the Ministry, and the attention of every community was diverted from their own organizational processes. Following the election, there was another static period as the administration of the country was handed-over, and this was followed by a Christmas-and-New Year celebration much livened and lengthened by the successful return to electoral democracy.

Within the Ministry of Health, all major appointments had been made by the end of January 1985, at which time the new Permanent Secretary, Mrs. Ruth Rahim, was briefed on our project by her predecessor, Mrs. Margaret Dowe. Our relationship with her was cordial and cooperative right from the start (as had been the case with Mrs. Dowe), but there was an initial period during which the new Permanent Secretary was familiarizing herself with the situation, and during which District Health Teams and communities were waiting to see what would happen. Thus, the election produced an interruption of about four months. By itself, this obviously would have required a drastic revision of our schedule but, in addition, the arrival of new parliamentary representatives and ministers then gave all of our project communities another set of political variables to consider, further retarding the organization process.

In itself, the actual final departure of the American Forces in June, 1985, was a quiet non-event. Yet it was the focal moment, precisely in the middle of the project, of a transition in Grenada's status from occupied protectorate to heavily-aided sovereignty. That the process occurred as smoothly as it did is a credit to several people and agencies, but the continuing facts of transition and dependence upon aid affected everyone in the country. Health-related aid, most conspicuously through Project Hope, effectively steered Ministry of Health activities away from Primary Health Care priorities. This diversion of the Ministry's attention was understandable and necessary, because the aid was substantial, time-limited, and never to be repeated.

In communities all over the island transition meant, for example, adjustment to high unemployment, to new and chancy routes out of unemployment, and to rules-of-the-game different from what had existed for five years. (And, for people in their 20's, those five years had provided the only rules they knew.) Government departments were severely strained by all these developments and transitions. Even before the Gairy-Bishop-Braithwaite changes from 1980 to 1984, the civil service had been undergoing a post-colonial maturational transition. The already-limited pool of trained personnel, further depleted by the turbulent events of those years and by the chronic training-drain (which has more skilled Grenadians in Toronto than in Grenada), was rapidly exhausted. Transition, with the quiet embarkation of the last American soldiers as the watershed event, created the main distractional theme for the country throughout the project period.

In Grenada, patterns of morbidity related to infantile and early childhood diarrhoea have fluctuated widely over the past decade. Even allowing for incomplete, uneven, and unreliable reporting, it is clear that morbidity rates are difficult to predict. Some variability results from the combination of small scale and community isolation. Communities even a very few map-kilometers apart may be quite different in physical, social, and economic characteristics. For very local reasons, therefore, a mini-epidemic can occur and significantly skew the overall rates. We have come to understand that DCM has many inter-related determinants and, hence,

that many factors can contribute to these 'local reasons'. As in other locales, Grenada has traditionally shown some seasonal variation but, over the last five years, not consistently. At the time of the establishment of the baseline morbidity rates upon which this project was founded, morbidity was a significant problem in many communities, and associated utilization a strain upon PHC resources. During the final, and methodologically crucial, six months of the project diarrhoea-related morbidity in our project communities was close to nil. Whether this fall in rates was simply the most recent of a long series of fluctuations, or whether it was related to some country-wide social and economic changes, remains to be determined.

Obviously, changes in the conduct of the project were required by all these events. The simple way to describe the project's adjustment to the cumulative time-subtraction by the election and smaller events is to say that the project's schedule was compressed. However, this compression was done unevenly, and required a good deal of improvisation, because later interruptions could not be anticipated when earlier adjustments were being made. The 'national transition' required that the project adjust to substantial variation in the cadence of community activity and in government-health team-community interactions. Communities were already experiencing about as much change as they could handle. Together with the above-outlined time compression, these consequences of transition made orderly planning of activities very difficult. The adjustment of project method to the unexpected (but, of course, welcome) fall in morbidity rates also dictated that the project concentrate upon the process of community organization rather than upon ORT-delivery.

The specific changes in data collection and analytical objectives are described in detail below but, anticipating the conclusions of this report, there are some general observations to be made about all these adjustments and the reasons for them. First, in developing countries such events are not atypical. Indeed, compared to what often occurs, they were relatively mild, orderly, and non-traumatic. Thus, any project like the one reported here must begin by assuming these unpredictables, and allowing for them in the budgetting of both time and resources. Secondly, the community organization process described below can be seen to be quite sensitive to all these events. While it is theoretically possible that a project could overcome such event-related delays by 'driving' a community's organizational process, our present belief is that this would create only the illusion of efficiency, because such organization would not 'take'.

C. PROJECT IMPLEMENTATION

1. Two Approaches: Active Design vs Responsive Shaping

An assumption, usually implicit, in much CO work is that the organization is (like) a technical device which, by analogy with other technologies, can be 'delivered' to a community. The general approach is to imagine (plan) some outcome form(s), and to identify barriers and the means to overcome them. This is the 'Active Design' view, which is liable to influence CO projects even when the people conducting the projects have a genuine concern for the communities' interests, wish them to maintain ownership of their own problems, wish to avoid cultural disruption, and so on. The final form of organization is determined in advance, and the 'help' offered to the community is designed to bring it about as efficiently as possible. This done in good conscience because the active designers live in such organizational structures, find them useful/comfortable, and tend to forget

both their cultural specificity and our own acculturation to them.

We now know that it is important to avoid the transfer of inappropriate or unassimilable technologies and, hence, prefer the transfer of skills. Our behaviour suggests that we have assumed that CO is a 'skill', in the relatively unbridled transfer of which we can feel constructively safe. However, it has repeatedly been observed that CO which occurs by active design has a high probability of 'rejection' which may be thought of both literally, as a behavioural choice by the community, and metaphorically, as the community organism ridding itself of a 'foreign body'. That is, community organization may more usefully be considered as a type of socio-cultural 'soft' technology which, in its interactions with a new setting, shares many of the problem characteristics of the more familiar hard technologies.

There are good reasons, from the social and behavioural sciences, why we should expect that a more 'natural' approach to CO would avoid some of the rejection problems encountered when a design is actively imposed. Such an approach assumes that a community adapts to the environment in which it exists through a succession of 'spontaneous' collective behaviours. The most successful communities 'learn' from successes and failures, and 'choose' the most productive self-developmental path. A 'Responsive Shaping' approach to community development aims at encouraging a succession of spontaneously emitted community actions toward some desired result. Thus, the project 'responds' to what the community itself does, the goal being that the community's behaviour will gradually be 'shaped' into effective organization.

2. The 'Active Design' Process

The AD approach implies and requires that: (a) community members be socialized to specific types of organizational behaviour; (b) there be a high degree/probability of acceptance by the community of such organizational forms; (c) the 'unofficial' factors (informal structures, personal feuds, political intentions) be relatively weak. When these requisite conditions are not met, they are seen as 'barriers' (usually described in somewhat patronizing terms). Indeed, the real meaning of 'developing' (as in "developing countries") is the process of overcoming such barrier-problems. It seems that 'more developed' is a virtue which consists fundamentally of meeting these conditions. There is a circular conundrum here: How can we rationally propose a means to development which requires that the goals of development be met before we start? The active design approach means 'conducting' an organizational development process.

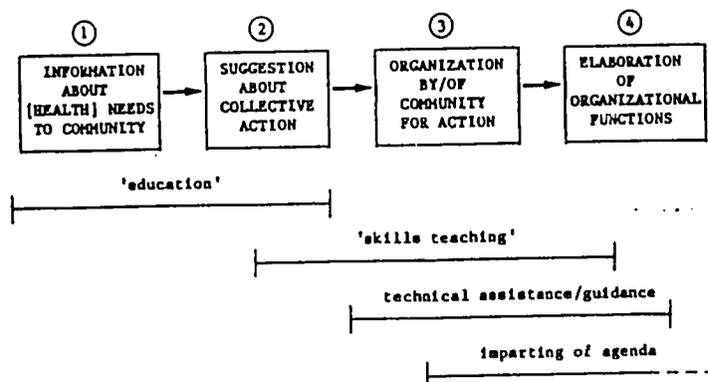


Figure One: Normative Model for 'Active Design' Community Organization

In AD, there has been a pre-determination both of needs and of organizational form and function. The project is active in its tasks of 'education', 'skills teaching', and so on. The educational activity is based upon the assumption that when information about (health) needs is brought to the community, the people of the community will adopt a posture of needful expectancy which, in turn, calls for instruction about how to get organized. The aim (of the project, as transferred to the community) is to have an organization which can do something such as, e.g., distribute ORT materials. It follows that the key determinant of successful 'performance' will be the technical (i.e., delivery) proficiency of the organization. Viewed this way, the organization is an apparatus, or tool, which comes about through a linear sequence of communal behaviours that seems almost inevitable, and certainly self-evidently rational, to someone who has been well socialized to European-American 'industrial' institutions.

3. The 'Responsive Shaping' Process

The Responsive Shaping approach assumes spontaneous activity in/by the community. The conceptual basis for this approach comes from social psychology, system dynamics, and such operational schemata as the Health Belief Model. It requires a distinction between a 'Formation' dynamic and a 'Maintenance' dynamic (see below). In the Formation Phase of community organization, a series of stages occurs 'naturally', as shown in Figure Two.

No stage can occur before its predecessor, but the serial linearity of the diagram is a normative idealization, and the process is not as neatly sequential as shown; e.g., the "consensus" in #1 cannot happen without there having been some assembly, and the assembly-into-a group of #'s 3 and 4 implies some anticipation of action. Moreover, the group may wish/try to skip stages; e.g., embarking upon action without having achieved organization. When this occurs, the problems encountered may be remedied by 'cycling back' through earlier stages. Following successful action, a new Apprehension occurs as Discovery of Needs, and the Application of lessons learned occurs through the Assembly and Action stages; i.e., the process is cyclical. Through a number of cycles, the Organization persists, so that the need for the new Assembly Stages is progressively reduced, eventually to nil. At that point, the Maintenance Phase begins, but if the organization is under-used, poorly maintained, or faulty, the organization may have to re-do some of the Formation Stages. The conceptualizations, tasks, and data-collection orientations of the project team are determined by the properties of this staged process. In the Responsive Shaping approach, the project strategy is to anticipate and respond to developmental events, so as to (help) establish necessary conditions for each successive stage. The project 'coaches' or 'guides', rather than actively organizing.

4. General Project Tasks

The most fundamental project activity consists of tracking the Formation process, so as to determine which stage-specific tasks are appropriate and, especially, how to establish priorities amongst them. Although differing necessary conditions from stage to stage dictate a variety of tasks (see below), there are three common themes across all the stages: communications, sharing skills, and cultivation of efficacy.

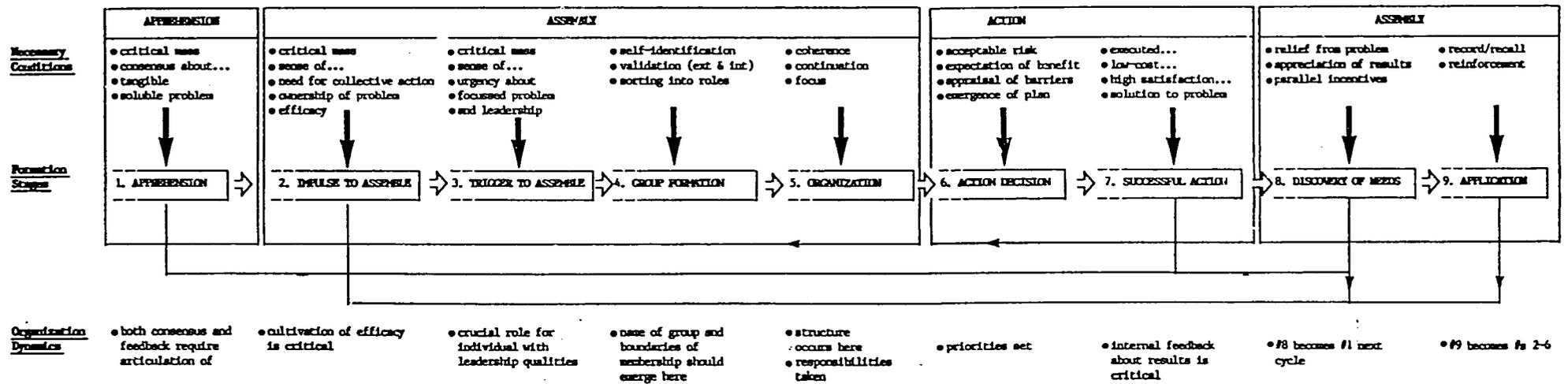


Figure 2a: Normative Model for Formation of Community Organization

The most important **communications** are internal. A group does not exist without communications and, for it to persist between actual gatherings, there must be some continued 'presence' in the form of conversations, posters, newsletters, art, songs, or events (such as, e.g., plays or contests). For these communications to distinguish the group from all of the other human events in its environment, it must have an articulated aim, an emotional theme, and a vocabulary. Thus, a crucial role for the project is to foster a clear articulation of the group's emerging consensus which, of course, means providing some conceptual tools for this clarification. It also means supporting the use of whichever internal forms of communication are best suited to the community. There are also external communications which are important because a group identifies itself partly through responses from its environment.

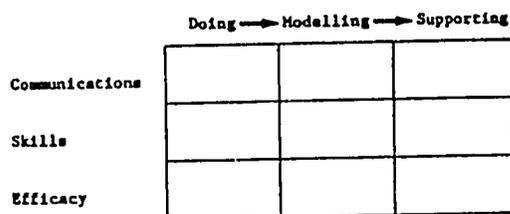


Figure Three: The Three Steps for General Tasks

There are many organizational **skills** which help a community from one stage to the next; record-keeping, scheduling of activities, assignment of tasks, and the actual conduct of infrastructure activities (phone calls, typing). None of the activity necessary for the progression from one stage to the next occurs without a critical mass sense of **efficacy**; i.e., people are not likely to sustain even cost-free and risk-free activity if there does not seem to be some likelihood of success. Thus, the most important function of a project team often is simply to convey a sense that an undertaking is worthwhile because, e.g., it has worked somewhere else or, especially, that the project workers have experienced their own successes.

With all of these general tasks, there often is a progression of steps, from the project team actually doing them, through modelling them for community members, to supporting the community members in doing them (Figure Three). A day-to-day implementation decision, with respect both to general tasks and stage-specific tasks, is: Which step are we at? Doing, modelling, or supporting? The actual behaviour of the project worker depends upon the answer to this question.

5. Stage-Specific Tasks

Preceding each stage, the project team's tasks are to establish the necessary conditions for the achievement of that stage. For each stage, there is a corresponding list from which, depending upon specific community circumstances, it is possible to formulate an array of appropriate tactics and methods. As outlined above, these are attached to the continuing themes of communications, skills sharing, and cultivation of efficacy. As also outlined above, it is necessary to determine in each instance whether the appropriate emphasis is to do, to show, or to support. The critical items in each stage-list are indicated in Figure Two. The on-going agenda of a

project, therefore, is determined by a regular series (sometimes, as often as daily) of 'diagnoses' of the community's organizational formation process.

6. Maintenance Phase

As a community goes through the formation cycle, and then goes through it again, the Organization becomes permanent, the 'Assembly' stages are skipped-over, and the action cycle is reduced to the following:

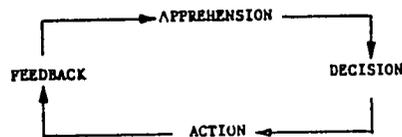


Figure Four: The Action Cycle for a Community Organization
in the 'Maintenance' Phase

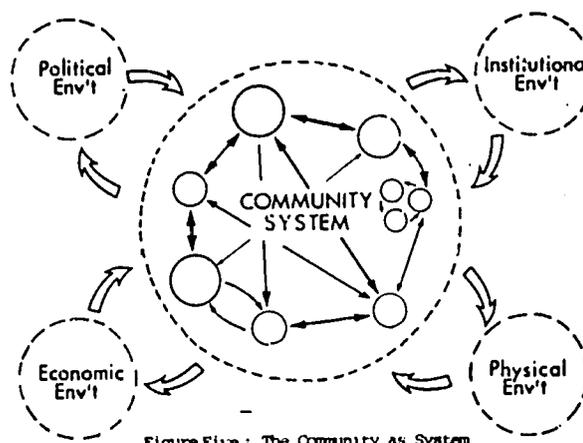
The maintenance of the organization involves a dynamic which differs from that of its formation and which, accordingly, calls for different responses from the project team. It is important to note that the descriptors which are appropriate to the monitoring of an organization-in-maintenance differ from those for an organization-in-formation. Some communities go through repeated formation cycles without ever becoming permanent (i.e., without ever reaching a Maintenance phase).

Alongside the task of supporting the progression through the formation stages, the most important overall objective of the project team is to assist the achievement of permanent organization. This probably cannot occur if there is not a useful record of the Formation Process available to community members. Often, and in many societies, the record is part of an oral tradition. An organized and literate record is, however, necessary to increase the speed of formation of a permanent organization. Hence, the important project team function of chronicling formation developments.

7. System Description of Community Organization

Communities in Grenada have virtually no formal structure. There is no mayor, administrative officer, or head man. All geographic, administrative, and membership boundaries are indistinct. This informality allows the members of the community to develop whichever style of elective action suits their circumstances or, it may be supposed, makes it probable that they will adopt whichever form might arrive in the absence of alternatives. If alternative CO options do arrive together, traditions and models which might offer the community some basis for discriminating choice are somewhat meagre. As a consequence, even under the simplest of circumstances and especially if there is any 'competition' between alternatives, patterns of communication, alliance, authority, and decision-making are fluid and elusive. Superficially, such irregularity appears to make the description of CO processes very difficult. In fact, it was probably an advantage for the project because, even in the presence of a well-defined formal administration, it is often the informal power structures which are most

significant. We were thus spared the seductive distraction of a set of formal mechanisms which might have kept us from seeing what was really happening.



It was necessary to impose some conceptual order upon our impressions. Team members became, without this having been planned in advance, partial participant-observers. They were not actually living in the communities (although some did, part-time), but were frequently present and active in much of the organizational process. We adopted a social systems approach, at first implicitly and informally, identifying as key elements the belief systems, instrumentalities, roles, and institutions which might organize the perception of a cultural anthropologist. We saw these as interacting, and as thus constituting an open system. This system is in constant interaction with other systems in its context: geo-physical, economic, and political. There is, of course, also a policy-administrative context, or interacting system, and since our ultimate concerns are health-related we focussed principally upon the Primary Health System. Thus, we are able schematically to draw a systems portrait of a community, as shown in Figure Five. The structural detail of such portraits varies between communities. The purpose is to indicate which community 'elements' to analyze and monitor, and the nature of the interactions between them. Depending upon the notational conventions which are adopted, such a portrait takes on a system dynamics, ecological, ethological, or anthropological cast.

8. Method: Original and Modifications

The original proposal described a parallel case study design involving five communities, four 'experimental' and one quasi-control. The intent was that each of the experimental communities would be the site for one of the four alternative forms of community organization (pre-primary school, community health committee, community members in health teams, health auxiliaries). This design allowed for a comparison of the performance of different forms of CO for the delivery of ORT.- -

The feasibility of this design rested on assumptions which from the outset of the field work proved tenuous:

- that all experimental communities were equally prepared to organize around child health care issues, and ORT delivery in particular;
- that each community would opt for a different form of CO, so that all four alternatives were represented;
- that ORT materials were available for community-based delivery;
- that the prevalence rate of diarrhoea-related morbidity would be sufficient to generate the need for ORT in each community.

None of these basic assumptions was satisfied, necessitating major revisions to the study design and methods. The reasons why the assumptions were not met are in themselves instructive and deserve mention.

Community organizations are often fragile and transitory. What appears as a healthy and active group can quickly evaporate in response to adverse internal or external circumstances. This has been the Grenada experience. Our early field work had indicated the existence of proto-organizations in several of our study communities. This gave us confidence that there was a basis for the rapid formation of COs around child health care to the extent that in the addendum to the original proposal (dated September 18, 1984) we allowed just one month (January, 1985) in the workplan and schedule for the "formation of community organizations". Even under ideal starting conditions this was an optimistic estimate. Given the social and political realities of the time, it proved entirely unrealistic.

In our progress reports (especially that of November 18, 1985) we have described the conditions arising from the rapid political transitions on the island as a consequence of successive government changes and attendant shifts in Ministerial personnel. One result of immediate relevance was uncertainty at the community level about the role of COs under the new order. This inevitably generated a wait-and-see attitude on the part of community leaders, and associated delay, if not disappearance, of organized activity around local issues including health needs. In short, even if COs had existed in advance of the study, the climate in late 1984 through mid-1985 was not conducive to the rapid emergence of active COs ready to assume new responsibilities such as ORT delivery.

In the proposal, we recognized the importance of negotiating the form of CO adopted in each community with the community members themselves. Imposition of a CO form, while attractive from the 'Active Design' standpoint of ensuring that the different alternatives were included, was unacceptable to the communities and, indeed, contrary to the concept of community participation which underlies the McMaster-Grenada project as a whole. One implication of a negotiating (or, better yet, a 'Responsive Shaping') strategy is the possibility that some, or perhaps even all, communities will opt for the same organization alternative, hence limiting the scope for comparing the performance of different forms: this has, in fact, been our experience. In each of the four communities where COs have formed, the pre-primary school has emerged as the preferred alternative.

Another implication of our avoidance of imposing and orchestrating CO development (not that we realistically had much choice) has been that each community has proceeded at its own pace. This links back to the first assumption. Not only is it unrealistic to assume equal states of readiness for CO activity, it is also necessary to accept that development will proceed at very different rates for reasons which are not necessarily related to the form of CO adopted.

ORT distribution in Grenada has been highly centralized, with materials distributed from the Ministry of Health to the health centres and stations for dispensing by PHC personnel. Community-based distribution has been resisted (centrally, though not by District Team Leaders) until very recently (December 1985) when sanction was obtained to permit the use of volunteer distributors in the study communities on a trial basis. This constraint has obviously significantly reduced the time period during which it has been possible to monitor ORT management and utilization. CO development around ORT would therefore necessarily have had less emphasis than initially intended, even if the communities had actively pursued this course.

A further constraint on monitoring ORT use has been the low rate of diarrhoea morbidity during the study period. Increased access to materials following the introduction of community-based delivery had little effect on usage, because there was practically no need. Obviously, this is a desirable situation but one which also limits the feasibility of the original design which had assumed, based on our own-recent morbidity surveys, sufficiently high prevalence rates.

Thus, the design and methods described in the proposal had to be revised substantially to accommodate the realities of the situations we encountered in the field. The net effect of these circumstances was to shift the focus of the study from testing the effectiveness of alternative COs to monitoring the development of COs in different community settings. This shift did not result in any basic change in design architecture: the parallel case study design was retained, involving the same set of communities. The major change was that the inclusion of a quasi-control community no longer had much purpose.

The reviewers of the original proposal anticipated this shift of focus. Their recommendation that the study could more usefully examine the criteria for CO selection than attempt to identify a "best" CO solution was sensible and accepted in our addendum to the proposal (September 18, 1984). In light of our subsequent field experience, the validity of the recommendation has been strongly confirmed.

9. Instrumentation and Data Collection

The proposal called for the collection of four types of data under the headings of: community organization performance, ORT acceptance, use and compliance, hospital health system utilization, and impact of ORT delivery on child health status. Given the revised focus of the project, the emphasis for data collection was upon the first two. Utilization and morbidity data have been and continue to be collected, but it is premature to expect measurable changes due to CO activities around ORT especially with the relatively low incidence of diarrhoeal disease over the past months.

Three instruments were developed to measure CO performance.

- (a) Community Organization Performance Survey: this was a questionnaire administered to community members to determine knowledge of and attitudes toward the local CO. Participation in community activities was also measured.

- (b) Narrative Report Form: this was a simple recording form developed to provide a systematic basis for filing information on significant community events, whether obtained by direct observation or through conversation with informants.
- (c) Community Meeting Evaluation Form: this was developed to provide a systematic record of the conduct and outcomes of CO meetings. It provided information on attendance, agenda, modes of participation and decision-making and action items.

Two methods have been developed to measure ORT acceptance, use and compliance.

- (a) ORT Knowledge Survey: administered jointly with the CO Performance survey, this questionnaire determines community members' knowledge of the causes of diarrhea, the purpose and appropriate use of ORS, and willingness to receive more information through health activities.
- (b) ORS Case Management Records: these are forms to be used by the community distributors of ORS to record amounts distributed, appropriateness of use, wastage and outcomes.

The methods for data collection on health system utilization and child health status are as follows:

- (a) Hospital Admissions Data: detailed information on all pediatric admissions for gastroenteritis and malnutrition have been extracted from the hospital records for a five and a half year period up to mid-1984 and will be updated on an on-going basis. This information includes home community and so will allow monitoring of changes in admissions post CO formation.
- (b) Child Assessment Form: children in the study communities in the age cohort (birth to six years) have been assessed on at least an every-three-months basis. Data collected include self-reported morbidity with detailed information sought on diarrhoea episodes. Anthropometric measures are taken to permit growth monitoring.

D. COMMUNITY CASE STUDIES

1. Format

In this section we describe and analyse the formation and development of community organizations, taking each of the five trial communities in turn. A brief profile describing environmental and social characteristics, past community works and the health status of the children is followed by a chronological review of the activities of the project, and a commentary on the factors which have influenced CO formation and development. This account is deliberately synoptic. No attempt is made to exhaust the wealth of detailed information which the project team has assembled. We draw upon several sources of data in compiling the synopses: the narrative report forms, minutes of community meetings, interviews with key informants and community surveys. It made no sense to try to present the data in separate pieces. Rather, we have integrated them in line with our previously stated

purpose of providing a sequential portrait of events and their determinants in each community.

2. Belle Isle

(a) Community Profile:

Situated in St. David's parish in the south of the island, Belle Isle is a small rural community comprising 35 households, a total population of 192 (March, 1986) and 39 pre-school age (i.e., under six) children. The level of education of the adults is generally low, only seven residents having any post-primary schooling. The community has a reputation for poor school attendance. There is chronic unemployment and consequent socio-economic deprivation. Opportunities for paid employment are typically temporary, low-paying, part-time agricultural jobs. There are many single mothers; some have access to extended family support, others lack any source of social or economic stability.

At the time of our baseline morbidity survey (January, 1984), of the 63 pre-school age children surveyed, 22% had had at least one diarrhoea episode in the previous three months, 6% had had recurrent diarrhoea, 53% had worms and 45% had some skin disorder. Standardized anthropometric scores showed the following percentages as malnourished (i.e., > -1.0 below the WHO norm): weight for age, 71%; height for age, 52%; weight/height for age, 56%.

Under the PRG regime, there were active community groups, primarily for women and young people. These were discontinued after the intervention in October, 1983. There is some history of community self-help, most notably the construction of a small community centre.

Prior to the McMaster project, the PHC team at the St. David's Health Centre had begun out-reach into the community. A variety of health education activities had been offered at the centre and had attracted limited involvement by Belle Isle residents. The PHC team accepted and endorsed the importance of community participation in child health care but acknowledged an incapacity to implement effective CO activities.

(b) Synopsis of CO Activities:

The Project has been active in Belle Isle since late 1983 when the Field Director was introduced to the community by the PHC team leader at the St. David's Health Centre. Initial rapport was established by informal home visits and participation in community social events. There was quite ready acceptance of the project's child health objectives and of the importance of community participation in health care. To a large extent, this was due to the prior activities of the St. David's PHC team and the respect and confidence they had earned.

This initial information contact led to a baseline morbidity and risk factor survey conducted in January 1984. Monthly child assessment data were collected throughout 1984 by our Grenadian field workers. The project therefore had had a presence in the community for over a year before the commencement of the PRICOR-related activities in early 1985.

The formation of a CO dates from a community meeting held in February 1985 at which officers were appointed and the group assumed the title of the

"Community Development Working Group". The executive was enthusiastic and energetic and benefitted from the support and advice of the PHC team, the McMaster team and Ministry of Community Development staff.

The catalyst for the quite rapid emergence of a CO was the urgent need for reconstruction work on the one road into the community. Several necessary conditions were satisfied for the formation of a CO around this issue. There was community consensus on the urgency of the problems created by the deteriorated state of the road. The need was tangible and potentially soluble. Individuals able and willing to assume leadership roles were present in the community. External groups were on hand to encourage and advise. The convergence of these factors was such that several stages in our conceptual model of CO formation were telescoped and a structured organization with identified leaders and roles emerged very quickly.

The viability and credibility of the CO was soon reinforced by the acquisition of funds with outside assistance from USAID. Funds were provided to cover material costs for a three-phase road reconstruction project. Responsibility for doing the work lay with the CDWG. A volunteer labour force was quickly mobilized and work began in June 1985. By October, the first two phases had been completed, engendering a sense of achievement and efficacy which instilled confidence to undertake other community works.

The resilience of the CDWG was tested in the October-December, 1985, period when heavy rains delayed work on phase three and did some damage to what had already been completed. The leadership was successful in mobilizing support for the necessary repairs and the last phase of the project in January, 1986 leading to successful completion in April.

The leadership had some fears that the completion of the road project might lead to a decline in enthusiasm and support for CO activities in the absence of a similarly urgent, tangible and soluble problem. This has not happened because, again with the help of outside groups, including the McMaster team, the CDWG and the community at large have reached consensus on the need for a multi-purpose community centre. Among the functions such a centre could support is a pre-primary school with associated opportunities for adult activities, including health education.

Although identified early on as a priority need, the community centre project has proceeded slowly because of two complicating issues: site acquisition, and the involvement of the local Catholic church. The existing centre, constructed as a self-help project under the PRG, is too small, in disrepair and currently inaccessible because the landowner has fenced it off. Protracted discussions over ownership of the existing site and possible alternatives made little progress over several months, and could easily have led a less resilient and determined CO to shelve the project altogether. In this case, buoyed by the confidence and sense of efficacy generated by the road work and on-going encouragement and support by the McMaster and PHC teams, the CDWG leadership contacted the area Parliamentary Representative, Danny Williams (also the Minister of Health) to request his assistance. This culminated in Mr. Williams visiting the community in January 1986 to inspect various sites and to consult with community representatives.

This proved to be a very significant event in terms of reinforcing the credibility of the CDWG in the eyes of the community at large as well as

strengthening resolve to bring the community centre project to a successful conclusion. This resolve has been strengthened further by positive news on a community centre site received from Danny Williams in March 1986. Beyond providing background support and advice, the project team contributed more directly to the community centre project (see Section D8: "Community Centre Design"). A trainee architect team-member worked with members of the community from September to December, 1985, on the design of suitable, low cost building. The plans were drafted on site, and redrawn in Canada to be delivered to the CDWG so that construction can begin as soon as possible.

The relative success achieved in these two community projects has established the *raison d'etre* of the CO and has generated widespread support within the whole community for the continuation of self-help activity. This sentiment paves the way for extending the agenda for activities beyond the problems commanding immediate consensus based on their obvious urgency and tangibility. In this way health care issues enter the agenda. Because health problems in the community are more chronic than acute, they were not apprehended by many people as deserving highest priority for community mobilization and action. The situation is changing as the CDWG, McMaster team, and PHC team work in concert to communicate through community meetings, home visits, promotional materials and individual conversations that the potential exists to control and prevent chronic morbidity, especially among the children. This joint initiative to increase the visibility of health issues has been greatly facilitated by the fact that two of the McMaster team are Belle Isle residents. As team members they have received extensive training in health education and primary health care and are anxious to share their knowledge and skills with their fellow residents. One of them, Vernon Houstone, as president of the CDWG, is particularly well placed to increase the visibility and priority given to health care in the community.

There is already clear evidence that health issues are gaining prominence as issues for community discussion, participation and action. In November 1985, the CDWG contacted the Environmental Health Officer regarding the provision and maintenance of latrines. There is on-going cooperation and a latrine programme should begin within the next two months. In December 1985, plans were made for a series of health education activities to be held in the community. Previous health activities offered by the PHC team at the St. David's health centre had attracted few Belle Isle residents. Health education sessions were introduced as part of the agenda of CDWG meetings in January 1986. The initial focus was on GRT but has been subsequently extended to cover a range of topics related to the causes, control, and prevention of childhood morbidity.

Growing attendance at these meetings (now averaging between 30 and 40, mainly mothers and children), together with increased quantity and quality of participation, are encouraging indicators of the importance now ascribed to primary health care. Even more encouraging, though so far based upon informal observation only, has been the evidence of appropriate behaviour changes subsequent to health education sessions. This has been noted in cleaner yards, more children wearing shoes, and parents instructing children to stop sucking their fingers and to stop eating dirt. In addition, four families have paid to have a latrine installed. A final positive index is a proposal to construct a temporary health education structure pending construction of a permanent community centre. At present, meetings are held

in the open air and are therefore vulnerable to postponement or disruption by bad weather.

In summary, the Belle Isle experience has been a very positive one. The necessary conditions for CO formation were present. The subsequent achievements on the projects directed toward the immediate priority problems have led to the present situation where there is good prospect of the CO continuing on a self-sustaining basis with a widening agenda which includes primary health care as a priority item.

(c) ORS Management:

In Belle Isle, a community woman was trained and visited frequently by two project field workers. The project physician also met her and certified her understanding and ability to use ORT and counsel patients about danger signs of dehydration. She has ORT packets at home, and all members of Belle Isle Community have been advised that she has but, by April 15, 1986, had not had any cases requiring its use.

}. Coastguard

(a) Community Profile:

Coastguard is located in St. John's parish, near Victoria, on the west coast of the island. There are 56 households (March 1986) with a population of 268, including 67 pre-school children. The community is divided into two sections, Upper and Lower Coastguard. The former has better quality homes, slightly higher educational and socio-economic levels, an older population, and a more conservative political orientation. Lower Coastguard has more young couples and small children, lower income and education levels, higher unemployment and socialist political leanings. There is more stability in family structure than in many other communities, with couple-led households being the norm. Long-standing relationships are common, involving live-in husbands or boyfriends. Part-time work on local agricultural estates is the main source of employment.

At the start of the study period, the community lacked basic facilities and services. The roads were in poor condition, and there was no electricity or piped water. The nearest community standpipe was about three-quarters of a mile away. There was no pre-primary school and the community centre, built as a self-help project during the Gairy regime, was abandoned.

There were active community groups largely organized around social and sports events during the Gairy and PRG periods. Occasional self-help community projects were conducted to clean out drains, trim trees, etc.

The PHC team working out of the Gouyave health centre under Nurse Joseph's leadership had been actively involved in the area for three years prior to the PRICOR study. Activities included mobile clinics, child nutrition assessments, an anemia survey, immunization programs and growth monitoring. Health education problems had been identified (e.g., teenage pregnancies, lack of family planning), but few in-community or in-centre educational activities had been conducted. Despite a laudable commitment to community participation, no mechanism had been established for the involvement of community workers in PHC planning or programming.

The community has had occasional diarrhoea outbreaks, and worms are endemic. Child assessments conducted by the McMaster team between July 1985 and February 1986 show that of the 64 children assessed 36% had had at least one episode of diarrhoea, 5% had had recurrent diarrhoea, 17% had worms and 13% had skin disorders.

(b) Synopsis of CO activities:

Initial contact was made with the community in April 1985. McMaster and PHC team members made home visits and held informal interviews to generate interest in a meeting to discuss community needs. A meeting was held in May with about one-third of the community members in attendance. Open discussion with both men and women actively participating led to identification of needs and some attempt to prioritize them. Consensus was strongest on tangible, facility related issues, specifically, the provision of piped water, road repair and repair of the community centre. Health needs including ORT were discussed but there was no strong sense that they were a sufficient reason for community organization. Potential leadership for a CO existed and the members present at the meeting decided to appoint a steering committee but no action was taken on this immediately. It was not until mid-August that officers were actually elected.

Several of the necessary conditions for the formation of a CO were met at the time of this meeting in May. Urgent and tangible needs were identified, there was consensus as to their priority and leadership potential existed in the group. Other factors, however, acted against the rapid emergence of a CO. It was not clear how any of the desired facility improvements could be achieved in the absence of financial resources to acquire the necessary materials. This contrasts with the situation in Belle Isle, where under similar circumstances the community had access to USAID funds through the assistance of the office of Community Development. Lacking this kind of aid, it was not clear that the problems were soluble and this created a disincentive to CO formation. A second factor was a lack of organizational and communication skills within the potential leadership. Also relevant was the past history of community works in Coastguard. The May meeting was not the first occasion when the community had come together and reached consensus on needs. Past failure to progress much beyond talking about what should be done had generated a relatively negative and pessimistic attitude toward the prospect of anything happening on this occasion. Finally, in contrast to Belle Isle, there was some political conflict within the community which presented a potential obstacle to the formation and functioning of a CO.

The net effect of these barriers to CO formation was that attempts, supported by the McMaster team, to hold follow-up meetings in June and July were unsuccessful. The situation changed in August when USAID made funds available to underwrite community self-help projects. To obtain these funds it was necessary for communities to submit a project proposal. The deadline for proposals coincided very closely with the mid-August meeting at which officers were elected to serve on the steering committee. At this point, the McMaster team offered to assist the committee to draft a proposal to fund the upgrading of the community centre and the provision of piped water. The offer was accepted. The committee, and particularly the president, Mr. Letouche, acted effectively to obtain the necessary signatures of support from community residents so that the deadline for

applications was met. The funds were awarded in late August.

The acquisition of funds did not generate immediate action. Although the steering committee was in place, a plan of action was not, and the group lacked the skills necessary to formulate one. The PHC team leader discouraged the McMaster team from taking initiatives at this stage, believing that the people should organize themselves with minimal outside assistance. Two community meetings were held in September but without much progress.

By the end of January 1986, it was apparent that outside assistance was needed as a catalyst for action. The PHC team leader came to acknowledge the need for quite intensive external input in the early stages of community organizing. The McMaster team established weekly meetings with the steering committee to transfer organizational and planning skills. This led to the formulation of a work schedule, the allocation of tasks and the mobilization of personnel and materials. These action steps have brought some latent personality and political conflicts to the surface, but the steering committee has proved to be quite resilient, is gaining in self-confidence, and is gradually less reliant upon external support.

Between February and the end of April, the water project was virtually completed and plans were in place to commence work on rebuilding the community centre. In response to the obvious achievements by the community over the past few months, officials from different ministries have offered to provide financial and technical support for the community centre and road projects. As an outgrowth of the mobilization of the community around these projects, there is evidence of growing interest in PHC needs. A pre-primary school teacher has volunteered to serve as a member of the PHC team. In anticipation of access to the community centre, residents have requested a nutrition and health education program.

(c) ORS Management:

In **Coastguard**, which had only slowly become united around a project to bring water to all parts of the community, the District Health Team Leader decided not to allow community ORT distribution, maintaining that the nearby Health Centre is accessible. The community had, however, become increasingly vocal and its elected representative to the District Health Team made requests to the nurse to permit community distribution. Capable distributors had been identified, and other health-education activities are on-going in the community.

4. Plaisance

(a) Community Profile:

Plaisance is a tiny community on a privately-owned agricultural estate in St. John's Parish. There are only eleven households, a total population of 77 (March, 1986), including 16 pre-school age children. Education levels are low, only four people having post-primary schooling.

The community is quite remote and access is difficult by way of a poorly maintained mountain road. The nearest primary school is three miles away. There is no electricity. One community standpipe serves the whole

community. The only facility is a shop owned by the landlord of the estate, who exercises considerable influence because most people buy supplies from him on credit and are therefore normally to some degree in debt.

There is little population mobility. Families have lived in Plaisance for generations and it is common for individuals to be there all their lives. Extended family households are the norm. Residents tend to be quite shy and reserved, especially the women.

Involvement in community groups has been very limited. There was a self-help group under the Gairy regime but it was not very active. There were also sports and cultural groups. The PRG introduced youth and women's groups which were organized by outsiders and involved self-help as well as recreational activities. They ceased with the intervention in October 1983.

The PHC team from Gouyave health centre has been working in the community for three years. Activities have included a monthly visit by the mobile health unit, a quarterly clinic, nutrition assessments, immunization programs and growth monitoring. Traditional health beliefs are widely held in the community. Child health assessments by the McMaster team began in July 1985. Since then, of the ten children assessed, only one has had diarrhoea and five had worms.

(b) Synopsis of CO Activities:

PHC and McMaster team initiatives to encourage the formation of a community group began in February 1985. There were several unsuccessful attempts to hold a community meeting. One was eventually held in April. Attendance and participation was quite limited, partly due to the natural shyness of the people. Two outcomes were achieved: the provision of a pre-primary school emerged as the priority need; and the local representative on the Central Water Commission emerged as the potential group leader. He had clear leadership abilities and some past experience with community self-help activities.

There was very little further progress toward CO formation until August 1985. Attempts to hold meetings to elect group officers were unsuccessful and as a consequence nobody within the community assumed a leadership role. The McMaster team continued to motivate community interest in group formation around health and other issues. For example, one of the field workers who was a resident of the area made home visits to encourage community involvement.

A catalyst for CO formation occurred in August 1985. In consultation with the above-mentioned leader and other community representatives, the McMaster team submitted a proposal to USAID for funds to support construction of a community centre in Plaisance to function as, among other things, a pre-primary facility. The submission was followed by another series of home visits to encourage attendance at a meeting scheduled for the last week in August. Notice of the grant award was received a few days prior to the meeting and this helped to stimulate attendance, participation and decision-making. Officers were elected including the emerging leader as president.

The newly formed CO committee met in early September to develop plans for the community centre and other possible projects. This led to a community

meeting in mid-September which ended in disarray with the arrival of the Parliamentary Representative for the area, who proceeded to conduct a competing meeting right outside the building where the community meeting was in progress. Her basic purpose was to communicate that she would take leadership responsibility for the community centre project, effectively nullifying the simultaneous activities of the CO. Not surprisingly, community loyalties were divided and confusion ensued.

The incident points up the vital importance of inter-agency coordination and communication and the need for social networking to ensure that all relevant groups and individuals are fully aware of planned activities. In general, the McMaster team invested considerable time and effort to developing social networks so as to avoid just this kind of incident. At a subsequent meeting at the Ministry of Health, with the Parliamentary Representative in attendance, the Minister, Danny Williams, fully endorsed the McMaster team and its support of CO activities in Plaisance, but by that stage the damage had been done in the community and CO development was set back several months. Given the infancy of the group, it lacked the resilience to withstand such powerful opposition. An additional negative outcome of the incident was that the PHC Team retreated in frustration from involvement in the community, preferring to concentrate effort on activities in the health centre.

Between September and March, activity in the community was limited to health education sessions provided by the McMaster team, focussing on diarrhoea and ORT, plus a household survey to determine ORT knowledge. In the course of the surveys, residents reported that no progress had been made on the community centre project. This led to a request that the McMaster team coordinate with the Parliamentary Representative and the PHC team to reactivate the project. Progress in this direction was made beginning in March and the basis laid for reorganizing the CO and re-electing officers.

(c) ORS Management:

Plaisance is covered by the same DHT as is Coastguard. Here, local O.R.S. distribution has existed for some time and is approved (by the team leader). The distributor has been taught and her skills evaluated, but no packets had been distributed as of April 15.

5. Pearls

(a) Community Profile:

Located in St. Andrew's parish in the east of the island, near Grenville, Pearls is a rural community containing 73 households and a total population of 305 (February, 1986) including 57 children of pre-school age. Among the adult population, education levels are generally low; only 28 have any amount of post-primary schooling. There is chronic unemployment; most depend on low-paid and uncertain part-time agricultural work.

The McMaster team conducted a baseline morbidity survey in January 1984. Ninety pre-school children were assessed of whom 30% had had an episode of diarrhoea in the three months prior to the survey, 4% had had recurrent diarrhoea, 52% had worms and 39% had skin disorders. Anthropometric scores showed 77% to some degree malnourished on weight for age, 59% on height for age and 71% on weight and height for age.

There are three sub-communities, Upper, Central and Roadside Pearls, a fact of some significance for CO formation, because of the intra-community frictions and rivalries which are part of the history and continue to influence current events. There were active community groups under the PRG especially for women and young people. They were supported primarily by residents from Upper and Roadside Pearls. Few from Central Pearls were involved partly because of an incident soon after the PRG came to power when a cultural group from the area was barred from using the community centre. This created bad feeling especially as the group had been responsible for original acquisition of the centre. This incident among others points to the highly politicized nature of past CO activities. There has been competition for support and power between groups from different parts of the community. Although the functions of past groups have not been explicitly health related, this history creates a complex situation for the emergence of new groups whatever their mandate.

(b) Synopsis of CO Activities:

The McMaster project has had involvement in Pearls since its inception in 1983. A baseline survey was conducted in January 1984 and monthly child assessments have continued since then. Efforts to motivate interest in a health-related CO date from June 1985 when members of the McMaster and PHC teams conducted house-to-house visits. There was not much enthusiasm although potential leaders were identified. Some consideration was given in August to applying for USAID funds to support a community self-help project but it was not pursued because there was as yet no CO in existence.

A community meeting was eventually held in Central Pearls in early September, resulting in plans to elect group officers. This took place at a second meeting attended by about 40 people. A nine member committee was formed comprising a president and vice-president, secretary, assistant secretary, treasurer, two trustees and two public relations officers. From the outset there was difficulty reaching consensus on priority needs. Past frictions quickly surfaced and different interests were hard to reconcile. The problem was compounded by the perception that several outside groups wanted to assist CO in Pearls but were failing to cooperate with each other while holding different views about "what the people in Pearls need". Besides the McMaster team, these groups included the Office of Community Development and Grensave.

Insofar as there was any consensus on needs, it focussed on the provision of a multi-purpose community centre which could serve as the location for a pre-primary school. Three options were identified: to construct a new centre; to renovate the existing centre; or to enroll children from the community in the pre-primary school already operating at a local church. An obstacle to the first was lack of support from the chief landowner in the community. A disadvantage of the third was that it did not offer facilities for other than pre-primary activities nor was it clear how much scope there would be for the school to function as a vehicle for health out-reach within the church setting. At a meeting held in October, discussion over these alternatives ended in confusion and some antagonism, in part because outsiders present were viewed as attempting to impose their will on the community.

At this early stage, there were clearly major obstacles to the emergence of a smoothly functioning CO. The historical legacy of internal division

within the community, together with the confusion created by the involvement of outside groups operating with different mandates, produced a situation within which necessary conditions for successful CO formation could not be met, most obviously the achievement of consensus on community needs and a plan of action for their fulfillment. Problems were compounded in early November when a second CO committee was appointed with the support of Community Development staff. The first committee could easily have collapsed at this point but for the support of the McMaster and PHC teams. Better communication and relations between the outside agencies involved was obviously essential. This was gradually achieved over the next few months as the McMaster and Community Development staff were able to coordinate their efforts.

In an effort to boost morale and the credibility of the CO in the eyes of the community at large, a decision was taken to stage an event to officially launch the group. This was held at the end of November. It was basically a social occasion which was successful in attracting a large turnout representing all sections of the community as well as representatives of outside agencies. To some degree, this was a turning point as it demonstrated the possibility of cooperation and participation within the community and was a visible sign of joint support by external groups. The event was a success despite bad weather (and the arrest that day of the group's vice-president who had been the person responsible for much of the preparation).

The better spirit was maintained at a committee meeting in early December and the group approached 1986 with visions of cooperative community activity on a range of projects. At this same meeting, McMaster and PHC team representatives urged the committee to begin to assume more independence and responsibility for decisions and to be less reliant on outsiders whose dictates in the past had been a cause of conflict and controversy.

The new year initially failed to fulfill on these optimistic prospects. In part this was due to internal problems within the PHC team and its consequent withdrawal at least temporarily from CO related activity. There were also some leadership problems within the CO committee; the president failed to attend scheduled bi-weekly meetings and, combined with other issues, this caused latent internal conflicts and tensions to resurface. Some reversal of these negative developments was achieved by the end of January when a relatively successful community meeting was held at which plans were established for various fund-raising activities.

It was at this stage also that the possibility was (re-)introduced by the McMaster team of identifying and training community ORT distributors as well as incorporating health education activities into the CO agenda. This was accepted in principle by the committee, but there remained obstacles to implementation because of skepticism on the part of leaders in the PHC team. Nonetheless, ORT distributors were identified and trained in February and health education sessions were introduced as part of monthly community meetings in March. Attendance at the meetings has been about 30, nearly all women. The activities are beginning to generate increased interest in PHC and requests for further information in terms of pamphlets and other educational materials.

In sum, the short history of this most recent CO initiative in Pearls has been quite difficult. Recognizing the longer history of community groups in

Pearls, this is hardly surprising. It is still not clear that the CO has reached a point at which it can continue on a self-sustaining basis. To date there have been no major achievements to bolster self-confidence among the leadership or to create strong credibility within the community at large. There is some prospect that the community centre restoration project will function as a tangible and visible *raison d'etre* and, if successful, consolidate the CO to the point that it can maintain itself in the longer term.

(c) ORS Management:

In Pearls, a larger community which geographically divides into three sections, three women have been identified as distributors. They each have had intensive teaching by a Project Field Worker and have been interviewed and evaluated by the team physician. Each has packets, and the community knows of their role through community activities and house-to-house visits. As of April 15, three cases received attention. One was appropriately not given ORS but advised to take fluids. Another two were appropriately given ORT and used it properly. All three cases recovered uneventfully.

6. River Road

(a) Community Profile:

River Road, on the outskirts of St. George's, is in a completely different category from the other four trial communities and the experience of the project there has been very different as well. It is a peri-urban squatter community which continues to grow quite rapidly with the arrival of migrants from rural areas seeking employment opportunities and access to the facilities and services of the town. The present population numbers well over 1000 distributed among 250 households. At the time of our baseline morbidity survey in August 1983, there were 163 pre-school age children.

The community exhibits a complex and inter-related set of environmental, social and health problems. The physical geography presents some immediate difficulties. A highly polluted river, subject to flooding in the rainy season, forms the northern boundary of the community. The densely packed housing is situated on a steep slope which creates drainage, erosion and pollution problems. Sanitation conditions are poor; latrine facilities are insufficient and poorly maintained. Garbage disposal facilities are inadequate with the result that trash abounds and with flies, rats and mosquitos. Untethered animals are common and their excrement compounds the insanitary conditions.

There are profound social problems. High levels of unemployment result in uncertain and meagre incomes. The women and children are the primary victims of economic deprivation. Female heads of households are the norm. Conjugal relationships are unstable, transitory and multiple. Husbands or boyfriends typically assume minimal responsibility for providing consistent financial support. Poor financial management aggravates the situation with excessive expenditures on alcohol at the expense of basic necessities. Economic deprivation is clearly seen in the substandard, overcrowded housing conditions. Furniture and other basic necessities are often minimal or absent entirely. Under such conditions of poverty, cynical and apathetic

The poor environment and socio-economic conditions compromise health status, especially among the children. Our baseline morbidity survey included assessments of 144 children of whom 46% had had at least one diarrhoea episode in the previous three months, 20% had had recurrent diarrhoea, 51% had worms and 43% had skin disorders. Anthropometric measures showed 64% malnourished based on weight for age, 52% on height for age and 49% on weight and height for age. Hospital admissions for gastroenteritis and malnutrition confirm the high risk status of children in River Road which has the highest admission rate of any community on the island. Even allowing for an accessibility bias, due to the close proximity of the General Hospital (two miles), this is convincing evidence.

Despite, or perhaps because of, the litany of tangible environmental, social and health problems, there has been little concerted effort in the past, either from within or outside the community, to mobilize CO activity. The magnitude of the problems has been a disincentive to action. There is a recognized need for an inter-sectoral approach at the governmental level to devise a plan of campaign, involving the Ministries of Health, Education and Communications and Works but, to date, a mechanism for achieving such coordination has not been emerged. Under the PRG, there was a community zoning council and its mandate included the fostering and support of self-help groups, but very little was ever accomplished. Under the current government, in the person of the area Parliamentary Representative, there is some resistance to outside agencies encroaching on what he views to be his responsibilities for River Road.

Attitudes within the community also constitute an obstacle to CO activity. Besides the cynicism and apathy already mentioned, difficulties arise due to the broad spectrum of political views represented. The recent political turmoil in Grenada has tended to heighten factionalism which then acts as a major barrier to cooperative action and the formation of cohesive CO groups.

The St. George's District Health Team has been reluctant to initiate in-community health activities. Given the proximity of the health centre to River Road (about 3/4 of a mile), it is easy to justify providing service only in the centre. The DHT acknowledges the need for health out-reach but regards the underlying environmental and social problems as requiring action by government and other agencies as a pre-condition for commitment on its part. Community health programmes in the past have been relatively ad hoc, only partially implemented, and lacking any monitoring or evaluation as to effectiveness.

(b) Synopsis of CO Activities:

The McMaster team has had a presence in River Road since the inception of field work in August 1983. Initial home visits to introduce the project and establish rapport led to the baseline morbidity and risk factor survey conducted in late 1983. Since then, monthly child assessments have continued, so the team has been visibly active in the area for over two-and-a-half years.

Recognizing the magnitude and complexity of the problems in River Road, our approach in the early stages of the PRICOR study period was to hold meetings with government ministers and officials in an effort to foster the formation of an intersectoral government committee to review the needs of the community and to formulate a coordinated plan of action. This was an

ambitious undertaking which met with a polite and positive response, but no action. Efforts were also made to hold meetings to bring together the Parliamentary Representative and others with leadership responsibilities in the area. Four attempts to meet were all aborted.

Within the community, three meetings were held to discuss health and related problems. Advance publicity by means of flyers and home visits did little to generate interest with the result that turnouts were very low and no significant progress was made toward CO formation.

Meetings with the district health team to motivate a stronger commitment to in-community activities met with qualified success. Interest in health education and CO/CP methods was generated and some skills were transferred via workshops. The latest resistance to involvement in River Road was not overcome. The DHT preferred to focus in-community activities on D'Arbeau, a smaller neighbouring area, perceived as more manageable given the team's resources. The McMaster team assisted the DHT in a baseline health survey in D'Arbeau. The survey generated community interest in health education activities, but little progress was made toward implementation, partly because of an unwillingness by the DHT workers to be involved in evening (i.e., after hours) meetings.

The McMaster team has organized two health activities in River Road on diarrhoea and ORT. Both were poorly attended. Two mothers volunteered to serve as ORT distributors, but soon dropped out.

In sum, despite repeated and varied efforts to foster CO formation in River Road, no significant progress has been made. After August 1985, realizing the major barriers both within and outside the community, the team effectively limited activity to the monthly child assessments. River Road constitutes a project in itself. Fundamental pre-conditions for progress are seen to require a coordinated effort by government and non-governmental agencies to deal with environmental, social and health problems on a broad front. Failing this, specific interventions around ORT and other PHC issues can have minimal impact.

(c) ORS Management:

In River Road, a community where real participatory community organization is non-existent, there has been a succession of disappointments in developing community distributors. One project field worker has lived in the community, been given ORS packets by the District Health Centre, and been a health education resource for a long time. She left Grenada in April, 1986. Based upon her contacts, knowledge of the community, and health activities, a series of distributors was tried. The first had some previous training but in February resigned, stating that she feared being wrongly accused of benefitting from the role and felt her service would result in abuse, not appreciation. Another volunteer received some training, but then decided to emigrate. A new volunteer has been found, but still needs training. Lack of community support has greatly hampered development of community ORT distribution.

7. Community Management of ORS

The Primary Health Care plan now in use by the Grenada Ministry of Health originated with the PRG regime. It is based upon an impressively

sophisticated document which emphasizes Maternal and Child Health initiatives in the community. The changes of administration resulted in a trend toward a more traditional Health Centre-based system, including less confidence in the ability of non-professionals to distribute ORT. However, interest in ORT did not fade entirely: in mid-1985, the Ministry held a seminar for health workers on the appropriate use of ORT. Unfortunately, this was a set-back to ORT distribution, since nurses expressed confusion after the seminar about the guidelines for usage, and the final guidelines (still to be prepared, approved and instituted subsequent to the seminar) remained un-implemented during the project period. Some District Health Nurses had nonetheless continued to give ORT packets to trusted community members in both project and non-project communities. Despite the proximity of health stations to every residence in Grenada and the central policy of only distributing ORT from Health Centres or Medical Stations, these nurses felt that trained community members could respond properly to dehydration crises and prevent potentially dangerous delays in obtaining ORS packets.

In the official system of ORS distribution, packets are ordered and retained by the Ministry based on expected demand. District nurses travel to the central supply site and carry back packets according to their estimate of expected need. No on-going central inventory is in effect. Seasonal outbreaks of diarrheal disease ("gastro") typically occur in April-May and August-September, worse in some years than others.

Despite the fact that District Health Centres had experienced a decrease in demand, and despite an emerging recognition by the project team that communities should be setting their own agendas, a need to assess the originally-planned outcomes during the final months of the project dictated that the unofficial and official distribution methods be brought together, and that the resulting distribution be monitored. In December 1985, approval was secured for distributors of ORT in Project Communities, with close supervision by the project team. Field Workers were trained and held community health education activities on diarrhea, dehydration, and ORT in each community. Some interested participants were encouraged to learn more and were recruited as distributors. A flyer on ORT to be used as a teaching tool was developed and distributed. A certificate of appreciation for otherwise uncompensated community distributors was prepared.

In District Health Centres where distribution forms were provided in January very little distribution had occurred by April. (None to project community residents except three River Road residents.) Record-keeping is not uniformly good, and the low demand does not encourage improvement. With the expected surge in 'gastro' in April-May, the Ministry of Health has re-instituted radio announcements about prevention and diagnosis, but the radio spot does not strongly promote ORT or community distribution, and the typical case seeing a physician continues to receive Ampicillin.

There is a rising use of ORT by certain government district doctors, but mild cases are often hospitalized. Little community distribution occurs outside project communities. Within project communities mechanisms for local distribution are in-place, at different stages of development, but have experienced little demand. Data collection mechanisms are in place to monitor wastage and appropriateness of use.

Community organizations have enabled health education about ORT through community meetings, health activities, word of mouth, and door-to-door

visiting. Distributors in communities with strong participatory community organizations are appreciated and encouraged in their roles while, in poorly organized communities, they are unappreciated and reluctant to continue.

Some non-project communities were followed closely. A tragic development occurred in one (Telescope), near Pearls, which does not have a community organization, any Field Workers, or a local distributor. An 11-month-old baby, who was third percentile for weight died, apparently from dehydration, eight days after visiting the health station and receiving ORT. Our field worker visited the 22-year-old mother and ascertained that the mother had neglected planned followup at the Medical Station on the advice of an Obeah practitioner who blamed the problem on evil spirits. It is tempting to speculate that the proximity and neighbourly trust of a community-based ORT distributor would have prevented this death. This case seems to illustrate the problem of relative inaccessibility of a nearby station and the advantage of community-based primary health care. In another community without a community organization, where the DHT has used a distributor (Apres-Tout), the distributor has quit during a recent diarrhea outbreak, and all ill children were taken to a physician.

8. Community Centre Design

It had become apparent to us, even before the formal start of the PRICOR work, that for many communities a significant constraint upon collective action was the absence of a suitable meeting place. There is very little comment about this problem in the international health literature, the assumption seeming to be that community members can meet under trees or around the steps of someone's dwelling, sitting on the ground. This image is more picturesque than realistic. It ignores the fact that rain, wind, and hot sun interfere with meetings. It does not take into account a community's need for a constantly visible representation of itself and of its initiatives. When pre-primary school activities, craft classes, or adult study groups come together in a communal structure, it provides more than protection from the elements: it makes properly clear to all participants that they are doing something 'in common', independent of obligation to individuals or institutions other than their own. Such communal organization of space confers a kind of implicit coherence upon the gatherings within it, making continuity easier to sustain and substantially aiding the collective memory of deeds and obligations.

For the last four months in 1985, we recruited to the team a post-graduate architect with a specific interest in the social process of planning and design. The intention was to test the hypothesis implied by the above statement; i.e., that a community would identify the acquisition of a community centre as a priority need subserving many other community organizational purposes. We also suspected that if this hypothesis were confirmed, it would also turn out that the collective design-and-creation of a community centre would be a useful organizational focus.

We began with the assumption that it must cost less than \$5,000 U.S., and be built with local materials and local skills. It was considered fundamentally important that the structure (in scale, shape, location, organization of space, style, texture, and so on) correspond to local needs and tastes. Most importantly, we felt that the people should see it as the product of their own wishes and thought. We had some subsidiary hypotheses: (a) that some high-tech studies in Canada could optimize the design

advantages of local architectural styles; (b) that this community design process could be abstracted in such a way that it could be made available for further study.

The experience was very instructive. The community was immediately attracted to the collective design exercise. The community placed the need for a structure near the head of their list of priorities, and the anticipated pride in having their own community centre appeared to be a significant spur to activity. The sort of discussion required to identify needs (related, e.g., to pre-primary school activities or adult education classes) was useful in the community organization process in general. The design process had some fascinating spin-offs; for example, mapping the community was an enormously popular event which fostered the group's self-identification and developed working relationships, very quickly and inexpensively. The design specifications were met, and the high-tech optimization was very successful. This activity has spawned a sub-project which will involve building the community centre, documenting the entire process, and producing a manual for the guidance of others who wish to try this approach.

E. DISCUSSION AND CONCLUSIONS

1. Reasons for Seeking Greater Community Participation

There appear to be three related reasons for the establishment of strong community participation in support of Primary Health Care undertakings. The first and most general reason is linked to our changing perceptions both of the most important burdens of illness, and of the preferred means to combat them. It is increasingly clear that conventional biomedical interventions are at best expensively ineffective and, at worst, dangerous when deployed against large-scale population health problems. Even if we were to decide more favourably about the questions of their effectiveness, they are unavailable. The only effective means to combat the most important types of morbidity call for changes in the behaviours and functions of individuals and groups within communities. Community organization, according to this view, does not function as an adjunct to medicine, nor as something to do until a proper health care system arrives but, rather, as the first choice for reasons of both effectiveness and cost.

The second major reason has to do with the ways in which these behavioural and functional changes occur. The new behaviours themselves must be learned, which means that the people learning them must participate in a learning process. This learning process necessarily involves other people. When the behavioural changes involve groups rather than individuals, or when the 'behaviours' to be changed involve alterations in folkways, then the group makes decisions, acquires skills, and carries out changes, without there having been any obvious 'teaching'. This is, by any model, indispensable participation.

The third reason is related to the oft-demonstrated need for groups to feel ownership and control of the processes changing their lives. There are, of course, countless situations where such proprietorship does not exist, but community responses to such external influence are well documented: not much likelihood of genuine emotional investment in the process, withering inventiveness, and high probability of subversion. If the aim is to harness the energy and creativity of a community group for the purpose of getting

the people to improve their own lot, then they must feel that the problems and the solutions are theirs.

The literature, related both to Primary Health Care and to a number of other fields, strongly supports each of these reasons for encouraging community participation, and there is virtually no published dissent on the point. The 'evidence' offered in support of this view consists, however, of many reports of failures where community participation was lacking, and others where success has been accompanied by various forms of community involvement. That is, although the idea of community participation is intuitively appealing and conceptually sound, good empirical evidence in its support is very limited. This is, in our view, partly because we have been lacking a conceptual framework which permits the orderly study of community organization across a number of examples.

In this project, we discovered very early that some of our initial assumptions were mistaken, that others had not been known to us when we made them, and that the process we were attempting to monitor was many times more complex than we had expected (notwithstanding the fact that both of the Principal Investigators and a number of other people involved in the project had had considerable experience in a number of community development and organizational exercises). It was also clear that our measures were quite useless for describing the organizational process in which we were interested. We followed the usual route through re-examination of our project plan, brainstorming, literature searches, and consultation with experts. None of these helped very much. Our decision was to document everything as much as possible. To impose a little order on this broad-spectrum chronicling, we adopted a socio-ecological conceptual framework within which to seek interacting determinants, and a naturalistic (human ethology) style of participative observation. The result was the conceptual model presented in this report.

2. A Community's Prior Experiences

One of the reasons why Grenada is a superb environment in which to learn about community dynamics in Primary Health Care is that, compared to other countries in (e.g.) the Eastern Caribbean, it has been relatively untouched by research and projects-from-the-North. Nonetheless, each of the communities in which we worked had heard promises, and entered into preparatory exercises, with at least one, and sometimes three, administrations prior to meeting us. They had, for the most part, been disappointed by these contacts, and sometimes adopted a "show-me" posture because they did not want to be duped once again. There were exceptions to this experience, because some communities had found that PRG-initiated organizations for youth and women had been quite satisfying. In these instances, it appeared that the previous experience of having **organized themselves** had left a residual sense of efficacy which tended to ease the new organizational process. Where, in the past, the experience had been disappointment because of the failure of someone else's organizational efforts, the expectation was both that the effort was fruitless and that organization was really not the community's responsibility. We did not encounter a community which had undergone an autochthonous organization process, and failed, so we cannot comment upon how that might influence current activities.

In general, we found the obvious (that previous good experiences encourage

more of the same) and the not-so-obvious (that previous bad experiences can be turned to advantage by showing the community that they should not let someone else do their organizing for them). The major retarding influence of previous experience seemed to be indirect: i.e., communities had experienced, several times, that the political or policy wind would shift in the government departments with which they were relating, and that plans and prospects would blow away. To the extent that their activities promised to depend upon any outside department, institution, or agency, the group needed some assurance that their efforts would not be neutralized by factors they did not understand and over which they had no control. Often, this might imply guarantees which a project is in no position to give. Consequently, it seems wise, as a general rule, to encourage community organization around concerns which need not depend heavily upon outside support. After a few successes, the community organization may have the robustness and resilience to bargain more effectively or to withstand disappointments.

3. Processes for Stimulating CO

According to the model presented in this report, every 'community' is continually emitting spontaneous collective behaviours which, even in a small way, can be seen potentially as the beginning of a community organization process. This view suggests, then, that for the project worker it is not so important who 'initiates' community organization as it is to ascertain which of these small movements is taking place, and where in the organizational process the community finds itself. There comes a moment, however, when the project worker has to descend from the abstract into the real world and actually do something or say something, in some direction and to someone. In order for this to occur, and to be both trusted and comprehensible to people in the community, the worker must first have some legitimate reason for being there.

Everyone working in the field says, and we agree, that it is above all important to be honest with people in the community. Unfortunately, to announce that one's intention is to assist the community through a process of community organization so that it can develop the ability to establish a health agenda, is often to be making an incomprehensible (and, perhaps, threatening) announcement. Our experience, and that of others, would suggest that the worker ought to have some needed and readily understood function in the community, such as primary school teacher, health educator, craft instructor, or project facilitator. From such a credibility base the project worker can begin to make the formation-stage diagnoses described above, and assist the people in the community to establish the necessary conditions for progressing from stage to stage. When this is being done, it seems that there is no strategic advantage whatsoever in being covert.

Direct costs, apart from the need to support the worker, are minimal. However, enhanced communications and interestingly promoted events can accelerate the formation process and, so, there is a speed-cost trade-off to be entertained. Human organization itself, when people already live in the same space, costs virtually nothing. Whether the formation of COs can be done faster, with greater probability of success, through the use of more resources, is an important question for further research.

4. How are Project Workers Trained?

Training project workers for community organization is an important issue,

because this may be where most of the costs originate. There are two sub-issues: content and method. This is an area of staggering unclarity in the primary health care literature. Obviously, the sorts of skills and the capacities for conceptualization which are required by project workers depend upon the conceptual framework according to which one imagines that community organization takes place. Many decisions about the details of worker training must await a decision about preferred models.

Nonetheless, there are some preliminary findings from our work which bear consideration. A very important, and consistently under-appreciated, deficiency in project worker skills is in the realm of interpersonal relations. Because workers are likely to find themselves in diverse situations with individuals of different ranks, and groups with different purposes, they must be able to adapt rapidly and fluently to many situations which are quite unfamiliar to them. They also need instruction about the nature of community resources and the most effective ways of communicating with them. This 'community liaison' perspective enables them to guide a budding community organization from one resource-seeking step to the next.

Most project workers have never before worked as part of an organized team. They require familiarization with the ordinary skills of cooperative scheduling, intra-team communications and record-keeping. Specific methods for data collection require far more training than is likely to be assumed.

While these specific skills are being developed, there is a parallel need for the worker to learn both about the principles of primary and secondary prevention, and about health education skills, so that they can assist primary health care personnel and community members to learn these things. Despite the suggestion in this report that the development of a health agenda may not occur for some time in a community organization, it is necessary for these health education skills to be developed early. First, the primary health care team must be assisted in its relationship with the community, gently but with determination, throughout the organization process, and must be ready to collaborate productively as soon as the community organization indicates that this is desired. Secondly, the project worker must similarly be ready to understand or advise about health problems whenever the community begins to send out feelers.

If a project were using the kind of staged formation process model proposed herein, its workers would have to be familiar with how it works. That is, they would have to be able to make an appropriate 'diagnosis' of formation stage, to decide which of the necessary conditions most urgently need facilitating, and whether to do this facilitating through direct action, modelling, or support of community initiative. The training would have to clarify distinctions between 'Formation' and 'Maintenance' phases in community development, and would have to inform the worker about how community social systems operate. The observations and recording of information with this kind of task model are quite different from the sorts of data collection in which health project workers are ordinarily trained.

The training methods for such workers have received far too little attention in primary health care research and publications. There is ample reason to believe that didactic instruction is a low-efficiency training medium, but it is the format within which worker trainees usually feel most comfortable, at least initially. The alternative, which is some form of Problem-Based

Learning, calls for rather specific skills on the part of the trainers. The workers are guided in 'learning by doing', preferably in a group format which simulates the community processes with which they will be working. One problem with Problem-Based Learning is that instructional evaluation is seemingly more complicated than with its didactic counterpart. Didactic teaching allows one to test retention of information, generate scores, and 'pass' worker-students who meet some arbitrarily determined standard. The logical and practical problems connected with this mode of teaching are well known, and can be summarized by saying that the results are more tidy than meaningful.

In problem-based learning, the emphasis is as much upon **how** to learn as upon what to learn, and the student is therefore encouraged to develop self-evaluation and peer-evaluation skills. Since it is actual performance, rather than proxy for performance, which is being judged, the learning has to take place within a real-world environment. Methods for such instruction of workers, and for its evaluation, have not been systematically studied or compared, especially with respect to cost. Our preference is for Problem-Based Learning, self-evaluation coupled with on-the-job external validation, and an emphasis upon self-directed learning skills. The evidence in support of this approach is fairly strong from other health education areas, and it is consistent with favoured models of community development and primary prevention, but it has not been tested in the field.

5. The Use of Existing CO Structures

At the beginning of this project, as stated in our original protocol, we were encouraged by the fact that there were some proto-organizations and left-overs from previous organizations, already in our prospective study communities. It seemed reasonable to suppose that we could simply hitch-on to these organizations, and/or use them as skeletons which could be fleshed-in with health concerns or, at least, that they represented building blocks which could be reassembled into viable organizational structures. We did not keep our optimism secret, and were told nothing in the communities which discouraged us from this view. When we began actually to work in the field, it turned out that these organizational fragments were of little use, or were actually impediments. The outstanding exception to this statement was the relatively new organization in Belle Isle.

The reasons, in retrospect, are not particularly obscure. If an organization is dormant or wilting, there is generally some good reason for this being the case: its founding rationale may have disappeared or been forgotten; it may be under the control of someone who is unpopular, its political connections may be tainted, or it may have a history of ineffectiveness. Using the Community Organizational development model proposed in this report, one would predict that, unless a robust and well-functioning organization (in the 'Maintenance Phase') exists, then problems will result from trying to skip earlier steps in the process.

Even before we had developed this model, the field team had sensed the need to start from scratch, and had begun intuitively to guide community members through the first steps of the process. While doing this, a residual or dysfunctional organization from another period simply gets in the way. Some 'existing organizations' fall into a special category: churches, schools, and health centres. These have their own independent origins and, for the

most part, do not rely upon self-generated community action for their continued existence. When they decide to assist in community organization, they can be enormously helpful. The danger, of course, is that being 'helpful' can become co-option, either deliberately or inadvertently. It is very important for the project to investigate and cultivate the positive potential of these externally-linked community organizations.

6. Community Participation in Project Management

Any project aimed at meaningful community participation/organization which does not avail itself constantly and thoroughly of every opportunity for input from the community simply misunderstands its task. In our project, we employed workers from project communities, two of the Grenadian fieldworkers were quite involved in project management decision-making, and it would have been very difficult to manage without this contribution. There are many ways in which this can be done, depending upon local circumstances, the nature of the project, and the management structure. It is very important that the project be de-mystified (or, better, that it never gets mystified in the first place) by clarifying communications links, inviting community visits to project meetings, holding discussions in the community, appointing liaison personnel, and so on.

7. Project Evaluation

In the late 80's, it is difficult to imagine an acceptable project design which does not include a meaningful evaluation component. What is to be evaluated depends obviously upon the objectives of the project. Our conclusions, outlined above, are that conventional evaluation methods for health projects examining 'health' variables at a pre-determined time, do not suit the community participation/organization development process. Moreover, except when looking at late-outcome changes in, e.g., morbidity rates, it is a mistake to attempt quantified evaluation of progress in community organization. The parameters, criteria, and descriptors must be clear and rigorous, but they probably cannot be numerical.

There is a trade-off between time and function: if one wishes to evaluate organizational development X months after the beginning of a project, one may not be able to examine obviously health-related functions; if one wants to look at health-related functions, one may not be able to do this following a specified period. Community residents should be involved in the evaluation, usually as part of a multi-phase process; i.e., they are the sources of much of the information upon which the evaluation is based, but the evaluation is incomplete until they have reacted to the first interpretation of this information, following which there is an obligation to inform them of the final conclusions. If they can participate in the actual mechanics of the process, so much the better (for the above-stated 'de-mystification' reasons). One of the most important reasons for including community organization members in the project evaluation process is that organizational performance evaluation is an important skill for them to learn. What better way to learn it?

8. Community Organization and Politics

There may never again be as good an opportunity to study this issue as in Grenada between 1981 and 1986. The PRG, with politicization and ideological education as a primary goal, was very interested in the development of a variety of community organizations, and pursued these aims with considerable

vigour. It was a little surprising that they were prepared to allow an outside group to get involved in community organization and education but, for reasons best known to themselves, nonetheless gave us a fairly free hand. We witnessed the impact of the PRG approach, its promise, its impact, and its mixed fate before the intervention. Then there was a rapid dismantling of women's and youth organizations, even though the Interim Advisory Council thought some of them had been quite valuable and regretted being unable to sustain them. Following the parliamentary elections, some of the middle-level ministry personnel most involved in community development work, and some of the community people most able and ready to work with them had had their first exposure to community development during PRG days. The dominant pre-Bishop political figure, Eric Gairy, returned during the Interim Administration, resurrected a still-substantial political movement, and became a presence. There remain many people sympathetic to Maurice Bishop and/or to the New Jewel Movement.

For the most part, Grenadians are uninterested in fine shades of ideological difference, and see political issues in a very practical and personal way. They have their own style of political intercourse which is simultaneously raucous and subtle. Almost everyone 'knows' almost everyone else, and if they don't, they expect to. National issues are frequently indistinguishable from neighbourhood issues. Consequently, to a significant degree, CO and 'politics' are inextricably intertwined. Yet it is not that local interests are likely to be subordinated to 'larger' issues but, rather, that political rivalries get played out on a community stage. At least, this is the perception of both politicians and community members: and, in politics as nowhere else, perception is reality. The community system model must accommodate political influence.

9. Learning by Doing

At all levels, the implementation of the project revolved around a reconciliation of two strategic approaches: detailed pre-planning, and responsive improvisation. Most basically, the re-formulation of the operational problem and, hence, of alternative solutions, came about as a consequence of experience in the field. In the process, we had also to revise our ways of utilizing the experience, because we found that the data being collected were not usefully relevant. Consequently, the team became participant observers, and began to collect narrative data rather in the fashion of a human ethologist or a cultural anthropologist. It was by no means always clear which kinds of information would be most useful and, thus, ideas about how to participate and what to observe were being up-dated constantly. The task was rendered more difficult by the team's recognition that our original model had been found wanting, without our yet having developed a more useful alternative. Hence, in the very structure and prosecution of the project, we were 'learning by doing'.

This theme trickled down to even the most concrete micro-activities. In the training of community health workers, for example, it seemed often to make little sense to have a detailed pre-determined agenda, but the previous educational experience of these workers was such that they could not believe that they were actually learning anything if they were not in a very structured didactic encounter. Based upon Problem-Based Learning models which are widely accepted in health sciences education in North America, we encouraged practical 'learning by doing' but, in so doing, found ourselves in conflict with suprisingly strong pedagogic traditions. In the communities, a 'learning by doing' process appears to be a central theme in

the natural evolution of community organizations. Conventional 'instruction' has been found by many other community development workers to be relatively ineffective and our experience was consistent with theirs.

The lessons to be drawn apply to several aspects of project planning and implementation. Most obviously, it is absolutely necessary that a good deal of programmatic flexibility be designed-in from the start, because all the circumstances which affect community organization are liable to change without announcement. The educational and development skills of project workers must be directed toward the facilitation of 'natural' learning and organizational phenomena which means, frequently, that they must be studiously vigilant against the tendency to re-create their own learning and community experiences. When project workers come from differing educational and community backgrounds, these differences must be reconciled.

10. Determining Health-related Priorities

When assisting the community in deciding upon health-related activities, there are two basic considerations: when any health-related item will come to the top of the community agenda, and which from amongst several possibilities it ought to be. As described above in a number of places, the community must have arrived at a sense of its own efficacy, in the right combination with a view of the feasibility of the undertaking, before it is likely to mount effective action to solve a problem. Therefore, virtually any successful problem-solving activity, the worth of which is agreed upon by a critical mass in the community, is a good place to start. Generally, the initial items on the agenda ought to be relatively obvious, tangible, and short-term problems-and-solutions.

When the community organization has come to some sense of itself, and has learned how to articulate and debate problems and solutions, it becomes gradually more practical to introduce items which are less obvious, and more abstract or subtle, and which will take longer to solve. Since most (though clearly not all) health-related problems fall into this latter category, they are not likely to appear on the community agenda early in its organizational process. When they do, a number of social dynamics appear to determine the order in which they occur. The general concern about the welfare of children, coupled with the drain on individual and community resources resulting from the need to care for them, means that child morbidity problems are likely to be early entries. Our experience was consistent with that of many other workers in finding that the community was very interested in talking and thinking about the health needs of their children. By 'community' we mean primarily the child-care givers (mothers, sisters, and other female relatives), but we suspect that this is an artifact of availability and not-particularly-strong tradition, since fathers were relatively easily recruited to the discussion when we tried to do this.

Directing the discussion about child health problems toward those issues which the project regarded as most important raised, still again, the strategic issue which categorizes the 'Active Design vs. Responsive Shaping' tension in CO. Sometimes it seems relatively easy, using earned trust and sapiential authority to persuade community mothers that they ought to see things according to the views of the project. Most places, when this is done it is referred to as 'education'. An alternative view would be that almost any health-related initiative which has a chance to succeed is worth supporting, because its success will render more doable all subsequent

initiatives. To a significant extent, it appears that encouraging the community to take over its own health education accelerates greatly the process of adding health-related items to their agenda. However, taking this approach simply moves the process back a step; i.e., the question becomes how to make health education a priority.

11. The Positive and Negative Effects of CO on Project Implementation

The supposition underlying all community organization efforts in relation to health projects is that a community which acts in concert will make projects happen faster, less expensively, or more effectively. There is virtual unanimity among health workers, and in the literature about health projects in developing countries, supporting this supposition. However, despite a large quantity of anecdotal 'evidence', it must be conceded that the empirical evidence in its support is not very strong, and this feeling by health project workers may say more about the kind of people who do such work than about what actually happens in their projects.

The opposing (and certainly less popular) view might be that one can import/impose social engineering expertise in much the same way that one uses dam-building or generator-repairing skills, and that doing this will abbreviate projects and save a lot of resources. We believe that the theoretical and loosely-empirical arguments against this view are persuasive enough to insist upon organized community participation as the basis for all health projects, but the opposing arguments still deserve to be answered. The Responsive Shaping approach advocated in this report complicates the question substantially. Whereas an Active Design approach to community organization represents an engineered-organization compromise, which accepts the need for organization but pursues it efficiently, a strategy which is based upon facilitation and guidance of a natural process is apparently much less predictable and subject to inconvenient delays.

If it is true that there are valuable resources to be recruited and cultivated in the community (so projects can be less costly), and that a sense of community ownership is necessary (so the project can be protected by its beneficiaries), then it can be argued that the penalties resulting from community organization are justifiable. These penalties consist principally of programme unpredictability, delay, and administrative untidiness. In order to minimize these, the interface frictions between natural community processes and formal bureaucratic practices must be anticipated and sensitively managed. All the experience from our project and from other workers indicates that this interface-tending function must be handled by people rather than by office procedures, and that a special set of skills is required for it to be done well.

12. Research Design

We have taken the view that OR is a 'meta-methodology' which provides a framework within which a wide range of specific methodologies (amongst them such OR-typical procedures as Multiple Criterion Utility Assessment and Interactive Matrix Diagramming) can be employed. In addition to the general project architecture provided by an OR approach, its two most useful guiding principles are its imperative of providing the most useful policy direction available in given real-life circumstances, and the iterative re-formulation process which allows one to contend rationally with what is learned about those circumstances.

As described above, we used several methods for formulating operational problems, developing alternative solutions, and implementing some of these solutions. We had plans for the validation of some early (premature!) ideas about solutions, but there was not nearly time enough to carry out such validation and, in any case, the validation methods have to be redesigned to match the new solutions. We re-formulated our problem as a consequence of our problem analysis, aiming at a description of CO process rather than CO form. We also found that the 'scope' of the problem had to be reconsidered, because the community system interacts with a number of larger systems. At the most abstract level, we found that conventional conceptual models of CO were not adequate for our task and, in order to complete the job, it was necessary to devise a more appropriate model.

It is important to distinguish between two significantly different methodologies which arose out of this project. The first is a 'study methodology' which we believe to be useful for the prosecution of this type of project. As described above, it involves a continuing narrative description of CO process, shaped by sequential portraiture of the community system as it proceeds through the developmental stages of community organization. Our impression is that this kind of process is not amenable to mensural analysis; i.e., the problem is not simply that our techniques are insufficient but, rather, that the process is in principle unmeasurable. This is, however, a classic holism-vs-reductionism dilemma and, within each of the system portraits there are undoubtedly some specific interactions which could usefully be quantified. For the most part, nonetheless, processing the kinds of data which emerge from such an approach is far more complex, time-consuming and, hence, expensive, than the more conventional computer analysis of numerical information. The approach advocated in this report involves the integration of a number of social science disciplines. Although it is a new and undeveloped approach, it is consistent with the concerns and advice which have appeared for at least a decade in the international health literature. It deserves systematic study and development, because it has very important implications for project design, management, and utilization.

The second methodology is that which would be used by workers implementing the results of this project. It is related to, and based upon, the rationale and methodology of the 'study' project, but is necessarily much simpler and task-oriented. As it relates to the CO process proper, it requires the project (worker) to 'diagnose' the stage of community organization, to determine which necessary conditions need fostering, and to determine which methods are most suitable for doing this. For this to be converted into advice which a Ministry would find useful, it will have to be translated into a kind of 'procedures manual'.

3. Guidance for Decision-Makers

Just as we have taken the view about ORT that the central concern must be the "most effective final distribution" of oral rehydration solution, it has seemed increasingly clear that the same proposition applies to information. Having come to a number of conclusions, with varying degrees of confidence, it must be decided which of them should be communicated, in what form, to whom. The communication process itself is crucial because the type of advice being offered is far more complex than about, e.g., which type of pump to be purchased. To explain fully the rationales and variations on themes which underly our advice might require 80 or 100 pages and, if we

were foolish enough to take this route, it would mean producing a totally indigestible commentary upon (perhaps) the wrong issues.

Thus, the dilemma: if recommendations are brief enough to be usable, they will lack the detail necessary for their implementation; if a report is sufficiently comprehensive to assist in real planning, it will be too long to be useful. It would seem that the only satisfactory alternative to simple written communication would be carefully-choreographed face-to-face meetings between key people in the Ministry and the Project Principals. Optimally, this would probably entail an initial series of meetings over the course of a week, with some follow-up consultation some months later.

The kind of advice which, in the long run, is likely to be most useful and most influential does not concern concrete technical matters so much as conceptual and strategic matters. It is unmistakably clear that the policy-and-administration climate within which Community Organization (or, for that matter, any PHC initiative) occurs is a crucial determinant of success or failure. It is not simply that policies should be clear and administration should be crisp but, also, that the structure and function of the administrative apparatus correspond to the requirements of community-based primary health care. There are mountains of literature attesting to the disadvantages of excessive centralization in government and, more particularly, in health care systems.

Even in such a small country as Grenada, the substantial differences between communities illustrate once again the need for individualization of problem-solving at the periphery. The case for decentralized problem-solving is even stronger, however, if one adopts a strategy which depends upon a 'natural' community-owned organizational process. Within clearly-identified constraint boundaries, individual communities must be given maximum latitude in choosing styles and methods of solving problems. There is a certain degree of 'district latitude' which, in turn, must operate within constraint boundaries established at a more senior level. Finally, within the ministry, there must be a single clear policy direction. This means that we can imagine a triangle on its side, with minimum scope for alternatives at the apex whence broad policy directions emanate, and maximum allowance for alternative solutions at the base where most local decisions are made.

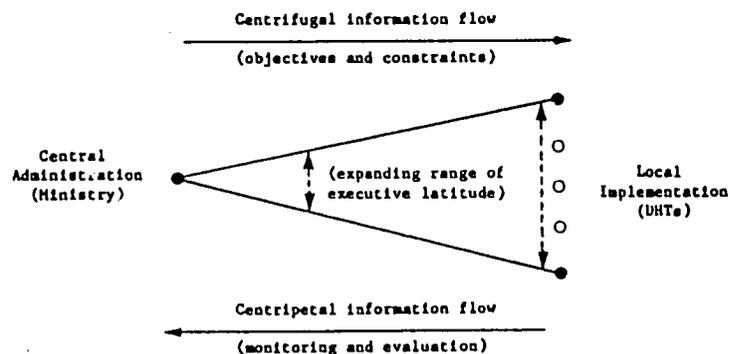


Figure Six: Decentralization, Latitude, and Information

In order for health programme administrators to function properly, there must be a constant and predictable flow of high quality information from the periphery (base) to the central administration (apex). This information-flow is not for record-keeping purposes (i.e., in order to document how

central directives are being implemented) but, rather, for the continual adjustment and guidance needed at the periphery. Such information-flow, for the reasons outlined above in connection with project recommendations, cannot occur merely by memorandum: there must be frequent face-to-face exchanges. The community organization process outlined in this report has its parallels within the health care system. The central administration is well advised to cultivate some 'lateral' communication between the teams on its periphery because, by so doing, it can generate a lot of useful solutions. Teams who, together, develop such solutions to their own problem perceptions have a strong investment in making solutions succeed. However, such an approach involves a good deal of peripheral autonomy and, therefore, a certain degree of uneasiness for the central administrator.

For both the centripetal information flow and the centrifugal delegation of authority, very specific mechanisms, customs, and attitudes are necessary. In Grenada, as in many other countries with similar histories, a civil service with recent colonial origins does not have the mechanisms, customs, and attitudes suited to such a programme dynamic. In its very recent history, moreover, the gradual evolution away from post-colonial governance has been hindered by two major stresses, one negative and one positive. The negative stress has been the substantial turmoil involved in a number of major administrative changes since 1980. The positive stress has been the arrival of benevolent but powerful aid, the speed and magnitude of which are close to overwhelming. Under such circumstances, it is a rare administration which does not sacrifice innovation for the sake of simply coping. In the longer term, for Grenada to make best use of its own resources, as well as to avoid having its indigenous programmes distorted by external aid, the structure and function of the central administrative apparatus will require some attention.

R E C O M M E N D A T I O N S

ARISING FROM THE STUDY RESULTS

A. PREAMBLE

1. SCOPE OF RECOMMENDATIONS

- a) **Breadth:** The recommendations offered herein go beyond the scope of the original PRICOR project protocol, which focussed quite specifically upon the relative usefulness of different Community Organization structures.
- b) **Inclusion in larger project:** The Operations Research (OR) activities outlined in the protocol were conducted within the larger programme of the McMaster Child Health Project and, hence, we are able to draw upon a study experience which includes the relations between communities and several aspects of the Grenada health care system.
- c) **Formation process most significant:** In the course of this OR examination of Community Organization strategies, it became clear that formation process is much more important than structure, leading to a need to analyze the factors which affect this process.
- d) **Planning principles:** Our analysis is based upon an Interactive Planning Framework within which there is a set of inter-dependent relationships between policy, administration, methods, and resources. These four elements should 'fit' together, and each with all the others, as parts of a coherent organizational system. Each should be determined/designed within constraints imposed by the others. This model permits the rapid identification of limiting factors, and of incompatibilities between elements. For example, it makes very little sense to arrive at a strategic policy which calls for unavailable resources, methods, or administrative capacities. It is similarly undesirable to allow institutionalized methods (of, e.g., health care) to determine the direction of the whole system.

A companion assumption is that of an Iterative Planning Loop, according to which a determination of needs results in the formulation of objectives which will be partly/wholly achieved, and which then results in a new determination of needs.

- e) **Systems concepts:** Although the proper focus of this report is upon the community basis of Primary Health Care (PHC), modern systems views of morbidity, health care, and the community oblige us to consider the relations between community phenomena and many other things.

2. BALANCE OF INNOVATION AND CONSOLIDATION

- a) **Constraints:** Only naive planning disregards the human and fiscal costs of transition. Moreover, a health care system with limited resources should not be asked to accommodate change for its own sake. We have therefore been careful to suggest only those changes which appear necessary to achieve, at least cost, the objectives of the Ministry's PHC plan.

- b) **Existing strengths:** Some of our recommendations may seem to fall outside the traditional domain of health care practice and administration, and do suggest some basic changes in both outlook and management style. This is not intended as criticism of the Ministry but, rather, is a reflection of developments in health systems analysis and planning around the world. Although the recommendations call for innovation, we believe that they represent a consensus of the soundest thinking in the current world literature; i.e., we are not suggesting that Grenada 'experiment' with the people served by its health care system. Our task has been rendered much easier by the fact that this innovation is largely in the service of consolidating, and implementing, an unusually enlightened PHC plan. One of the most crucial elements of an overall health care scheme is therefore already in place; what remains is to find a way of getting it into action most effectively.

B. BROAD OBJECTIVES

1. COMPREHENSIVE HEALTH ENHANCEMENT

Using the broadest sense of 'health', which includes the social and mental well-being of the people, the most fundamental goal of the health care system is to produce the greatest overall enhancement of this health state attainable within the constraints imposed by resource availability and other social priorities. Due consideration is given to the twin facts that all economic and social development is dependent upon such health but also that, conversely, health ultimately depends upon such development.

2. THE REDUCTION OF EARLY CHILDHOOD MORBIDITY

Within the context of broad health enhancement goals, the achievement of a better health foundation for children and, hence, for communities and Grenada society as a whole, is a central objective.

3. CONSERVATION OF HEALTH CARE RESOURCES

It is necessary to obtain maximum benefit for minimum cost because, with finite resources, every dollar spent on one intervention becomes unavailable for another. Ranking, reconciling, and choosing between alternatives should be guided by the clearest possible grasp of needs, impacts, and costs.

C. STRATEGIES

1. THE PLANNING PROCESS

- a) **Planning elements:** The rational development of the Health Care System in pursuit of the above goals requires specific attention to each of the main planning elements; policy, administration, methods, and resources.
- b) **Integration:** Although steered by policy and constrained by resources, the planning process should not be shaped by any one of the elements. Each must be made to fit the whole, just as the whole is determined by what is allowed by the elements.
- c) **Concepts:** The process should be guided by clearly elaborated concepts. Because population health concepts have changed dramatically over the

past decade, it is important that the ideas used should be up to date. They must also be explicit, because hidden assumptions or concealed pre-conditions may invalidate a strategy or make its proper evaluation impossible.

- d) **Information:** Although sound planning should be iterative, with 'design' not being separated from implementation, it is convenient to make a distinction between information which relates to overall purposes, and that which monitors performance. The first, based upon suitable health concepts and upon the broad goals of the government, is generated through needs assessment analyses. The second is based upon programme design and specific objectives, and consists of evaluation data.

2. POLICY DIRECTION

- a) **The Primary Health Care Imperative:** The PHC component of the health care system, because it is basic to all other health-oriented initiatives, must be given priority both in resource allocation and in shaping development of the system as a whole. This is where prevention is most effectively conducted, where the greatest number of disorders can be managed with best results and lowest costs, and where the optimum use of the more expensive parts of the health care system can be determined.
- b) **The community base:** Community involvement has been found to be absolutely necessary for the success of PHC programmes. At the very least, this requires that the community be carefully consulted and informed. Actual community participation in the implementation of primary care activities is better, and has repeatedly been shown to increase effectiveness and reduce cost. The best approach takes participation a step further, to having the community actively deciding upon priorities and upon the means of implementation. This final step requires Community Organization.
- c) **Inter-sectoral cooperation:** Because so many social, commercial, and governance concerns intersect in the community, and because the community and health care systems are so complex, coordination of all the relevant interests is crucial.

3. ADMINISTRATION:

- a) **Structure:** The actual form and composition of the administrative approaches should correspond to the requirements of the plan. This means program-specified positions, responsibilities, reporting relationships, and accountabilities. It also means the creation of mechanisms for coordination. Above all, it means not bending methods solely to match management needs.
- b) **Centralization vs. decentralization:** Direction should be central, and implementation peripheral. The breadth of executive options should increase toward the periphery. Management philosophy must emphasize facilitation over control.
- c) **Information flow:** Centripetal information flow is absolutely necessary for central (Ministry) administrators to be secure in ceding executive prerogatives to local groups (e.g., District Health Teams). Continuous monitoring data must be rapid, replete and relevant. Some crucial information is not reducible to data, so that face-to-face discussion is

necessary with teams visiting the Ministry, and v.v. Centrifugal information flow is symmetrically necessary. Teams need direction, response to submissions, and a clear sense of policy climate. Here, too, face-to-face encounters are indispensable and, in the long term, cost-saving. The perception must be encouraged that the efficient transmission of information is the means to an end, rather than its accumulation being an end in itself. Lateral information flow (between action groups) nourishes creativity and shared sense of purpose.

- d) **Budgetting:** The real costs and benefits of programs should be considered. It should be known whether scarce fiscal resources are funnelled out of the community into low-benefit or negative-benefit care services. Non-fiscal community resources should be accounted so they can be cultivated and husbanded. Relatively modest non-clinical expenditures may serve to avoid high-cost clinical demands. The ratio of decision-making costs to implementation costs has to shift in favour of the former.

4. METHODS

- a) **The use of evidence:** In many instances, there is high-quality scientific evidence which conflicts with conventional wisdom about how to fight health problems. Sometimes this evidence suggests methods which intuitively seem wrong to those of us trained in a strict biomedical tradition. It should not be discounted for this reason. A systematic review of all technical and programmatic decisions in the light of the best available evidence can be a significant cost-saving measure.
- b) **Prevention:** A preventive, or 'upstream', perspective has been shown to reduce both costs and overall illness burden. In principle, primary prevention (stopping the genesis of disease) is preferable to secondary (arresting or eliminating disease, through treatment) prevention, or to tertiary (limiting the consequences of disease) prevention. However, the effectiveness and efficiency of 2^o prevention methods (such as Oral Rehydration therapy for dehydration) may compare so favourably with 1^o prevention (changing childcare practices to reduce infantile diarrhoea), that they deserve support. Usually, a 'mix' of approaches is best. A special kind of sophistication is necessary to maintain political support for a preventive strategy because, while one can easily point to numbers of treated cases as an index of service provided, it is not simple to demonstrate cases (of, e.g., diarrhoea or dehydration) which have not occurred.
- c) **De-emphasis of facilities:** Almost everywhere, and for at least half a century, there has been a trend toward the concentration of services in, and organization of services around, facilities (such as hospitals, clinics, and health centres). As a consequence, we have come to perceive health problems and solutions in ways which suit our assumption about the necessary centrality of clinical functions. This orientation opposes a preventive, community-based strategy. Certain operations are best carried out or headquartered in facilities but, in general, the technology-dependency, professionalism, institutional mystique, and craving for managerial tidiness which support facilitation must be countered with an extramural thrust to community-focussed programmes.
- d) **Professionalism as a limiting factor:** The essence of professional identity is boundaries; between skilled groups, between these groups and

the 'lay' public, and between what is, and is not, proper for a professional person to do. Professionalism is a plague throughout the health-care world. It keeps hierarchically-ordered groups from working effectively in teams, keeps them from collaborating with their clients, and keeps them from changing their tasks, skills, and roles. Conspicuously, it keeps them away from prevention and from communities. The expertise and high sense of responsibility which are the legitimate basis of professional status are social goods to be preserved, but every effort must be made to mitigate the negative impact of professionalism upon the PHC plan.

5. RESOURCES

- a) **Varieties of useful resources:** Resources applicable to the solution of health problems come in many forms, all of them relatively scarce. The dominant, but often misleading, concern of administrators at all levels is money. Yet the people themselves constitute a substantial problem-solving resource which, with the leverage of even very limited funding, can reduce budget pressures significantly. In Grenada, the most precious and easily lost (drained!) resource is knowledge; the intellectual and craft capital which drives social development. However, there are also in Grenada some real and potential special resources. The size, character, and location of the country make it a superb platform for a model PHC system which would attract attention, and resources, from both the industrialized countries and the developing world. If this were to occur, it would strengthen internal skills development, and at least slow, if not reverse, the drain. While there are sources of aid still to be tapped, the goal should ultimately be self-sufficiency. Tourism, agricultural productivity, and political stability, all depend directly upon successful and integrated health policy. Thus, PHC can be regarded as an investment; health enhancement requires resources, but health is itself the primary resource of the country.
- b) **Conservation of resources:** The effective targetting of interventions, and informed judgements about where to set limits to interventions, are pivotal in getting the greatest health benefit from finite resources. Some curative interventions (e.g., in certain parasitic infestations) may be 'clinically' efficacious but relatively useless, because the conditions recur or cause little morbidity. Some preventive measures (e.g., household-directed health education) may be necessary only in specifiable situations. Obviously, in large-scale efforts, it is necessary to accept less than the hypothetical benefits of infinite cost, to conserve resources for more effective allocation elsewhere.

D. COURSES OF ACTION

1. PLANNING

- a) **A senior position in the Ministry of Health, reporting to the Permanent Secretary, should be created and assigned responsibility for the planning, development, implementation, and evaluation of the PHC programme:** The person filling this position would need specific knowledge and skills. Medical training is neither sufficient nor particularly necessary. There are accessible, inexpensive, and rapid-action programmes to provide appropriate training, and they can be tailored quite specifically to Grenada needs.

- b) **Primary Health Care should be recognized in government policy, across all departments, as a programme of first importance:** There is no aspect of government which is irrelevant to population health enhancement, nor any government responsibility untouched by the health status of the population. All legislation and programmes should be examined with respect to their 'Health Efficiency'. This implies that the Ministry establish suitable evaluative criteria and procedures for the purpose.
- c) **The Maternal and Child Health component of the PHC programme should be reaffirmed:** The fundamental necessity of promoting and protecting the health of children in the community must be reflected in the assignment of functions and resources.
- d) **Community development and organization should be specified as a central thrust in PHC:** Since the consequences of this move clearly go beyond 'just health', some inter-departmental mechanisms would appear to be necessary.
- e) **The training of senior government personnel in health care planning and evaluation should be undertaken:** This is desirable both within and outside the Ministry of Health. Visiting programmes are available through a number of universities and agencies. Within the Ministry, of course, such training should be more detailed and intensive. The District Health Team leaders, together with their assistants and their supervisors, are the key people.

2. ADMINISTRATION

- a) **The mission of the District Health Team should be clarified:** At the local level, PHC personnel need specific mission directives aimed at Maternal and Child Health and community responsibilities. They need more Ministry-sanctioned latitude of action, and must know exactly what it is.
- b) **An appropriate data management system should be developed and installed as soon as possible:** For on-going evaluation and planning purposes, detailed measures of morbidity, risk factors, and utilization are absolutely necessary. Not only should these data be collected, but they also need to be processed, interpreted, circulated, and woven into the health system's developmental process.
- c) **An explicitly detailed two-way system for information flow should be instituted as soon as possible:** Although appropriate data management is an essential part of information flow within the PHC programme, it is not by itself sufficient. Regular meetings between senior Ministry personnel and DHT members, both in the Ministry and in the field, would re-focus efforts appropriately, increase productivity, eliminate administrative slippage, and reduce costs.
- d) **A mechanism for the coordination of community-focussed activities should be instituted:** This probably should be a two-tiered structure, with local inter-sectoral bodies reporting to an inter-departmental group composed of senior officials from appropriate ministries.

3. METHODS

- a) **The District Health Teams should be given specific programatic**

- responsibility for community outreach as a basic element of their PHC agenda:** This implies the budgetting of time and resources for community activities, the legitimization of transfer of some activities from Health Centres and Medical Stations to the communities, and the official recognition of staff achievements in community work.
- b) **District Health Teams should actively encourage the formation of Community Organizations with a view to their eventual support of community-based PHC activities:** These COs may take several different forms. The first sites should be selected for likelihood of success, seriousness of problems, and demonstration value.
 - c) **Standardized records and record-keeping procedures related to CO should be instituted in the DHTs:** It is important not only that each team be able to monitor its own activity, but also that the Ministry be able to compare activities across districts.
 - d) **Opportunities for non-professional ('third sector') health workers should be created as soon as possible:** It is necessary that training programs, official recognition, and non-monetary rewards be offered for for duties taken on by community people. It is essential that every effort be made to avoid having these positions perceived as politically tainted; that is, the appointment or election of such people should be in the hands of the DHT and the community with minimal central involvement.
 - e) **The operational agenda of the DHTs should emphasize proven effective interventions to combat Diarrhea Complex Morbidity:** Primary prevention, using community-based Health Behaviour Education, has been shown effective and efficient in reducing morbidity from infantile diarrhea, infectious disease and malnutrition. Secondary prevention, particularly Oral Rehydration Therapy (again, community-based), has been shown superior to all other approaches in combatting the dehydration which results from diarrhea. It is important to de-emphasize ineffective and expensive chemotherapies.
 - f) **Community-oriented Health Behaviour Education should become a priority task for the DHTs:** There are now methods of established effectiveness and efficiency for increasing the health-awareness, involvement, and program adherence of community members.
 - g) **The community activities of the DHTs should be specifically targetted, emphasizing high-risk groups:** Because of the marked unevenness of morbidity and risk-factor distribution in Grenada, it would be unbearably expensive to deliver specific effective interventions across all groups in all communities. Through community outreach, the involvement of Community Organizations, and proper data management, pockets of special risk factor problems can be detected and accorded appropriate attention.
 - h) **Continuing on-the-job training of all PHC personnel should be organized within each DHT, and co-ordinated by the Ministry:** As far as possible, tradition didactic methods should be discouraged, and proxy-evaluation eliminated, so that workers develop program-specific skills. This greatly reduces costs, because training is more relevant, work is accomplished while it is being carried out, and there is constant enrichment of the training program by those taking part in it. This should be a

wide-ranging program covering all aspects of PHC organization and delivery. There are several international agencies available to assist in the development of a resource library, and to provide materials and formats for actual training programs. All this training must systematically be monitored and evaluated, with mechanisms for program revision.

4. RESOURCES

- a) **A systematic approach should be adopted for the acquisition of external funding:** Since a number of donor agencies (e.g., WHO, PAHO, UNICEF) have resources available to seed and support costs of health care development projects, these opportunities should be taken. Such an approach must include problem definition and prioritization, communication with agencies, adherence to agency deadlines, and the development of skills in proposal writing.
- b) **A strategy aimed at the development of 'informal' community health resources should be instituted immediately:** This initiative deserves its own office within the Ministry, or at least a specifically labelled responsibility given to a senior Ministry official. Not only are there important economies to be wrought, because such health-active community members are not paid, but has also been shown repeatedly that non-professional health workers generate practically none of the adventitious medicalization costs which are inherently a part of the conventional professional approach to health care. Moreover, the quality of primary and secondary prevention is superior and the community development by-products of increased self-sufficiency and responsibility diminish resource use.
- c) **The Ministry of Health should establish a Population Health Institute (in collaboration with the University of the West Indies and St. George's University):** With community development and community-based interventions as a central theme, the Ministry would thus participate in the scientific and scholarly pursuit of important PHC issues. Grenada could become a leader in the development of model programmes for health care delivery and, as such, would attract intellectual, personnel, and material resources for the benefit of its people. McMaster University would be pleased to participate in discussions about such an initiation.

A P P E N D I X A

Date:
 Day Month Year

ADDRESS OF RESPONDEE

COMMUNITY

PARISH

SAMPLE AREA CODE

HOUSE SAMPLE NUMBER

TIME OF INTERVIEW

INTERVIEW CONDUCTED

Inside or Outside

INTERVIEWER'S NAME

CHILD'S NAME	DATE OF BIRTH	PRESENT AGE	WEIGHT AT BIRTH	PRESENT WEIGHT	PRESENT LENGHT	PERIOD OF GESTATION
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

A. Socio-Economic and Demographic Characteristics

1. Mother's Full Name _____

2. Mother's Age _____

3. Person who usually takes care of the children

_____ NAME
_____ RELATIONSHIP
_____ AGE

HOUSEHOLD MEMBERS NAME	SEX	AGE
1. _____		
2. _____		
3. _____		
4. _____		
5. _____		
6. _____		
7. _____		
8. _____		
9. = _____		
10. _____		
11. _____		
12. _____		
13. _____		
14. _____		
15. _____		

4. Could you please tell me the names of the people living in this home, their sex and their age.
(Record the respondent's answer in the above table)

5. Are you Married _____ Single _____ or Common Law _____

If you are talking to someone other than the mother (for example) the grandmother then ask if the mother is married or single.

5. Mother's Educational Level

- 1. Primary _____
- 2. Secondary _____
- 3. College _____
- 4. Other _____

Record the number of years or months or schooling or training completed by the mother.

6. If someone other than the mother takes care of the children, then ask the following question, otherwise go to question 7.

Caretaker's Educational Level

Use list from above and ask the child care giver the number of years completed and what level she completed.

_____ Years Completed _____ Level

7. How long have you lived in this community _____
Months Years

How long have you lived in this house _____
Months Years

8. Is your house:
(Read out list and circle respondents answer)

- a. Owned by one of the household members 1
- b. Rented 2
- c. Lived in rent-free 3
- d. Other _____ write answer 4

B. HEALTH SERVICES CHARACTERISTICS

1. Could you please tell me the places you take your child or children when they are sick.
(Have respondent list all the places)

- a. _____
- b. _____
- c. _____
- d. _____

2. Do you sometimes find it difficult to get to the health clinic or doctor's office?

Yes _____ No _____

If yes, ask the mother why she finds it difficult to go to the health center or doctor and record your answer below.

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3. When the doctor or nurse tells you what is wrong with your child do you find it difficult to understand what he or she is telling you?

Yes _____ most of the time I don't understand them

No _____ they are easy to understand

Sometimes _____ I understand only part of what they tell me

(read out the above statements and ask the respondent to tell you the answer)

4. Does the health center give you information on child care and personal cleanliness?

Yes _____ No _____

If, yes, ask the following question, -otherwise go to question 6.

5. Could you please tell me what kind of information the health center or station has given or told you about.

6. Have you heard anything on the radio about:

a. Breastfeeding Yes _____ No _____

b. Immunisations Yes _____ No _____

c. Diarrhea Yes _____ No _____

d. Nutrition Yes _____ No _____

Read out the above list and have the mother give you her answer.

If the mother has heard either about diarrhea or nutrition, ask the following questions, otherwise go to question 9.

7. Could you please describe the type of information you heard on the radio about diarrhea.

8. Could you please describe the type of information you heard on the radio about nutrition.

9. Can you tell me any information you heard about at the health center concerning diarrhea.

5k

10. When the health workers (nurses) visit your community or home can you please tell me what types of things they talk to you about or what type of information they share with you.

C. IMMUNISATIONS:

1. Have all of your children been immunized? Yes _____ No _____

2. If, child or children have not been immunized list their names and ages below.

1. _____	5. _____
2. _____	6. _____
3. _____	7. _____
4. _____	8. _____

3. Does each child have a child health passport? Yes _____ No _____

D. DIARRHEA INCIDENCE, KNOWLEDGE, PRACTICES

1. Could you please describe how the child feels when he or she has diarrhea, in other words can you tell me the signs or symptoms of diarrhea.

2. Can you explain to me how a child gets diarrhea, what causes a child's belly to go off so much.

3. What foods do you give your child when he has diarrhea?

4. Do you give your child liquids when he or she has diarrhea?

Yes _____ No _____

5. If yes, what kinds of liquids do you give your child?

6. In the last three months have any of your children had diarrhea?

Yes _____ No _____

Please fill in the table on the next page if child has had diarrhea.

7. What kind of medicine or treatment do you give your child when he or she has diarrhea?

8. Have you heard of the special salts in a package (ORS) that you can give your child when he/she has diarrhea? (If mother looks doubtful, explain to her about the ORS)

Yes _____ No _____

9. Have you ever given your child ORS for diarrhea?

Yes _____ No _____

10. If, mother says yes she has used the ORS, ask where she gets them from?

11. Do you know what causes children to get worms?

12. Could you please tell me what causes scabies?

E. BREASTFEEDING PRACTICES

If the household has an infant ask the following question, otherwise go onto the next set of questions.

1. Do you breast, bottlefeed or use both for your child?

Breastfeed _____ Bottlefeed _____ Both _____

If mother does both ask the following question.

2. At what age did you first begin your baby on on the bottle:

_____ months (Number of months child began bottle)

3. If mother is still breastfeeding her child ask her the following question.

At what age do you plan to begin your baby on the bottle?

_____ months

FOR BOTTLEFED BABIES ONLY

1. 1. Are there times when you forget or just don't have time to sterilize your bottles? Yes _____ No _____

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2. Please explain to me how you wash your bottle?

3. Are there times when you don't have soap to wash your bottles?

Yes _____ No _____ Sometimes _____

4. Are there times when you forget, don't have time or have no coals to boil the water for the babies feed?

Yes _____ No _____

5. Do you find that it is more easier just to mix the baby's formula without boiling the water?

Yes _____ No _____

Ask all households the following question, even if there is no infant on a bottle in the home.

1. In the past how did you feed your infants--Breastfeed, bottlefeed or both?

Bottlefeed _____ Breastfeed _____ Both _____

F. ENVIRONMENTAL FACTORS

WATER AND SANITATION FACILITIES

1. What type of water supply do you use?

- a. Piped water into the house. _____
- b. Piped water into the yard _____
- c. Community standpipe _____
- d. Piped water into house and yard _____
- e. Neighbor's pipe _____
- f. River _____
- g. Other _____

2. Are you satisfied with your water supply service?

Yes _____ No _____

If the person is not satisfied with the water supply ask the following question, otherwise go onto the next question.

3. Why are you not satisfied with your water supply?

4. What type of toilet do you and your family use?

- a. Pit Latrine (private) _____
- b. Pit Latrine (shared with others) _____
- c. Flush Toilet _____
- d. Public Facility _____
- e. Bucket _____
- f. Other _____

5. Are you satisfied with your toilet? Yes _____ No _____

6. Do you use a bucket at night for a toilet? Yes _____ No _____

7. Where do you empty the bucket? _____

8. How often do you clean out your latrine? _____

9. Do you sometimes use the bush for toileting? Yes _____ No _____

G. EMPLOYMENT

1. Is the mother employed? Yes _____ No _____

If yes, ask the following question.

2. What do you do for work? _____

3. Do you work Full-Time _____ Part-Time _____ ?

4. Is anyone else in this household employed? Yes _____ No _____

5. Name(s) of persons employed in the household, their occupation and full/part-time work.

	NAME	OCCUPATION	FULLTIME	PARTTIME
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

6. On the average how much income a month does this household bring in. _____ In dollars per month

7. Does this family have a garden? Yes _____ No _____
If no, ask the following question.
8. Why don't you plant provisions?

NUTRITION

1. How many times a day do you give your child cooked food?
_____ Times a day
2. Do your small children share food from the family pot?
Yes _____ No _____
3. Who usually feeds the baby or small child?
Mother _____ Brother/Sister _____ Grandmother _____
Father _____ Other _____ Specify _____
4. Where do the small children usually eat?
At the table _____ On the floor _____ In the Corner _____
On the Step _____ Outside _____
If the house has very little or no furniture, please do not ask
if the child eats at the table.
5. At what age do you usually wean your child? _____ Months

School

1. Do any of your children go to preprimary school? Yes _____ No _____
If no, ask the following question
2. Why don't you send your children to preprimary school?

3. Do your children sometimes forget to wash their hands?
Yes _____ No _____ Sometimes _____

Cooking

1. What fuel do you use for cooking? (Gas, kerosene, wood, charcoal)

2. Are there times when no fuel or coals are available for cooking?
Yes _____ No _____

Family Planning

1. Do you think family planning is a good thing to practice?
Yes _____ No _____

Depending on how the respondent answers, ask why do you think it is (or is not) a good thing to practice?

2. Do you practice family planning? Yes_____ No_____

If respondent says no, ask -- Why don't you use birth control?

BELIEFS

(Read out the sentences and have mother pick only one of each sets)

1. I usually let life take its own course. _____

or

I really try to make things happen my own way. _____

2. I feel good most of the time _____

or

I feel really tired and unhappy some of the time. _____

3. Most babies or small children get sick, its just a way of life. _____

or

Only a few babies or small children get sick because they are not properly cared for. _____

4. Most likely my baby or child will get diarrhea sometime. _____

or

My child probably won't get diarrhea. _____

1. If your child gets diarrhea do you think his or her illness is serious? Yes_____ No_____

2. Do you think any or your children are underweight? Yes_____ No_____

3. If your child gets worms do you think it is serious? Yes_____ No_____

Community

1. In general do you feel this community is a clean place to live?

Yes_____ No_____ If no, ask the following question.

2. Could you please tell me why this community is not so clean.

3. How could this community be improved?

4. Would you be willing to be in a self-help group that works to improve this community?

Yes _____ No _____

5. Do you think everyone in this community should put hand in hand and work together?

Yes _____ No _____

When you are in the house ask to see where the mother keeps her water supply?

Is the water in a clean container? Yes _____ No _____

Is the water covered? Yes _____ No _____

Is the water inside the house or outside? Inside _____ Outside _____

OBSERVATION SHEET- Only observe the surroundings of the household and write down your answer, DO NOT ASK THESE QUESTIONS

1. What is the condition of the house?

Very Good Good Slightly Good Slightly Rundown Rundown Very Rundown

2. How many rooms does this household have? _____

3. How crowded does this house appear to be?

Very crowded Crowded Slightly Crowded Slightly Uncrowded Uncrowded Very Uncrowded

4. How clean are the rooms?

Clean Clean Slightly Clean Slightly Unclean Unclean Very Unclean

5. Is there furniture in the house to sit on or use?

None Very Little Some Adequate

6. Are the floors clean? Yes _____ No _____

Is the Kitchen covered? Yes _____ No _____

7. Is the Kitchen located inside the house or outside?

Inside _____ Outside _____

8. Is the Kitchen entirely separate from the house? (In other words is it a small structure separated from the house and outside?)

Yes _____ No _____

9. The Kitchen whether in the house or outside is it:

Very Clean Clean Slightly Clean Slightly Unclean Dirty Very Dirty

10. Is there a refrigerator in the house? Yes _____ No _____

11. Is the latrine and the surrounding area:

Very Clean Clean Slightly Clean Slightly Dirty Dirty Very Dirty

12. Is the pit latrine covered or exposed? (In other words does it have a house over the hole?) Covered _____ Exposed _____

13. How clean is the yard?

Very Clean Clean Slightly Clean Slightly Dirty Dirty Very Dirty

14. Is there garbage in the yard? Yes _____ No _____

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16. Is there animal or human excrement (feces) in the yard)?

Yes _____ No _____

17. How clean are the children, their hygiene?

Very Clean	Clean	Slightly Clean	Slightly Dirty	Dirty	Very Dirty
---------------	-------	-------------------	-------------------	-------	---------------

SPECIAL COMMENTS: Please write down any other observation or comments about this household and the hygienic practices of the family members.

TOPIC:

TIME:

DATE:

HOW IT CONCERNS PROJECT:

PERSON(S) SPOKEN TO:

OTHER PERSONS PRESENT:

PERSON FILING REPORT:

CONVERSATION/ACTIVITY

REFERENCES:

- INCLUDE
- 1) MAIN THRUST
 - 2) OTHER NOTABLE POINTS, IF ANY
 - 3) IMPRESSIONS OF CONVERSATION/ACTIVITY

FOLLOW-UP YOU THINK IS REQUIRED:

.67.

Community _____ Code _____

Child Assessment

Household name: _____ no.: _____

Child's name: _____ Birthdate: _____ Sex: M F

Who often cares for child? _____

Mother: _____ Nat. Father: _____

Guardian: _____ Other male: _____

Date of visit									
Interviewer									
Responder									
Age (yrs. mos.)									
Height									
Birth weight									
Weight									
Since last visit:									
Diarrhea episodes	Y	N		Y	N		Y	N	
# days									
Max # stools/day									
Blood in stools	Y	N		Y	N		Y	N	
Mucous	Y	N		Y	N		Y	N	
Fever	Y	N		Y	N		Y	N	
Help sought	pt. local	hc.	hosp. none	pt. local	hc.	hosp. none	pt. local	hc.	hosp. none
Hospitalized	Y	N		Y	N		Y	N	
Treatment describe below	ors om	fluid food	pm. *other	ors om	fluid food	pm. *other	ors om	fluid food	pm. *other
Other illnesses									
Cold	Y	N		Y	N		Y	N	
Fever	Y	N		Y	N		Y	N	
Stomach	Y	N		Y	N		Y	N	
New rash	Y	N		Y	N		Y	N	
Other (specify)									
Comments									

Community _____ Code _____

Child Assessment

Household name: _____ no.: _____
 Child's name: _____ Birthdate: _____ Sex: M F
 Who often cares for child? _____
 Mother: _____ Nat. Father: _____
 Guardian: _____ Other male: _____

Date of visit								
Interviewer								
Responder								
Age (yrs. mos.)								
Height								
Birth weight								
Weight								
Since last visit:								
Diarrhea episodes	Y	N		Y	N		Y	N
-# days								
-Max # stools/day								
- Blood in stools	Y	N		Y	N		Y	N
- Vomiting	Y	N		Y	N		Y	N
- Fever	Y	N		Y	N		Y	N
- Help sought	pd. local	hc. none	hosp.	pd. local	hc. none	hosp.	pd. local	hc. none
- hospitalized	Y	N		Y	N		Y	N
- treatment # describe below	ors om	fluid food	pm. *other	ors om	fluid food	pm. *other	ors om	fluid food
- other illnesses								
- Cold	Y	N		Y	N		Y	N
- Fever	Y	N		Y	N		Y	N
- Sores	Y	N		Y	N		Y	N
- New rash	Y	N		Y	N		Y	N
- Other (specify)								
Comments								

Community _____ Code _____

Child Assessment

Household name: _____ no.: _____

Child's name: _____ Birthdate: _____ Sex: M F

Who often cares for child? _____

Mother: _____ Nat. Father _____

Guardian: _____ Other male: _____

Date of visit									
Interviewer									
Responder									
Age (yrs. mos.)									
Height									
Birth weight									
Weight									
Since last visit:									
Diarrhea episodes	Y	N	Y	N	Y	N			
# of days									
max # stools/day									
Blood in stools	Y	N	Y	N	Y	N			
Swelling	Y	N	Y	N	Y	N			
Fever	Y	N	Y	N	Y	N			
Help sought	pd. local	hc.	hosp. none	pd. local	hc.	hosp. none	pd. local	hc.	hosp. none
hospitalized	Y	N	Y	N	Y	N			
treatment describe below	ors on	fluid food	pm. *other	ors on	fluid food	pm. *other	ors on	fluid food	pm. *other
Other illnesses									
Cold	Y	N	Y	N	Y	N			
Fever	Y	N	Y	N	Y	N			
ORRS	Y	N	Y	N	Y	N			
New rash	Y	N	Y	N	Y	N			
Other (specify)									
Comments									

DATE: _____
 COMMUNITY: _____
 LOCATION OF MEETING: _____
 OBSERVER: _____
 name
 OBSERVER'S RELATIONSHIP TO GROUP:
 LEADER INVOLVED OUTSIDER
 MEMBER OUTSIDER

START TIME: -SCHEDULED: _____ -ACTUAL: _____
 FINISH TIME: _____

	AGENDA	SATISFACTORY	
PREPARED	Y N	Y	N
ITEMS: MINUTES	Y N	Y	N
EXECUTIVE REPORTS	Y N	Y	N
TREASURER'S REPORT	Y N	Y	N
WAS AGENDA FOLLOWED?	Y N		
WAS AGENDA COMPLETED?	Y N	IF NOT, WHY NOT?	

ATTENDANCE		COMMUNITY MEMBERS:	
LEADERS PRESENT:			START END
PRESIDENT	Y N	MALE	
VICE-PRESIDENT	Y N	FEMALE	
SECRETARY	Y N	CHILDREN	
TREASURER	Y N		
P.R.O.	Y N	STUDY PARENTS	
_____	Y N		

SUMMARY

ITEMS OF NEW BUSINESS _____
 # HEALTH ITEMS _____
 # MEMBERS PARTICIPATING MALE _____ FEMALE _____
 # ITEMS REQUIRING DECISIONS _____ # TAKEN _____
 # ITEMS REQUIRING ACTION _____ # "ACTIVATED" _____

LEADERSHIP MODES	PARTICIPATION MODES
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____

OUTSIDERS PRESENT:

NAME/POSITION	NUMBER

DECISION MODES

1. _____
 2. _____
 3. _____

NEXT MEETING:
 DATE SET: _____
 DATE TO BE DECIDED _____
 NOT DISCUSSED _____

COMMENTS: (Comment on overall mood, spirit of meeting, most important topic, problems, achievements, etc.)

TOPICS				
DISCUSSION LED BY: (Name)				
(Rel'n to group)				
LEADERSHIP MODES				
COMMENTS				
PARTICIPATION MODES				
# PARTICIPATING	M _____ F _____			
COMMENTS				
DECISIONS REQUIRED	Y N	Y N	Y N	Y N
TAKEN	Y N	Y N	Y N	Y N
DECISION PROCESS				
COMMENTS				
ACTION REQUIRED	Y N	Y N	Y N	Y N
ACTIVATED	Y N	Y N	Y N	Y N
OVERALL COMMENTS				

M

HEALTH EDUCATION ACTIVITY OBSERVATION

Topic: _____ Title: _____
 Name of presenter: _____ Job title: _____
 Name of observer: _____ Job title: _____
 Date: _____ Time: _____ Total duration: _____
 Attendance: Male: _____ Female: _____ Children: _____

Most of the participants were: (✓)
 community members health workers
 pre-primary schoolers teachers
 primary schoolers other (specify) _____
 secondary schoolers

The purpose(s) of the activity was (were) to: (✓)
 share facts/information develop teaching methods
 develop skills motivate/plan for action
 the purpose was unclear other (specify) _____

Was the topic relevant/important to the group?.....
 Was the information shared - on topic?.....
 - useful/important?.....
 Was all information - correct?.....
 - clearly presented/explained?.....
 Would you have added any information?.....
 Would you have left any information out?.....

YES	NO	SOME- WHAT	NOT SURE
	*		
	*		
	*		
	*		
*			
*			

* If you answered "no" to any of the first 5, or "yes" to the last 2 questions, please explain: _____

About how many people participated? none about half the group
 a few almost everyone

In what ways did people participate?
 asked questions shared ideas/experiences
 answered questions discussed problems/needs
 made observations actively participated in "work"
 showed enthusiasm planned for action
 other (specify) _____

AS A RESULT OF THIS ACTIVITY DO YOU FEEL:
 -that something can be done about the topic/problem?
 -motivated to do something about it?.....
 -that you have learned enough to be able to do something?.....
 -that you have gained the skills required?.....
 -that you could teach someone else?.....

YES	NO	SOME- WHAT	NOT SURE

Who else could benefit from this activity? (e.g. health workers, pre-primary schoolers) _____

PRESENTATION STYLE
 Was voice - loud & clear enough?.....
 - interesting?.....
 Was the language appropriate for this group?.....
 Was there good eye contact?.....
 Was presenter approachable/open to questions?.....
 Did presenter make you feel - relaxed?.....
 - confident & competent?.....
 Were presenters appearance/gestures helpful?.....

YES	NO	SOME- WHAT	NOT SURE

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The following is a list of health education "tools". Obviously there are many more, and all can be used to improve presentations and enhance learning.

- | | | | | |
|--------------------------|--------------------|------------------------|-------------------|---------------------|
| 1. asking questions | 7. demonstration | 13. slides | 19. story | 24. photos |
| 2. leading a discussion | 8. display | 14. film | 20. song | 25. other (specify) |
| 3. brainstorming | 9. assign problems | 15. pamphlet | 21. role play | |
| 4. sharing ideas | 10. group work | 16. poster | 22. special guest | |
| 5. sharing personal exp. | 11. field trip | 17. flipchart | 23. lecture | |
| 6. hands on practice | 12. humour | 18. student "teaching" | | |

PLEASE INDICATE BELOW WHICH "TOOLS" THE PRESENTER USED, AND ALSO ASSESS HOW WELL EACH WAS USED AND WHETHER YOU THINK IT ENHANCED LEARNING.

	LIST TOOLS USED	properly done appropriate clear/simple enhanced learning				COMMENTS
How did the presenter STIMULATE INTEREST?						
How did the presenter ENCOURAGE PARTICIPATION?						
How did the presenter SHARE INFORMATION?						
How did the presenter ALLOW FOR PRACTICE?						
How did the presenter HELP GROUP BECOME MOTIVATED/PLAN FOR ACTION?						

PLEASE COMMENT ON THE ACTIVITY, OR EXPAND ON ANY OF THE ABOVE: _____

Objective (Main point)	LESSON PLAN How will it be presented? (outline & use diagrams)	Materials needed	How will you motivate all this... stimulate interest? build skills? encourage participation?	How will you evaluate success/ learning?

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ORS Case Monitoring sheet

Field worker _____ Distributor _____

Child's name _____ Mother's name _____

Date interviewed _____ Date last seen by distributor _____

1. Case outcome

- child improved/recovered without visiting clinic or doctor
- child referred when first seen by distributor to _____
- child referred on follow-up by distributor to _____
- child was hospitalized child died

If child did not improve, got sicker, or had problems, describe what happened and why you think it happened _____

2. ORS use (describe how mother mixed, gave, stored, disposed of packets)

- # of packets received _____ # of packets remaining _____
- # of packets properly mixed _____ How much was given to child? _____
- Was it stored properly? Yes No Was it disposed of after 24 hrs.? Yes No
- # of packets given away _____ To whom given? _____
- # discarded or lost _____ # misused _____ Describe any errors: _____

3. Follow-up (ask what mother was told to do, what did she actually do?)

Were there problems? (e.g. unable to return, went to clinic anyway, came back too late, etc.) Explain: _____

4. Mother's knowledge

<u>A:</u> mother is correct and sure of answer	<u>A</u>	<u>B</u>	<u>C</u>
<u>B:</u> mother seems to know, not sure			
<u>C:</u> mother does not know, confused			
Replace water that is lost by giving certain fluids	---	---	---
ORS (if used) Proper mixing	---	---	---
Proper use	---	---	---
Proper amount to give in one day	---	---	---
Give ORS for each watery stool	---	---	---
What to do if eyelids are puffy	---	---	---
How to properly store ORS	---	---	---
FOOD: Keep breastfeeding or give formula or milk	---	---	---
Give food (small amount)	---	---	---
Continue breastfeeding or give formula	---	---	---
DANGER SIGNS: Child unable to drink for 2 days	---	---	---
Child's diarrhea is getting sicker	---	---	---
Child's diarrhea is no worse for 3 hours	---	---	---

5. Mother's satisfaction

- Did she feel she was helped? Yes No Some
- Was she confident that distributor knew what to do? Yes No Some
- Could she go to the doctor at times? Yes No Some Tell friends to go? Yes No
- Overall, was she satisfied? Yes No Some
- Is mother very active in community organization? Yes No Some
- How did this experience affect mother's willingness to participate in activities of the community organization? Improved Unchanged No change

6. Based on your review of the case, how well do you feel it was handled?

Excellent _____

State reasons for your rating: _____

Describe any other comments: _____

ORS Case Monitoring sheet

Field worker _____ Distributor _____
 Child's name _____ Mother's name _____
 Date interviewed _____ Date last seen by distributor _____

1. Case outcome

- ___ child improved/recovered without visiting clinic or doctor
- ___ child referred when first seen by distributor to _____
- ___ child referred on follow-up by distributor to _____
- ___ child was hospitalized _____ child died

If child did not improve, got sicker, or had problems, describe what happened and why you think it happened _____

2. ORS use (describe how mother mixed, gave, stored, disposed of packets)

- # of packets received _____ # of packets remaining _____
- # of packets properly mixed _____ How much was given to child? _____
- Was it stored properly? Yes No Was it disposed of after 24 hrs.? Yes No
- # of packets given away _____ To whom given? _____
- # discarded or lost _____ # misused _____ Describe any errors: _____

3. Follow-up (ask what mother was told to do, what did she actually do?)

Were there problems? (For example: unable to return, went to clinic anyway, came back too late, etc.) Explain: _____

4. Mother's knowledge

- A: mother is correct and sure of answer
- B: mother seems to know, not sure
- C: mother does not know, confused

	<u>A</u>	<u>B</u>	<u>C</u>
Replace water that is lost by giving certain fluids-----	---	---	---
ORS (if use!) Proper mixing-----	---	---	---
Proper use-----	---	---	---
Proper amount to give in one day-----	---	---	---
Give extra for each watery stool-----	---	---	---
What to do if eyelids are puffy-----	---	---	---
How to properly store O-----	---	---	---
FOOD: Keep breastfeeding or give formula or milk-----	---	---	---
Give food (type, time, amount)-----	---	---	---
Continue extra food for one week-----	---	---	---
DANGER SIGNS: Go to Health Centre if diarrhoea for 2 days--	---	---	---
Go to Health Centre if getting sicker-----	---	---	---
Go to Health Centre if no urine for 8 hours--	---	---	---

5. Mother's satisfaction

- Did she feel she was helped? Yes No Some
- Was she confident that distributor knew what to do? Yes No Some
- Would she go to distributor next time? Yes No Tell friends to go? Yes No
- Overall, was she satisfied? Yes No Some
- Is mother very active in community organization? Yes No Some
- How did this experience affect mother's willingness to participate in activities of the community organization? Improved Harmed No change

6. Based on your review of the case, how well do you feel it was handled?

Excellent Good Fair Poor

State reasons for this rating: _____

Describe any errors or inappropriate management: _____

COMMUNITY ORGANIZATION PERFORMANCE

KNOWLEDGE OF ORGANIZATION AND ACTIVITIES:

1. When this community first joined hands and formed a group, could you tell me what goals or aims you all decided on?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

2. Please tell me the names of the leaders in your community group and what position each one holds.

	Name	Position
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
e.	_____	_____

3. When are your community meetings usually held?

4. How many community meetings have you attended?

5. Could you please list for me what your members have decided are important needs for this community? (Indicate order of priority, if needs have been prioritized)

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

6. What activities have been planned to begin work on the community needs?

- a. d.
- b. e.
- c. f.

(RECORD ANSWERS TO # 7 - 10 IN TABLE WHICH FOLLOWS)

- 7. How many people from your home have participated in any of the activities in the community? Please name them.
- 8. Which community activities have they participated in?
- 9. What part did they play in each of these activities?
- 10. How much time would you say each person has contributed to community activities since your group has started?

NAME	ACTIVITY	PART PLAYED	TIME (hrs/days)
a.			
b.			
c.			
d.			
e.			

11. What qualities or skills can you or anyone in your home contribute to this community group/ or How do you feel you can best help?

NAME	SKILLS/QUALITIES/CONTRIBUTION
a.	
b.	
c.	
d.	
e.	
f.	

12. How does this group decide things? (Vote, discussion, one person decides)

13. If you could change the way the community group makes decisions or runs things, what would you change?

14. What do you like and dislike about the community group?

PLEASE TELL ME HOW YOU FEEL ABOUT THE FOLLOWING STATEMENTS.

15. The community activities are well planned and meet our needs.

Strongly Agree Agree Undecided Disagree Strongly Disagree

16. The community goals and activities are good.

Strongly Agree Agree Undecided Disagree Strongly Disagree

17. The leaders could improve the way they run the meetings and activities.

Strongly Agree Agree Undecided Disagree Strongly Disagree

18. Members do not feel free to speak out at meetings.

Strongly Agree Agree Undecided Disagree Strongly Disagree

19. All members participate eagerly at meetings and activities.

Strongly Agree Agree Undecided Disagree Strongly Disagree

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20. Could you please tell me what groups or individuals from outside the community are helping your group.
- a. c.
b. d.
21. Do you feel the help you get from these groups or individuals is adequate?
yes no
22. Please tell me what you like or dislike about their help?
23. Do you think that in the long run this community will be on its feet?
yes no maybe
24. How could this community become better able to help itself?
25. Do you think this group could eventually rely more on its own resources?
yes no maybe
26. How do you think this could be achieved?
27. Is this community group a good group to be involved with?
yes no
28. Please explain why you feel this way.

HEALTH

A Community Knowledge Concerning Health Needs and Oral-Rehydration

1. Could you please tell me what you think this community's greatest health care needs are?
- a. c.
b. d.

2. What causes a child to get diarrhoea?

.....
.....

3. How does a child look, feel and behave when he or she gets diarrhoea?

.....
.....

4. What should you give a child when he or she has diarrhoea?

.....
.....

5. Has the nurse or doctor told you about oral-rehydration therapy or salts (ORS)?

yes _____ no _____

6. How does a child look, feel and behave when he or she is dehydrated (drying up) from diarrhoea?

.....
.....

7. Have you ever used oral-rehydration salts (ORS) in your home?

yes _____ no _____

If yes, ask the following:

8. Did the oral-rehydration salts make the child better?

yes _____ no _____

9. Have you ever mixed the oral-rehydration salts in your home?

yes _____ no _____

10. Please tell me how you would mix oral-rehydration salts?

.....
.....
.....
.....

11. What size of container should you use to mix the oral-rehydration salts?/ or how much water should one packet of ORS be mixed with?

.....
.....

12. What local container or container you have in your home would you use to mix the oral-rehydration salts in?/ or what would you use in your home to measure the amount of water to be mixed with the salts?

.....
.....

13. Would you be willing to come to the community center or health center to learn more about health, diarrhoea, and oral rehydration salts?

yes _____ no _____

14. Do you think that you might like to help in a health education activity/programme?

yes _____ no _____

A P P E N D I X B

COMMUNITY OF BELLE ISLE

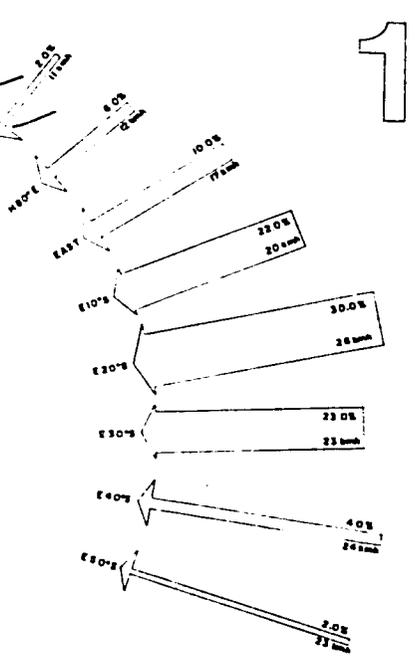
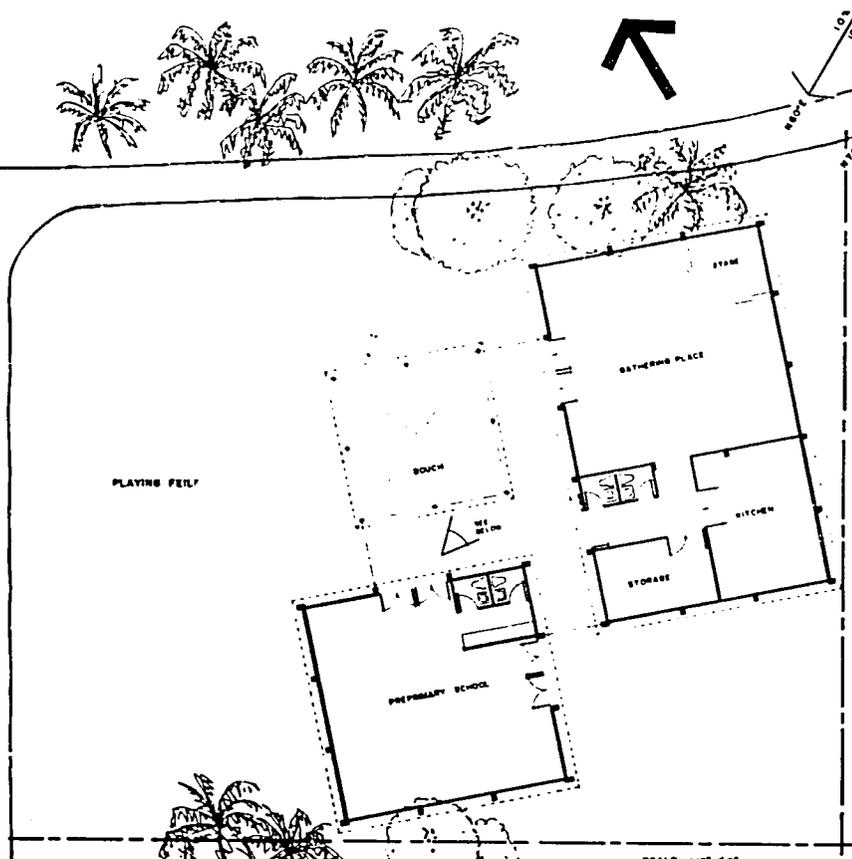
BELLE ISLE, ONE OF THE COMMUNITIES IN THE PARISH OF ST. DAVID'S HAS A POPULATION OF APPROXIMATELY 100 PERSONS. THERE ARE FORTY-TWO HOUSEHOLDS AND TWO SMALL GROUPS OF HOUSES IN THE VILLAGE. MOST OF THE HOUSEHOLDS HAVE RUNNING WATER, WHILE THE REMAINDER OF THE VILLAGE OBTAIN WATER FROM TWO STANDPIPES. THERE IS NO ELECTRICITY IN THE VILLAGE.

THE TYPICAL VILLAGE HOUSEHOLD IS A ONE-ROOF STRUCTURE CONSISTING OF A ROOM WITH A CORONA-ROOF METAL ROOF, AND USUALLY NOT MUCH LARGER THAN 12 FEET BY 12 FEET. ONLY A FEW ACTIVITIES OCCUR OUTDOORS WHERE IT IS MORE CONVENIENT. THE HOUSEHOLDS SIMPLY PROVIDE SHELTER AT NIGHT AND SAVING ROOMS OF MATERIAL.

Sanitation is poor. COOKING IS USUALLY DONE OUTSIDE OF THE HOUSEHOLD, EITHER IN A FIRE PIT, OR IN A SEPARATE COOKHOUSE UNDER SOME SHELTER. SHELTERS IN GENERAL IS PRIMARILY USED IN THE EVENING. THERE ARE SOME PIT LATRINES IN USE AND SOME OF THE ONE SHARED BY MORE THAN ONE FAMILY. BATHING AND LAUNDRYING ARE DONE UNDER THE STANDPIPES WHICH ARE PROVIDED FOR PROVIDING DRINKING WATER ONLY. SOME HOUSES AND ONE ARE BUILT IN THE HOUSEHOLD WITHIN THE REAR PART OF AN ISLAND TRANSPORTATION ROUTE IN SEVERAL PLACES.

THE NEEDS OF LIVELIHOODS AND INFRASTRUCTURE, FINANCIAL AND MATERIAL OF VILLAGERS. THE EMPLOYMENT RATE IS VERY LOW. THE HEADS OF THE HOUSEHOLDS ARE MOSTLY WOMEN. MOST OF THE WOMEN ARE SELF-EMPLOYED, AND THERE IS UNDEREMPLOYMENT. SINCE EXTENDED FAMILIES LIVE IN APPROXIMATELY 75% OF THEM.

RECENTLY, THE COMMUNITY IS PROVIDED WITH A ROAD NETWORK PROJECT WHICH WILL IMPROVE COMMUNITY SERVICES THROUGH ACCESS INTO THE COMMUNITY. THE PROJECT IS "SELF-HELP" BY MEANS OF WHICH VILLAGERS ARE PROVIDED THROUGH A U.S.A.I.D. DEVELOPMENT GRANT AND LOANED BY THE PROVIDED BY THE COMMUNITY THROUGH A VOLUNTARY BASIS. OTHER ACTIVITIES INCLUDE PLANNING FOR A COMMUNITY CENTER, PUBLIC BATH HOUSE, A PIT LATRINE PROGRAMME, AND ATTEMPTS AT GETTING ELECTRICITY INTO THE COMMUNITY. THE COMMUNITY IS ALSO VERY RESPONSIVE TO HEALTH CARE PROGRAMMES INITIATED BY THE ST. DAVID'S DISTRICT HEALTH CENTER AND BY THE ST. DAVID'S CHILD HEALTH CARE PROJECT.

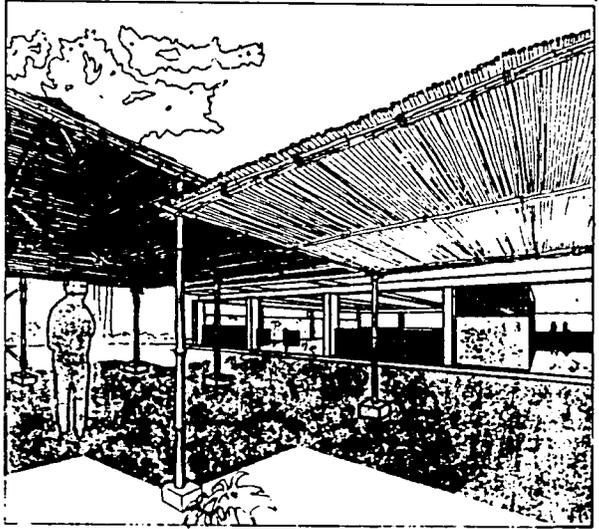


WIND ROSE

DATA INDICATES BEARING AND VELOCITY OF WINDS AFFECTING GRENADA BASED ON YEARLY AVERAGES

1cm LENGTH - 2km VELOCITY
1mm WIDTH - 1% OCCURANCE

ESTIMATED "ONE IN 50 YEARS" DESIGN GUST VELOCITY - 182 km/h
TAKEN FROM BUILDING RESEARCH ESTABLISHMENT NOTES No. 9001



BUILDING PROGRAMME

COMMUNITY OF BELLE ISLE, ST. DAVID'S, GRENADA
COMMUNITY BUILDING - BUILDING PROGRAMME

- A. MARKET PLACE (Approx. 27 PERSONS @ 25 sq. ft./PERSON)
SHOULD FACILITATE - COMMUNITY MEETINGS
RELIGIOUS SERVICES
DANCE/REVUES
COMMUNITY EVENTS
- B. OUTDOOR SCHOOL (Approx. 40 CHILDREN @ 30 sq. ft./CHILD)
SHOULD FACILITATE - CLASSROOM ACTIVITIES
STORAGE FACILITY
ONE WATER CLOSET EACH FOR BOYS AND GIRLS
WASH AREA
- C. ALTERNATIVE TECHNOLOGY
BASIC KITCHEN FACILITIES SHOULD BE PROVIDED AS WELL AS ADDITIONAL SPACE SO THAT THE BATHROOMS ALSO BE UTILIZED AS A READING FACILITY TO CREATE COMMUNITY INTEREST IN IMPROVED FOOD PREPARATION FACILITIES.
- D. LEISURE SPACE
GENERAL OPEN SPACE SHOULD ACCOMMODATE -
- JAMES
BUILDING MATERIALS/TOOLS

- E. OUTDOOR
OUTDOOR SPACE ADJACENT TO THE COMMUNITY BUILDING, MAY BE UTILIZED AS -
- (ENTERTAINMENT/OPEN SPACE
- OUTDOOR RESTING AREA
- PLAY AREA FOR CHILDREN)
- COMPLETION OF THE COMMUNITY BUILDINGS WILL BE BASED ON THE FOLLOWING PRIORITIES AS IDENTIFIED BY THE COMMUNITY MEMBERS OF BELLE ISLE.
1. BATHING PLACE
 2. PRIMARY SCHOOL
 3. OUTDOOR KITCHEN FACILITY
- AS WELL AS A COMMUNITY BATH HOUSE IS ALSO PLANNED BY THE COMMUNITY AND WILL BE BUILT ON A SEPARATE SITE. COMPLETION OF THE VARIOUS BUILDING PHASES IS DEPENDENT UPON THE AVAILABILITY OF GRANT FUNDS, AND THIS IN THE LONG-TERM MAY BECOME PART OF THE BUILDING PHASES SET BUILT AND AT THAT POINT IN TIME.

COMMUNITY BUILDINGS

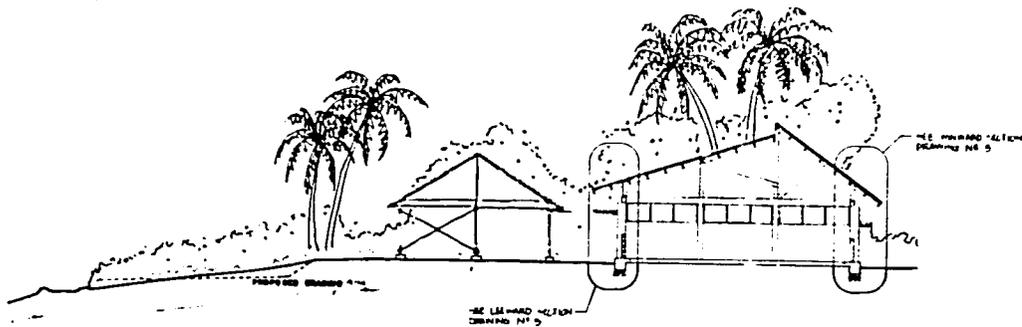
BELLE ISLE GRENADA W.I.

ANDREW NIZIELSKI
FACULTY OF ARCHITECTURE
TECHNICAL UNIVERSITY OF
NOVA SCOTIA

CLIMATIC DATA

MONTH	AVG TEMP °C	RAINFALL mm	AVG REL HUMIDITY	AVG WIND BEAR / VEL
JANUARY	26.4	423	75%	E11°S 23km/h
FEBRUARY	26.3	401	74%	E40°S 21km/h
MARCH	26.8	346	75%	E10°S 28km/h
APRIL	27.1	287	74%	E20°S 26km/h
MAY	28.2	18.4	75%	E28°S 28km/h
JUNE	29.0	138.3	77%	E20°S 19km/h
JULY	27.7	173.8	81%	E17°S 18km/h
AUGUST	28.0	178.4	80%	E11°S 18km/h
SEPTEMBER	28.0	174.4	80%	E13°S 15km/h
OCTOBER	27.7	190.3	81%	E48°S 16km/h
NOVEMBER	27.8	183.1	82%	E13°S 13km/h
DECEMBER	26.7	210.2	78%	E18°S 20km/h
YEAR	27.4	1410.0	78%	E48°S 20km/h

CLIMATIC DATA OBTAINED FROM POINT SALINES INT'L. TOTAL SUPPORT METEOROLOGICAL OFFICE



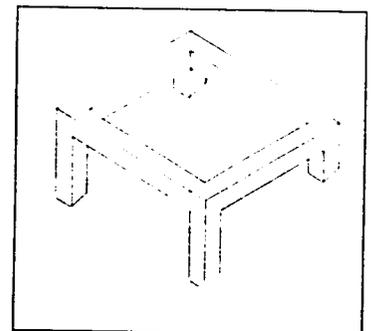
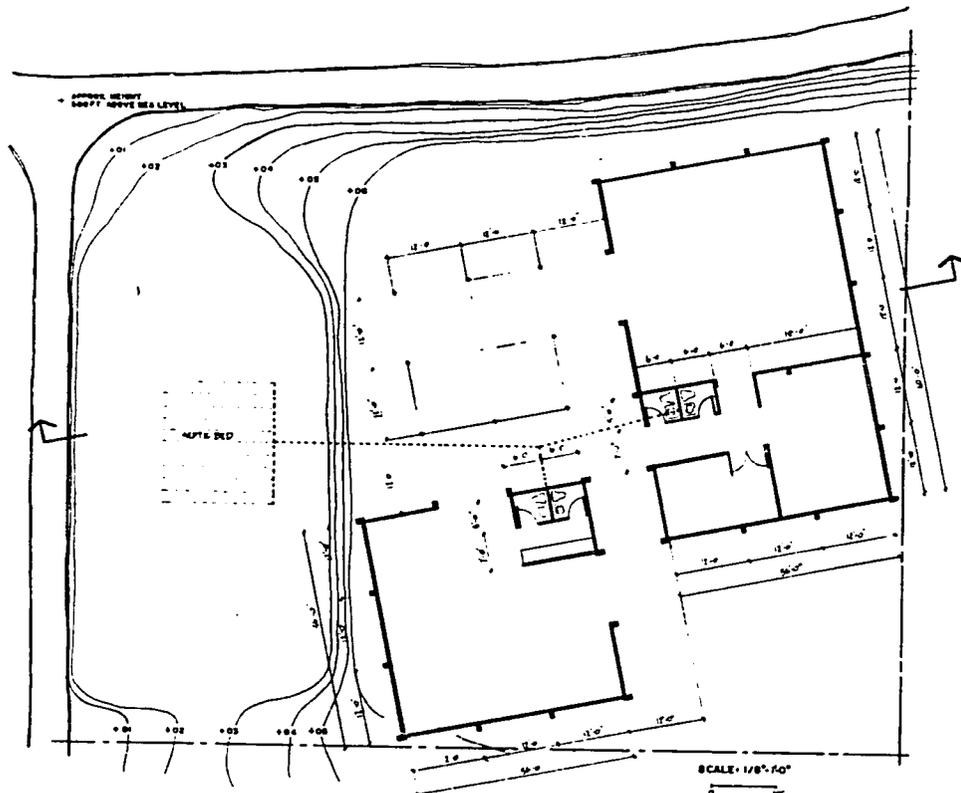
SOIL CONDITIONS

THE EFFECT OF SOIL CONDITIONS ON VENTILATION DESIGN IS NOT ALWAYS APPARENT. THE NATURE OF SOILS IN THE AREA OF THE SITE, HOWEVER, MAY BE SUCH THAT THE FOUNDATION DESIGN AND CONSTRUCTION MUST BE SUCH AS TO PREVENT THE BUILDING FROM SINKING OR SLIDING IN A FAVORABLE DIRECTION.

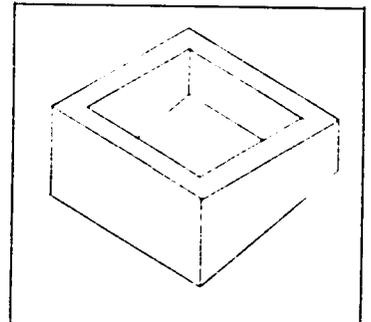
SOILS IN THE TROPICAL REGIONS ARE "UNSTABLE". THEY ARE OFTEN SOFT AND MOIST IN THE LAYER NEAR THE SURFACE. BECAUSE THIS TYPE OF SOIL HAS TENDENCY TO SETTLE AND SHRINK DUE TO THE HIGH PERCENTAGE OF HUMIDITY WHICH IT CONTAINS, THE FOUNDATIONAL DESIGN IS SUCH THAT THE BUILDING IS NOT SUBJECT TO A SLIDING OR SETTLING OF THE FOUNDATION.

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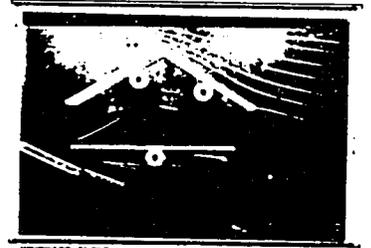
SOILS IN THE TROPICAL REGIONS ARE "UNSTABLE". THEY ARE OFTEN SOFT AND MOIST IN THE LAYER NEAR THE SURFACE. BECAUSE THIS TYPE OF SOIL HAS TENDENCY TO SETTLE AND SHRINK DUE TO THE HIGH PERCENTAGE OF HUMIDITY WHICH IT CONTAINS, THE FOUNDATIONAL DESIGN IS SUCH THAT THE BUILDING IS NOT SUBJECT TO A SLIDING OR SETTLING OF THE FOUNDATION.



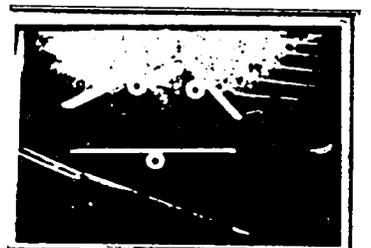
PIER FOUNDATION - BEAMS SPAN BETWEEN SUPPORTING PIERS. TYPICALLY USED ON SLOPING SITES WITH UNSTABLE SOIL CONDITIONS.



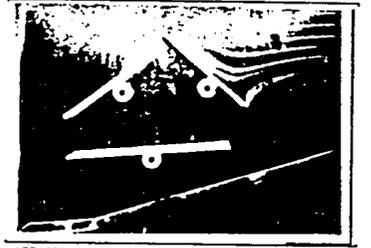
WALL FOUNDATION - USED WHEN AN ENCLOSED BASEMENT IS DESIRED. IF SOIL CONDITIONS PERMIT, THIS IS A SIMPLER FOUNDATION TO ERECT.



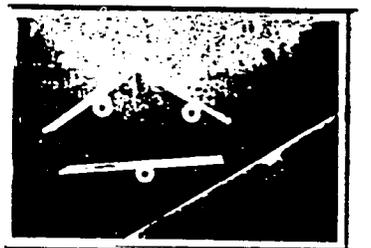
WINDWARD SLOPE - VENTILATION BOTH THROUGH AND UNDER BUILDING. SHALLOW ROOF PITCH PREVENTS AIRFLOW AT PERSON LEVEL.



WINDWARD SLOPE - STEEP ROOF PITCH PROMOTES AIRFLOW AT PERSON LEVEL.



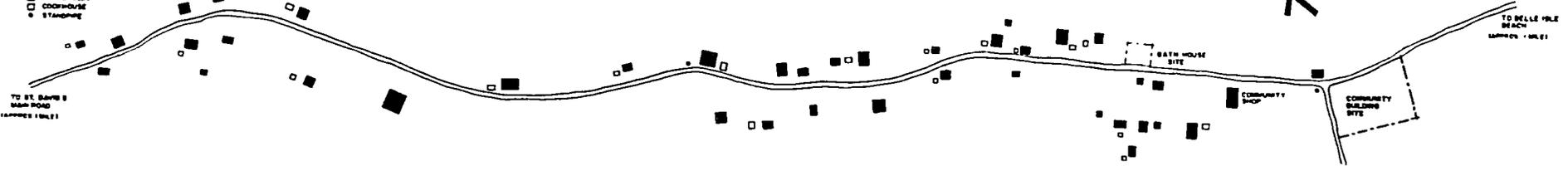
LEEWARD SLOPE - SHALLOW SLOPE HAS MINIMAL EFFECT ON VENTILATION THROUGH BUILDING. HOWEVER, CONSIDERABLY REDUCES AIRFLOW UNDER BUILDING.



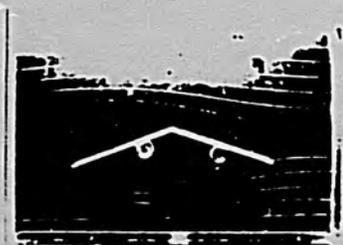
LEEWARD SLOPE - STEEP SLOPE PLACES BUILDING IN A WIND SHADOW OF NO AIR MOVEMENT. THIS CONDITION SHOULD BE AVOIDED.

COMMUNITY OF BELLE ISLE

SCALE - 1" = 75'
 ■ HOUSE HOLD
 □ COOP HOUSE
 ○ STANDING



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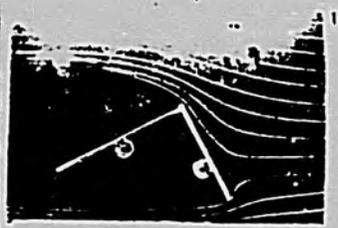
AIRFLOW - SHALLOW ROOF PITCH, NO GABLES. MINIMAL INCREASE IN VELOCITY THROUGH THE BUILDING IS NOTICED.



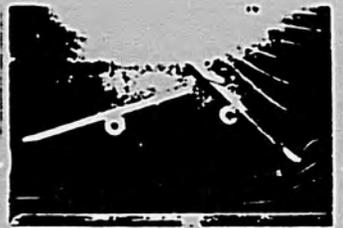
AIRFLOW - STEEP ROOF, NO GABLES. THERE IS A MARKED INCREASE IN VELOCITY (SMOKE TRAILS CONVERGE) THROUGH THE BUILDING. THIS SUGGESTS A STEEP ROOF PITCH ON WINDWARD SIDE OF BUILDING.



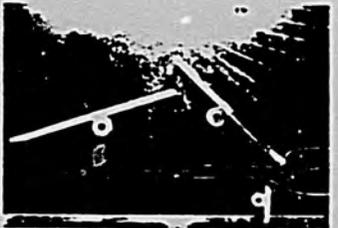
AIRFLOW - LARGE INLET OPENINGS WITH SMALL OUTLET OPENINGS. THERE IS A DECREASE IN VELOCITY THROUGH THE BUILDING.



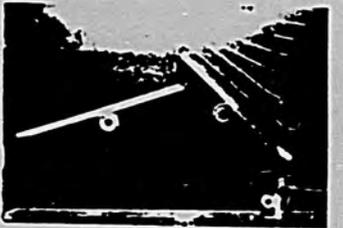
AIRFLOW - SMALL INLET OPENINGS WITH LARGE OUTLET OPENINGS. THERE IS A SHARP INCREASE IN VELOCITY THROUGH THE BUILDING. FOR INLET AND OUTLET PROPORTIONS, SEE NOTES THIS SHEET.



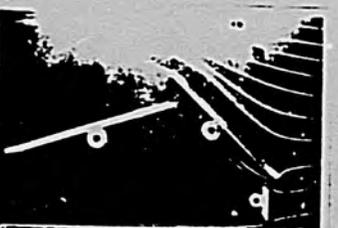
AIRFLOW - COMBINATION OF STEEP PITCH AND SMALL INLET ON WINDWARD SIDE, WITH SHALLOW PITCH AND LARGE OUTLET ON LEEWARD SIDE. NOTE HIGH VELOCITY THROUGH BUILDING. VELOCITY AT ROOF PEAK ALLOWS WIND TO ESCAPE.



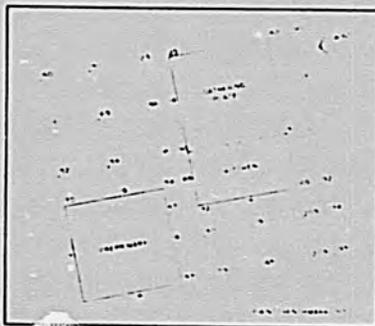
AIRFLOW - HIGH INLET OPENINGS PROVIDES CIRCULATION ABOVE THE DESIRED PERSON LEVEL (6'-0").



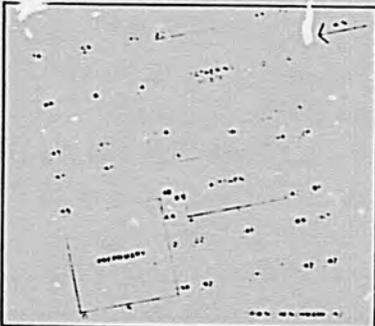
AIRFLOW - LOWER INLET OPENINGS PROMOTES CIRCULATION AT PERSON LEVEL.



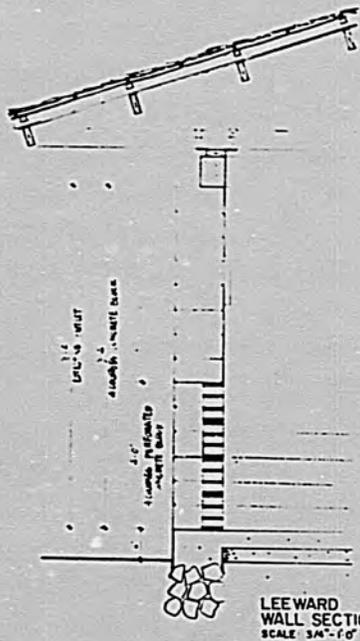
AIRFLOW - SPLIT INLET OPENINGS PROVIDES NO ADVANTAGE. IF INLET IS TOO HIGH, CIRCULATION IS DOWN THROUGH THE PEAK VERT.



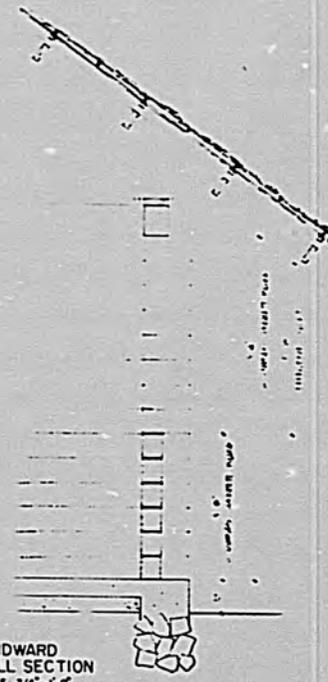
RELATIVE VELOCITIES - ATTACHED CONFIGURATION. HIGHER VELOCITIES ARE REALIZED ON LEEWARD SIDE OF BATHING PLACE BY WINDWARD SIDE ARRANGEMENT IS MORE FEASIBLE THAN DETACHED CONFIGURATION.



RELATIVE VELOCITIES - DETACHED CONFIGURATION. LOWER VELOCITIES ARE RECORDED ON LEEWARD SIDE OF BATHING PLACE AND WITCHEN DUE TO A VORTEX CREATED BETWEEN THE BUILDINGS.



LEEWARD WALL SECTION SCALE 3/4" - 1'-0"



WINDWARD WALL SECTION SCALE 3/4" - 1'-0"

PRINCIPLES OF NATURAL VENTILATION

The principles of natural ventilation are based on the fact that air is lighter than water and that it expands when heated. The result is that air rises and is drawn into the building from the windward side. The air then moves through the building and is exhausted to the atmosphere on the leeward side.

The rate of natural ventilation is determined by the temperature difference between the inside and outside air. The greater the temperature difference, the greater the rate of ventilation. The rate of ventilation is also affected by the wind speed and the area of the openings.

The principles of natural ventilation can be applied to a wide variety of building types. The most common application is to residential buildings. The principles can also be applied to industrial buildings, schools, and hospitals.

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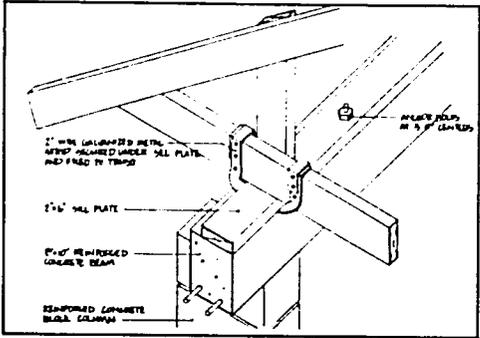
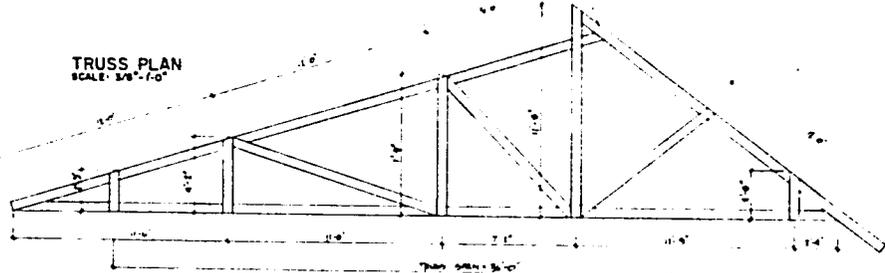
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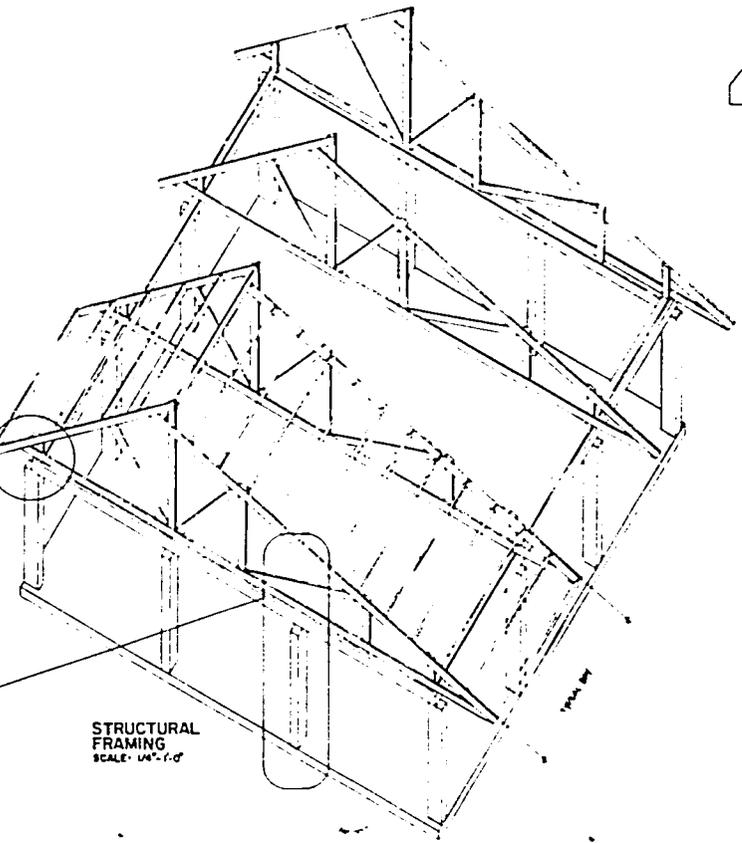
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90

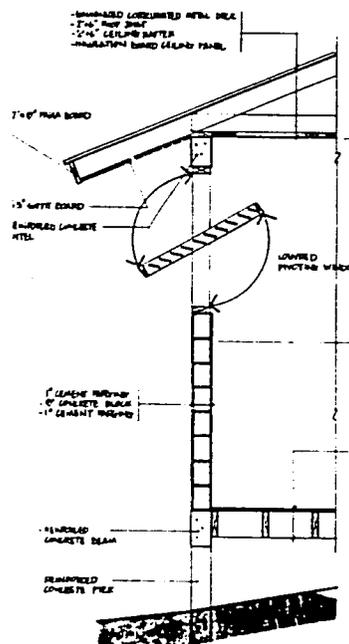
TRUSS PLAN
SCALE: 3/8" = 1'-0"



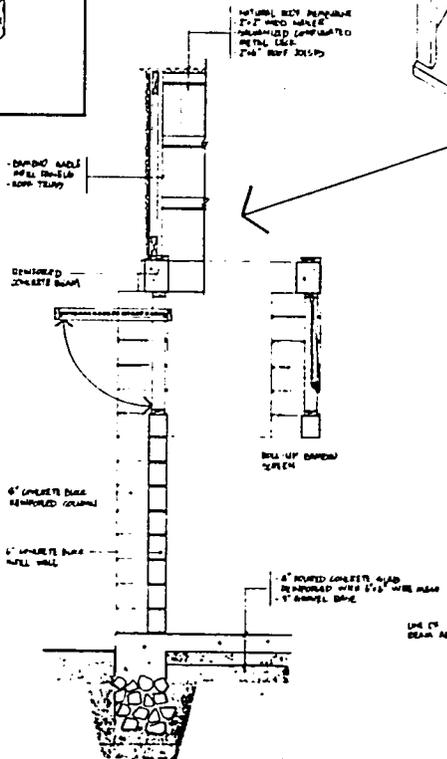
HURRICANE STRAP
DETAIL
SCALE: 1/2" = 1'-0"



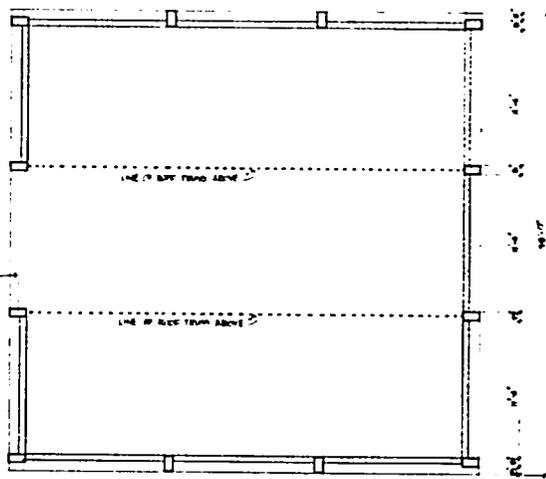
STRUCTURAL FRAMING
SCALE: 1/4" = 1'-0"



CONVENTIONAL CONSTRUCTION
SCALE: 3/4" = 1'-0"

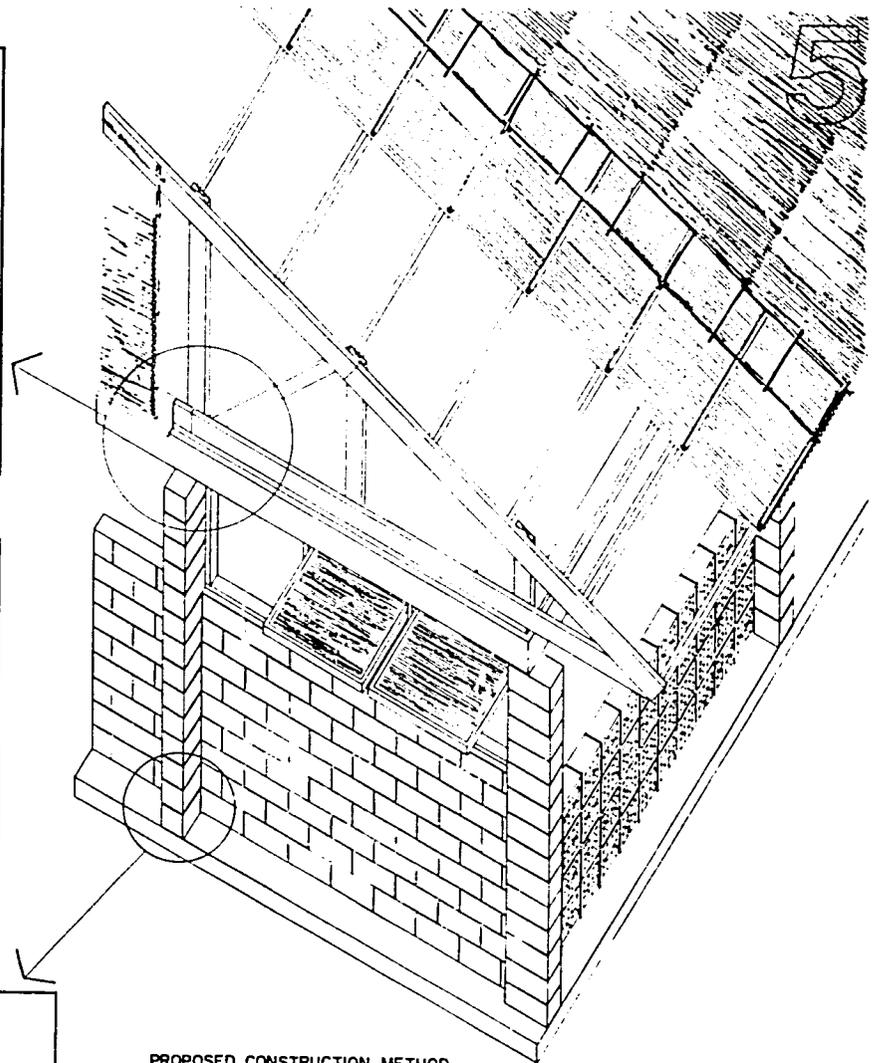
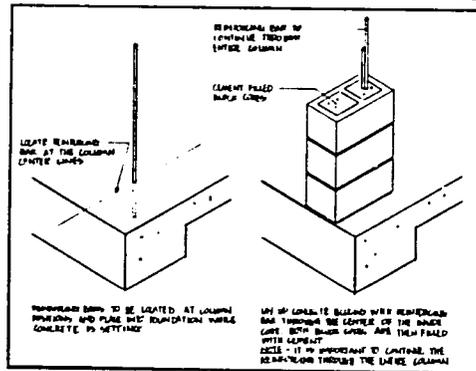
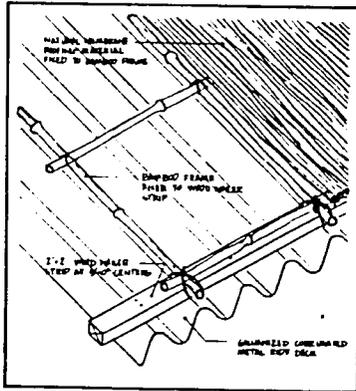
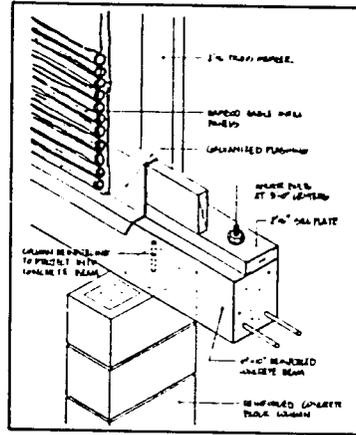
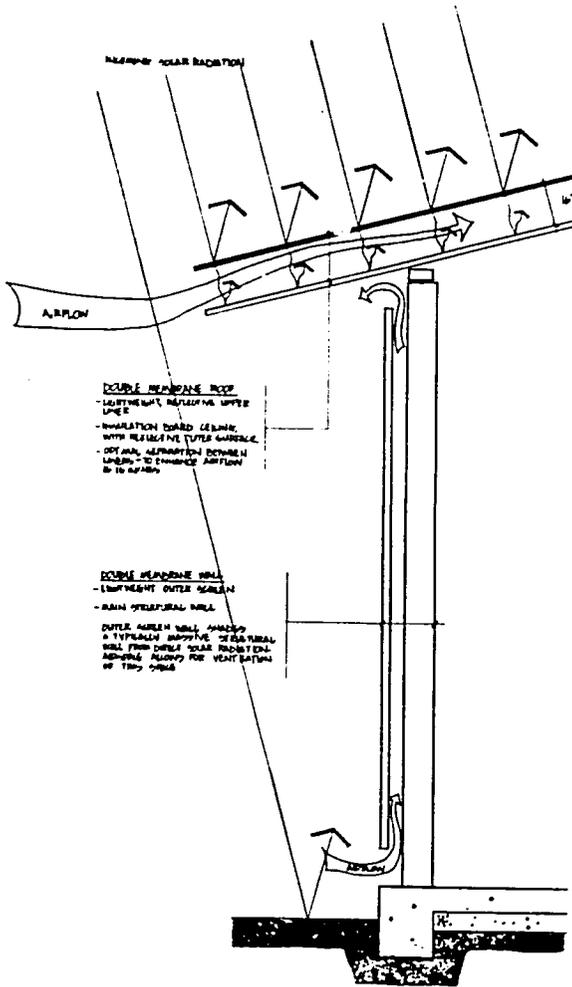


PROPOSED CONSTRUCTION
SCALE: 3/4" = 1'-0"



FLOOR PLAN
SCALE: 1/4" = 1'-0"

16



BUILDING IN WARM-HUMID CLIMATES

IN GENERAL, A MOST EFFECTIVE BUILDING FOR WARM-HUMID CLIMATES WILL BE OF LIGHTWEIGHT CONSTRUCTION CONSISTING OF PROMINENT OPENINGS TO SECURE AIR FLOW, AND DESIGN TO LIMIT THE AMOUNT OF HEATING DUE TO SOLAR RADIATION.

WHEN THE BUILDING IS OPEN UP TO OUTSIDE CONDITIONS, TO ENHANCE AIR FLOW, THE INFLUENCE OF THE STRUCTURE UPON WIND CONDITIONS IS LIMITED. THE ONLY SURFACE WHICH HAS ANY POTENTIAL INFLUENCE UPON WIND CONDITIONS IS THE ROOF. IT CAN IMPROVE CONDITIONS OVER THE TEMPERATURE COOLER PERIODS, BUT IT PROBABLY REDUCES CAPACITY TEMPERATURES FROM BEING TOO UNDESIRABLE.

THE BEST METHOD FOR ACHIEVING THIS IS TO USE A DOUBLE MEMBRANE ROOF CONSTRUCTION. THE PRINCIPLE IS BASED UPON USING A ROOFING MEMBRANE AND A CEILING MEMBRANE WHICH ARE SEPARATED TO ALLOW FOR VENTILATION. SOLAR RADIATION WHICH PENETRATES THE ROOFING MEMBRANE WILL BE REFLECTED BY THE CEILING, AND COOLING IS PROVIDED BY VENTILATING THE SPACE BETWEEN THE TWO LAYERS. THE BEST ARRANGEMENT IS TO USE A LIGHTWEIGHT REFLECTIVE ROOF, WITH AN INSULATION BOARD CEILING WHICH HAS A REFLECTIVE OUTER SURFACE.

IN THE CASE OF THE BILLE TALE COMPANY BUILDING, SINCE THE RECOMMENDED ARRANGEMENT IS NOT AFFORDABLE, THE FOLLOWING WILL BE USED. A CORRUGATED METAL ROOF SHALL BE USED AS THE PRIMARY ROOFING MEMBRANE. A METAL MEMBRANE CONSTRUCTED OF EITHER BRASS, PALE COBALT, BRASS LEAF, OR ANY OTHER AVAILABLE METAL MEMBRANE, SHALL BE PLACED OVER THE METAL ROOF. THE METAL MEMBRANE SHALL COVER THE METAL ROOF FROM THE SIDE AND BE EXTENDED OVER HEATHING, AND WILL ELUET THE EFFECT OF DRIVING RAIN HITTING THE METAL ROOF.

SINCE AIR TEMPERATURES ARE RELATIVELY CONSTANT THROUGH BOTH THE DAY AND NIGHT, BUILDINGS WILL NOT COOL DOWN SUFFICIENTLY TO ALLOW FOR THERMAL STORAGE DURING THE DAYTIME. IT IS RECOMMENDED THAT TO CORRECT BUILDINGS OF LOW MASS, FROM USING LIGHTWEIGHT MATERIALS.

PROPOSED CONSTRUCTION METHOD

CONSTRUCTION OF THE BILLE TALE COMPANY BUILDING WILL HAVE USE OF THE MOST ECONOMICAL, AND EASILY AVAILABLE MATERIALS AVAILABLE - PRECAST CONCRETE BLOCK, UNFINISHED CORRUGATED METAL ROOFING, AND LUMBER FOR THE ROOF STRUCTURE.

THE BUILDING FOUNDATION WILL BE A 6" THICK WALL OF REINFORCED CONCRETE. REINFORCING BARS SHALL BE PLACED VERTICALLY WITH THE CONCRETE AT ALL COLUMN LOCATIONS. THIS REINFORCING BAR SHALL BE PLACED SO THAT IT IS LOCATED WITHIN THE INNER CORNER OF THE CONCRETE BLOCK COLUMN.

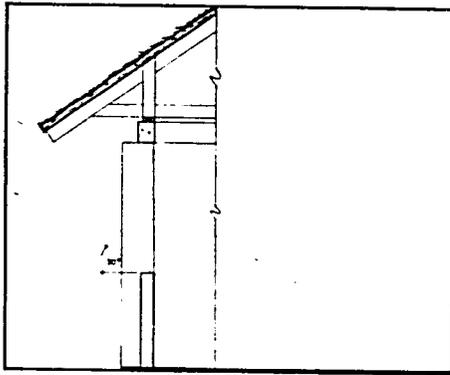
THE BUILDING FLOOR SHALL BE POLISHED CONCRETE, REINFORCED WITH 4 WELDED WIRE MESH.

THE BUILDING COLUMNS ARE TO BE CONSTRUCTED OF 8" HIGH CONCRETE BLOCKS STAKED VERTICALLY ONE ON TOP OF THE OTHER. THE BLOCKS WILL BE LAID SO THAT THE REINFORCING BAR IS CENTERED IN THE INNER CORNER OF THE BLOCK. ONCE THE COLUMNS ARE BUILT TO APPROXIMATELY HALF HEIGHT, EACH BLOCK CORNER SHALL BE FILLED WITH CONCRETE. THE COLUMNS WILL BE CONSTRUCTED TO THE NEARNESS OF THE FULL HEIGHT, AND AGAIN THE BLOCK CORNER SHALL BE FILLED WITH CONCRETE.

THE WALLS SHALL BE NON-STRUCTURAL AND FILLER BETWEEN COLUMNS. THE WALLS SHALL BE CONSTRUCTED OF 8" HIGH BLOCKS. THE NORTH AND SOUTH WALLS SHALL BE CONSTRUCTED TO A HEIGHT DETERMINED ON BASIS TO SUIT. THE WESTWARD AND EASTWARD WALLS SHALL BE CONSTRUCTED TO THE SPECIFIED HEIGHT AS PER DRAWINGS.

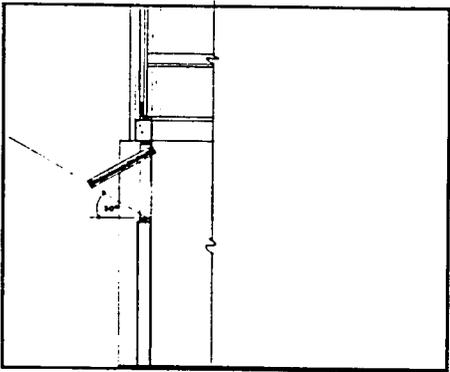
A REINFORCED CONCRETE BEAM SHALL BE PLACED TO TIE THE COLUMNS TOGETHER. THE COLUMN REINFORCING SHALL EXTEND 6" INCHES ABOVE THE COLUMN SO THAT IT TIES INTO THE CONCRETE BEAM.

THE ROOF STRUCTURE WILL BE CONSTRUCTED OF TRUSSES MADE FROM 2" x 6" WOOD MEMBERS. THE TRUSSES SHALL BE CENTERED OVER THE COLUMNS ON THE EAST AND WEST WALLS, AND TIE TOGETHER WITH 2" x 6" RAFTERS AT 3'-0" CENTERS. A CORRUGATED METAL ROOF SHALL BE Nailed TO THE RAFTERS. A 1/2" x 2" WOOD STUDS WILL BE Nailed TOGETHER WITH THE METAL DECK OVER THE ROOF RAFTERS. THE UPPER MEMBRANE ROOF SHALL BE CONSTRUCTED AS SEPARATE PANELS AND THEN ATTACHED TO THE WOOD STUDS.



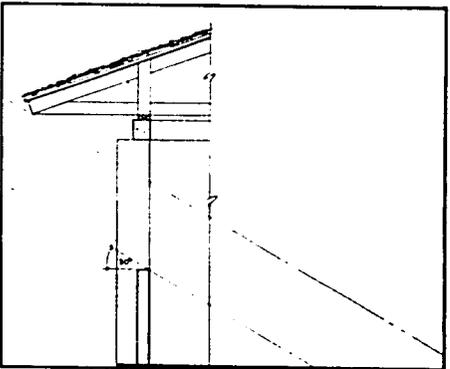
EAST SIDE

EXTENDED ROOF OVERHANG PROVIDES SOME SHADING. SOLAR SHADING IS NOT CRITICAL ON THIS SIDE OF THE BUILDING, AS THE SUN TRAVELS VERY QUICKLY AS IT RISES. SOLAR EXPOSURE IS LIMITED TO APPROX. 1 HOUR.



SOUTH SIDE

USE OF OPERABLE SHADING DEVICE PROVIDES MAXIMUM DAILY LIGHTING WHILE MAINTAINING MINIMAL SUNLIGHT PENETRATION. AN ALWAYS DIRECT OVERHEAD SUN POSITION ALLOWS FOR EASY CONTROL OF SUNLIGHT.



WEST SIDE

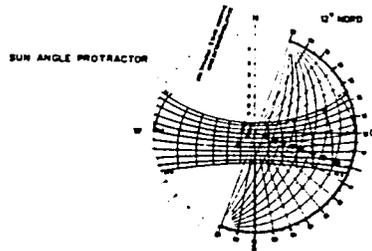
MOST CRITICAL SIDE FOR SOLAR PENETRATION DUE TO LOW SETTING SUN. ROOF OVERHANG IS STRUCTURALLY LIMITED TO 4 FEET. USE OF AN EXTENDED LIGHTWEIGHT BAMBOO CANOPY PROVIDES REQUIRED SHADING.

SOLAR SHADING

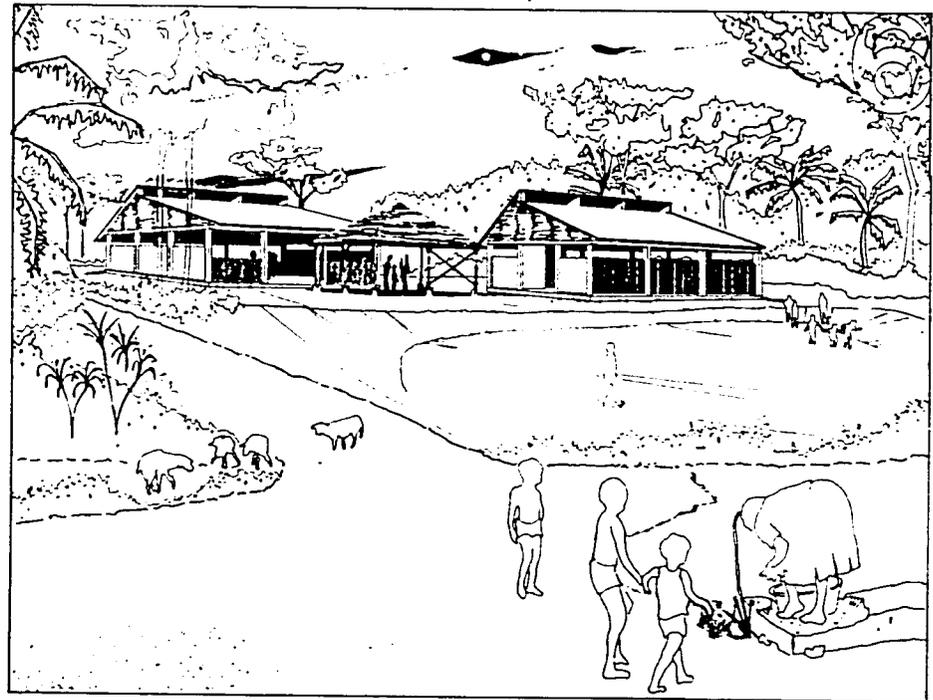
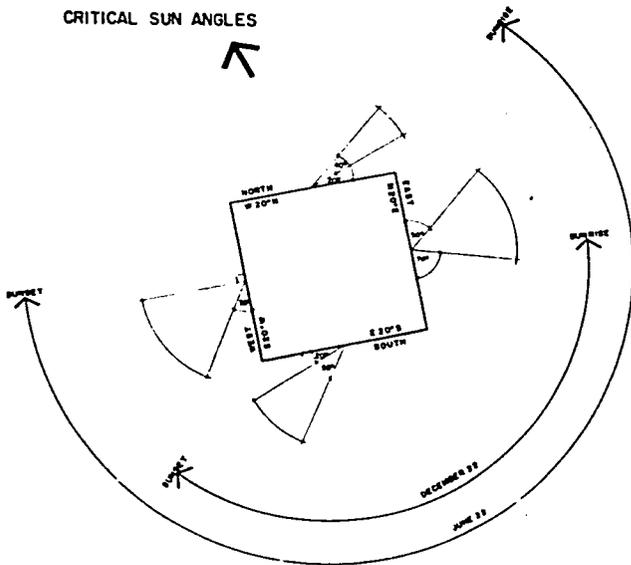
SOLAR RADIATION FROM TROPICS LESS THAN IN HIGH-LATITUDE REGIONS, IS STILL THE MOST SIGNIFICANT SOURCE OF HEAT, AND SHOULD BE SHELD FROM THE BUILDING. IN HIGH-SUN CLIMATES, SOLAR RADIATION IS MOSTLY UNIDIRECTIONAL, AND SHADING ANGLES CAN BE PRECISELY CALCULATED. IN SUBTROPICAL CLIMATES, SOLAR RADIATION IS DIFFUSE AND MULTI-DIRECTIONAL, DUE TO THE HIGH ANGLE OF WATER VAPOR IN THE ATMOSPHERE. FOR THIS REASON SHADING DEVICES MUST BE DESIGNED TO CONTRACT MOST OF THE SUN, RATHER THAN JUST THE POINT SOURCE OF THE SUN. SHADING OF ALL VERTICAL SURFACES (WINDOWS AS WELL AS SOLID WALLS) WOULD BE MOST BENEFICIAL. THIS IS MORE EASY WHEN THE BUILDING HEIGHT IS NOT TOO HIGH.

REGARDING SOLAR HEAT GAIN, IT WOULD BE BEST TO ORIENTATE THE LONG AXIS OF THE BUILDING IN THE EAST-WEST DIRECTION. THIS WILL ALLOW FOR EASY SHADING OF THE NORTH-SOUTH FACED WITH A MINIMAL BUILDING OVERHANG BECAUSE OF THE ALMOST DIRECT OVERHEAD SUN. THIS MAY HOWEVER CONFLICT WITH THE BEST ORIENTATION FOR AIR FLOW. FOR LOW-RISE BUILDINGS WITH MINIMAL WALL SURFACE, ORIENTATION FOR WIND IS PREFERRED. FOR HIGH-RISE BUILDINGS WITH GREAT WALL SURFACE, ORIENTATION FOR SUN IS THE KEY.

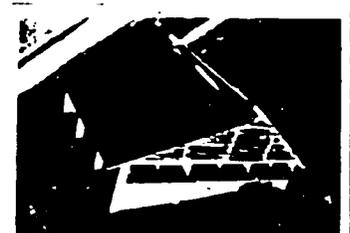
SOLAR SHADING DEVICES SHOULD BE DESIGNED FOR SPECIFIC ORIENTATIONS. SOUTH FACED ARE BEST SERVED BY THE USE OF HORIZONTAL SHADING DEVICES BECAUSE OF THE DIRECT OVERHEAD SUN. EAST AND WEST FACED ARE BEST SERVED WITH VERTICAL DEVICES BECAUSE A LOW SETTING OF SUN IS DIFFICULT TO SHELTER WITH A HORIZONTAL SHADING DEVICE. THE OPTIMAL SOLUTION WOULD BE TO INCORPORATE REMOVABLE DEVICES SINCE THEY CAN BE ADJUSTED TO SUIT THE CHANGING SUN PATHS OF THE DAY AND SEASONS.



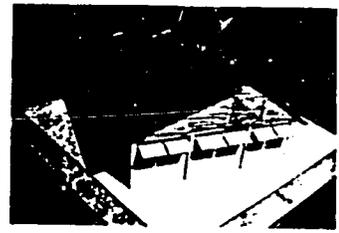
CRITICAL SUN ANGLES



JUNE 22 NOON SOUTHWEST
HIGH OVERHEAD ANGLE OF SUN (60°) ALLOWS FOR ENTIRE SOUTH FACED TO BE SHADDED BY ROOF OVERHANG AND WINDOW SHUTTERS



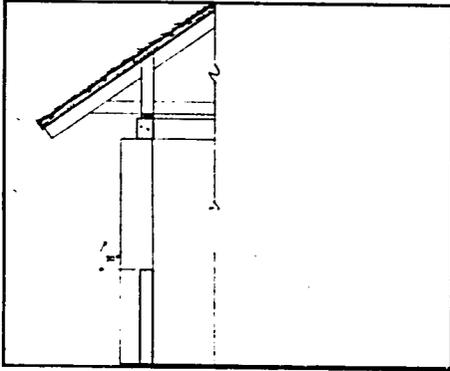
JUNE 22 6:00 PM SOUTHWEST
LOW SETTING SUN ENTERS DIRECTLY INTO BUILDING THROUGH WEST FACED. THE ANGLE OF THE SUN IS TOO LOW (30°) TO AFFECT SOLAR HEAT GAIN. IN ACTUALITY, TALL PALM TREES TO THE WEST OF THE BUILDING SUFFICIENTLY SHADE THE BUILDING FROM APPROX. 4:00 PM



DECEMBER 22 NOON SOUTHWEST
SUN IS LOWER THAN JUNE 22 (50°), HOWEVER, WINDOW SHUTTERS STILL PREVENT SOLAR PENETRATION INTO BUILDING INTERIOR

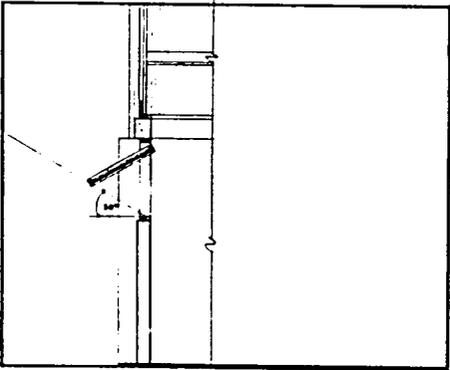


DECEMBER 22 6:00 PM SOUTHWEST
SUN IS LOWER ON HORIZON (30°), AS COMPARED TO JUNE 22, HOWEVER, SAME CONDITIONS APPLY AS ABOVE.



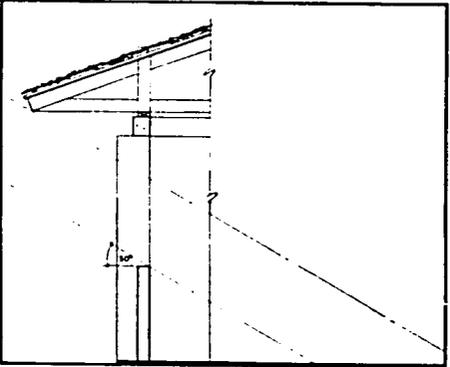
EAST SIDE

EXTENDED ROOF OVERHANG PROVIDES SOME SHADING. SOLAR SHADING IS NOT CRITICAL ON THIS SIDE OF THE BUILDING, AS THE SUN TRAVELS VERY QUICKLY AS IT PASSES. SOLAR EXPOSURE IS LIMITED TO APPROX. 1 HOUR.



SOUTH SIDE

USE OF OPERABLE SHADING DEVICE PROVIDES MAXIMUM DAYLIGHTING WHILE MAINTAINING NORMAL SUNLIGHT PENETRATION. AN ALMOST DIRECT OVERHEAD SUN POSITION ALLOWS FOR EASY CONTROL OF SUNLIGHT.



WEST SIDE

MOST CRITICAL SIDE FOR SOLAR PENETRATION DUE TO LOW SETTING SUN. ROOF OVERHANG IS STRUCTURALLY LIMITED TO 6 FEET. USE OF AN EXTENDED LIGHTWEIGHT SHADOE CANOPY PROVIDES DESIRED SHADING.

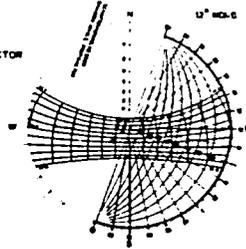
SOLAR SHADING

SOLAR RADIATION, EVEN THOUGH LESS THAN IN HORIZONTAL PLANE, IS STILL THE MOST SIGNIFICANT SOURCE OF HEAT, AND SHOULD BE CONSIDERED IN THE BUILDING. IN HORIZONTAL PLANE, SOLAR RADIATION IS MOSTLY UNIDIRECTIONAL, AND THE SHADING DEVICES CAN BE PRECISELY CALCULATED. IN HORIZONTAL PLANE, SOLAR RADIATION IS DIFFUSED AND MULTI-DIRECTIONAL DUE TO THE HIGH ANGLE OF WATER VAPOR IN THE ATMOSPHERE. FOR THIS REASON SHADING DEVICES MUST BE DESIGNED TO DEFLECT MOST OF THE SUN, RATHER THAN JUST THE POINT SOURCE OF THE SUN. SHADING OF ALL VERTICAL SURFACES FORMERLY AS WELL AS SOLID WALLS SHOULD BE MOST IMPORTANT. THIS IS MORE EASY TO DO WHEN THE BUILDING HEIGHT IS NOT LOW.

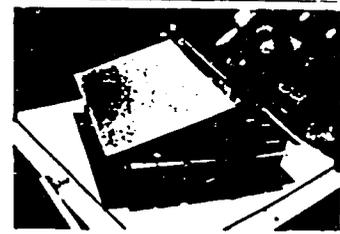
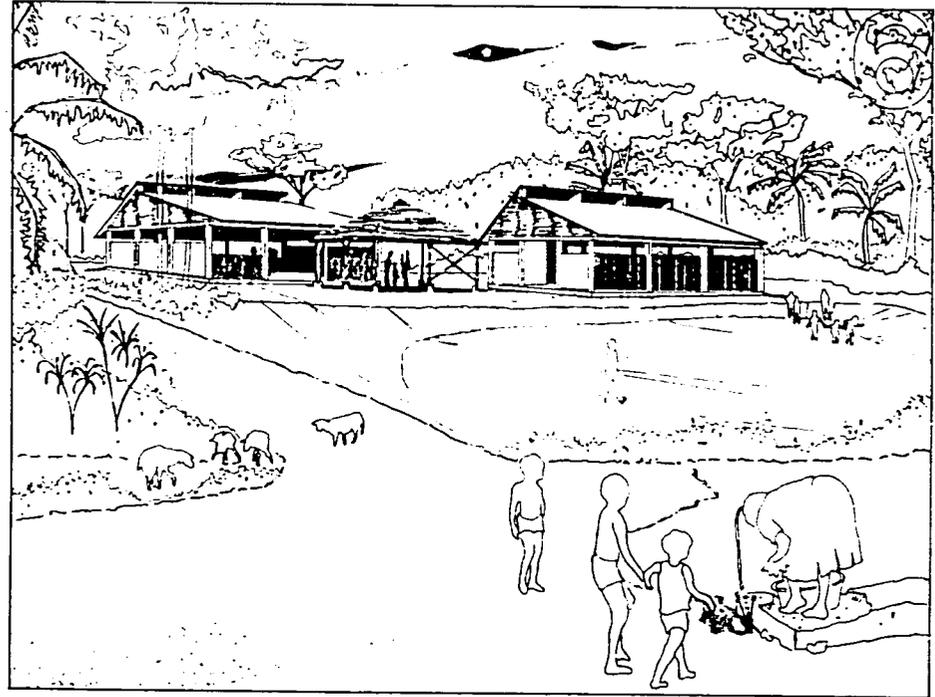
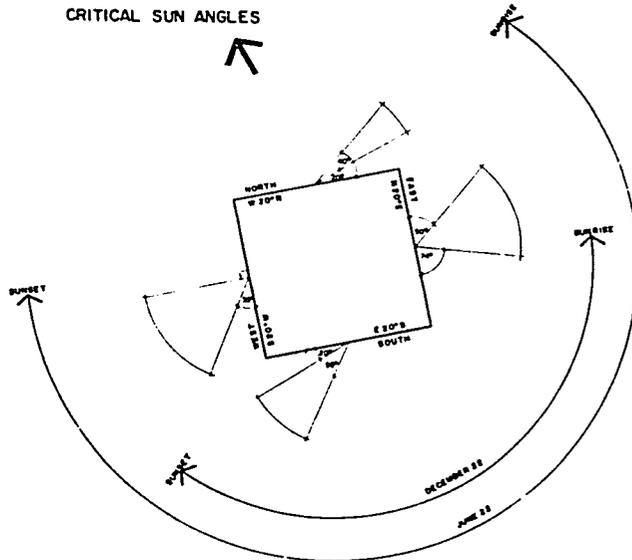
REDUCING SOLAR HEAT GAIN, IT WOULD BE BEST TO ORIENT THE LONG AXIS OF THE BUILDING IN THE EAST-WEST DIRECTION. THIS WILL ALLOW FOR EASY SHADING OF THE NORTH-SOUTH FACADES WITH A MINIMAL BUILDING DEPTH BECAUSE OF THE ALMOST DIRECT OVERHEAD SUN. THIS MAY HOWEVER CONFLICT WITH THE BEST ORIENTATION FOR AIR MOVEMENT. FOR LOW-RISE BUILDINGS WITH MINIMAL WALL SURFACE, ORIENTATION FOR WIND IS PREFERRED. FOR HIGH-RISE BUILDINGS WITH GREAT SURFACES OF WALL SURFACE, ORIENTATION FOR SUN IS THE RULE.

SOLAR SHADING DEVICES SHOULD BE DESIGNED FOR SPECIFIC ORIENTATIONS. SOUTH FACADES ARE BEST SHIELDED BY THE USE OF HORIZONTAL SHADING DEVICES BECAUSE OF THE DIRECT OVERHEAD SUN. EAST AND WEST FACADES ARE BEST SHIELDED WITH VERTICAL DEVICES BECAUSE A LOW ANGLE OF INCLINATION OF THE SUN IS DIFFICULT TO SHIELD WITH A HORIZONTAL SHADING DEVICE. THE OPTIMAL SOLUTION WOULD BE TO INCORPORATE BOTH HORIZONTAL AND VERTICAL DEVICES SINCE THEY MAY BE ADAPTED TO SUIT THE CHANGING SUN PATHS OF THE DAY AND SEASON.

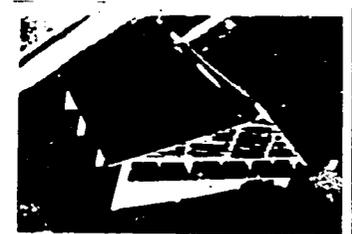
SUN ANGLE PROTRACTOR



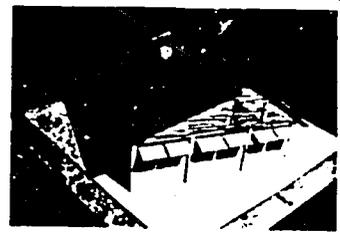
CRITICAL SUN ANGLES



JUNE 22 NOON SOUTHWEST
HIGH OVERHEAD ANGLE OF SUN RECS. ALLOWS FOR ENTIRE SOUTH FACADE TO BE SHADED BY ROOF OVERHANG AND WINDOW SHUTTERS



JUNE 22 6:00 PM SOUTHWEST
LOW SETTING SUN ENTERS DIRECTLY INTO BUILDING THROUGH WEST FACADE. THE ANGLE OF THE SUN IS TOO LOW (15°) TO AFFECT SOLAR HEAT BARR. IN ACTUALITY, TALL PALM TREES TO THE WEST OF THE BUILDING SUFFICIENTLY SHADE THE BUILDING FROM APPROX. 4:00 PM



DECEMBER 22 NOON SOUTHWEST
SUN IS LOWER THAN JUNE 22 (18°), HOWEVER, WINDOW SHUTTERS STILL PREVENT SOLAR PENETRATION INTO BUILDING INTERIOR.



DECEMBER 22 6:00 PM SOUTHWEST
SUN IS LOWER ON HORIZON (15°), AS COMPARED TO JUNE 22. HOWEVER, SAME CONDITIONS APPLY AS ABOVE.