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ABSTRACT

The purposes of this study were: (1) to determine the implications of present perceptions of selected faculty and administrative personnel at the University of San Carlos (USC) in Guatemala with regard to the potential of the new Instructional Materials Center (IMC) for their individual responsibilities; and (2) to describe subsequent changes in these perceptions and related behaviors which occurred as responses to the demands of university faculty and administrative roles, and other sources of influence. The first chapter discusses the purposes, background, and problems of the IMC project, the basic goal of which was the improvement of educational resources at the University of Pittsburgh and USC. The project was sponsored by USAID. Chapter 2 describes the development of the IMC project at USC, the preconditions leading to the IMC at San Carlos, the IMC contract period, and the events occurring after the contract. Chapter 3 presents an analysis and interpretation of higher education in Guatemala, educational technology, directed and purposeful change and social process as related to the IMC project. Conclusions and recommendations are presented in Chapter 4. (AF)

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SOCIAL CHANGE AND EDUCATIONAL INNOVATION IN A
LATIN AMERICAN UNIVERSITY: ~~A CASE STUDY OF THE
USE OF THE NEW MEDIA IN SAN CARLOS UNIVERSITY
IN GUATEMALA~~

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November 15, 1969

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ABSTRACT

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Orville D. Joyner
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1. Statement of Problem

The formal problem for this research project has two aspects: (1) to determine the implications of present perceptions of selected faculty and administrative personnel at the University of San Carlos with regard to the potential of the new Instructional Materials Center for their individual responsibilities, and (2) to describe subsequent changes in these perceptions and related behaviors which occurred as responses to the demands of university faculty and administrative roles, and other sources of influence.

2. Procedures

An attempt was made to describe, analyze and interpret the organizational adaptations at San Carlos University in Guatemala associated with the establishment of an Instructional

Materials Center which was the result of an USAID funded bilateral agreement between San Carlos and the University of Pittsburgh.

Information was gathered through participant observation activities and from written sources as well. Special significance was accorded activities which could be related to behaviorally stated project objectives, and in all cases, facts and their interpretation were treated in terms of the problem elements of higher education, educational technology, directed, purposive change and social process. The assumptions related to those problem elements and the professional orientation of the principal investigator all relied on a position that instructional materials centers can make a unique contribution to education through instructional materials design, production and utilization, and through the fostering of, and reliance on, research in media use.

3. Conclusions

A consideration of the organizational adaptations at San Carlos associated with the Instructional Materials Center (IMC) suggests that, as far as the IMC was concerned, the acute secondary teacher shortage in Guatemala and large scale educational development programs aimed at this and other deficiencies were the most significant characteristics of the host system. Changes in instructional patterns, the new, large, internationally funded educational programs, and

educational planning activities in Guatemala represent three broad frontal attacks on educational deficiencies there. The IMC had innovational potential for assistance in all these broad areas of activity, but it was neither fully realized by IMC personnel nor recognized by San Carlos administrators or faculty.

The IMC served as a model and an information resource, as well as partially meeting the need for instructional materials production and utilization; but it did not achieve a viable, influential status. San Carlos decided not to support it at the end of the contract, and it appeared to have lost its capacity to serve and survive at the end of this research study.

It appears that the value of programs of technical assistance between institutions of higher education in North America and Latin America probably is greater when it is undertaken free of political constraints, when it respects the autonomy of all institutions, when sufficient time is available to firmly establish goals and implement realistic programs, when more people are permitted to participate in planning and policy decisions, and when due and mutual respect is accorded the value systems of the participating societies.

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McLeod files

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ERRATA

- P. 17, par. 1, line 17 the correct phrase is
"...organizational adaptations"
- P. 23, par. 1, line 6 the correct phrase is
"...slight adaptation to"
- P. 26, par. 2, line 8 following footnote qualifies
the sentence ending with
"...teaching at the primary
level.*"
"*Secondary schools are also
partially staffed by uni-
versity professors and other
professional people teaching
part-time and by university
students who have not
completed university degree
work."
- P. 38, par. 1, line 16 the correct date is "1967"
- P. 50, par. 3, line 10 the correct phrase is
"...for one professor"
- P. 81, par. 2, line 14 the correct spelling is
"...Rene Barrientos Ortuño"

CHAPTER I

TECHNICAL ASSISTANCE IN GUATEMALAN HIGHER EDUCATION--FIGURE AND GROUND

Introduction

The IMC project--In the fall of 1968, the University of Pittsburgh (Pitt) and the University of San Carlos (USC) in Guatemala concluded two years of cooperative effort aimed at the establishment of an Instructional Materials Center (IMC) at San Carlos. This project was funded by the United States Agency for International Development (USAID), supervised by its Guatemala mission (AID/G), and administered and staffed by both universities. The contract provided for technical services in instructional materials and media to be supplied by Pitt at San Carlos, and for supporting administrative and advisory services on the Pitt campus. The IMC project at San Carlos represented an innovation in higher education in Guatemala, because it was initiated as a technical assistance project implemented by two institutions of higher education, each with roots in different cultural contexts.

Purpose--The present research project was undertaken after the IMC contract expired, and its purpose was to

analyze this technical assistance IMC project in educational technology in order to (1) provide information useful to agencies engaged in relating educational technology to larger economic and social planning opportunities and (2) contribute to the literature dealing with the role external technical assistance may play in effecting educational change in developing countries. A third general purpose of this study has been to achieve additional insight into the technical assistance process, particularly when it is undertaken by cooperating institutions of higher education based in at least two different social contexts.

This research has been carried out in the inquiring spirit of Beeby's (1966) remarks when he suggests that we need a "better understanding of the pattern of resistance forces acting at the junction where ideas and techniques flow from one school system to another at a different level of development [p. 47]." Whether, in fact, "resistance" is an adequate description of a technical assistance response, it is no secret that few such projects are unmitigated successes or failures, and that increased insight into the technical assistance process is desirable.

Previous involvement--In 1967, before the beginning of this study, I served as a short term, six week consultant to the IMC in its early stages. My activities in the IMC at that time were primarily those required to establish the center as an operating unit. These included:

1. assembling newly arriving equipment;
2. initiating a working relationship with the new off-set printing center on campus;
3. producing visuals for USC faculty and IMC personnel;
4. teaching the instructional materials course to faculty members of the Biology Department at USC;
5. consulting with faculty and administrators.

The intellectual involvement thus engendered was kept alive by contact with the back-stopping operation on the Pitt campus when I returned there to continue graduate study, and by a second visit to Guatemala in the summer of 1968 as assistant director for an NDEA institute on Latin American Culture and Society. During this second visit to Guatemala, funding of this research grant became a near certainty, and it was possible to establish initial contacts at the university which served to facilitate a return to the San Carlos campus some two months later for research purposes.

Research strategy--Research activities included personal observation and participation in university activities, inspection of written sources of information, establishment and maintenance of contacts with San Carlos personnel closely associated with the IMC project proposals, contract and operation, regular attendance at the IMC, and discussion with educational communication experts visiting or working in Guatemala. This has been an exploratory field study, dealing with events before, during and subsequent to the IMC project contract period, and is aimed at discovering significant variables in the field, and their relation to each other (Kerlinger, F. N., 1967, p. 388). IMC project relationships

with the University of San Carlos have been examined both in terms of available options, and in terms of decisions and organizational adaptations undertaken by the University of San Carlos in response to demands made upon the educational resources of the university.

The original research strategy had called for my regular, unpaid presence in the IMC. One of the assumptions of this research project was that San Carlos would continue to support the center after contract activity ceased, and that this support would be for a level of activity not greatly different from that which was characteristic of the contract period. I expected to serve as a professional IMC consultant and production worker and in other ways as needed in order to maintain my status as participant observer of instructional media use at San Carlos. This strategy had been developed in cooperation with the coordinator of educational resources at San Carlos. He had been the Guatemalan counterpart of the IMC director under the AID/G contract, and was placed in charge of the IMC when the contract expired. It had been determined earlier that some production materials were in short supply, and provision was made in the research budget for purchase of these materials as the need arose. Although the IMC was not dismantled, the University of San Carlos was not able to appropriate money for its operation. This meant that no expendable supplies could be purchased by San Carlos, nor was it possible to employ any person to

maintain the service capability of the IMC. San Carlos administrators and faculty permitted research activities related to the IMC. However, when official permission was requested to announce to faculty a list of available IMC services made possible by my presence, it was refused on the grounds that it might generate a demand which could not then be satisfied after the research project ended.

The inability to offer production services to faculty severely curtailed opportunities for contact with teachers interested in the use of media. It was, nevertheless, an important incident for the insight it provided relative to the probable future of the IMC. It led, also, to an increased and productive concern for the personal and organizational adaptations which appeared to be required or underway as a result of the cumulative nature of educational development in Guatemala. Since these adaptations are functions less of chronology than of long-term interactions, the adaptations used as examples here are not necessarily final or certain.

The San Carlos administrative activity related to the use of media which did appear open to research attention was that associated with the plans and philosophy underlying several loans and grants to Guatemala for educational development which were to become a reality during the life of this research project. Proposals and plans for sizable loans for all three levels of education in Guatemala had

been in preparation for at least two years prior to the initiation of this research project. The University of San Carlos had a direct involvement in a proposed Inter-American Development Bank (BID) loan to higher education in Guatemala, a World Bank loan for secondary school construction, a Unesco grant for secondary teacher education, and a more tangential involvement with the USAID loan to the Ministry of Education for primary education. These proposals were important to the IMC and this research project because, with varying degrees of specificity and commitment, these major educational programs contained concerns for the development of instructional materials, media and the training of people to carry out materials/media functions.

From its inception, the IMC served as one model for the planning and development of the instructional materials/media components of the major educational development programs financed by the loans and grants. In addition, it served as a resource of information concerning the hardware, software, personnel and ideas available for the implementation of those components. These functions, and the one of equipment loan to faculty, were still intact at the end of the IMC project, and were functions that it was possible to maintain in my role of researcher. Indeed, these functions facilitated contact with university personnel and provided knowledge of the educational problems and opportunities on San Carlos campus.

Organizational health--These problems and opportunities of Guatemala presented San Carlos governing individuals and organizations with a number of small and large decisions concerning educational development. Many of these were neither clearly administrative nor pedagogical in nature, often being some of both and sometimes involving national politics. It is clear that San Carlos is a stable educational system with traditional and recognized ways of making the decisions required to maintain its stability, autonomy and integrity. However, in the face of growing pressure to respond more quickly in quantitative terms to escalating vocational demands of the country, the traditional decision making process at San Carlos was not always adequate. It is just such a condition that Miles (1965) suggests can be analyzed in terms of what he calls "organizational health [p. 147]."

Miles (1965, pp. 14-21) prefers to define health not so much in terms of disease-freeness, but rather in terms of enthusiastic and positive coping behavior. He suggests that this concept of health is characterized by the second-order system perspectives of survival, growth and effective problem solving. These properties are according to Miles (1965), defined by the dimensions of goal appropriateness, communication adequacy and power equalization, resource utilization, cohesiveness, morale, innovativeness, autonomy, adaptation and problem-solving adequacy. "An adequate organization, then, has well-developed structures and procedures for sensing

the existence of problems, for inventing possible solutions, for deciding on the solutions, for implementing them, and for evaluating their effectiveness [Miles, 1965, p. 217]."

Special properties of educational systems--The properties mentioned above are assumed to be present to some degree in all systems, but this should not "obscure the fact that educational systems have special properties which condition the propositions of organization theory in reasonably predictable ways [Miles, 1965, p. 227]." Some of these special properties are:

1. goal ambiguity--difficulty in specifying the output;
2. input variability--in terms of students and teachers;
3. role performance invisibility--the closed classroom door;
4. low interdependence of the parts;
5. vulnerability--subject to control and criticism of the public;
6. lay-professional control problems;
7. low technical investment.

Not all these properties, notably #5 and #6, apply equally well to the University of San Carlos. The remaining five seem to apply with particular intensity, and suggest where major difficulties may occur in Guatemalan higher education.

The University of San Carlos is susceptible to problems associated with these special properties and often finds those problems intensified by a circumscription imposed by a relatively small, closed and intertwined political and economic system. In addition, the shortages of money and skilled manpower in Guatemala are real. Programs designed

to ease these shortages, which range from revolution to massive assistance projects, are all fraught with potential threat to the status quo and to the system which supports it. An increase in technical investment, for example, could precipitate changes in goal definition and teacher competence requirements as well as in professorial invisibility and interdependence. The introduction of an IMC to the San Carlos campus was a relatively small intrusion, seemingly incapable of serious system disruption. Nevertheless, as an increase in the technical investment at San Carlos, the IMC did, in some manner and degree, stimulate greater awareness of specific problems associated with the above named special properties of educational systems.

Change models--A review of the literature dealing with social process and directed, purposive societal change reveals a general interest in motivational models which could help explain the activities of people and systems when an innovation is introduced. These models tend toward a modality of their own, e.g., resistance, cooperation, tension-management and confrontation. All such models recognize the interaction of an intervention and its host system. Miles (for instance, (1965, p. 11) calls these two elements "figure" and "ground" and suggests a need for greater knowledge of the ground characteristics, and in particular, aspects of its organizational health.

The structure/function dichotomy--The concept of organizational health has application in the analysis of both structure and function properties of an organization. The introduction of new coping mechanisms into an organization would most likely affect structural dimensions of the organization as well as some of its function. The improvement of existing coping procedures and mechanisms is more likely to affect function aspects only. In the case of the University of San Carlos, an adequate knowledge of "ground" characteristics would probably include a clear understanding of the university's basic structure/function properties. Strategies for facilitating organizational adaptations within the university could then reflect a conscious choice of structure or function aspects as the target. A number of organizational changes had been undertaken at San Carlos, and others were contemplated but in general these were changes in function rather than structure. The basic autonomy of San Carlos University vested in the Superior Council is a structural property and is an article of faith within the San Carlos community. Any change which is perceived as a threat to it is resisted out of hand. Functional changes, particularly in the form of programs added, normally posed no threat to autonomy so strong it could not be dealt with. Structural changes which would have required new jurisdictional alignments and new decision-making processes may be seen as more threatening and therefore, less desirable.

Background

This study appears to have been undertaken at a particularly appropriate time. In 1949, the University of San Carlos began the construction of a new campus on the edge of Guatemala City; one effect of which was a movement toward the centralization of all Facultades within the University. A Facultad is roughly equivalent to a school or college in North America, e.g., a school of medicine or a college of education. The San Carlos Facultades have traditionally been housed in their own buildings, each of which was remote from the others, making mutual interdependence difficult.

After the centralization process was well established, a General Studies curriculum was devised and initiated. In effect, the School of General Studies added two years to an already over-long university career because all new San Carlos students were required to pass through these basic two year programs before enrolling in the Facultad of their choice. The addition of two years of instruction for large numbers of newly enrolled students generated a number of logistic and curricular problems for which there was no immediate solution.

One such problem surfaced as an expressed need, particularly on the part of the chairman of the Biology Department in the School of General Studies, for teaching materials of all sorts, both for student and faculty use. It is also evident from letters, preliminary plans, and the IMC contract

that Pitt, San Carlos and AID/G proponents of the media center were working on the basic assumption that the educational process at San Carlos could be improved, particularly in view of an excessive student wastage demonstrated by failure rates which vary by class from 50 to 90 percent (Spaulding, circa 1964). The general line of thought was that university students came to San Carlos poorly prepared to do university work, and moreover that the university faculty were themselves unable to respond to this problem, either for lack of educational resources or lack of any concern. The media center was conceived, therefore, as an intervention with the purpose of providing (1) instructional resources for university professors and (2) an impetus toward increased concern for improved educational performance at the university level.

The chairman of the Biology Department was the author of the proposal from San Carlos to establish the IMC. During the contract period, he and his faculty continued to be enthusiastic supporters and users of the IMC resources. At almost the same time that the IMC contract expired, the threat of a university-wide student strike was sufficient to cause the Superior Council to vote in favor of dissolving the School of General Studies. One immediate result of that action was that the Biology Department suddenly had no administrative home in the university. Serious difficulties were subsequently experienced in restructuring the university curriculum to provide instruction in those General Studies courses considered too valuable to drop.

This research project was begun after the IMC contract expired and at almost precisely the same time that the School of General Studies was voted out of existence by the Superior Council of San Carlos. The latter stages of the School of General Studies and the IMC contract overlapped in time, and also coincided with other university efforts to meet a growing need for more money and to train more and a greater variety of university graduates. Proposals for loans and grants were being developed, as were proposals for restructuring the Facultades to achieve a more efficient use of available resources.

This research project has presented a unique opportunity to be present at a time in the development of San Carlos University when university elements have been called upon to identify a number of key issues and problems, and to search for solutions to these problems. These problems and opportunities revolve around the issues of (1) basic change in the structure and function of the Facultades, and (2) methods of achieving increased financial support. Related issues are those associated with maintenance of university autonomy, control of all higher education in Guatemala, curricular revision, secondary teacher education, and in general, an increased responsiveness to the demands of social and economic development in Guatemala.

Problem

The formal problem for this research project has two aspects: (1) to determine the implications of present perceptions of selected faculty and administrative personnel at the University of San Carlos with regard to the potential of the new Instructional Materials Center for their individual responsibilities, and (2) to describe subsequent changes in these perceptions and related behaviors which occurred as responses to the demands of university faculty and administrative roles, and other sources of influence.

Limitations--This research project was initiated on October 11, 1968, when I arrived to begin a nine month residence in Guatemala. That period of residence ended July 20, 1969, and was devoted wholly to research related to this project.

No attempt was made to survey media use in other institutions of higher education in Guatemala, nor was any comprehensive assessment made of media use in other levels or types of instruction, either in the cities or in the countryside. Some other schools were visited, but only for the acquisition of a general background on the nature of the educational communication environment surrounding the University of San Carlos.

Research activity was focused on the organizational adaptations at San Carlos related to the presence of the media

center on the new campus. This required (1) frequent and regular contact with key personnel at the university who were involved with and/or acquainted with the IMC as well as administrative decisions being taken or considered; (2) my regular and frequent presence in the IMC; (3) freedom to establish and maintain contacts with others in social science research, particularly those with interest in higher education. All these conditions were met during the period of research.

Assumptions--When this research was first proposed, a number of assumptions were stated; some appeared at that time to be important and fundamental. They were: (1) that the two universities and AID/G were in basic agreement that an IMC could make a needed contribution to the educational process at San Carlos; (2) the basic structural formation of the faculty would undergo no significant changes within the period of the research; (3) San Carlos would support, if only minimally, continued IMC service to the faculty. From information already presented it can be seen that these assumptions were in fact, barely tenable. At least two other assumptions were stated. They were: (1) San Carlos faculty do not regard the use of media as being crucial to improved teaching and learning, and that their perceptions of the value of media would change primarily as responses to, and in, peer relationships, and (2) with respect to the use of media in their teaching, the character and level of the faculty's entering skills, behavior, previous experience with media and

communication, existing culturally defined preference scales and value systems, as well as personal professional identity, all were in some way incompatible with the goals and rationale of the media center. The thrust of these assumptions is that the media center had had, so far as had been determined prior to this research, only a minimal influence on the teaching process at San Carlos.

Though the foregoing may or may not be true, events at San Carlos coinciding in time with the beginning of this research, and subsequent to it, worked to provide a research environment in which the use of instructional materials and media by faculty members could not be adequately studied. The original intent had been to pay particular attention to the instructional activity of the Biology faculty, with reference to their use of instructional materials and media. The demise of the School of General Studies and the loss of the Biology professors as an intact group required a refocus of research activity. Moreover, the University of San Carlos administrative officers failed to support in any substantive way IMC service activity after the end of the contract. Equipment bought under the contract remained in the room originally provided and was available for use by qualified faculty, and I was permitted access to the room and equipment for research purposes. It became increasingly evident, nevertheless, that university administrators were hesitant about supporting the IMC in its extant form, and also about exactly what kinds of changes in the IMC needed to be made.

Therefore, the guiding assumptions for this research became: (1) that the administrative and teaching organization of San Carlos is sustaining great pressure from a number of directions to become more responsive to the developmental needs of Guatemala; (2) the decision-makers in the university assume that instructional media can make a positive contribution to the teaching process at the university and resultant educational product (the graduate); (3) the administrative organization of San Carlos was such as to require certain changes to permit an adequate response to the challenge of the development and the instructional advantages offered by educational technology. During the period of this research, a number of organizational changes were contemplated by San Carlos, primarily in Faculty structure and function. Not all the changes were related to the use of instructional media, but reliance on the above assumptions permitted a view of bilateral interventions and organizational adaptations which appears to offer insight into the technical assistance process.

Research problem elements--The remainder of this study is organized on a concept of the interdependence of four major elements of the research problem. They are listed here, and are accompanied by definitive and relational assumptions.

1. Higher education, in Guatemala, at least, has a large influence upon the character of education at all levels. This derives from legally defined responsibilities as well as the natural course of events which ordinarily places university graduates in responsible positions within the Ministry of Education and the universities.

2. That educational technology could provide the tools and methods for (a) the need to multiply the effect of a relatively small number of trained teachers, and (b) the identification of educational problems and opportunities and focusing on appropriate methods for resolving them.
3. That directed, purposive change is primarily concerned with the process and act of acceptance of innovations which may be temporarily disruptive and/or disfunctional, and which will require varying degrees and types of social invention.
4. That social process is mainly concerned with individual and societal self-renewal, i.e., the maintenance of basic integrity in the face of the changing of norms and values which frequently results from confrontations with different systems of knowledge and technology.

Procedures--Historical information useful in this study was available in files of the University Center for International Studies at the University of Pittsburgh, IMC files at San Carlos University and unclassified files of AID in Guatemala. A log of research activities for this study was maintained. Recorded in this log are descriptions of events related to possible disposition of the IMC, results of informal interviews and conversations with administrators and faculty, and a record of IMC service activity after the contract ended. Other useful information came from reports, bulletins, plans and occasional papers and letters which were made available to me in Guatemala. Finally, information and insight were often obtained from other researchers and visitors to Guatemala.

The academic calendar of San Carlos indicates that some classes begin on January 15 and end in November. Not all

classes begin or end on precise days, but the general aim is to provide approximately ten months of instruction each calendar year. My arrival in Guatemala in early October coincided with the beginning of the final exam schedule which occupies much of October and part of November. At exam time, teachers frequently have little interest in formulating teaching plans for the coming year. In the early months of the research, little use by faculty of the IMC facilities was expected, and there were no surprises in this regard. This time was used to: (1) follow the evolving situation regarding the resolution of problems associated with the loss of General Studies; (2) conduct interviews and attend numerous meetings with the coordinator of educational resources; and (3) make my presence known to as many people as possible who might be useful in providing additional research information. This last activity included people in the Office of Educational Planning and Research (OPIE) of the Ministry of Education, AID/G personnel, San Carlos teachers and administrators, and other social science researchers.

In particular, I maintained regular contact with the two men at the university who had been most intimately involved over the years with the creation and administration of the center. These two men were my main links with the university and the center, and to many other educators in Guatemala as well. One of these men was the IMC contract counterpart and had been charged by the university with

coordinating educational resource programs, which included the IMC, but his central activity at the university was within the framework of university planning. The second man was the former chairman of Biology in the School of General Studies. As an energetic teacher and researcher in the natural sciences, he had been, as noted earlier, one of the original proponents of a media center, and one of its more enthusiastic users during the life of the IMC contract.

In both instances these two men were committed to the increased use of media for university teaching, but for a variety of reasons this commitment was expressed in different ways. These men represented respectively, the administrative and teaching functions at San Carlos as well as different points of view with regard to the most beneficial arrangements within the university for provision of media service to the faculty. Contact with these differing, sometimes opposing, points of view was especially helpful in identifying major issues and possibilities for their resolution.

Analysis and interpretation--This study concerns a technical assistance project in educational technology for higher education, the dimensions of which are characterized by selected facts and a professional interpretation of them. In this study, the interpretation placed on the facts is based on an analysis of them which reflects the assumptions already stated relative to the problem elements of higher education, educational technology, directed purposive change and social process.

It is possible to select only those facts which will, through interpretation, support a predetermined thesis, and the research problem, hypothesis and assumptions become a self-fulfilling prophesy. In an endeavor to avoid that trap, caution has been exercised in this study to label very little as incontrovertible fact. Historical documents and primary sources which were available to me did not necessarily reveal the complete background for the event with which they dealt. Moreover, it is not possible to determine whether, and to what extent, the classified files of the three institutions involved in the IMC project may have contained helpful information. The assumption was made that they did not; in this study, analysis and interpretation of available information relies primarily on the importance of what happened rather than what people said they hoped would happen.

A technical assistance project does not rule out the presence and effect of attitudinal stances taken by participating parties, but the value of evaluative research is thought by some to derive primarily from a consideration of dependent variables which have been "formulated in behavioral rather than attitudinal terms [Caro, 1969, p. 907]." Information selected for inclusion in this study was judged to be useful when it was descriptive of what was proposed and/or what happened with respect to the IMC. Decisions concerning the relevance of such information reflected a reliance on a professionally accepted position that instructional materials

centers in higher education, properly administered and supervised, can make a unique contribution to education through instructional materials design, production and utilization, and through the fostering of, and reliance on, research in media use (Mierhenry, 1964, p. 6). The application of this statement to the IMC at San Carlos does not require a particular stance regarding implementation of these functions, and in this study, every effort was made to refrain from overtly supporting any specific implementation decision to be made by San Carlos. Although not intended, the very presence of this research project probably lent covert support to the extant form and functions of the IMC. In any event, San Carlos administrators made the IMC facilities available for this research project, but apparently made no major decision to change IMC status on the San Carlos campus.

The IMC project may be considered to be an innovation in higher education in Guatemala with potential for a spread effect into other areas and levels of education there. Miles (1964) says, "Basically the problem is that we do not understand--we do not know with any clarity or precision the answers to questions about almost every imaginable aspect of innovation in education [p. 407]." His book, Innovation in Education, deals primarily with educational innovations attempted in the United States. He suggests some important classes of questions about innovations and it is a mark of the fundamental nature of these questions that they appear

to be equally applicable to situations involving technical assistance in more than one cultural context. Miles gives leave to other researchers to adapt and reorganize the questions he presents in order to facilitate further insight into the innovational process. Accordingly, the areas of inquiry presented here bear the mark of slight adaption to this research project. They are:

1. prior states of the system;
2. special characteristics of educational systems;
3. characteristics of the innovative person or group;
4. characteristics of the innovation;
5. process during change;
6. the fate of innovations;
7. reasons for changes in innovation rates.

Summary

This is a case study of a short-term bilateral technical assistance project in higher education; the basic goal of which was the improvement of educational resources at the University of Pittsburgh and the University of San Carlos in Guatemala. The major IMC effort was concentrated in Guatemala in an attempt to institutionalize an instructional materials center at the national university, an attempt with innovational implications for education at all levels, and particularly for secondary teacher training at the University of San Carlos. The time span of the IMC project is precise, and records of its activity and accomplishments are sufficient to permit some inferences about its immediate impact on education at San Carlos. Attention to the gathering and interpretation

of research data and information shifted, in process, from strictly pedagogical concerns to organizational adaptations and their implications for educational technology as well as for higher education in Guatemala.

CHAPTER II

THE CASE OF THE INSTRUCTIONAL MATERIALS CENTER AT THE UNIVERSITY OF SAN CARLOS IN GUATEMALA

A college roommate of Miles (1965) is quoted as saying, "You know, everything is really connected to everything else [p. 187]." So it is with the IMC. The case history of the IMC is the story of long-term, intertwined preconditions, the first of which led on to other preconditions and other programs. It is the story of personal and professional relationships and of personal and individual commitment and ambition. Local, national, and international political concerns were frequently a consideration, some supporting the IMC, some opposing it. Culturally biased responses to most phases of the IMC can be detected, as can individual or group instances of resistance or cooperation. The first section of this chapter deals in gross terms with some of the events of the past 25 years which appear to be related and insightful preconditions for the IMC.

Preconditions Leading to The IMC at San Carlos

Humanities--In September, 1945, after a long absence, the Facultad of Humanities was reestablished at the University of San Carlos. This renaissance of the Facultad of

Humanities followed the adoption of a new national constitution which granted autonomy to the university. At the same time, San Carlos was charged with the responsibility of the preservation and transmission of the culture through teaching and research, and the supervision of all other institutions of higher education. The responsibility for training secondary school teachers in Guatemala resides with the Facultad of Humanities, and so it was that in 1946, Humanities began offering courses to train such teachers. The Facultad of Humanities also embraces the departments of philosophy, letters, history, literature, pedagogy and psychology, and expresses a concern for the maintenance of a link between the university and the rest of the nation and the world through teaching and research in these disciplines.

Although the training of secondary teachers is one task for which it has sole responsibility, the Facultad has not been successful in attracting, training and placing in schools a high number of secondary teachers. The output has been variously estimated at two to four per year. The result is that most teachers at the secondary level have been trained in the nation's normal schools for teaching at the primary level. The inadequately staffed secondary schools have been long recognized as one of the serious barriers to economic and social development in Guatemala. The World Bank loan and UNDP building program were negotiated in 1968-69 specifically to create a teacher training school

in Guatemala, and to build new secondary education buildings throughout the country.

University City--In 1949, land on the edge of Guatemala City was purchased for the construction of a new centralized campus. Now, 20 years later, this task is approximately half completed. The most recent Facultad to move to the new campus, called University City, is that of Humanities. The Architecture building stands uncompleted at present, but the university administration building, several of the science Facultades, Engineering, a large dome-shaped auditorium called the Igloo, and several service buildings make up the campus. Extensive plans do exist at San Carlos for the final phases of construction and campus development. These plans include the construction on campus of a new building for secondary teacher training and a second building to serve as secondary demonstration school, both to be financed by the World Bank loan.

School of General Studies--The physical and academic isolation of the professional schools, i.e., the Facultades, from each other made coordination and university-wide administration difficult and sometimes led to needless duplication of course offerings and services. It was felt at San Carlos that university students often lacked an integrated view of the arts and sciences and were frequently poorly trained in the academic skills required for university level

work. A student is permitted to take a professional course as many times as necessary to pass it, and although most degree programs are based on eight semesters of academic work, many university students take from seven to fourteen years to graduate, and most do not graduate at all. In a move to correct the conditions which were thought to contribute to this unprofitable situation, a School of General Studies, planning for which began in 1958, was initiated in 1964. Courses were offered in Biology, Chemistry, Culture (including History, Economics and Sociology), Language (but not foreign languages), Mathematics, and Physics. Enrollment was required and initially was 879, but rose to 4236 in 1968 (Oficina de Registro, 1968, p. 9).

IIME--Just as the University of San Carlos undertook in 1945 to revitalize itself, a world-wide concern in the late 1940's and 1950's for the economic and social development of what has since become known as the Third World, resulted in a number of developmental programs in Guatemala and Central America, which were designed to focus coordinated resources on the most critical bottlenecks. One such program, the Instituto de Investigaciones Mejoramiento Educativo (IIME) (Research Institute for the Improvement of Education), was established in 1962 through cooperative efforts of the university of San Carlos and Michigan State University. IIME's international staff was "dedicated to the systematic improvement of education through research and its application in

Central America [IIME, 1962]. IIME's approach to the study, analysis and solution of problems was based on local needs and cultural patterns. Although housed in Guatemala, IIME was formally incorporated in the plan of regional integration then being developed by the Superior Council of the Central American Universities (CSUCA) and was endorsed by the five member national universities. IIME was (and is) a research institute with the central purpose of the development and distribution of "basic research information regarding education and educational need in Central America [IIME, 1962]."

IIME did, in fact, prepare a number of research reports in the early 1960's which provided much information about education in Central America, and made specific proposals for its improvement. It is not within the scope of this paper to discuss those proposals in detail, or their ultimate effect, except to note that the very critical demand for more and better trained secondary teachers was identified, and the strong recommendation for integrated educational planning made (IIME, 1963).

University of Pittsburgh--At more or less the same time, i.e., the late 1950's and early 1960's, the University of Pittsburgh was implementing a "deliberate decision to broaden the international aspect of its teaching, research and service activities [University of Pittsburgh, circa 1966]."

To that end, and among other actions, the University of

Pittsburgh undertook relationships with other institutions in Ecuador, Chile, Nigeria and Guatemala. In addition to contract staff hired from time to time and deployed to live in those countries for varying lengths of time, the development of a supportive infrastructure on the campus in Pittsburgh was required. One function of such an infrastructure is the continuing effort to strengthen the university's international dimension through constant study and new project development. Implementing this function, a Pitt faculty member with a professional background in international education and educational media made numerous consulting trips to Guatemala on behalf of Pitt, the United States Agency for International Development in Guatemala (USAID/G) and educators in Guatemala. His central concerns there were for the training of teachers for secondary education and for the expanded, systematized use of educational media for human resource development (Spaulding, 1964).

It is important to note here that these interests in media and teacher training brought the Pitt consultant into contact both with San Carlos University officials and Ministry of Education representatives. The Facultad of Humanities at San Carlos is charged by law with the training of secondary teachers, but it is the Ministry of Education that employs them. The constitutionally guaranteed autonomy enjoyed by San Carlos frees the Humanities Facultad from effective outside control. These conditions mean that the

Ministry of Education has no legal means of affecting the training program of secondary teachers, and is restrained from starting its own training program. This very serious roadblock to progress was recognized by the Pitt consultant, representatives from the Ministry of Education, and the University of San Carlos, and a liaison committee was established, but without real power; it could do little more than "recommend."

First Pitt, AID/G - San Carlos proposal--The liaison committee was evidently considered an important one, because it reappears in a 1964 proposal for a two-to-three year, \$800,000 AID/G sponsored relationship between the University of Pittsburgh and San Carlos University. This many-faceted proposal grew out of the previous relationships established by AID/G, Pitt and San Carlos, and encompassed the following fields:

1. Institutional planning
 - a. management
 - b. facilities
 - c. computer center
2. Secondary teacher education
 - a. in-service training
 - b. pre-service training
 - c. liaison committee
3. University curriculum
 - a. basic studies
 - b. plan for major fields of study
4. Student personnel service
 - a. testing and counseling
 - b. student records

The proposal included concerns for development of curriculum, instructional media, secondary teacher training, a Materials Production Center and an improvement in the then existing television service (University of Pittsburgh, 1964).

Even though the proposed contract agreement was supported by USAID/G the University of Pittsburgh and many San Carlos university officials, the Superior Council of San Carlos, which has the ultimate authority in such cases, rejected the agreement. The apparent reasons were: (1) continuing difficulty in establishing a viable working relationship between the Ministry of Education and the Humanities Facultad with regard to teacher training, and (2) the feeling on the part of the then Dean of the Facultad of Humanities that he had not been sufficiently consulted in the development of the proposal (Spaulding, 1965). Since much of the proposed contract activity was directly or indirectly aimed at secondary teacher training, the Dean apparently felt that he was within his rights in refusing to agree until he had further studied the implications of the proposal. If, in fact, he did conduct a further study, he evidently did not like what he saw, because the proposal did not finally receive approval by the Superior Council.

Recapitulation--By late 1964 and early 1965, there existed at San Carlos a greatly increased, but somewhat localized, desire to improve the quality of the entering and leaving university student through improved secondary

teacher training and an expanded university curriculum correlated with the development and production of curricular and instructional materials for all levels of education. The 1964 external assistance proposal from Pitt which was designed to help meet this need had failed to receive San Carlos approval. The School of General Studies, though not universally liked, was truly an innovation for San Carlos, and was quickly generating some specific instructional needs of its own, and was, by virtue of numbers of students enrolled, a growing power in university administration. Since the School of General Studies also served as a link between the secondary schools and the traditional Facultades, it was seen by some as the most fruitful location for other new developments--hence its designation, in the 1964, \$800,000 proposal as the proper administrative home for instructional materials development and production.

IMC proposal--When it became evident early in 1966 that the large Pitt proposal was not going to be approved, the Chairman of the Biology Department within General Studies conceived a program of his own for the development and production of the needed materials. His proposal provided for two major programs. The first was for an offset printing facility for the production of the various printed materials required for effective teaching in General Studies and which would be purchased by individual students. The second part of the proposal embodied a center for the production and

utilization of instructional materials to be developed and used by San Carlos professors. The printing operation was visualized as a profit-producing venture, and these profits were in turn to be used to support the operation of the production and utilization center, inasmuch as neither professors nor the university administration were assumed to have sufficient funds for instructional equipment and material purchase.

In mid-June of 1966, the University of Pittsburgh responded to this proposal with one of its own in which it agreed to provide advisory and technical services to San Carlos University to assist "in development of an educational media laboratory [University of Pittsburgh, 1966]." This proposal, in dollar terms, amounted to less than a fifth of the earlier 1964-65 proposal, and provided for 18 man-months of specialist assistance in educational media and higher education and eight man-months of short-term advisory service to assist in the effective development and use of the media laboratory. It was also understood at that time that some assistance could be offered to the San Carlos computer center.

IMC contract--These two proposals in 1966, the one from San Carlos and the response to it from Pitt, resulted in a contract between the University of Pittsburgh, San Carlos University and USAID/G. The proposals were in basic agreement on the following objectives:

- 1) To assist San Carlos in the development of an educational media laboratory with local production facilities, equipment service, film library and in-service training program;
- 2) To advise on collaborative relationships between educational media laboratory, the University Library, the University Press for the regional distribution of materials produced;
- 3) Advise San Carlos on possible uses of the computer;
- 4) Advise San Carlos and AID/G on scholarships and training programs to provide skills for the developing media program.

In addition to the above proposed objectives, this 1966 contract contained a long-range objective which apparently derived from the earlier, larger Pitt proposal but which did not appear in any of the working papers developed prior to this contract. This objective was: to establish relationships between the educational media laboratory and the Ministry of Education in Guatemala so as to extend the concerns of the center into the secondary schools through the development of secondary school teaching materials which would then provide greater continuity between the secondary schools and the university.

IMC implementation--In order to implement this contract, it was necessary for the University of Pittsburgh to recruit a person who was qualified to undertake the 18-month residency in Guatemala to serve as media advisor in educational media and higher education (in effect, to be Chief-of-Party). Since the project contract was not signed until October, 1966, well after the date originally expected by the University of

Pittsburgh, difficulties were experienced in locating a qualified person who was not already under contract for that academic year to a North American university. It was not until February, 1967, that a media advisor was able to establish residency in Guatemala and to begin activities related to the IMC project.

Educational planning in Guatemala--Another area of educational development activity which increased in the early 1960's was that of planning. IIME at San Carlos supported the growth of the Office of Planning there, and the Ministry of Education expanded the scope of its planning activities. The University of Pittsburgh indirectly contributed to this development by training one person who later worked in both of these planning offices. One activity of these offices was to assist in the development of proposals to major international lending and granting institutions for multimillion dollar assistance programs specifically designed to correct some of the basic weaknesses of the Guatemalan education system. These proposals went to: (1) USAID for assistance in primary education, (2) the World Bank for secondary school construction, (3) United Nations Development Program (UNDP) for help in augmenting the small number of trained secondary teachers, and, (4) to the Inter-American Development Bank (IDB) for aid to higher education. Each of these proposals contained recognition of the need to develop appropriate instructional materials and the media for their dissemination,

although specific implementing programs were not always included. These massive loans and grants, because of the debt service and program maintenance responsibilities which would result, were not universally approved of in Guatemala, but negotiation for them was begun about the same time the IMC project was initiated. They were a response to pressures at all levels of education for greater educational opportunities for Guatemalan citizens.

New universities--Another measure of this increased pressure on educational institutions in general and the university of San Carlos in particular, is the emergence, since 1960, of three other universities in Guatemala. The Jesuit university, Landivar, the Protestant university, Mariano Gálvez, and the private Universidad del Valle now offer higher educational alternatives to secondary school graduates. San Carlos is charged by law (Constitucion de la Republica de Guatemala, Article 99) with the supervision of all higher education in Guatemala, but apparently has been unable to establish the required mechanisms and consequently the other universities function with little real control by San Carlos.

These, then, are some of the important events and decisions occurring from 1945 to 1966, which were preconditions for the creation of an instructional materials center of the San Carlos campus, and which further conditioned the impact the IMC was able to make.

IMC Contract Period

Equipment purchase--Prior to the February, 1967, arrival of the resident media advisor in Guatemala, one short-term advisor, an instructor in Educational Communications at the University of Pittsburgh, had already spent two weeks on the campus of San Carlos in Guatemala, compiling a list of equipment which, in his judgment, would be useful in the projected activities. At this time, there had been no systems analysis of the task to be undertaken by the project. The list compiled replicated rather faithfully the media production laboratory for teacher training already in existence at the University of Pittsburgh. The equipment purchased for the Guatemala project reflected a fairly traditional response to the problems and opportunities associated with the use of new instructional materials and with training teachers in their use. The equipment was received in Guatemala in July, 1966, some five months after the resident advisor arrived. It consisted primarily of a range of projection equipment, tape recorders and photographic equipment, including the basic equipment required for darkroom work. Additional production equipment supplied was primarily for the creation of art work and overhead transparencies.

Certain deficiencies in equipment and materials purchase and/or delivery and space allocation were evident to IMC personnel at this time and were never corrected. Specifically: (1) a 35 mm. camera was never purchased, making

systematic production of 2 x 2 slides impossible; (2) even though San Carlos University provided space in the new Engineering building at the new campus for the Instructional Materials Center, no provision was ever made for a darkroom, rendering useless all the photographic equipment and reducing considerably the varieties of visual materials that could be produced; (3) three 16mm. movie projectors were purchased, but no great number of films were made available, and no professional 16 mm. cinema equipment was ever purchased. The net effect of these and other more minor deficiencies was that the major production effort of the IMC was restricted to the development of overhead transparencies and various kinds of graphics, such as posters.

RTAC--In Mexico City, the Regional Technical Aids Center (RTAC), functioning as an arm of the United States Agency for International Development (USAID) provides an instructional materials production and training service in Latin America. It was hoped that RTAC could provide instructional materials specifically designed for Spanish speakers, but a preliminary visit to RTAC by the IMC resident advisor early in the project term, revealed that RTAC had sustained a serious budget cut and could do little more than maintain its present programs. A number of copies of an audio-visual textbook which had been translated from English to Spanish were purchased from RTAC, but inadequate funds in the budgets of RTAC and the IMC precluded any other kind of materials acquisition for the IMC at San Carlos.

The center for the production of materials--Although the original San Carlos proposal suggested a combined center for printing and production of instructional materials, San Carlos administrators had already established the offset printing center before the IMC contract was signed. This printing facility was called The Materials Production Center, and was kept administratively separate from the IMC when it was established later. The two main effects of this move were that profits from the printing were never available for IMC support, and the very important function of printing instructional materials was not readily available to the IMC, either as a service it could offer, or use itself.

Plan of action--Early in the life of the IMC contract, a plan of action was evolved. Not all of its 18 points were fully implemented, but they are listed here to suggest the scope of proposed IMC involvement in the university learning process. All of these activities are "open-ended" in the sense that each suggest on-going developmental effort rather than point-in-time decisions or accomplishments. Moreover, one instance of performance for each of the 18 points is sufficient to indicate its initiation, but says nothing about the ultimate value and impact of that single action. With the possible exception of numbers 6 and 14, effort was made by the resident advisor to implement the plan of action, but most activities initiated had a life span limited to the IMC contract period.

- (1) Appoint media coordinators in various Facultades and schools--An attempt was made to do this, but there is no evidence that effective linkages between them and the IMC were established.
- (2) Study other media programs--In addition to the familiarity each consultant had with various media programs in North America, the resident advisor and his Guatemalan counterpart traveled early in the contract period to several countries in the northern part of South America. A report on that trip was developed by the resident advisor's counterpart.
- (3) Establish equipment and materials service--The intent was to determine availability of equipment owned by San Carlos and the IMC and to place in each Facultad, school and major department a motion picture projector, a film-strip and slide projector, an opaque projector, an overhead projector and a tape recorder. These were to be in the charge of the media coordinator in the various Facultades. The materials service was to include film rental services and a film library at San Carlos. Neither of these functions was ever implemented. The cause of this inaction is not entirely clear although lack of money was a contributing factor. An equipment pool was maintained at the IMC for loan to individual faculty members.
- (4) Conduct of media demonstrations--An in-service training function, this was carried out by the short-term consultants, working with groups of faculty members as well as individuals. Biology professors comprised the only group to participate in this activity in depth. An important and unexpected side effect of the audio-visual course offered Biology professors should be recorded here. A number of the Biology Professors were also teaching on a part-time basis in the School of Nursing, located at Roosevelt Hospital in Guatemala City. The School of Nursing, while attached to San Carlos University administratively, was not controlled or supported by it. The Biology professors spoke enthusiastically about the use of media, and used some of the materials they had constructed in class in the IMC. Their enthusiasm resulted in a decision by the Nursing School staff to construct their own instructional materials center. The new training programs being developed in the School of Nursing were being supported by foundations, and the future of the instructional materials center there now appears to be independent of the future of the San Carlos IMC.

- (5) Use of consultants--The areas of consultant expertise requested were: (a) computer services, (b) printed material services, (c) curriculum integration of media, (d) materials preparation and demonstration. In fact, except for the computer consultant, each consultant brought to Guatemala under the IMC contract was not so strictly categorized and performed in all three of the last three functions named above.
- (6) Establish film library--Never undertaken.
- (7) Establish instructional materials production laboratory--Equipment ordered at the beginning of the contract included items to establish a modest laboratory for the production of inexpensive instructional materials. Biology professors were taught how to use the equipment and the associated materials. When all IMC project materials were consumed, it was frequently impossible for San Carlos faculty or administrators to purchase more, either because of non-availability of materials in Guatemala or for lack of money.
- (8) Conduct pilot projects in radio and television--Planning activity only was undertaken here.
- (9) Work in depth with one Facultad--The Biology faculty was chosen for a six-week course which met daily, and as needed thereafter.
- (10) Work with one classroom facility--With the help of a number of Guatemalan educators, the resident advisor recommended some design changes in the Igloo interior which would make it possible to increase the use of media. Among other things, the chalkboard was to be reduced in size to make room for a permanent projection screen. Ensuing discussion among Guatemalans resulted in an interim decision to remove the chalkboard altogether, but there were those professors who wanted to retain the chalkboard because they felt they could not teach without it, and they were equally certain that overhead transparencies were no substitute. The important point here is that a relatively small physical change did elicit considerable discussion about teaching techniques among faculty members. Ultimately, a compromise was struck, providing both the screen and the chalkboard. A projection booth was also added to the Igloo's facilities.
- (11) Cooperate with teacher education groups--The plan of action lacks specificity on this point. It is not clear what was intended nor that any action was taken.

- (12) Cooperate with text materials preparation committee-- A committee appointed by the Ministry of Education and the University of San Carlos was preparing text materials in physics and mathematics. By participating in this activity, it was hoped that the IMC could promote more cooperation between the Ministry and San Carlos. One planned method of participation was to have the offset printing center produce the textbooks. That center did, in fact, print the texts, but it was never an administrative part of the IMC, so the IMC was unable to participate to any great degree in the text book program.
- (13) Train center staff--The objective was to train university staff to take over the work of the IMC when the contract expired. An artist and a secretary were so trained, but were forced to find other work at the contract's end since San Carlos elected not to continue to pay for their services.
- (14) Publish media newsletter--This was deemed especially useful because of the wide geographical distribution of the Facultades and schools over Guatemala City and the country. Again, offset printing facilities were to have been used, but the media newsletter did not become a continuing operation, if in fact it was ever undertaken.
- (15) Establish operational procedures--This was an activity with no particular focus except to establish procedures which would insure IMC life and continuity after the contract expired. Little success was experienced in this regard. A Guatemalan counterpart for the resident advisor had been appointed by San Carlos University. He had, however, a number of other important and demanding responsibilities and his main function was to serve as a link between the IMC and San Carlos administration. The resident advisor did not speak Spanish, and although he had a bilingual secretary, he was unable to communicate directly with non-English-speaking Guatemalans. There is no record to indicate the specific nature of his communication channels with university personnel, but in general it was necessary to rely on interpretation of the written and spoken word, carried out by his secretary, his counterpart, and selected faculty members, all of whom were bilingual in Spanish and English.
- (16) Change "language lab" to "learning lab"--The idea here was to secure approval to add other kinds of learning resources to those already in use in a twenty-four booth language laboratory already in existence at the new San Carlos campus. Again, there is no evidence of success on this point.

- (17) Design housing for media facilities--This was seen primarily as assistance to architects designing a University Library which was also to permanently house the media facilities. There is no evidence of fruitful activity here.
- (18) Coordinate other University of Pittsburgh projects in Guatemala, where needed--The possibilities envisioned here were new or enhanced program activities in (a) urban and regional planning, (b) the School of Social work, (c) Chemistry, (d) Biology, and (e) Doctoral Research studies. In fact, the University of Pittsburgh was able to offer consultation and/or assistance in all these areas using consultants, full-time advisors and trips to Pittsburgh for certain San Carlos personnel. Midway through the IMC contract period, the contract was amended to provide additional assistance to San Carlos in the areas of Chemistry, and Urban and Regional Planning. Most of this assistance came in the form of short-term consulting, but one chemistry professor from Pitt spent approximately 18 months at San Carlos. His arrival made possible a shift of chief-of-party responsibilities to him from the resident media advisor.

The timing of the IMC contract was such that it spanned most of two academic years at San Carlos, missing the first part of 1967 and latter part of 1968. No records of the IMC equipment loan function are available for most of 1967, but for the 1968 academic year, there were 80 instances of equipment loan to faculty members. Some of these were for periods of several months and give no real indication of the number of times the equipment was used. Over sixty percent of the requests for audio-visual equipment came from the Engineering Facultad, the Facultad in whose building the IMC was lodged. The Biology faculty in the School of General Studies borrowed equipment less frequently, but often kept what they borrowed for several months.

Mentioned earlier were the loan and grants to the three levels of education in Guatemala. The Inter-American Development Bank (IDB) proposal was composed of ten programs, one of which was the development of a closed circuit television facility for higher education. This interest in television was also reflected prior to the IMC contract in two reports and recommendations prepared by the Pitt media consultant. The IMC resident advisor was also asked to contribute to the design of television facilities to implement the learning resources section of the IDB loan, but neither that design nor the other reports were implemented during the life of the IMC contract.

The author of this research study served as a short-term advisor in the IMC for six weeks in July and August, 1967, his term overlapping somewhat with the second advisor's. Major activities of the IMC were undertaken during this period of time in Guatemala, and it appears useful to describe in some detail other events of that period of time.

In the early stages of the project, some hope was still entertained that the printing operation and the IMC could be brought together under one administrator, or at least that a cooperative atmosphere could be established that would result in easy access to the printing process when so desired by the IMC. To that end, considerable time was spent in the printing workrooms which were housed in a building adjacent to the Engineering building, the home of the IMC. It

was possible to put back in operation certain equipment that was malfunctioning, and in turn the IMC received considerable assistance in the photographic reduction of artwork prepared for overhead transparencies.

Coincident with the above activities, a major part of the equipment was released from Customs, and a first task was to unpack, take inventory, and put in operation as much of this equipment as possible. Photographic equipment remained, for the most part, in the original containers for the life of the contract. As soon as the other equipment was operational, it was used to prepare overhead transparencies for a number of people associated with the IMC.

In addition to the activities already named, the resident advisor and available short-term advisors consulted with some Facultades, particularly Dentistry, with regard to the utilization of IMC resources within a radically restructured curriculum proposed in that Facultad. Since additional money would have been required, no real progress was made beyond these preliminary discussions, but they were sufficient to reveal the scope of opportunities open to innovative use of educational media in Guatemala. The Facultad of Dentistry had already embarked upon a reevaluation of its own curriculum and had plans for changing it in such a way as to place fourth-year students in the field, working on practical dental problems. The Dentistry Facultad was concerned that the physical distance between these individual students in the

field and the central Facultad in the city would create added instructional problems. Members of that Facultad were asking for help in developing communications channels and instructional materials which could be used for each student but which would provide opportunity for communication on general problems as well as problems specific to each student's experience. A list of equipment was eventually drawn up which would have made such communication possible but money for the implementation of this program never became available.

Phase-out activities of the IMC--As the IMC contract drew near the end of its first eighteen months, and termination, the University of Pittsburgh entertained hope that AID/G and San Carlos would support a contract extension. This support was not forthcoming and the contract ended in the fall of 1968. An extension would have required both an expression of willingness to continue the relationship from San Carlos, and additional funds from AID/G. In this case, AID/G decided against a continuation, apparently in line with its policy of reducing support of higher education in Guatemala.

The life and character of a project such as the IMC derive from the personal and professional activities and relationships associated with it. These, in turn, are influenced by decisions and policies of the participating institutions. There were a number of such factors present in Guatemala and at the University of Pittsburgh as well which probably contributed to circumstances leading to the decision

by AID/G not to further support the IMC. A description of some of them is offered here for the sake of example and because the examples chosen appeared to have been crucial to IMC's future.

External aid policies--Prior to and during the IMC contract, the University of Pittsburgh had subscribed to an institutional approach to external assistance. This approach relies on the extension of advice and assistance specified by contract, but assumes the desirability of continuing exploration of other areas where assistance might be possible and useful. "A project is conceived of as an on-going relationship between the two institutions, with emphasis and effort changing smoothly and reasonably quickly in response to changes in the personnel or climate of the various areas [Dunkleberger, 1969]." This approach can provide continuity, coordination, flexibility and mutual benefits for the institutions involved. It is, also, somewhat like basic research in that reliable cost/benefit ratios are hard to determine, and for that reason often appears to be, and in short run, may be, excessively expensive. It was the opinion of the author of the IMC project final report that this long-range institutional approach to external aid was in basic conflict with the prevailing AID/G policy which reflected an interest in supporting individual projects characterized by more finite parameters of time and activity. The IMC represented, for AID/G, a small, finite project with precise beginning and

ending dates. For Pitt, the IMC was probably seen as the first of more and varied arrangements which would spring from that university's long-range interest in educational development in Guatemala.

Personal and professional relationships--The IMC contract grew out of a set of professional and personal relationships established between representatives of the University of Pittsburgh, the University of San Carlos and the United States Agency for International Development in Guatemala. The contract was negotiated by men approved by their separate institutions to commit that institution to the terms of the contract. The authority to commit each institution to the contract devolved on these men by virtue of the position held by them within their own institution. All the occupants of those positions had moved on to other responsibilities within a year after the IMC contract was signed, and were replaced by others. The replacements apparently experienced little difficulty in assuming the professional role of institutional representative, but the personal relationships which had produced the IMC contract were no longer present. Each of these representatives responded to the requirements of his new role in terms of personal and professional interpretations of his institution's policies and priorities.

Perhaps the most important change was the election and installation at San Carlos of a new Rector. This election was a regular event and constituted no surprise, but as

in most cases of change in administrative leadership, there was a shift in priorities, and the power structure adapted to accommodate these shifts and the personal relationships on which they rested. The new Rector apparently did not place the same value and priority on the IMC as had his predecessor, the Rector who had signed the contract.

General Studies--The threat of a student strike in August, 1968, resulted in a decision by the Superior Council to abandon the School of General Studies. It had been criticized for failure to achieve its purposes, although, in fact, it had hardly been in existence long enough for a fair trial. Without question, it did appear to add two years to the average university career, and even its strong supporters agreed that changes were needed.

The student complaints regarding the School of General Studies were generally expressed in terms of its failure to achieve higher passing rates for students, either within General Studies or later, in the professional schools. This was generally true, and it had the effect of retaining great numbers of students while enrolling new ones, thus enlarging the School in numbers and potential political power, and at the same time reducing the number of students who had passed through General Studies and who could then enroll in a Facultad. It was possible, for instance, for one profession, teaching a basic course in General Studies, to fail as many as 95% of the students taking that course, thus making

it necessary for them to repeat the course before enrolling in any Facultad. (Dunkelberger, 1969).

The failure of the School of General Studies to survive had no direct bearing on the IMC contract or performance, although as will be shown later, there were some indirect effects which were not fully realized until course schedules were being arranged and staffed for the coming academic year.

Summary--Ideally, at the end of a contract period, one would hope to see evidence that most major project objectives had been achieved, and more importantly, that mutual benefits were accruing to all institutions involved. At this point, it is appropriate to do no more than record that this did not appear to be the case with the IMC at San Carlos. Continuation of IMC activities did not have a high enough priority either with AID/G or San Carlos to elicit more funds for a contract extension by AID/G or a support of the IMC by a university appropriation. San Carlos did not appoint any person to direct activities of the IMC, and the enlarged other duties of the coordinator of educational resources precluded any increased amount of IMC supervision and direction by him. There is no evidence that the major objective of establishing working relationships between the IMC and the Ministry of Education had any measure of success.

The IMC project ended in this somewhat uncertain fashion, the resident advisor's term ending at a time

coinciding almost exactly with the abolition of the School of General Studies. AID/G's interest in Guatemalan education was shifting to the primary level while development activity at San Carlos centered on the proposals for the internationally funded projects for secondary and higher education. San Carlos did not dismantle the IMC, but appeared to be concentrating developmental efforts on the programs to be funded by BID, Unesco and the World Bank, and on structuring a curriculum which could take advantage of newly unemployed General Studies professors and which could offer some of the General Studies courses within the various Facultades.

University of San Carlos and IMC Events after the Contract

Research permission confirmed--The nine-month research period began in October, 1968, after the resident media advisor had departed but before the chief-of-party finished his term in Guatemala. One of his final and my first duties was to reconfirm official permission from San Carlos to carry out the research project. San Carlos officials had previously expressed willingness to cooperate in the research project, but it was deemed wise to make this cooperation official at the initiation of the research.

General Studies--The demise of the School of General Studies has already been noted. Insofar as the IMC was concerned, the removal of General Studies had two main effects.

The first effect was that a considerable amount of curricular reshuffling was then required, and General Studies faculty members were uncertain about their status for many months after the change. This included the chairman of the Biology Department, who had been such a strong supporter of the IMC. He ultimately was made chairman of biology within the Facultad of Chemical Sciences and Pharmacy, and directed a teaching program there that served that Facultad and some of the others. Of the original seventeen General Studies biology professors, all were reassigned to teach biology at least half-time in Chemical Sciences and Pharmacy. The other half of their time was divided among eight other Schools and Facultades. At least one biology professor was holding three such half-time teaching positions. About half of the Facultades elected to have no biology instruction, or to provide their own. The required decisions were long in the making and were not final until well after the 1969 academic year began.

The 1969 budget--The second main effect of removing General Studies from the curriculum was the necessity of redistributing money that had originally been allocated for the School. It apparently is common practice at San Carlos to begin the academic year with a proposed, but not necessarily approved, budget. This practice had often resulted in the accrual of large deficits. Increased concern in early 1969 for reducing the size of the deficit led to the decision by

administrators to place no item for IMC operation in the budget. The University budgeting process was still uncompleted when this research project ended in July, 1969, but a deficit of over \$300,000 was under scrutiny, and a commission was appointed to make recommendations for reducing it. The presence of this large budget deficit made unlikely any financial support for the IMC in the 1969 academic year.

Audio-visual center in the Ministry of Education--The coordinator of educational resources felt a responsibility to salvage as much as possible of the IMC project. To that end, and among other proposals, he wrote a letter to the Rector of San Carlos requesting permission to develop a plan for a more efficient, integrated use of the facilities present in the IMC and in an audio-visual center operated by the Ministry of Education. This letter referred to the need to maintain university autonomy and integrity, but stressed the opportunities inherent in such a cooperative effort. The letter was to have been jointly signed by the coordinator and the director of the center at the Ministry, but the letter was never sent because the latter failed to sign it. Whether or not the plan for this cooperative effort was worthwhile, it never received discussion beyond this point because, according to the San Carlos coordinator, the director of the center in the Ministry decided against the idea. In some way it conflicted with his own interests, professional or personal, and the matter stopped there.

Faculty use of media--Individual faculty members interviewed at San Carlos who had adopted the available media for their teaching tended to be young, under 40, and not particularly high in status at San Carlos but responsive to their department chairman's encouragement to use media. One spokesman said that he relied on his collection of overhead transparencies to pace his presentations and to permit him to go as fast or slow as class understanding permitted. He was also grateful for a considerable reduction in energy expended per hour of teaching. Another faculty member indicated that as a teacher of one section of a course also taught by other professors, he often felt a need to excel in the competition for student approval. It was his feeling that a professor using media had an edge in this competition. The preparation or selection of the visual materials required for their courses also generated increased concern for the accuracy and relevancy of the information presented.

The production materials center--A visual check of equipment and time cards suggested that the printing center had trebled its quantitative capacity and considerably upgraded the quality potential of its equipment. The printing center's catalog listed 39 publications for sale. This growth had taken place over a period of eighteen months. These publications were relatively inexpensive books used in various classes in the university. Prices ranged from fifteen cents to three dollars, but it does appear that this center

produced a profit which could have helped finance IMC activities, had San Carlos permitted those profits to be so channeled.

BID proposal--An example of the sometimes agonizing slowness with which changes and adaptations are accomplished is to be found in the 1967 BID loan proposal for higher education in Guatemala. The basic purposes of the loan were: (1) to construct some of the necessary instructional facilities at the four Guatemalan universities for at least the next ten years; (2) to organize a common core for basic instruction and services in mathematics, physics, biology and chemistry (the services to be composed of an integrated library system, a computer center, a division for educational resources including closed circuit TV, and an integrated university publishing house); (3) to strengthen those disciplines most closely related to national economic development (agronomy, veterinary medicine and engineering); (4) to provide funds for improvement of faculty and scholarships for students (Droubay, 1969). Although this multimillion dollar program would have undertaken far more than the 1964, \$800,000 Pitt proposal, all of the major areas of endeavor in the Pitt proposal appear in the later BID loan proposal.

In July, 1969, the BID loan still had not been approved by the Superior Council at San Carlos. It may be only coincidental that they suffered the same fate, rejection, at the hands of the San Carlos Superior Council, but there do

appear to be common factors. At least two major proposals for externally funded assistance programs were tentatively approved by the Superior Council but later rejected on the ground that some of its members had had an insufficient role in the development of the proposals or for consideration of their possible consequences. These proposals were basically directed at strengthening some, but not necessarily all of the Facultades, and at establishing new or strengthening facilities and educational services for faculty and students. One of the possible consequences of loan approval and program implementation was that debt service on the loan and maintenance of programs started with it would be prohibitive, and in the long run, a disservice to financially sound development of higher education. It is also possible that the loan proposal failed to receive approval because some members of the Superior Council would not, under the terms of the loan, have benefited greatly enough, and they hoped to amend the loan terms or their own qualifications in order to partake more fully in the loan program. As of this writing, the outcome of the loan proposal is unclear.

Teacher training school--Earlier mention was made in this study of a teacher training school to be established at San Carlos with the aid of funds from United Nations Development Project (UNDP) and a World Bank loan. This school was conceived as a response to the great need for secondary

teachers in Guatemala, and is still another example of organizational adaptation. Even though the Facultad of Humanities had clearly failed to provide sufficient numbers of secondary teachers for Guatemala, the introduction of a new institution to do that job in the higher education framework was a threat to the Facultad. The project was funded by UNDP and was based on cooperation with a World Bank financed high school building program for the country. Two of the buildings in this program, a demonstration school and a teacher training building, were to become a permanent part of the San Carlos campus. There was considerable discussion about the administrative changes required to place the teacher training school in the San Carlos administrative framework, but eventually it did become a part of the Humanities Facultad and plans were made to temporarily house it in the new Humanities building which was opened for use in the early part of 1969. The aim of this training program was to establish patterns for curriculum development and teacher training that would provide greater opportunities and effectiveness for graduating teachers. The general approach was to hire experts in curricular and pedagogical areas to work for periods of one to two years to create and integrate this pattern. Although the use of instructional materials and media was contemplated in the plan of action, no implementing procedures for this phase of the program had been delineated. The first implementation phases of the teacher

training activity were just beginning as this study ended, and were not sufficient to permit accurate inferences about their future character and impact.

Associated organizational adaptations--In addition to these multimillion dollar projects and their associated organizational adaptations, there are other events which reveal the process of adaptation at work. Three of the following examples relate directly to the IMC during the research period, and the fourth is associated with General Studies.

Engineering--As this research study drew to an end, an exchange of letters between the Engineering Facultad and the coordinator of educational resources dealt with the possibility of permitting Engineering to assume responsibility for the IMC. The proposal was plausible since the IMC was in the Engineering building. Even though the Rector who had negotiated the IMC contract was an Engineer, and in spite of a strong sense of identification with Engineering by the coordinator, who was also an Engineer, the decision was still being held in abeyance some two months after the initial proposition. There remained unanswered the questions of how and whether Engineering could provide a service for all Facultades. Even at this point, nearly a year after the contract's end, and after a year of no support, the final disposition of the IMC and its facilities was still in doubt.

Population studies--Early in October, 1968, the coordinator of educational resources and the higher education officer from AID/G discussed the question of space for a Population Study Center at San Carlos to be sponsored by AID/G. This was another matter not easily resolved. AID/G wanted, and thought it had been promised, space in the university administration building. Some six months after the first discussions, the decision was made to establish the Population Study Center in the front part of the room occupied by the IMC. That part of the room had previously served as a small classroom with IMC office and equipment space in the rear of the room, behind a temporary partition. Within two or three months, the San Carlos students and their supervisors from AID/G working on population studies had moved to virtually all parts of the room. There was still some recognition of the IMC as an entity, but it appeared to be fading.

UNDP experts--There were, on the other hand, signs of new interest in IMC functions on the part of the newly arriving experts for the UNDP teacher training school. One of my last activities at San Carlos was to conduct guided tours through the IMC for those experts. It was their stated intention to try to keep the IMC facilities available for their own use. There was, incidentally, renewed, but similar, interest on the part of certain biology professors in maintaining IMC functions.

Perhaps one of the most difficult situations at San Carlos is the one of which the School of General Studies was a part. The initial rationale for the School of General Studies was not different from that generally accepted anywhere General Studies curricula are used. A report on the subject of General Studies by IIME at San Carlos for the Superior Council of Central American Universities (CSUCA) gives a number of specific reasons for the failure of General Studies, but its thrust is that the School did not appear to help students in their later college work, and that a general lack of integration and responsiveness prevailed both between university elements involved and between the university and the needs of the country. This report further suggests the need for academic restructure based on considerations of integration of academic requirements and provision of educational resources. The point is made that these changes should be accomplished within the framework of traditional structures, and furthermore that the prevalent disorientation on the San Carlos campus could be reduced by the institution of these and other changes suggested in the new Development Plan for the university.

The Planning Commission of San Carlos later issued a proposal for restructuring the university Facultades along lines suggested by the IIME report, relying on the integration of those instructional elements in each Facultad that have characteristics in common. This report also proposes

the appointment of a coordinator of these common courses and the associated functions and services. This would be required because of the budgetary demands of the coordinated and integrated activities thus assumed or generated. The Superior Council was considering this and other proposals as well when this research project ended July 1969.

Summary

The IMC appears to have been established at the University of San Carlos as one of a number of innovations attempted by the university over the past 25 years. USAID/G and the University of Pittsburgh were the other two institutions with primary involvement in the IMC contract. It is apparent that none of these three institutions were totally committed to the IMC as it was finally implemented. Pitt had hoped for greater involvement, San Carlos was deeply involved in negotiations for larger and more comprehensive educational development programs, and AID/G apparently felt that in the face of these large, internationally funded programs for higher education, it could profitably commit more effort in primary education. A large budget deficit at San Carlos was a constant concern there, and in the conscious assignment of priorities to various programs for budget support, the IMC appeared to rank too low to qualify for a budget allotment. During the period of research for this study, the IMC was maintained in the sense that its equipment was not

removed, but there appeared to be little interest on the part of San Carlos administrators in giving life to it. Rather, their interest appeared to be in providing the same service but within and through the larger educational development programs. As those programs began implementation activities, renewed interest was being evinced in having available on campus the production and utilization services normally provided by an instructional materials center. An analysis and interpretation of these events follows in the next chapter.

CHAPTER III

THE IMC AT THE UNIVERSITY OF SAN CARLOS: ANALYSIS AND INTERPRETATION

The central concerns of this study are those activities in Guatemala at the University of San Carlos which in some way impinged upon or were a result of the project to start the Instructional Materials Center (IMC). The purpose of this chapter is to present an analysis and interpretation of those activities in terms of the identified problem elements: higher education in Guatemala, educational technology, directed purposive change and social process.

Higher Education in Guatemala

The previously stated assumption about higher education that is fundamental to this section is: Higher education, in Guatemala at least, has a large influence on the character of education at all levels. This derives from legally defined responsibilities as well as the natural course of events which ordinarily places university graduates in responsible positions within the Ministry of Education and the universities. The implications of this responsibility reside in considerations of

social change as well as definitive aspects of the larger educational environment in Guatemala.

Figure and ground--It is Miles (1965) who introduces the terms "figure" and "ground" as being particularly helpful in the description of the central entities involved in the innovation process. The "figure" is the innovation and the "ground" is the contextual environment in which the innovation is to be applied. Miles' concern is that too often the innovation itself has received the greater share of attention in the process of strategy development, with insufficient thought being given to the defining characteristics and forces of the "ground." With this caveat in mind, the primary emphasis of this section is on the "ground" characteristics or environment, rather than on specific characteristics of the innovation as they may appear to relate to educational developments in Guatemala.

Physical description--There are certain physical aspects of Guatemala which have had, and probably will continue to have, importance in the social and economic development of the country, and specifically, in the development of education. Some of these aspects are peculiar to Guatemala and set it apart from most other Latin American countries; other aspects simply indicate the degree to which Guatemala is a part of Latin American Society.

Guatemala has common borders with Mexico, El Salvador and Honduras with coasts on the Pacific and Atlantic

Oceans. The country is divided by watersheds into three main regions, one bordering the Pacific Ocean, one on the north border of Mexico, and a third bordering the Atlantic Ocean. The resultant topography is such that communication and travel between all three regions is difficult. The northern region, which is lightly populated, is the least accessible of the regions. The other two regions are connected by paved roads that run from coast to coast, through Guatemala City, and by the Pan-American Highway which runs from Mexico through Guatemala City to Central American countries to the south. The natural barriers tend to reinforce differentiations between various indigenous population groups who have only limited communications with each other. There are over 20 different dialects spoken by these various groups, although three or four predominate. In many cases, this indigenous language is the only language spoken by that group. Spanish, the official language of the country, is not always used or understood by those major sections of the country's population.

Population--Based on a 1964 census, the Guatemalan population in 1967 was estimated at something over 4,800,000 and growing at an annual rate of 3.1 per cent. Approximately two-thirds of these people live in rural areas, although they tend to live around the major towns and cities in the country. More than half the population is less than 19 years of age, a fact which has significance for educational

planning in Guatemala. The school-age population in 1964 was estimated at 1,700,000, 65 per cent of which was in the rural areas; but of those in the rural areas, it is thought that perhaps as many as 90 per cent received no education at all. This is in spite of a constitutional guarantee of a six-year primary education for all (Comision de Planeamiento, 1967, p. 30).

In very gross terms, productivity of the educational system in Guatemala is not greatly different from that in other Central American countries. It is likely that of the school-age population, one child in two will enter primary school; one child in 20 will complete the first six years; one child in 100 will complete secondary school; and one child in 1,000 will complete a first university degree (Friedman, 1964, p. 8). Illiteracy is approximately 70 per cent, and even though attempts are under way to improve this, the situation is difficult to correct, partly because of the presence of so many major language groups in the country. Literacy campaign plans require a decision to teach for literacy in a specific language, and the absence of the Spanish language in some Indian groups means that a single set of curricular materials for one language will not serve those who are able only to speak another language. The difficult topography contributes to the complexity of the problems associated with achievement of literacy and other forms of adult education.

Slightly more than half of the population is Indian (Comision de Planeamiento, 1967, p. 22). Because of the language problems and because of apparently strong adherence by half of the population to Indian values, a single curriculum for rural and urban primary education would be difficult to implement and possibly counterproductive. Some Guatemalans are more or less directly descended from Spanish settlers, but many more are people with Indian ancestors who have made a conscious decision to give up Indian speech and dress and to embark on an effort to become part of a larger community of Guatemalans and Latin Americans (Adams, 1960, pp. 238-256). They have often remained in the rural areas as farmers, even though they may not own land, and are still struggling to achieve the national income of \$360-400. In Guatemala, there is a prevailing opinion that these people, called Ladinos, place a higher value on schooling than do the Indians. Whether they do or not, it matters little. The primary education in Guatemala, and especially rural Guatemala, reflects the shortage of trained teachers at the primary and secondary level as well.

Education--As in many other developing countries, the teacher training problem is acute. The normal schools which train primary teachers usually find that their graduates teach at the secondary level, since there is a great lack of trained teachers at that level. This means, in turn, that the primary schools are staffed, especially

in the rural areas, by inadequately trained teachers, many of whom have attained an educational level only a grade or two above the level at which they teach. The Ministry of Education is responsible for primary and secondary levels of education, including teacher training for the primary level. The University of San Carlos, by law, is responsible for the training of secondary school teachers. The Ministry of Education, as the consumer of secondary school teachers, has no built-in control of their training program. The University of San Carlos is a national university founded in 1676. Its autonomy is guaranteed by the country's constitution (Art. 99), and it is this autonomy which sets it apart and frees it from control of any other governmental institution, such as the Ministry of Education. The University of San Carlos is under no legal obligation to respond to the specific needs of the Ministry of Education.

University of San Carlos--San Carlos is not the only university in Guatemala but it is certainly the largest and most influential. The university budget for 1968 was \$4,689,400 (Oficina de Registro, Universidad ie San Carlos, 1968, p. 57), approximately 71 per cent of which came from the Guatemalan government. The enrollment at the University of San Carlos currently is approximately 10,000, whereas the annual number of graduates in recent years has approximated 300. A university student career of seven to fourteen years is not uncommon and an extraordinary number

of students who enter the university never graduate. Of the 2,844 university graduates of the time period 1950-67, almost 80 per cent came from the Facultads of Law, Medicine, Engineering and Humanities. Law and Medicine together graduated more than half the total in that period (Oficina de Registro, Universidad de San Carlos, 1968, p. 49). Some of these graduates leave Guatemala for graduate academic study in other countries, but most stay in the country and endeavor to establish themselves professionally. This frequently means that they have two jobs, one of which is often teaching or educational administration.

The University of San Carlos is a university whose organization and development bear similarity to a generalized concept of Latin American higher education. A document of the Organization of American States has the following paragraph about Latin American universities.

Their schools and institutes are separate units lacking a cohesive element. Each school tends to set up its own services, with the resultant multiplicity of departments, laboratories and libraries in the same university, when of course such services should be general. Autonomy carried to extremes by the several schools closes the road to intercommunication and to the rational use of professors, laboratories, and space. Duplication of effort and expense is inevitable, and as a result teaching and research suffer considerably. Each school has its own governing council and its own authorities, and fairly often there are conflicts between the school and the university council. The lack of an overall administration, then, jeopardizes the fulfillment of academic objectives. /OAS, 1963, p. 627

The same document makes the point that many universities in Latin America have not kept pace with social and economic evolution and have not tried to promote training in those professions needed for accelerating development. They have continued to train in the traditional professions, many of which are neutral towards development. Moreover, according to Cerych (1965), "most Latin American universities make no provision for post-graduate studies [p. 617]." He suggests this condition results from lack of funds and the basic traditions of Latin American university life, in which the university developed out of the professional schools, or Facultades. "The result is the absence of a genuine scientific atmosphere, and the exodus to Europe or the United States of those who are most gifted for research [Cerych, 1965, p. 627]."

The University of San Carlos is made up of ten Facultades, plus some other Schools (of lesser standing than the Facultades) and certain administrative and service offices. These Facultades vary in size and power, and in their ability to influence decisions in the Superior Council. The Facultades have been traditionally separated, located in different parts of the city, each with its own Dean and staff, and each with considerable autonomy of its own, in fact, if not by decree. The faculty at San Carlos numbers just over 700, of which 127 are full-time professors. For most professors, and some administrators, their responsibilities at San Carlos University constitute perhaps as much

as half of their professional activity for which they receive remuneration. Many professional Guatemalans teach full or part time at the University and work at their profession during non-teaching hours. The University schedule reflects this. Classes begin and offices open early--sometimes as early as 7:30 a.m., and continue through the morning and early afternoon. By 2:00 p.m., activity at the University has been considerably reduced and remains that way until approximately 6:00 p.m. when night classes begin. It is a relatively rare student or professor who does not have another job.

Superior Council--The autonomy granted San Carlos by the national constitution is vested in the Superior Council, a governing body of representatives from student, teaching, administrative and alumni groups. The authority of the Superior Council is final. Superior Council decisions reflect shifting power alliances which do not always approve of university administration activity. For example, the BID loan for higher education was tentatively approved by the Superior Council, negotiated by university administrators, and subsequently rejected by the Superior Council. The Rector and other administrative officials serve to implement the decisions of the Superior Council, and are, of course, important authority figures in their own right, but are not free to initiate unilaterally important new trends or to make important decisions without the approval of the Superior Council.

Córdoba Reform--No discussion of Latin American universities would be complete without a description of the students, and in particular, of the Córdoba Reform of 1918, "a declaration of academic independence and political intent [Silvert, 1964, p. 210]." The doctrine of the populist Córdoba Reformists gained stature in Argentina and spread northward. Its basic tenet was that a new elite was required in Latin American society to bring about its modernization, and that the university carried the responsibility for providing "the ideas and cadres of responsible men [Frei, 1962, pp. 8-11]" required. Before 1918, the Latin American university had been "an effective institution in maintaining the traditional elite in their control of society by its ability to limit the number who could enter the university and the control over the granting of degrees to those who did matriculate [Harrison, 1964, p. 23]."
This had the effect of keeping all but the elite out rather than improving capabilities of a larger class of students. "Within this context, it is easier to understand why the goals of the reform movement were only incidentally concerned with improving the academic process; they were aimed primarily at prying open the doors leading to improved social status [Harris, 1964, p. 24]."
The demands of the reformers stated that "students would be free to attend lectures of their choice and be graded solely on examination results; selection by open competition; no academic limitations

beyond completion of secondary school; the right of a student to repeat a course as often as he liked until he passed the examination; direct participation by the students in university administration; and increased emphasis on the autonomy of the university [Harrison, 1964, p. 257]." It is Harrison's position that these last two demands, institutional autonomy and student participation, were essential because they formed the basis for political action and reform without which academic reform is pointless. Academic reform was less the goal than changes which would permit the formation of a stronger political base from which to combat the existing regime. Educationally purposeful programs which might result in a more efficient university were (and are) sometimes opposed by disruptive students on the grounds that a successful program would lend strength to the regime they wished to displace. The value of the program itself was of secondary or no consideration (Harrison, 1964, p. 26).

Although the university population has traditionally been comprised of a select few, it can be seen that there is a drive to change this condition. In the specific case of Guatemala, this drive appears to be an element of what Adams (1964, p. 257) calls the continuous character of change.

Describing this phenomenon, he says:

In Guatemala almost every major group of the population has, as we have seen, been undergoing far-reaching changes. Now we must look at these separate changes in a broader framework; we must see how they are related to each other. When we examine the process of change in Guatemalan society as a whole, two striking features leap to the eye.

In the first place, the nation is in the throes of changing over from a discontinuous set of regional cultures to a continuously evolving and nationally centered culture. In the second place, this change-over is being initiated by political and social innovations, rather than arising spontaneously out of changes in production and technology [Adams, 1964, p. 257].

The failure of older state universities to provide leadership for change and for the research facilities which are essential to the growth of knowledge and technology, resulted in the establishment of new universities and technical schools. These have been supported mainly by the government and by the private sector in the region where they are located. They have tended to be more experimental and innovational, particularly in the separation of basic education from professional training, and in the attempts to meet specific regional needs (Adams, 1967).

In Latin America, universities have "predominantly been professional schools, heavily concerned with the education of lawyers and doctors. Continued pride has been taken in what is felt to be the rich, humanist tradition of the continent, and this is sometimes contrasted with the crass, materialistic tradition" that Adams (1967, p. 136) says has been ascribed to the North American scientific and technological world. Adams points out that the problem confronted by those who have attempted to introduce scientific technical training into Latin American university curricula has been mainly "a severe lack of motivation to come into conflict with the social relationships that are

current [T967, p. 1417." The sudden introduction of new concepts and technology is difficult for college professors and administrators to handle and is often seen by the student as an infringement of his rights. There is ordinarily no way to reward those who initiate improvements and when the novelty "is identified as North American in origin, it is even more unacceptable [Adams, 1967, p. 1417."

Students in Latin American universities continue to contest for control of the university. The experience of higher education in Cuba--in which university autonomy has been withdrawn, students are dismissed if they fail to pass or even attend their classes, entrance requirements have been raised, and the university has been restructured in terms of departments instead of Facultades--has tended to undermine the Córdovan reformist's position. Harrison points out that if student disruption of state universities increases, graduates of private universities, supplemented "by some foreign-trained students will, short of political revolution, end up with a monopoly of the principal decision-making positions in and out of government [T964, p. 327." He suggests "the struggle within the national universities between the totally alienated student groups and university administrations working for more rigorous training to meet national needs for economic development and broader social access to product of the development may well be decisive in determining the future political form of Latin American nations [Harrison, 1964, p. 327."

Special properties of educational systems applied--Seven special properties of educational systems suggested by Miles (1965) were listed earlier for their application in the analysis of a specific educational system. An assessment of higher education at the University of San Carlos reveals that not all the properties mentioned are present. Keeping in mind that the absence of a property may be as significant as its presence, the seven special properties do provide a tool for analysis and description of important aspects of the system. A discussion of those properties in terms of higher education at San Carlos follows.

1. Goal ambiguity--the traditional output from the universities has been at the professional level. Lawyers, engineers, doctors, etc., predominate. The varied vocational requirements of social and economic development have only recently been accorded increased attention. This is particularly true of training secondary school teachers. The present plan to establish a new secondary teacher training school at San Carlos is the best example of this concern.
2. In-put variability--the present educational system in Guatemala is inadequate, both in quantity and quality, especially at primary and secondary levels. Population and topographic characteristics of Guatemala are divisive and make a single curriculum difficult to devise or administer. Teachers in the first two levels of education are usually poorly trained for the level where they teach, and students who pass through these two levels are often poorly prepared to undertake university work.
3. Role performance invisibility--professors usually gain their teaching appointment on the basis of a qualifying examination. Their teaching performance is evaluated periodically by peers and students although a continuing appointment may rest not only on teaching ability, but political

considerations as well. It can be seen, then, that this property does not exist, i.e., professors are not invisible in their teaching performance for any great length of time.

4. Low interdependence of the parts--autonomy is the name of the game. The university is autonomous and the Facultades enjoy great freedom. The Ministry of Education and the university operate in legally separated spheres of responsibility.
5. Vulnerability--again, the constitutionally guaranteed autonomy and budget support enjoyed by San Carlos frees it from effective public criticism. Student strikes are common, and changes are often made as a result of these disruptions, but these changes are more properly seen as internally wrought than as responses to public pressure. There is always the possibility that a new, radically different national government could gain power and rewrite the constitution in such fashion as to remove the guarantees of money and autonomy for the university. Self-interest on the part of San Carlos therefore requires that it support governments and government officials who would, in turn, maintain those guarantees.
6. Lay-professional control problem--the power that students have in the Superior Council varies from issue to issue, but that power, combined with coordinated student group action is often enough to carry the day. The case of the rise and fall of General Studies is a case in point.
7. Low technical investments--to the extent that a generally low technical investment characterizes Guatemala, this is also true of the university. On the other hand, since the end of World War II, San Carlos has initiated a number of new programs including, but not limited to, a new central campus, initiation (and termination) of a School of General Studies, a research office (IIME), a curricular materials printing center, an instructional materials center, and finally, negotiation for large loans and grants for the improvement of educational programs, particularly in secondary teacher training.

Summary--The continuous nature of change in Guatemala is conditioned by a nearly even division of the population into Indian and Ladino groups, language and geographical barriers, severe economic and social schisms between the university educated, wealthy elite and the poorly trained rural or urban worker, limited national financial resources, an inadequate school system, and a number of strong ties with other North and Latin American countries. The graduate of second level schools is the raw material for university education, as well as for a variety of important vocational activities related to economic and social development. The Ministry of Education and San Carlos possess segregated responsibilities for the improvement of secondary education, but the required buildings, curricula, personnel, materials and distribution systems do not exist, nor for the required agreements on teacher certification standards and training between the responsible agencies. The Instructional Materials Center (IMC) was seen as having a potential role in solving, or assisting in the solution of, the practical problems posed by these limitations. Specifically, in addition to technical assistance in instructional materials and media development at San Carlos, the IMC contract contained the objectives of achievement of working relationships between the IMC and the Ministry of Education in Guatemala. The implications of these objectives are better discussed in the following section which deals with the

concept of educational technology and its application to developing systems of education.

Educational Technology

The stated assumption about educational technology in relation to the research problem is that it could provide the tools and methods for (a) the need to multiply the effect of a relatively small number of trained teachers, and (b) the identification of educational problems and opportunities and focusing on appropriate methods for resolving them.

Educational technology defined--Educational technology is a term which embraces the machines, the people, the resources and the sub-systems required to facilitate the communication of information which is required in the educational process. While the terms communication and education are not interchangeable, certainly in almost all educational situations, communication is an absolute requisite. For Schramm & Winfield (1964), communication "refers to the circulation of knowledge and ideas in human society. It is thus conceived of as a social process, rather than as machines, vehicles, roads, or electronics [p. 17]." Their discussion of mass communication is primarily concerned with its use for the promotion of economic and social development, by which they mean the economic and "social changes that take place in a nation as it moves from a traditional

to a modernized pattern of society: changes associated with division of labor, growth of industry, urbanization, growth and per capita incomes, and preparation of citizens-- by literacy, education, and information--to participate in national affairs [Schramm & Winfield, 1964, p. 17.]

Role of communication and educational technology--These goals obviously are subject to interpretation and definition by specific circumstances and behaviors attached to them, but if they are acceptable as generalized goals of education, the question then arises as to the role of educational technology in their accomplishment. Schramm & Winfield have suggested that a number of new devices such as the offset printing process, miniaturized transistors and resultant radios and TV sets are only some of the ways that more information can be carried to literates and non-literates alike in geographic areas where universal education and mass communication have not yet penetrated. Sometimes, face to face communication is all that is available. The late President Renè Barrietos Artuño of Bolivia said, "I have the idea that every citizen must be a participant in building his country. In order to be a participant, he must know what the problems are and how they can be solved. In order to know, he must receive information and believe it. The destiny of telling the campesinos has fallen to me, a good friend of theirs [May 9, 1969]."

These information, participation and teaching functions of the social process of communication have also been attributed, albeit with different names, to the devices, or media of communication. Janowitz and Street (1966) have proposed that the new media have the three major functions of providing information, socializing and mobilizing. In their terms, the information function means the transmission and dissemination of information and essential knowledge, and the posing of alternatives for economic, social, and political action... By the socializing function they mean "the transmission of a cultural system, and the inculcation of values and norms which makes possible a person's participation in a variety of social groupings--from the family to the nation-state [Janowitz & Street, 1966, p. 210]." The mobilizing function refers to "the processes of persuasion and the development of loyalties and attachments which are essential for collective problem solving [Janowitz & Street, 1966, p. 210]."

Media--Keeping in mind the thought that educational technology depends on people, machines, resources and subsystems, it may be well to distinguish between two words that commonly lead to misunderstanding--medium and method. In general, "a medium may be defined as any form of device or equipment which is normally used to transmit information between persons... An educational medium is such a device used for educational purposes [Biddle and Rossi, 1966, p. 37]."

The question of whether a device is new or old seems irrelevant, but it appears necessary to point out that some media which have been with us for a fewer number of years do appear to offer a greater multiplier effect in developing countries. Other older media, primarily chalkboards and books, appear to have limited use in the provision of the vicarious experience which Bruner (1960) suggests is also a function of those devices which have been invented more recently. He says, "There exist devices to aid the teacher in extending the student's range of experience, in helping him to understand the underlying structure of the material he is learning, and in dramatizing the significance of what he is learning [p. 847]." Biddle and Rossi (1966, p. 8) have suggested that media differ from each other in a variety of dimensions, all of which are more important than the one of age. These are: a) the degree to which literacy is required, b) the degree to which more than one sense modality is involved, c) the phenomenon of static or dynamic quality of the medium, d) the degree to which they are controlled by both communicator and user of the medium, e) the degree to which a medium may be used by a group or by a single person, f) the cost of a particular medium and its spread, i.e., its mass use, g) the mechanical techniques and means employed for reproduction.

Method--Media are devices. The development of new educational practices which rely on a new or adapted device sometimes raises the question of whether the new educational

practice is a medium or a method. Programmed instruction is one example of this dilemma. Without question, programmed instruction is a method, but as a method, it relies on some device such as a book or a machine to involve the student in learning. The device is usually more visible and tangible than the method and often serves as a surrogate symbol for the method. A teaching machine is a device, hence a medium, but can hardly be called a method, since it relies entirely on people, ideas and the programmed instruction designed for it. This is a crucial point, often overlooked by those who are apprehensive about possible erosion of the personalized teacher/student interaction which may arise from heavy reliance on media.

Media research--In addition to the generalized functions of educational media already mentioned, a more specific function, research, has real bearing on the issue of whether or not educational media have value for developing educational programs. The media have themselves been the target of, and sometimes the vehicle for, a considerable amount of research in education. Though the value of this research is belittled in many quarters, Edling suggests, "There is little evidence to support the concept that given media, qua media, contribute to more or better learning than other media; i.e., there is no evidence as to what, or how much, is learned in non-media situations. But there is considerable evidence to indicate that research and development activities involving media have (a) helped clarify

educational objectives, (b) contributed to the analysis and design of media that produced the specific learner behaviors identified, (c) utilized learner responses to refine and develop more predictable learning experiences, (d) clarified the need for specific instructional strategies to attain given objectives, (e) provided new potentialities to determine whether or not educational objectives have been attained [1968, p. 189]."

Systems analysis--It is no accident that these benefits derived from research and development coincide in many ways with elements of a systems analysis approach to educational planning for the development and use of media, particularly in developing countries. The systems analysis approach involves the isolation of objectives (well-defined tasks to be accomplished), inputs (resources such as manpower and materials which are required), process (methods, technologies and organization which combine to actuate the inputs and to produce desired results), and outputs (the results actually accomplished). In The New Media: Memo to Educational Planners, Schramm, Coombs, Kahnert & Lyle (1967) suggest a number of objectives for media in developing countries. They are all objectives which have the purpose of improving instructional situations and personnel, and in general suggest that media can have a multiplier effect in the sense that the skills and knowledge of the best teachers can be brought to the attention of a greater number of students.

The inputs or resources which will need special attention are technical components, content and teaching, supporting communication and evaluation, and training provisions.

The implementation of programs and practices which arise from a systems analysis approach to the use of media relies, in addition to the above mentioned considerations, on the concept of critical mass. "Economically and educationally, the concept of a critical mass is an important one for the effectiveness of the mass media [Schramm, et. al., 1967, p. 987]." This is a consideration arising from the relatively high cost of encoding, distributing and decoding mechanisms, and the need to use them on a sufficient scale of intensity of program and audience to insure a noteworthy impact on the learning of many people.

Summary--A paragraph from The New Media: Memo to Educational Planners may help to put all this into focus.

Finally, and especially important for developing countries right now, the systems approach can provide help in bringing about much-needed educational change and the best leverage points for securing improvement. It can lead to a classification of important objectives which the present system is not achieving and perhaps simply cannot achieve in its present form for various practical reasons. In this event it leads us to search for new solutions, sometimes involving unconventional technologies such as the new media. It provides a clearly defined purpose for whatever innovations we may undertake, it provides an orderly basis for planning such innovations so that they have maximum chance of success, and it provides a rational basis for evaluating their effectiveness in comparison with other solutions [Schramm, et. al., p. 1647].

The IMC as innovation in educational technology--Rational educational planning for any country, but especially a developing one, can hardly proceed without some form of systems analysis applied at conceptual levels of planning as well as in situations requiring greater specificity. It is at this conceptual level that a systems analysis approach to the development of instructional materials and the associated media and personnel can have its greatest impact. There is present an opportunity as well as a requirement to specify educational objectives, resources, processes and results, without which the first step can hardly be taken. Instructional materials and media are a part of the resources to be considered, and a partial determinant of the process to be employed. Neither educational objectives nor the obtained results would be primarily described in terms of media and materials, though these devices and methods could be used in their measurement.

The use of media would be inappropriately viewed as innovational in Guatemala. Their use is less widely accepted and established there, and the required resources are not available, but the idea of media use in education is certainly not new. In this sense, then, the IMC at San Carlos represented no innovation at all. It did represent an additional service that was, for the most part, untried and unfamiliar. Its innovational aspects derive from its potential application to a systems analysis of education at San

Carlos and, through the university, of all Guatemalan education. While the IMC itself was an innovation, it had even greater potential innovational influence.

Brickell's (1964, p. 498) three-stage innovational process of freedom of design, controlled evaluation and dissemination in normal circumstances can be applied for some insight here. He suggests that these stages are so distinct from each other as to require different kinds of people and supportive conditions for their successful completion. There was no real freedom of design in the conceptual stages of the IMC. It was designed and implemented as a response to a specific, identifiable need at San Carlos. Some of the IMC proposal and contract objectives were stated in such terms as to suggest an awareness of the IMC innovational potential, but little attention seems to have been given to the provision of freedom to design those innovations. The equipment purchased for the IMC, the professional activities of the resident advisor and the short-term advisors, and the use made of IMC facilities by San Carlos Faculty all suggest the almost stop-gap nature of the IMC program. San Carlos had, in 1965, failed to ratify a more extensive contract with Pitt, and the later IMC contract represented, for Pitt, at least, considerably less involvement in Guatemala than had been hoped for.

There is no question that Pitt had hoped to extend and expand the contract later (Dunkelberger, 1969, p. 4). San Carlos administrators, on the other hand, had serious, but

unarticulated (to Pitt) reservations about the wisdom of deep involvement with North American educators in secondary education development programs. This was crucial because the IMC potential was seen by Pitt as having specific application in the development, by university educators, of curricular systems and associated materials and media aimed at a greater degree of integration of university and second level educational goals and methods. Pitt hoped for a systems analysis of education in Guatemala to which the IMC could contribute and influence. It is likely, on the other hand, that San Carlos saw the IMC as a resource for the partial satisfaction of demands already in evidence. One such demand was generated in the General Studies Program for teaching materials. Meeting that demand required an innovation less than it required increased resources. The IMC was created as a resource to meet that and similar demands at San Carlos and was an intervention requiring acceptance by administrators and faculty.

The foregoing distinction between the IMC as resource intervention and the IMC as potential innovation is important to remember in discussions of the "fate of innovations." The immediate fate of the IMC is fairly obvious. It was supported for 18 months by USAID/G, but at the end of that time, San Carlos had neither the money nor personnel to continue that support. San Carlos apparently attached a very low priority to the IMC as a resource for teaching. The reasons for this are not clear, but in general, it

appears that the IMC could not maintain its identity and service potential in the face of changing conditions.

Specifically, the key changes seem to be these:

- 1) The fact that the profits from the offset printing operation were never used to support IMC operational costs, and by the contract's end, this support was a more remote possibility than ever;
- 2) The high number of personnel changes at San Carlos, AID/G and Pitt, tended to hamper cooperative maintenance of goals and efforts to achieve them;
- 3) Other contemplated programs at San Carlos, of longer term and greater financial support, loomed as possible administrative homes for instructional materials and media activity, and coincidentally provided for enhanced integration of these activities both at San Carlos and between San Carlos and other institutions.

Project Dimensions--Recent research (Baldwin, 1968; Urquidi, 1969) reveals that the North and Latin American universities who enter into bilateral agreements for technical assistance often misunderstand each other about the roles, objectives, strategies, and resources that are required. These misunderstandings frequently have political, technical, economic, cultural and educational dimensions.

Strategies employed reflect objectives, but some of the objectives may not be articulated, at least for public consumption. Pitt's strategy was based on its commitment to a policy of maintaining long-range, multifaceted and open-ended capability to respond to emerging opportunities in technical assistance. In the specific case of the IMC, the

articulated objectives were a response to identified, immediate needs of San Carlos faculty as well as to the larger issues surrounding San Carlos' responsibility for secondary teacher training. The strategy applied, however, was almost entirely a response to the specific, short-term teaching problems of San Carlos faculty.

Structure/function features which are definitive of university activity also affect the efficacy of strategies employed. A technological intervention, innovational or not, is likely to affect both structure and function, and it may be possible to change one only by changing the other. It may also be that a particular function, such as the service rendered by the IMC, has no viable place in the structure. If this be true, as it certainly appeared to be, this fact alone may be useful in demonstrating the need for structural changes which would permit effective integration of available resources. Both the IMC and General Studies Program were entities tentatively grafted to the traditional university structure. Their respective functions had recognized value but the structural changes required to institutionalize them either were imperfectly understood or were understood but rejected in favor of less threatening changes.

Confrontation patterns--The traditional goals and techniques of any educational system will tend to be maintained as a response to the conservative nature of education. The values and patterns basic to educational technology are

those associated with the newer electronic devices and psychological approaches to learning. These are often seen as barriers to personal contact between teacher and student. Unless adherence to traditional values and patterns is confronted with messages designed to support the adaptation of existing practices, there is little opportunity for the growth of the social inventions necessary for integration of the technology in question.

Constitutional law and traditional patterns of elitism in Guatemala have, until recently, sustained a school system in which the performance of the lower levels was at least in part a response to insufficient support accorded it by higher education. The autonomy enjoyed by San Carlos is highly valued, and the need to protect that autonomy often forces San Carlos administrators and faculty into conservative stances. Education in Guatemala is probably still seen by many of those in control of educational policy-making as consumer oriented rather than as an investment. That possibility, considered in the light of the population and geographic peculiarities of Guatemala, suggests that educational development programs are planned to utilize available resources to meet only the most insistent demand.

Summary--The IMC at San Carlos was an innovation in the sense that it was a service not previously available to faculty. Its innovational potential, viewed in terms of

possible initiation of and application to a systems analysis of Guatemalan education, was suggested by IMC contract objectives, but not by strategies or implementation. Faculty members who used the IMC service were almost entirely located on the new campus, the exception being the School of Medicine. Physical proximity to the IMC appeared to facilitate its use as did formal instruction for faculty in the techniques basic to effective use of instructional materials and media. Even as the IMC on the new campus was fading away, several Facultades were engaged in building up their own instructional materials resources, usually in the form of offset printing and overhead transparency projectors. These Facultades generally were not on the central campus, and it is not difficult to understand their desire to provide an instructional materials resource close at hand. Acceptance of the IMC service potential by faculty apparently was conditioned by factors of proximity, familiarity, and teaching responsibilities. The IMC potential for assisting San Carlos in identifying and solving education problems of the country was either not recognized or was recognized but rejected. Possible reasons for rejection are that San Carlos preferred not to have strong North American influence brought to bear on secondary teacher training, and/or that internationally funded educational development programs were being designed separately to accomplish those same ends.

Directed Purposive Change

The previously stated assumption about this element of the research problem is that directed, purposive change is primarily concerned with the process and the act of acceptance of innovations which may be temporarily disruptive and/or dysfunctional, and which will require varying degrees and types of social invention.

Change--There are a number of sources of change within a given social system, some of which are unprogrammed and undirected. These result from such activities as discovery and invention. This study is not so concerned with this type of change as it is with purposive, directed change. Purposive, directed change may have its impetus from external or internal sources, and might be described as revolution, institution building, economic investment, education, intervention, innovation, foreign aid, or technical assistance.

Technical assistance--The term, technical assistance, implies that a need of some quality and quantity has been identified by a social system, and that through some process, another group has made its technical expertise available to assist in the alleviation of that need. It is also true that the two groups involved may not have coincident understanding of what the need is, both in quality and quantity, and there may be the presence of purposes and goals in each

group of which the other may not be aware (Goodenough, 1963, p. 244).

Directed change programs assume the presence of a need for change and rely on purposive, selective interference to accomplish the goals which are implied by the need. Although verification of the need within the system is not always available or even required, the presence of some plan to achieve the goals becomes a necessity. The particular kind of directed change which is of concern here is that which is undertaken as technical assistance in higher education between institutions with roots in different cultural contexts. Technical assistance projects of this sort in education are conditioned by cultural considerations at two levels which, briefly characterized are: (1) project implementation relationships which depend directly on personal and professional interactions of individuals and institutions involved; and (2) project assumptions and procedures which are responsive to the culture transmission function of any given educational system. The "ground" characteristics which Miles (1965) considers to be of paramount importance are cultural in part, and directed purposive change relies on an understanding of the cultural forces at work.

Culture--In an article on directed change, Gallaher (1965) uses a definition for culture which says that "culture is those ideas, socially transmitted and learned, shared by

the members of a group and toward which in their behavior they tend to conform. Culture, then, provides the selective guidelines--ways of feeling, thinking and reacting--that distinguish one group from another [p. 327]." He adds that there is a normative quality of culture which implies an ideal, deviation from that ideal, and therefore, change. He notes that anthropologists have come to view culture as in a constant state of change brought about by deviations from an ideal. These deviations may be instigated by various individuals within and outside the culture. Furthermore, "socio-cultural systems developed by man are tension-producing, as well as tension-reducing, and the attempts to manage tension are productive of innovation and its acceptance [Gallagher, 1965, p. 387."

Functions of education--Social change and development efforts have produced a concept of education as change agent which is diametrically opposed to the traditional concept of education as conservator. Cerych (1969) has said that "The primary function of most educational systems has always been socialization: that is, the transmission of existing values; in Talcott Parsons' words, a "pattern maintenance function." In this respect, therefore, innovation in education implies a certain disfunction, which the system as such will by definition resist [p. 347." Biddle & Rossi (1966) define education as "activities wherein the learning of one or more persons is being deliberately controlled by others [p. 57,"

and go on to say that it "may be restrictive (socialization) or expansive (the encouragement of creativity). It may reflect a variety of strategies, including practice, information transmittal, or discussion of thinking itself. It may be formalized and ritualized, or informal and sporadic [Biddle & Rossi, 1966, p. 57." Coleman (1965) agrees, but adds, "once regarded as an essentially conservative, culture preserving, culture transmitting institution, the educational system now tends to be viewed as the master determinant of all aspects of change [p. 37."

Role of innovation advocate--The host educational system in a technical assistance program, by implication, recognizes a need in its system and seeks outside help for its alleviation. Change is also implicit. Such changes may well be innovational for the host system, but Gallaher (1965) feels that it is necessary to "distinguish between the term innovator, which we will reserve for the individual or agency responsible for the conception of the innovation, and the advocate, which we shall use to refer to individuals or agencies who sponsor an innovation for the express purpose of gaining its acceptance by others [p. 417."

Gallaher makes a distinction between two possible major roles for the advocate. One would follow a Utopic model "as one of manipulation to gain the acceptance of an innovation; the view of the culture change cycle is myopic, it focuses almost exclusively on the act of acceptance

[1965, p. 417." In this model, people are planned for, and done to, rather than with. A model which he prefers is called pragmatic advocate, in which "the view of the culture change cycle is global, acceptance is to be achieved, but the processes of acceptance are accorded signal importance. This model rests on the premise that success or failure in directed change is referable to the advocate's understanding of the content and internal organization of the pattern where change is sought [Gallaher, 1965, p. 417." It also suggests that success or failure in a technical assistant project can be evaluated in terms of processes of acceptance rather than specific acts of acceptance only. These processes may be characterized as one manifestation of host organizational adaptation, whereas it is not equally clear that an act of acceptance necessarily represents any significant change in that organization.

Primary and secondary development--A concern for the nature of the internal organization of systems in developing countries led Adams (1967) to postulate the concepts of primary and secondary development. "Primary development is characterized by the primacy of technological innovations. Secondary development, however, is distinguished by the central concern with control over social behavior. It is this control, the issue of power, that lies at the core of so much that guides and directs the society [p. 317." He defines power as "the control that one party holds over the

environment of another party [Adams, 1967, p. 327]." The essence of this argument is that the advocate of an innovation in a country characterized by secondary development must be particularly responsive to the exercise of one party's control over the social behavior of a second party. The primacy of technological innovations in primary development assumes a continuous interdependent accession of facilitating social systems. As an example, media use in the United States has responded to the growth of the educational system and has incorporated various technological developments as they have become available. This response has not always been without dispute and failures, and educational research has not always been helpful in resolving all the questions thus generated. On the other hand, commercial, educational, and governmental interests have generally combined their efforts to provide improved materials and media. These interests and their agents have necessarily cooperated in the development of the physical and administrative infrastructure required for small and large system use of these materials. This appears to be a typical example of primary development.

Secondary development is characterized by the somewhat precipitous introduction of technological systems to a society which is also virtually devoid of the social systems normally associated with the technology. Social invention is required, but existing behavior patterns and value systems

which are primarily concerned with the exercise of power and control of social behavior mitigate against the easy development of supporting infrastructures which could in some fashion alter the balance of power. Again, using the example of media, there exists an almost simultaneous need for curriculum design and materials, trained personnel in these and associated fields, and for a critical mass of physical media devices and communications networks. The development and support of any of these conditions depends on the presence of a societal commitment to the educational goals and techniques on which such an effort rests. The assumption that such a commitment does exist or as an essential precondition for technical assistance project negotiation is a risky one. DeVries (1968) says that technical assistance programs do not always fail, but when they do fail, the cause is traceable to the lack of: "(1) the political will to give high priority to development--either with a restrictive adjective, or comprehensive and multifaceted and (2) the development of a social ethos for group behavior (small--in a village, or large--national and international) which can induce people, groups and nations to pay the cost of development with the prospect of reaping the benefits p. 497."

Politics--Internal political implications of secondary development problems are not easily dissociated from political issues arising from technical assistance programs in which two countries are involved.

Two interesting case studies in a volume called Hands Across Frontiers deal with the problem of political pressures mixed with technical assistance. One such case by Peter Franck (1955) describes a United Nations (UN) mission in Afghanistan. A three man survey team analyzed the country's educational needs and made the following recommendations: "Higher pay for teachers, delegation of greater autonomy to them, and a shift in curriculum away from academic subjects to those bearing on pupils' immediate physical and social environment [Franck, 1955, p. 347]." This article reports basic political encounters between UN and government officials in Afghanistan as well as within the UN itself. Nonetheless, in July, 1953, "the opinion was general in UN headquarters that UNESCO's basically sound idea which it had put into practice elsewhere, could have been carried out expeditiously in Afghanistan if the constituent UN agencies had crystallized their ideas before sending experts out, and if the government had been drawn into the discussion before the beginning [Franck, 1955, p. 367]."

In the same volume of case studies, there is an account of the origins of a village improvement project undertaken in India by the American Friends Service Committee (AFSC). AFSC perceived the possibility of helping to demonstrate the role of private organizations in technical assistance, which even then was too much thought of as only for government and international organizations.

The AFSC project began with two men assigned to evaluate project possibilities and locations in India. This process alone took three months. Throughout the life of the project there was continued effort to evaluate and reassess policies and procedures, and especially to come to grips with "the problem of Westerners attempting to relate themselves closely with the people of the locality--bridging a vast cultural gap [Teaf, 1955, p. 1137]." The cultural gap between educators in North and Central America may not be so vast, but the AFSC experience in India suggests the value of an effort to keep a project responsive to emerging needs and problems rather than aimed unequivocally at a goal whose validity and dimensions may come into question after the project starts.

The funding of the IMC contract by USAID/G constituted an indirect United States government intervention in the affairs of the University of San Carlos, an institution whose autonomy precludes similar activities by the Guatemalan government. University autonomy, however fully realized, is a tenet basic to institutions of higher education in Latin America, and is a concept which does not predispose for the acceptance of foreign government intervention, real or imagined.

Bilateral contracts--A study undertaken for Education and World Affairs (EWA) attempted to determine if there were ways to improve performance on AID university technical assistance bilateral contracts. The purpose of the study was to

bring together major principles that have been learned from experience and to organize them in the form of a suggested procedure for planning university projects overseas. One of the clearest findings of the study was that "sufficient experience and knowledge to do much better already is possessed by many of the practitioners of the art of providing educational technical assistance to other nations. The real problem would appear to be that this experience and knowledge have not been put into practice as they should have been Wood, 1968, p. 127." The thrust of this report is that "careful research and planning must be viewed as an activity to be carried out over the entire life of a project, and not just as a prior and separate activity Wood, 1968, p. 127." The fundamental reason for this proposal is the all too present and "pervasive lack of real agreement among the principles regarding the project's purpose and, therefore, regarding the nature of desirable program activities Wood, 1968, p. 147."

In late 1968, EWA further addressed itself to the problem of attitudes in Latin America toward the policies of the funding agencies in technical assistance to higher education in those countries. In general, the conclusions reflect a Latin American desire that funding agencies in the United States be more perceptive about the host system; that external assistance be considered non-political; that respect for university autonomy be considered fundamental;

that continuous program evaluation be carried out; that since external aid is a relatively minor part of the total expenditures for higher education that it be concentrated on support of the most promising institutions; that more coordination between various funding agencies be achieved as well as coordination between recipient institutions in Latin America; that less paternalism be reflected in bilateral arrangements; that aid programs be funded for at least five to ten years; and that greater emphasis be given to establishing fellowships of worth and to the establishment of professional linkages between countries (Urquidi, 1969).

The central conclusion to be derived from the above is that political beliefs and loyalties intrude in technical assistance programs, and often are at the root of failure of various interested parties to understand each other, and the resultant project failure. There is no wishing away the impact of political considerations, however, and there is an incumbent need to live and work within the constraints imposed by them. This is an applied problem in what Miles has called "organizational health."

Miles' concept of organizational health induced through conscious administrative action and manifested in positive coping behavior has practical application here. One would not expect, and rarely finds, representatives of the parties to the bilateral agreement whose loyalties lie outside their own system. Each representative may define his own system, and there may not always be congruence

between his view and his counterpart's view of that system. These differences, added to those resulting from the project's objective and strategy inconsistencies make for real and injurious failure to communicate.

Organizational health--There are, according to Miles (1965, p. 18), at least ten dimensions of organizational health. They are: (1) goal focus; (2) communication adequacy; (3) optimal power equalization; (4) resource utilization; (5) cohesiveness; (6) morale; (7) innovativeness; (8) autonomy; (9) adaptation; (10) problem-solving adequacy. To the extent that an organization is deficient in some of these, Miles (1965, p. 77) believes that organizational health can be induced through employment of interventions such as team training, survey feedback, role workshops, target setting, organization diagnosis and experiment. These interventions all rely on self-study, relational emphasis, increased data flow, norms as a change target, temporary-system approach and expert facilitation.

The indiscriminate use of these interventions by outsiders is likely to always be threatening. Their use in international technical assistance situations would probably require more than ordinary caution, but if carried out in a professional way, might well lead to improved communication between the innovation advocate and the host system as well as within the host system itself. Three central themes of this study are those of innovation, organizational

adaptations and autonomy. With respect to those themes and the induction of organizational health, Miles' (1965) remarks are particularly helpful and are quoted here in their entirety.

The notions of autonomy and innovativeness are both connected with the idea that a healthy person, group, or organization is in realistic effective contact with the surroundings. When environmental demands and organizational resources do not match, a problem-solving re-structuring approach evolves in which both the environment and the organization become different in some respect. More adequate, continued coping of the organization, as a result of changes in the local system, the relevant portions of the environment, or more usually both, occurs. And such a system has sufficient stability and stress tolerance to manage the difficulties which occur during the adaptation process. Perhaps inherent in this notion is that the system's ability to bring about corrective change in itself is faster than the change cycle in the surrounding environment. Explanations for the disappearance of dinosaurs vary, but it is quite clear that in some way this criterion was not met [p. 217].

Research and development--Related to Miles' suggestions for the induction of improved organizational coping behavior is a statement by Cerych (1969) that educational organizations or whole systems are beginning to apply an organizational device long common in industry--research and development divisions. These divisions are "deliberately constructed to enable the organization to continue research activity even when most of the organization's members are quite satisfied...; they tend to define for the organization successively higher levels of satisfaction by raising the standard of what is considered all right. In this way, organizations have been able to build in mechanisms to

make themselves rationally dissatisfied and to continue to search for improvement [p. 427]." Activities such as these are internally derived, supported and acted upon.

Planning--Although not created to deliberately create dissatisfaction, educational planning offices can and do identify a changed level of aspiration for a given society. As such, they represent yet another way of creating tension within an organization. The profusion of plan documents that emerge in underdeveloped countries without concomitant action proceeding from them is well known. In Guatemala, plan documents for all levels of education have been recently published, but one of the men vitally concerned with their creation and publication was very quick to remind me that too often, publication of the document is the end product of planning activity. These documents all too frequently have had little relationship to future educational development, but they do, nevertheless, reflect the previous conduct of research into matters precedent to educational development.

Tension reduction--When change is purposive and directed, tensions are created and ultimately reduced through the use of a plan, power and/or authority, and rewards, operating through and in the host system. This is the role of the innovation advocate, who must have or get, maintain, and transmit personal insight into cultural patterns of the host system. His chief concern is for the host system's organizational health as revealed by its ability to cope with

everyday problems of growth, and only secondarily with particular aspects of the innovation in question. Improved organizational health is a function of greater induced knowledge and improved personal and role relationships.

People work within systems and perform roles to achieve goals that are a result of established values characteristic of the normative features of their culture. At the same time, deviation from the norm can be introduced through confrontation techniques relying on an increasing use of telecommunications messages, technology advocates, research and development discovery, invention, planning and a consequent personal unwillingness to continually accept the idea implied by the norm. This ultimately results in a redefinition of personal and organizational needs and values, and establishes tensions within the system or organization which bring about system acceptance of some innovational change.

Summary--The essence of this discussion of directed purposive change is that the innovation advocates have at least four functions: (1) to deliberately encourage activity which will create tensions leading to deviation from the host system norms, (2) to rely on or induce organizational health as exemplified in problem-solving behaviors and self-study, relational mechanisms, (3) to provide access to at least one alternative solution, i.e. the innovation being advocated, to identified problems, and (4) to provide some reward for the selection of the solution he advocates.

The IMC as directed purposive change--The IMC project objectives represent an agreement by the parties involved on the significant needs at San Carlos which could be alleviated by the IMC. These have been stated earlier in this study and generally propose to (1) establish a production and utilization center for San Carlos faculty, (2) provide consultation and instruction in multi-media development and use, and (3) to become as deeply involved as possible in higher and secondary curriculum development and teacher training. The first of these objectives is essentially logistic in nature, demanding little more than cooperation of San Carlos and Guatemalan government officials as space and equipment were brought together in the physical creation of the IMC.

The second objective necessarily required more intimate communication, adaptability, and sensitivity, i.e., more reliance on the problem-solving mechanisms of organizational health. It was here that the plan of action, developed early in IMC history, came into play. An analysis of the 18 point plan of action in terms of four functions of an innovation advocate suggests that the plan of action is made up primarily of activities that could conceivably create tensions leading to deviation from the norm, and that could provide some solutions to identifiable problems. There is little evidence that any reward was present to encourage trial and acceptance of the innovation, and there is no evidence of an attempt to establish regularized, self-study, relational communications channels. The publication of a

media newsletter can be seen as an exception to that statement, but no copy of such a newsletter was encountered during this research.

Efforts to achieve the third objective of a deeper involvement in secondary teacher training and curriculum development would have required personnel resources that the IMC did not have, and a considerably greater consideration of the culture transmission functions of education. Ability on the part of IMC personnel to speak Spanish would have been required, as would have been more full or part-time consultant help. As has been noted elsewhere, it is not clear that San Carlos would have welcomed any assistance in this regard from the IMC, and the presence of the objective in the contract is somewhat of a puzzle. In any event, the three objectives as stated here represent three points on a spectrum of project activities ranging from the logistical and procedural to the culturally defined.

The School of General Studies at San Carlos was an attempt at a major structural innovation, and the proposed Facultad restructuring, yet another. The potential effect of these changes on the culture transmission functions of education would be difficult to estimate, but in general, they were directed at training more university students with available resources and at training graduates in a wide variety of vocations, skills and occupational interests. The IMC was probably seen primarily as a resource of instructional materials for those tasks rather than as having a

contribution to make in defining the direction and form of structural change. The role of the innovation advocate, then, was generally relegated to assistance in functional changes rather than structural. It is likely that in this sense he and his consultants were restricted thereby to activities which would result only in acts of acceptance rather than the process of it. This statement is based on the assumption that process has its sustaining roots in structural features of an organization whereas as specific acts of acceptance proceed mainly from functional features. The primary and secondary development aspects of the IMC have been discussed previously and appear again in the final chapter, but it does seem important to note here that as an example of directed, purposive change, the IMC was simply not grandly enough conceived. The objectives and plan of action point in the right direction, but factors of critical mass, personnel training, distribution systems could not be implemented with the personnel, space, equipment and money available to the IMC. Even with those, it is not clear that more effective action would have found support at San Carlos, but without them, there was really very little hope.

To the extent that the four functions of the innovation advocate were only partially executed in IMC implementation, it is important to note that the IMC was only one of a number of organisms which were trying to achieve life and influence. In a sense, the IMC received only peripheral attention and response from San Carlos faculty and

administrators who apparently saw more advantages in the educational prospects of the large grants and loans being negotiated. Viewed in this light, the IMC was never able to become disruptive enough to create tensions which demanded tangible resolution.

The innovational potential of the IMC with respect to curricular change and media development was also seen as being present in the UNDP grant for secondary teacher education as well as the BID loan for higher education, although in both cases this potential was perceived somewhat imprecisely. The UNDP plan of action included a concern for instructional materials and media, but no specific plan for implementation of that segment of teacher training activity was evident at the end of this research project. The BID loan proposal was divided into ten specific development programs at San Carlos and the other universities as well, but did not benefit all Facultades equally. At the end of this research project, the Superior Council at San Carlos had withheld its final ratification of the loan agreement, ostensibly because the debt service and operation costs of the programs so developed would have placed too great a strain on the future financial resources of San Carlos.

The coordinator of educational resources at San Carlos confirmed much of the foregoing by saying that the IMC, as an operating entity, appeared to have no place in present or restructured organizations at San Carlos, but

its value was in the idea it represented. While San Carlos failed to accept and support the IMC as an innovational service, it also failed to reject the idea it represented and the IMC presence on the San Carlos campus made more certain the provision of similar service activities through other agencies.

The organizational health, research and development, planning and tension reduction aspects of directed, purposive change appear to have little application to IMC activities. These were concerns of San Carlos administrators, but not with relation to the IMC or its activities. It is probably not too strong a statement to say that San Carlos administrators were aware of the IMC, tolerated it, even valued it for certain purposes, but for the most part, preferred to politely ignore it. The IMC, on the other hand, was rarely able to make a significant contribution to research and development or planning activities, nor to assist in constructive ways to truly innovational projects such as the proposed Dentistry Faculty new curriculum for students undergoing field experience. It seems fair to say that there was a fundamental discrepancy between the implied and stated goals of the IMC, and the funding and resultant strategy with which it was implemented.

Social Process

The stated assumption about social process is that it is mainly concerned with individual and societal self-renewal,

i.e., the maintenance of basic integrity in the face of the changing of norms and values which frequently results from confrontations with different systems of knowledge and technology. Earlier in this study, communication was called a social process concerned with the circulation of knowledge and ideas (Schramm & Winfield, 1964, p. 1). Laswell (1965) says that any social process is "briefly characterized as people pursuing valued outcomes (values) through institutions in a resource environment [p. 340]." He further generalizes these values and gives them the names of power, enlightenment, wealth, well-being, skill affection, respect and rectitude (Laswell, 1965, p. 340). Each of these values has meaning only in terms of specific attributes which are peculiar to a given system or cultural context. For individuals and organizations alike, the meaning of a value is expressible in terms of the existing cultural norm or in terms of available options for deviation from it; and knowledge of the norms and available options for deviation is partially made available through the social process of communication. Boulding (1964) says that at any given moment, one has a self-image which is really subjective knowledge of the world, and is constructed from past experience and messages received. He further contends that behavior depends on that image. Man is constantly receiving messages in the form of structured experience, and "the meaning of a message is the change that it produces in the image [p. 77]."

What Boulding has called self-image, Goodenough (1963, p. 215) has called identity. It is Boulding's notion that change is really growth of subjective knowledge structures, whereas Goodenough (1963) suggests that individual change in man proceeds from personal "dissatisfaction with his present condition of self so that he wants to change it [p. 219]." This calls for some kind of experience that leads him to reappraise his self-image, and reevaluate his self-esteem. This can be accomplished with the confrontation techniques often employed in psychological counseling as "experienced development workers stress the necessity of defining a community's problems to its members in terms that are meaningful to them according to their established categories for perceiving and evaluating things [Goodenough, 1963, p. 223]." This idea is not greatly removed from the assumptions underlying the self-study techniques proposed earlier for the induction of organizational health.

The growth of knowledge structures and the consequent changes in self-image or identity ordinarily occurs over time. Butts (no date) is one of several who perceive an historical trend from pre-civilization to the present state of mankind. This process can also be called modernization and is defined as a trend toward differentiated political systems, greater participation in politics by a larger proportion of the population, secular and impersonal standards of achievement and performance, speed of movement,

transit and communication, and an acceptance of the rational-logical methods of science.

Butts says, "The distinctive climate of opinion of modern civilization has been shaped by the perfecting of methods for creating, organizing, acquiring, and transmitting reliable and valid knowledge, the creation of large scale systems of universal education, and the development of wide spread literacy and mass communication [p. 357]." This suggests that a major source of social change is learning (as distinct from education), accomplished through improved communication and educational practices, most of which depend on technology for their implementation.

A more detailed discussion of Adams' (1967) concept of primary and secondary development may be helpful here. He uses technology to make the distinction between these two kinds of economic and social development. "Primary development produces technological inventions and discoveries and elaborates social and economic forms to handle the consequences. Western Europe and North America underwent primary development with the advent and course of the industrial revolution [p. 187]." Secondary development is characterized by a government which exercises its power in order to facilitate development. The country finds the market full of available technology and the problem of reorganizing society to adapt to the available technology becomes uppermost. "There is awareness ahead of time that the devices have worked elsewhere, and the central problem becomes one of

adaptation [p. 217]." The difference then, between primary and secondary development is defined by the timing and the impetus for development of social institutions which permit the integration and operation of technological devices. In primary development, the technology and social institutions are developed more or less contiguously and the problems are localized and subject to minor adaptive changes whereas in secondary development, a more or less complete range of technological devices becomes available, creating problems and tensions for existing social institutions as they attempt to manage the forces thus generated. The major changes required are in the social institutions since only minor possibilities for change are present in the technology.

It is all too easy to think of social change in terms of a distinct effort to "catch-up" with the rest of the world. The argument presented here takes an opposite point of view based on Gardner's (1969) thought that the real task of social change is the design of "a society and institutions capable of continuous change, renewal and responsiveness [p. 247]." Such a society would be characterized by "pluralism and the development to the fullest of its human resources through education and the removal of obstacles to individual fulfillment [Gardner, April 11, 1969, p. 247]."

Summary--The social change process can be perceived in the growth of man's self-image or identity, accomplished through changes in the value systems held by individuals,

organizations and societies. The direction of change in general is toward greater knowledge and modernization, one of the chief determinants of which is the presence of technology. When full-blown technology is suddenly available to a society which has not had it before, the likelihood is great for serious dislocations in individual and organizational self-image and identity, value systems, role structure and performance, and in general, the society's ability to develop adequate coping institutions for the new demands made by the interrelationships of technology and the social systems. These dislocations are sometimes productive of tension and the tension itself can be productive of innovations and their eventual acceptance.

The IMC as social process--The implications of the IMC for a self-renewal concept of the social change process are perhaps the most difficult to isolate and identify. The IMC was an innovation dependent on technology and aimed at a wider spread of knowledge. As technology, it demanded accommodation in terms of the social inventions, however small, required to facilitate its life and influence at San Carlos. As a means of disseminating knowledge, it had no meaning apart from the messages that San Carlos faculty and administrators chose to convey through its facilities. As technical assistance, its potential role was in shaping educational behaviors at San Carlos, but this is another way of saying that it threatened the maintenance of established values and norms.

Of the teaching, research and service functions of a university, San Carlos appears to be primarily concerned with teaching, and with research and service only tangentially. The central concern is to make the university more responsive to national needs without destroying the traditional culture. The success of this effort depends on (1) the entrance to the university of better-trained secondary graduates and (2) a university curriculum which reflects the developing occupational needs of Guatemala. These conditions are recognized at San Carlos, but the potential damage to cultural values and norms which is associated with massive infusions of technological investment mitigates against easy acceptance of disruptive and disfunctional innovations.

Even though the Constitution guarantees six years of primary education for all Guatemalans, it is not equally clear that San Carlos personnel are prepared to accept the resultant challenge at the secondary level. The new teacher training college probably will not be able to train more than one-fourth of the 1980 need for secondary teachers, and without increased concern for the multiplying effects of media, the present teacher training effort appears to be a cul-de-sac.

Basic Facultad restructuring recently proposed at San Carlos is yet another example of a perceived need for organizational adaptation which is difficult to undertake because of the threat it poses to individuals, systems and cultural

values. One of the basic purposes of the proposal for integration of some Faculty activity, combined with the creation of new supportive services for teaching and administration, is the creation of an organization which can facilitate continuous change and self-renewal. This proposal for a social invention is characteristic of the requirements for social change and the accommodation of a variety of fundamental technology and knowledge structures.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The problem for this research project is to determine the perceptions of San Carlos faculty and administrative personnel of the value of the IMC to their role performance, to state the implications of those perceptions, and to describe the changes in those perceptions that occurred. The value of a response to this problem lies primarily in generalizations about human organizational behavior which can be derived from the specific instances of that behavior, and the application of those generalizations to other bilateral technical assistance programs in higher education.

The perception, implication and change aspects of the problem represent three levels of response which can be discussed in terms of considerations of organizational as well as individual change. A discussion of those three levels has its prime meaning when considered against the background of the major educational problems in Guatemala. The one problem which appears to have conditioned the value and impact of the IMC project was not so much university education in general as it was the training of secondary teachers in the Facultad of Humanities at San Carlos.

Broad fronts of educational development--The secondary teacher training problem in Guatemala is acute, and a number of programs and projects have been conceived by educational planners there to remedy that condition. The IMC was only one such project, and in fact, its planned effect on teacher training was probably seen only as an indirect result of other instructional services it offered the university faculty. There were, certainly, other, more frontal attacks by San Carlos on the teacher training problem. Three broad fronts may be identified on which were moving major efforts to correct the problems created by years of insufficient numbers of secondary teachers. They were:

1. Changes in instructional patterns at the university--One example of these changing patterns was the School of General Studies, which had as one objective the remedial instruction necessary to provide newly enrolled university students with the skills required for university-level work. Although not an administrative part of the School of General Studies, the IMC was seen as having particularly valuable application in the School of General Studies.

2. Major, internationally funded education development programs--These include the United Nations Development Project (UNDP) for a teacher training school in the Facultad of Humanities, the Inter-American Development Bank (IDB) loan proposal for improvement of higher education and a World Bank loan for new secondary education buildings, two of which will be on the San Carlos campus.

3. Planning, research and development activities both at San Carlos University and in the Ministry of Education--These include the Office of Planning in the Ministry of Education, the Office of Planning at San Carlos, IIME at San Carlos, and loan and grant negotiations in the Ministry as well as at San Carlos. All these activities were related and often dependent on each other. The improvement of secondary teacher training and second level education was not the only purpose of these three broad fronts, however, and not all the activities characteristic of those fronts were equally visible. Of the three, the most visible during the period of this research was the one involving major funding proposals and activities. Changes in the instructional patterns, and planning activities were, for the most part, either at the level of discussion or production, but in either case, demanded less long-range commitment and fewer decisions on the part of the Superior Council at San Carlos. The proposed BID loan, the World Bank loan and the UNDP grant, combined with matching funds, amounted to a sum of over \$14 million with chances for even more at a later date. Not all this money benefited San Carlos, but the financial and jurisdictional stakes deriving from those proposals were too high to be ignored by San Carlos faculty, administrators and students.

Program plans for the activities characteristic of each of the three fronts included an awareness of a need to

develop the then available instructional materials and media resources. The dimensions of this need were uncertainly perceived since there was required an almost simultaneous consideration of all aspects of educational technology at all three levels of education. The number and kinds of people, the selection and combination of new and old curriculum ideas and practices, the development of distribution systems, and the development of new roles are all examples of those aspects of educational technology that require simultaneous articulation with each other and with other subsystems of the educational program. The teacher training school proposal recognized a place for media in teacher training, but implicit in its effective use in training is the assumption that the newly graduated teacher would have available increased materials and resources when he begins to teach. Provision for new aspects of educational technology in a teacher training situation is a more or less finite matter, but the creation of the system which could also provide those same aspects for all schools and all teachers is a matter of considerably more complexity. Likewise, the BID proposal originally contained a major program, later revised and scaled down, for a closed circuit television system for higher education in Guatemala. As a logistical problem, such a system is susceptible to rational planning and implementation, but the administrative and individual changes required for its integration with teacher training and other instructional activities at the universities is

another matter altogether. It is at the ideological level that such changes are required and often find resistance.

"An ideology may be defined as that part of his image of the world which a person defines as essential to his identity or his image of himself [Boulding, 1964, p. 1597]." A teacher who is ideologically aligned with propositions basic to the conservative functions of education will probably experience difficulty in altering his behavior and attitudes concerning his teaching functions. His self-image as a conservator of his society's value system rests partly on his belief that his contribution to the curriculum, i.e., the totality of experiences provided by the school, is in the best interest of the society. A methodological change in that contribution, which is the very least that increased use of instructional media requires, probably also requires changes in the self-image and the value system on which it rests. An additional change in a teacher contribution may be required as the school assumes new and disruptive functions and will probably have an even greater wrenching effect as the conservative functions are called into question. To the extent that educational technology requires a change in teaching method, it poses training problems that are primarily logistical in character, but when the educational technology is recognized as having potential for a rapid spread effect in the transmission of disruptive, tension-producing ideas, administrative decisions and change are then probably required regarding control of

the media and its informational functions. This is reflected in the following discussion of the perception, implication and change levels of the problem.

Level I of problem response--This level of response to the problem deals with faculty and administration perceptions of the value of the IMC for their role performance. In the case of both faculty and administrators, it appears that the perceptions were functions of needs to maintain their professional role performance at the least cost in energy, time, and loss of jurisdiction. Faculty members with easy access to and familiarity with the IMC were the ones who continued to use its service even after the AID contract had expired. Those Facultades not yet moved to the central campus where the IMC was located began to develop their own instructional materials. San Carlos administrators were willing to give the IMC space, but without great pressure from faculty or students, saw no reason to place a high priority on financial support for the IMC. They were not unaware of the impending possibilities for the integration of instructional materials/media development in the secondary teacher training school and the closed circuit television project, and it is likely that administrators and teachers alike saw in those projects the opportunity for more certain control and financial support for that task. For administrators, the IMC had value as a service which could be listed in proposals to demonstrate the steps already taken to support teacher

activities, and for teachers it had value as a model, a reference, for discussions about future instructional materials and media development on the campus.

Level II of problem response--The implications of these perceptions are at once quite mundane and profound: viewed in a time perspective, the 18-month IMC contract was for a relatively short-term project at a university nearly three hundred years old. The IMC was not crucial to the stability of San Carlos as an institution nor to job retention by any San Carlos teacher or administrator. On the other hand, the IMC represented an idea which focused attention on the need for improved communication and educational technology at the university and in the country as a whole.

Historically, it is possible to relate the IMC idea to campus development activities as far back as 1945, and the idea appears to have life for the future at San Carlos. The trend from the days when San Carlos decided to centralize the Facultades, to the present, and into the future, appears to be away from greater involvement with and assistance from single nations, through international funding directed at Guatemala, and very likely, toward single nation as well as international assistance to the Central American region. The trend is away from individual projects and to greater degrees of multi-faceted institutional involvement within, and across, national borders, supported by regional planning and project funding.

Level III of problem response--It does not appear that individual faculty or administrators radically changed their perceptions of the IMC's value to them during the period of this research. Whatever decision they had made relative to its value, apparently had been made earlier, during the IMC contract. If there was a change, it was in the direction of attributing less value to the IMC than before. Faculty interest apparently declined, although this may have been a result of the IMC's inability to provide a service. Some administrators tried and failed to integrate the IMC into the San Carlos structure, but that integration probably did not have high priority with anyone.

The IMC was one of several innovative programs and projects at San Carlos which have failed to flourish, but which have served to focus attention on the critical needs of the educational system of Guatemala. The identification and specification of those needs have served to bring pressure on the university for organizational change, some of which lies in the future. The organizational changes at San Carlos most clearly associated with the IMC and the idea it represented are those required to (1) implement a secondary teacher training school, (2) revise the curricular offerings, (3) restructure the Facultad responsibilities, and (4) devise ways for integrating the needs and the products of the first two levels of education with higher education.

Recommendations

International funding--Frankel (1968) makes a theoretical case for the wisdom of supporting the autonomy and freedom of institutions of higher education involved in bilateral technical assistance programs. This case rests on assumptions favorable to the position that academic freedom is the only base from which mutual development can begin. Educational interventions in higher education which are directly supported and controlled by external institutions with a fundamentally political orientation will eventually be confronted by a resistance which springs from the need to maintain host institutional autonomy. The findings of this research project tend to support Frankel's view that there is less threat involved, and more potential value in agreements between universities which are not circumscribed by national political considerations. It seems probable that the need to protect institutional autonomy against all threats to it overrides almost all other considerations, even that of money. This research tends to support international funding of education projects or the general subsidization by the U.S. government of a North American university for technical assistance alliances with a foreign university. This policy involves considerably less threat to institutional autonomy, and makes more possible the implementation of the following recommendations.

Long term projects--The cumulative and conservative functions of education serve to create a host system environment which makes almost mandatory, long-term, five to ten year technical assistance program commitments. The development of viable and influential new institutions, the establishment of linkages with existing ones and the facilitation of the human and organizational changes take at least that long to accomplish.

Instruction, which implies methods and techniques, is, as suggested earlier, a task with logistical overtones. Training for instruction is a relatively simple matter, given proper amounts of money, space and personnel. On the other hand, changes in a society's value system, whatever their origin, require time to be articulated and accepted as worthy of transmission through the education process. It is this dependence on the value system changes that makes education a more complicated process than instruction, and that requires a long-term, five to ten year, mutual assistance commitment by higher education institutions.

Urquidi recommendation--Assuming the willingness of two or more universities to embark on a long term assistance arrangement, and assuming funding free of first-order nationalistic political constraints, a third recommendation arising from the research is for project implementation operations which permit the maintenance of the integrity of all institutions involved, and which provide for mutual benefits. The

findings of this research project support the recommendations of the Urquidi (1969) report to Education and World Affairs regarding principles underlying external aid to Latin American institutions. The Urquidi recommendations suggest potentially profitable ways to initiate and implement technical assistance operations and are presented below as specific first considerations and steps to be taken.

1. Meet local needs as locally defined. Make the project responsive to the specific situation; involve a larger variety of individual Latin American participants; put fewer restrictions on fellowships and visiting professor support; keep permanent representatives of funding agencies in Latin American countries.
2. Be selective: Aim at modernization. Support the good and promising institution only, since external aid is a relatively small portion of local education investments; work toward the day when regional centers can serve several countries; fund programs for five to ten years; informally coordinate funding agency activities; let programs reflect the national education plan; maintain continuous evaluation.
3. Concentrate on the development of human resources. Place greater emphasis on human resources than on provision of buildings and equipment; plan and coordinate fellowship programs, and concentrate on

postgraduate students; provide funds for greater and continuing communication among scholars.

4. Aid should be non-political. "All external assistance in the development of Latin American higher education must be considered non-political and must be based upon full respect for university autonomy and local administration [Urquidí, 1969]."

Summary

The value of programs of technical assistance between institutions of higher education in North America and Latin America probably is greater when it is undertaken free of political constraints, when it respects the autonomy of all institutions, when sufficient time is available to firmly establish goals and implement realistic programs, when more people are permitted to participate in planning and policy decisions, and when due and mutual respect is accorded the value systems of the participating societies.

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