DOCUMENT RESUME

ED 047 170 AA 000 663

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TITLE	Reforming the University: The Role of the Research Center.
INSTITUTION	Columbia Univ., New York, N.Y. Bureau of Applied Social Research.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	71
NOTE	195p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$6.58
DESCRIPTORS	Behavioral Science Research, *Educational Innovation, *Higher Education, Leadership, Management, *Organizational Change, *Research and Development Centers, *University Administration

ABSTRACT

The authors seek to show the potentiality of research organizations for the achievement of basic university goals, and to isolate the conditions that impede or promote the success of these integrative agencies. In addition, they examine the role of the managerial scholars who are in the positions of leadership since they believe this role is vital to organizational success. The data for the investigations has been derived chiefly from the schools of education. There are four reasons for this choice: (1) The study of education includes all the behavioral sciences. (2) Education requires the integration of service and scholarship within the university which needs to be studied widely by researchers. (3) Graduate schools of education have taken great pains in the past decade to improve their research establishment. (4) It is possible to achieve a unique historical perspective to the problems of university research organizations since there has been a long and well documented history of educational research agencies in the university. (DAS)

COLUMBIA UNIVERSITY

BUREAU OF APPLIED SOCIAL RESEARCH

REFORMING THE UNIVERSITY --

THE ROLE OF THE RESEARCH CENTER

Sam D. Sieber
in collaboration with
Paul F. Lazarsfeld

1971

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Bureau of Applied Social Research
Columbia University

ACKNOWLEDGMENTS

Many individuals have helped us in carrying out the present study. To all those listed on the following page we owe special thanks for their stimulation, advice, and assistance. Unfortunately, their large number precludes our singling out each one of them for appreciation in the proper manner of acknowledgments. But we can at least specify the roles played by the different sets of actors.

The Advisory Committee tried to steer us onto the right course in the design and execution of the study, and informed us about some of the major problems besetting the field. Our Special Consultants told us what was wrong with our draft questionnaires, informed us of special research fields, criticised our interim research memoranda quite constructively, and lent moral support to the enterprise. Our Local Colleagues played several roles, including working as staff members on special assignments, providing us with questionnaire items and consulting on a myriad problematic points. The Writers of Student Theses carried out independent research on topics that deserved greater attention than we were able to devote to them within the scope of our study. Our Research Assistants performed the many tasks -- often necessarily tedious -- that lie behind each table; and in several instances carried out their own analysis and even hired and trained their own staff. But little would have been accomplished without the efforts of our Administrative Assistants who sought to keep abreast of the mountain of paper work that arose like lava from an erratic volcano. We are also indebted to the many deans, research coordinators, bureau directors,

and researchers at large who took time from their schedules to suffer through our lengthy questionnaires and field interviews. And finally, we greatly appreciate the work of our numerous field representatives who masterfully gained the cooperation of respondents and collected vital information about the schools. The study was supported by the USOE.

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INTRODUCTION

It is common knowledge that the tasks and aims of higher education have grown apace in the twentieth century. The reasons for this proliferation are several: the increasing complexity of technological society has imposed new demands upon the expertise of the universities, calling forth a variety of new services, training programs and research roles; the strains of rapid social change have induced the faculty to participate more actively in societal guidance -- as functionaries, critics and even revolutionaries; and the growth of knowledge has spawned new disciplines and specialties. Accompanying the increased burdens on the university -- and further induced by sheer magnitude of enrollment -- has been an increasing organizational differentiation and autonomy of sub-units. Unable to relinquish its functions to other social institutions, the university has been compelled to create new roles and sub-organizational forms, such as offices, institutes and departments, to achieve its goals. Consequently, a kind of centrifugal force has been set in motion that has resulted in an extreme form of organizational pluralism. Thus, it is often claimed that interdisciplinary relations have become more problematic; researchers have lost touch with teaching departments; administration and scholarship have tended to part company; the distance between faculty and students has increased as the job of counseling has been assigned to special functionaries and professors have adopted more non-teaching roles; and social service has advanced with only tenuous connections to scholarship. The excessive differentiation that has emerged within universities in the past

half century has been elegantly stated by Clark Kerr (1963):

> The university started as a single community -- a community of masters and students. It may even be said to have had a soul in the sense of a central animating principle. Today the large American university is, rather, a whole series of communities and activities held together by a common name, a common governing board, and related purposes. This great transformation is regretted by some, accepted by many, gloried in, as yet, by few. But it should be understood by all (p. 1).

Observations on the organizational plight of higher education have become hoary with repetition.[1] And yet, the number of solutions that have been tried are disconcertingly few. A major reason for the paucity of bold experimentation is the lack of central leadership, a problem which itself has resulted from the growing complexity of the university. The "captains" of higher learning belong to a bygone era. Academic freedom is more and more interpreted in such a way as to keep the administration out of any truly academic affairs; while the faculty has come to consider administration beneath its dignity. In addition, the aloofness of the administration to academic affairs has been reenforced by sheer growth in the size of individual universities. With respect to the president, Corson (1960) notes:

> . . . observation of the day-to-day functioning of typical college or university presidents suggests that as the institution grows in enrollment, and hence in faculty, in facilities, and in budget, the president is ejected from the areas of the institution's central concerns -- the educational program, the faculty, and the students -- by the demands that are made on his time by other activities (p. 61).

And Gross (1963) has made a similar observation with reference to all levels of administration:

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[1] See, for example Corson (1960), Goodman (1962), Rourke and Brooks (1966), Gross (1963), and Wallis (1964). Nor is the problem of excessive differentiation confined to American universities. Cf. Schelsky, Helmut (1963).

> Nowhere in the administrative structure of most universities, at the president's level, dean's level, or departmental level, do we find individuals whose energies are primarily devoted to the systematic examination and appraisal of academic affairs (p. 70).

But educational innovations are, by definition, intellectual as well as administrative tasks. And so, they have fallen into a no-man's land: the President and his staff wait for the faculty to take the initiative; the professors on their side consider that such matters would take time away from their truly scholarly pursuits. As a result, many of our universities exhibit a dangerously low level of institutional development.

It is not inconceivable that the task of leadership is now beyond the capacity of traditional administration, and that what is required is a new role closer to the professorial level. One of the purposes of this monograph is to explore the utility and pitfalls of an incipient form of this role, one that we have called the "managerial scholar."[2] In our view, the long-range mission of this role is to reintegrate the diverse functions and personnel of higher education as a means of better achieving its goals. A number of such men are critically needed in each university.

But the role alone is not sufficient -- the managerial scholar needs an organizational apparatus for carrying out his mission. The teaching department is inadequate for this purpose because it is organized entirely around the teaching function. In fact, the organization of academic work in accordance with the requirements of teaching often means that research is conducted in isolation from teaching. Inasmuch as each faculty member is obliged to seek facilities, intellectual stimulus and professional recognition outside of the instructional context, his scholarly life is by necessity removed from his interaction with students. Thus, in spite of the

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[2]The felicitous term "managerial scholar," which serves as the title of Chapter III, was suggested to us by John Blue, U.S.O.E.

fact that the university's reward system is geared to research production, its organizational subservience to the teaching function disparages the unity of teaching and research.

A major response to this situation has been the creation of research bureaus, institutes, and the like, where the faculty are able to pursue their scholarly interests with the aid of specialists and facilities for large-scale undertakings. As we shall see, this organizational invention has served scholarship well; but more important from an organizational perpective is its contribution to the reintegration of university components. Many research units have succeeded in bridging the gap between research and teaching, in serving as a fertile setting for interdisciplinary collaboration, and in combining disciplined inquiry with service. Students are able to participate in several ways: as employees, as learners, and as colleagues. The skills and sensibilities that distinguish the mature scholar are conveyed through master-apprenticeship relations, through rotation among projects according to educational needs, through project meetings, research and theory seminars, training programs in special fields, and so forth. And the intimacy of the setting makes viable the old ideal of a community of scholars and students. Thus, an agency that was created to answer the needs of the faculty for research carries within it the seeds of a new, and possibly more vital form of university.

To a large extent, service has suffered a fate at the hands of teaching departments similar to that of research. Relegated to the status of an individual enterprise, removed from the view of colleagues and students alike, it has rarely succeeded in establishing fruitful

connections with either scholarship or teaching. A common solution within professional schools where service is mandated is the founding of separate offices for service work. The academic departments, however, have scorned this solution, although individual professors are increasingly engaged in the performance of service activities.[3] But even in the disciplines, there are instances of research bureaus where service, research and teaching have progressed hand in hand. In viewing these exceptional cases, we have been led to conclude that the research unit has a potential far greater than its typical attainments.

The basic contribution of research agencies, then, is the integration of roles, personnel and functions within the university. Our study demonstrates that research units afford a superior setting for cross-disciplinary work in particular and for collaborative research in general; for bringing together scholars and students in daily intellectual intercourse; for integrating service, research and teaching functions; for flexibility in creating organizational provisions that facilitate intellectual work, thereby bringing administration and scholarship together in mutually supportive roles; and for linking the university with society at large through the pursuit of applied research, development and a host of community services. Research agencies are able to achieve these integrative goals by virtue of their capacity for bridging the gaps between departments, between the roles of student and professor,

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[3] The term "service" as employed here embraces social bookkeeping, consultation, development of practices from research or theoretical foundation, implementation of practices and evaluation. It is our opinion that such activities constitute a drain on the university's resources and academic traditions only when left uncoordinated with regular university functions. Organized properly, services can benefit teaching and research in a number of ways.

and between the university and the outside world. They are, in effect, boundary organizations inasmuch as they stand astride the multiple boundaries that have developed within the modern university and between the university and society. By virtue of their structural location, research agencies promise to play a critical role in reintegrating personnel, functions, roles, and so forth.

It should be recognized, however, that there is a definite liability entailed in the structural position of research agencies -- the risk of institutional marginality. Thus, despite the importance of research organizations to the future of higher education, it is easy to get the impression that these units are more often tolerated than embraced by the academic community. By and large, they receive only minimal financial support from the university, the great majority of their support being solicited from outside sources; their staffs do not enjoy many of the academic privileges of professors; and they have constantly to search for new personnel to run their programs. Not surprisingly, then, their mortality rate is extremely high. All of which points to a condition that might be diagnosed as chronic institutional marginality. In short, the persistence of traditional values and teaching structures in the university has prevented a full realization of the promise of research organizations.

The chief concerns of this monograph, then, are to demonstrate the potentiality of research organizations for the achievement of basic university goals, in particular by mitigating the functional fragmentation of higher education; and to isolate the conditions that impede or promote the success of these integrative agencies. Further, we shall be especially interested in the managerial scholars who stand at the helm of these agencies, since it is our strong impression that their role is vital to

organizational success.

Much of our data is derived from our studies of research organization in graduate schools of education, which we have been investigating at the Bureau of Applied Social Research over a period of several years. The school of education affords a strategic research site for examining the role of research agencies in the university. In the first place, the study of education partakes of all the behavioral sciences. Economics, sociology, anthropology, political science, history and psychology all bear important relations to education, as witnessed by the burgeoning of educational specialties within each of these disciplines over the past decade. In fact, education has been characterized as a "conjunctive domain," meaning simply that the field is by its very nature a combination of the fruits of several established disciplines. At the same time, professional education has/a history of isolation from the mainstream of the academic disciplines. Thus, contemporary educational scholarship has had to face two integrative problems: (1) how to combine the educationally relevant efforts of the disciplines, and (2) how to bring these combined efforts to bear on educational topics. The study of research in education, therefore, gives us an opportunity to examine the problems of cross-disciplinary relationships in their most complicated form.

A second reason for focussing on education concerns the prominent role of service and developmental activities in the profession. Schools of education carry a heavy burden of responsibility for professional improvement through a variety of avenues, including teacher training, workshops, applied research, social bookkeeping for practitioners and development/of new practices. These professional leadership roles are

tied to empirical research in a number of intricate and problematic ways. Historically, research and service have competed for scarce personnel and resources; only in recent years have concerted efforts been made to work out a systematic rapprochment between service activities and research, a trend that has come to be designated as the "R & D movement" in education. Since the social sciences are being compelled to play a broader role in enlightened social action, many of the problems that have arisen from the conflict between service and research in education are gradually coming to the fore in the disciplines themselves. Thus, education poses a series of lessons in the integration of service and scholarship within the university that needs to be studied widely by researchers in the disciplines.

Third, graduate schools of education have taken great pains in the past decade, largely provoked by the federal government, to improve their research establishment. Multi-million dollar R & D centers have been founded, a large number of research training programs have been supported, new research management roles have been created and an elaborate new system of research dissemination has been tried out. Thus, in the schools of education one finds tremendous organizational ferment over the past decade accompanied by a great deal of public discussion of the issues that most concern us here.

A fourth and final reason for focussing on the field of education as a strategic research site is owing to a long and well documented history of educational research agencies in the university. In fact, it is entirely possible that the earliest social research units in the university were devoted to the study of education and were located in departments of education. We are therefore able to appl a unique

historical perspective to the problems of research organization in the university by concentrating on these particular agencies.

We believe that the problems and contributions of research organizations reported here can readily be applied to the social sciences in general. This judgment is based on our lengthy first-hand experiences with social research agencies and our study of the limited amount of literature on these units. Moreover, certain vital data reported in the present study have been collected from agencies outside schools of education. Our analysis of research proposals submitted to the USOE included a large proportion of proposals (about half) from scholars located in the disciplines. Also, our study of the quality of the research published by journal authors of empirical research on education in 1968-69 included a large proportion of individuals (about a third) in the disciplines. Since these data are used to substantiate some of our more important conclusions, by no means should our observations be regarded as restricted solely to schools of education.

Our monograph is divided into four chapters. Chapter I is addressed to the problem of institutional marginality, a condition that has characterized research units in graduate schools of education for several decades. Chapter II demonstrates the contributions of research units despite their marginal status, with special attention to quality of output and integrative functions of the units. Chapter III takes up the role of the managerial scholar. By delineating styles of leadership and correlates of innovative behavior, this chapter attempts to demonstrate the key status of directors and to explore the consequences of various styles of leadership. Chapter IV draws together the implications of our findings for the reorganization of graduate social science education.

Methods

The techniques of data collection that were employed were the following: questionnaire surveys of education deans, faculty research coordinators, directors of research units and authors of published research reports; field interviews and observations of selected research units and of the activities of professional associations; documentary analysis of materials solicited through the questionnaires; content analysis of school →

of education catalogues, published research articles and research proposals submitted to the Cooperative Research Program, U.S.O.E.; secondary analysis of survey data collected in related studies; and historical library research. And we should also mention our practice of disseminating project memoranda on selected aspects of the study, which yielded valuable feedback from far-flung correspondents. Although not technically a mode of research, the information that was garnered in this way added a good deal to our stock of knowledge. Let us look briefly at the contribution made by each of these techniques.

1. Questionnaire Surveys

The survey of deans provided information about institutional policies as well as measurements of formal organizational dimensions. The questionnaire for faculty research coordinators (and for deans where coordinators did not exist) yielded detailed data about such matters as numbers of researchers and field service workers, numbers of collaborative and individual projects, disciplinary composition of teams, financial resources, and research topics under investigation outside of research bureaus. The purpose of collecting information about research outside of bureaus was to enable us to compare bureau and non-bureau research. Further, since the coordinators were themselves an "arrangement" for facilitating research, we asked them to report their own activities and styles of leadership, how the position was precipitated, who was responsible for setting it up, and how long it had been in existence.[4] Thus, the

[4]The present report contains only the information about research coordinators which proved useful for comparison with directors of research units. For fuller information about coordinators, see The Organization of Educational Research, USOE CRP Project No. 1974 (1966).

surveys of deans and of coordinators were designed to serve three purposes: to inform us about the institution as a whole, to inform us about the research activities outside of research units, and to give us some idea about the arrangement of "research coordinator." Our questionnaire returns represented 68 per cent of the deans and 82 per cent of the research coordinators. Taken together, these respondents represented 81 graduate schools or departments of education, or 76 per cent of those awarding doctorates in 1964.

The survey of directors of research units was intended to cover as many facets of these organizations as could be reported through the eyes of one man -- the director. Policies, leadership styles, activities of the organization, training of students in research, and even some historical data about the bureaus were among the many pieces of information gleaned from these questionnaires. (The return-rate for questionnaires distributed to the directors was about 90 per cent, yielding a total of 64 units.) [5] Especially challenging was the problem of making observations with mailed questionnaires which are ordinarily reserved for qualitative field work. For example, a field observer would naturally seek to characterize a director's "style" of leadership. Our task was to invent indicators of "style" which could be used in a mail questionnaire (see Chapter III). The measurement of additional qualitative features of the organization posed similar problems in the transformation of observational categories into a questionnaire format -- that is, in developing what we have called the institutional questionnaire.

The institutional questionnaire as a research tool for the study of organizations is poorly developed in the social sciences. Ordinarily, survey researchers have been content to measure the main formal features of

[5] Despite the broad coverage of our questionnnaires for the directors, the inevitable happened: questions were omitted which later analysis showed to be crucial for certain interpretations. We therefore conducted a follow-up postcard survey to fill in the gaps.

organizations. But since our task was to understand the characteristics of a relatively unexplored innovation in the organization of higher education, it was not sufficient to measure the conventional dimensions. For example, the directors of research units are not solely administrators and not solely scholars, but both. How these two statuses are combined to fill the power vacuum between specialists in administration and specialists in scholarship is a subject of considerable import. Because systematic knowledge of this unique status is lacking, we were obliged to explore as many facets of the position as occurred to us. An instrument which sought to measure the traditional features of administrative positions, therefore, seemed inadequate. On the other hand, if we wished to obtain highly comparable information from our respondents, we could not rely completely upon free-answer questions. And so, the unfocussed, exploratory type of format was not wholly suitable either. Hence, a compromise between qualitative and more structured questions was called for. It was the working out of this compromise that produced the "institutional questionnaire."

A special problem growing out of the length and complexity of the questionnaire for deans and coordinators was how to administer this cumbersome instrument. We felt that interviews would be inappropriate since we needed to collect statistical data that required some time for the respondents to compile; however, the length and detail of the questionnaires made it unreasonable to expect returns by mail, especially since the topic of research arrangements would not be highly pertinent to some deans. Some kind of personal contact seemed necessary. We therefore commissioned junior faculty members in sociology in the universities to

carry out the following assignment: identify the appropriate respondent, explain the purpose of the study, answer any questions concerning completion of the questionnaire, obtain the completed form on a return visit and check it over for complete answers, collect information that was not readily accessible to the respondents, and forward the questionnaire and supporting materials to our office. In sum, we adopted a method of data collection that lies somewhere between interviewing and mailed questionnaires. (See "The Use of Field Representatives," in Sieber and Lazarsfeld (1966).)

2. Field Trips

One way of testing the validity of the questionnaires that were mailed to directors of research units was to make personal visits after characterizing their organizations and styles of leadership on the basis of their replies to the questionnaires. We therefore made several field trips to units representing a variety of types: Research and Development Centers, institutional research units, informal teams with limited resources, large, well-financed institutes specializing in research, and more traditional bureaus that are engaged in both research and service. Among other things, we invited the reaction of bureau directors to our typology of formal leadership, informing them where they fell in the typology and then asking them to comment on the validity of our measure. We also presented them with a published statement concerning the unique intellectual opportunities afforded by the directorship of a research unit and solicited their reaction.[6] Another approach employed in the field

[6]This statement appeared in Lazarsfeld's Presidential address at the meetings of the American Sociological Association, 1962. In effect, this technique consisted of presenting a clear-cut sociological hypothesis to the subjects affected by the hypothesis. The author has used this technique to great advantage in previous field work among professionals.

interviews was to ask questions that were omitted from the questionnaires, but which on later reflection seemed important for testing certain interpretations of the survey results. (Other contributions of the field trips to the analysis of the survey data are presented below in our discussion of the integration of the various techniques.) In sum, the field trips were undertaken to validate and extend the institutional questionnaire already received from directors of research units.

3. Documentary Analysis

The questionnaires were also supplemented by various documents that were solicited through the questionnaires and through the field representatives. Annual reports of institutes, research reports, histories of schools of education, and vitae on coordinators and directors of research units were the main kinds of materials collected. Some institutions also made available self-surveys of research activities and placement of graduate students that provided statistical evidence to supplement pertinent items in the questionnaires. All of these materials were helpful in preparation for the field trips.

4. Study of Research Proposals and Articles

Since we were primarily concerned with the organization of research, we were constrained to collect most of our information from the leaders of organizations. Having adopted this approach, we stood in danger of missing information about educational researchers at large. We therefore selected a 20 per cent sample of research proposals submitted bo the USOE in 1956-63, which was the life span of the Cooperative Research Program at the time when our study commenced. By classifying the proposals

according to two major organizational dimensions (bureau versus independent research, and education versus non-education departments), we were able to extend the scope of our study beyond the staff work of research units in schools of education. In addition, we sent a questionnaire to all authors of empirical research articles published in some forty journals in 1964. The postcard inquired whether the author had been a student or a professional at the time of the research, whether he was associated with a research unit, his departmental affiliation, and so forth. More recently, a dissertation was begun on the quality of the articles published by another sample of authors. A national panel of judges was enlisted to evaluate these articles, while a survey of the authors contributed information about the setting in which the research was carried out.[7]

5. Previous Surveys and Historical Data

The perusal of previous surveys and of the historical literature gave us a much needed historical perspective. As mentioned earlier, educational research has a long history dating back to the turn of the century; and some of the research units in our study have existed for almost fifty years. These considerations prompted us to seek historical data about the founding and development of research units and about trends in the activities of these units over the past forty years. Since many of the early units had become defunct, we could not rely upon historical questions in our current surveys to disclose trends among all units which have ever existed in graduate schools of education. Accordingly, we turned to several surveys conducted periodically over the past forty years.

[8]Tersell, 1970.

When we collected the published reports of these surveys, we found that the investigators had listed the units by name, which suggested the feasibility of computing the birth and death rates of research units. These results proved of considerable value in demonstrating the "marginality" of research units as reflected in their high mortality rate over the past decades.

A Note on the Integration of Techniques

The integration of research methods in social science has been hampered by disciplinary boundaries and, within disciplines, by sub-cultural boundaries which have grown up around various techniques. Survey researchers consider their data more "hard" than the observations of field workers, while the latter consider their data more "rich." Content analysts seem to be persuaded that they are able to study the "culture" of a group independently of the structure of communication or the impact it has on the recipients. Historiographers regard the techniques of contemporary social science as promoting the collection of "trivia," while contemporary technicians feel that historians ignore the requirements of scientific inference and proof which need to be met in order to arrive at generalizations about human behavior. Sociometrists and experimentalists are more psychologically oriented than any of the methodological groups mentioned above. Consequently, the opportunity to explore the integration of techniques and to compare their distinctive contributions to a single investigation are exceedingly rare. The topic of methodological sub-cultures in the social sciences is too large to enter into here, but the issues which are raised are as much a part of the culture of social science as the substantive content of various disciplines.

As a consequence of employing a variety of research methods, we gained some insight into the problems and contributions of integrating techniques. On the problematic side, for example, we were faced with the difficult decision of when to carry out field work. If intensive field work were conducted prior to scanning the questionnaires, we might fail to ask the most pertinent questions of the respondents. But if it were conducted after processing and analysis of questionnaires, there simply might not be enough time to make trips to bureaus, and our observations would not coincide with the period when the questionnaires were completed. (It should be borne in mind that the lapse of time between the execution of a large-scale survey and the perusal of tabulations may range from a few months to as much as two years. In the present study, the design of new questionnaires for successive waves of distribution to different respondents created a gap of almost two years between the first returns from deans and detailed analysis of their responses. Our field work, however, was conducted among directors of research units rather than among deans. The lapse of time between our survey of directors and examination of the results was about a year.) We eventually decided to postpone the major field trips until after the surveys had been completed and processed, although a few trips were made for special purposes throughout the duration of the study.

Since field work is almost never done after the completion of a survey, it is worthwhile to note some of the contributions of this unconventional form of scheduling. Briefly, the survey data contributed to the field work in the following ways:

identification of the main types of research units provided a sampling frame for the site visits;

puzzling or provocative replies to questionnaires suggested questions for particular interviewees;

statistical relationships and their tentative interpretation helped focus the interviews on certain issues;

basic organizational information from the questionnaires made it unnecessary to take up time in the interview or to jeopardize rapport by burdening the interviewee with standard organizational questions;

questions which were omitted from the questionnaire, but which on later reflection or through analysis of results turned out to be important, were suggested for the interviews.

The field work, in turn, contributed to our further treatment of the survey data in the following ways:

modifications of existing typologies and indices were suggested;

new interpretations of statistical results were provided, especially with respect to the bearing of historical events on current situations;

the importance of describing the units according to certain major dimensions was indicated by the variegated nature of the units that we visited.[8]

Our study also afforded the chance to integrate historical and survey methods. There were three ways in which surveys added to our historical knowledge. First, as mentioned earlier, we used several past surveys of research units to establish historical trends in the balance between research and service, and to study founding and mortality rates of units. Second, our own questionnaires and interviews were quite useful in obtaining historical data. For example, our case histories of selected research units (see Chapter I) were drawn partly from the questionnaires

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[8] For fuller exposition of the mutual advantages of field work and survey research in a single study, see "The Integration of Field Work and Survey Research," in Sieber and Wilder (eds.), The School as a Social System, Reader in the Sociology of Education, New York: Free Press (forthcoming).

and field interviews and partly from historical documents. Information from these various sources was carefully interwoven for each case history. Further, the chief source for our notion of the influence of directors on the historical development of their units was the questionnaire. But there was still a third way in which the questionnaires provided historical data -- through tabulations according to the age of the research units. By classifying the units according to age, we were able to discern trends in organizational types. The interpretations of these statistical trends were then supplemented by information collected in the field interviews, and through library research on the development of educational research in general. Interpretations based upon all three of these historical uses of surveys entailed a weaving together of survey analysis, documentary analysis and library research.

CHAPTER I

MARGINALITY: THE BASIC PROBLEM OF SOCIAL RESEARCH ORGANIZATIONS

Social research organizations are presently in a transitional phase, a fact which accounts for many of their current problems. Under the conditions that prevailed in the first half of the century -- conditions of meager funding for service and research -- the impact of research organizations on the universities was quite limited. With the new affluence of social research that emerged in the past two decades, however, these organizations greatly matured; and this maturation added to the organizational strains within the university. Even now it is only gradually becoming apparent that insofar as research bureaus are set up on entirely different principles from those that undergird the structure of teaching departments, they pose a number of problems for the entire organization of higher education. And the more massive the undertaking, the greater the threat to the traditional academic enterprise. A director of one of the new multi-million dollar R & D centers funded by the USOE has framed the problem in the following terms:

> Developing a plan for an R and D Center which would actually enhance the other academic purposes of the University rather than detract from them may sound like a truism that needs no further comment. And yet it is not at all difficult to find major research organizations across the country which have actually drained the resources of a university or created serious internal conflict of values which have been detrimental to the academic enterprise in the long run (Holtzman, 1966, p. 109).

Originally founded to perform those functions which could not be carried out within the framework of the teaching departments, a number of

changes in the mission and organization of research units have taken place. These changes may be viewed as unanticipated consequences of organized research on campus. Thus, the units have gradually assumed responsibilities for teaching, thereby absorbing a task that has served as the major reason for the departmental structure. In addition, they have pressed for closer relations between the disciplines in answering the needs of scholarship freed from departmental constraints. And they have created bonds between the university and society-at-large as a result of increased demand for academic expertise in the operations of modern society. Moreover, research units have provided both the opportunity and the pressure for large-scale collaborative research, a trend that runs counter to the traditional reward system based on individualistic scholarship. And finally, they have necessitated a closer relation between administrative and intellectual roles, calling forth a managerial style that is not encountered elsewhere in the university.

Combined with the growing size and affluence of these units, gradual changes in their structure and mission have confronted the university with a number of problems. Questions such as the following reflect the organizational stresses that have emerged: should bureau staff members enjoy the same academic perquisites as professors; should the ranking system parallel that of the departments; should the proposals of senior faculty members (for research in the unit) be subjected to the same screening process as the proposals of the staff; should the university view service, or even applied research for external clients, as major goals on a par with teaching; should the research organizations be allowed to give academic credit to students; should a professor join the staff of an

organization for the duration of his research or should he remain relatively independent; should the organization be allowed a great deal of autonomy or should it be held strictly accountable to higher departmental and administrative authority; should it pursue the interests of a particular discipline or should it relate the disciplines to one another, and if the latter, then to what division does the organization "belong"; and should the director act as a mere facilitator of faculty research or should he assume a strong role in intellectual guidance and appraisal?

We view these problems as having emerged from the lag between functional differentiation and structural modifications in the universities. The roles of research and service have become separated from teaching and vigorously pursued in their own right, while the organization of graduate education has failed to accommodate the emergence of these roles in a fashion that insures continuity, high standards and relatedness to teaching. As noted in the introduction, the structure of higher education is still largely subservient to traditional teaching activities. And although a number of local solutions have been adopted in creating and relating research units to the teaching departments, it is obvious that no overall strategy promising a high degree of success has yet emerged. In the great majority of instances the units have remained organizationally marginal. The ambiguities of organization that have arisen in social research have been described by Rossi, formerly the director of the National Opinion Research Center, Chicago University:

> It may have been the pious hope of university administrators as they allowed and in some cases fostered the establishment of research centers that the departmental organization and the institute organization could be integrated very closely. Indeed, the ideal pattern in some ideal sense might be one in

> which the personnel of a department and the personnel of an institute would be one and the same, and that while teaching courses, sociologists, for example, would run themselves along departmental organizational lines, and while doing research they would run themselves according to institute lines. In fact, this has never occurred. . . . In response to the difficulty of integrating departments and research institutes, the latter have developed separate staffs to the extent that their operations are on a large scale. . . . Others have more or less deliberately remained paper organizations without significant division of labor (except between clerical and professional personnel) providing convenient sally ports from which the professors can emerge to gather funds from foundations and government agencies (Rossi, 1964, 1150-51).

The problem of integrating research units into the university remains the central issue in the present developmental phase of this innovation. Because of their tremendous significance to the advancement of the social sciences, and also because of the large sums that they contribute to the university budget, research organizations cannot be wholly ignored. But their marginal status, inherited from a half century of tenuous growth, prevents the simple formulation of means for achieving full integration. Nowhere is this problem more pressing than in the graduate schools of education.

The Case of Educational Research

Marginality has long characterized educational research units. In the following discussion, we shall be concerned with demonstrating the marginality of these units by reference to (a) birth and death rates, (b) problems of staffing, (c) problems of training, and (d) conflicts between service and research. Information on these points strongly suggests the precarious position of research agencies in the university.

A. The Birth and Death of Research Units

In order to ascertain the "life-chances" of research units, we computed rates of founding and mortality by comparing surveys conducted

periodically since 1923. Looking first at the annual founding rates in Table I, we find that the earliest and latest periods have been the most productive of new units. In terms of organizational founding rates, therefore, it seems that the past is now repeating itself. When we turn to the annual mortality rates for each period, we are furnished a clue to one of the major sources of organizational decline, namely, a lack of supportive funds. For it is obvious that the greatest attrition of research units occurred in the depression years, as shown by the average annual mortality rate of 15 per cent between 1932 and 1936. As a matter of fact, this is the only period in which the death rate exceeded the birth rate.

But budget cuts in the university cannot entirely explain the demise of these early research units, since even in non-depression years the death rate has been about 3 per cent annually. Over the entire span of forty years covered by our calculations, this annual rate of attrition would amount to a complete turnover of bureaus. This conclusion is a statistical fiction, of course, since a number of bureaus survived through several decades; but it does highlight the extreme instability of research bureaus in the universities.

Throughout the period covered by the available surveys, new doctoral programs in education were also being founded. In order to determine whether trends in the founding and mortality of units simply reflect the growth of education programs in the universities, it is necessary to compare our figures for research units with trends in the founding of doctoral programs. Also, by comparing the birth rates of units and of doctoral programs, we are able to draw more reliable inferences about the status of units within the structure of the university. For example, if the depression years affected the bureaus more than they affected programs of education, we would have reason to believe that research units are indeed marginal organizations which are readily abandoned when resources become scarce.

TABLE I

ANNUAL RATES OF FOUNDING, MORTALITY AND GROWTH OF RESEARCH UNITS AND OF DOCTORAL PROGRAMS IN EDUCATION, 1923-1964

	1923-1932	1932-1936	1936-1949	1949-1964
Research Units				
Founding rate (annual)*	19%	3%	4%	21%
Mortality rate (annual)*	4%	15%	3%	2%
Growth rate (annual)*	+15%	-14%	+00.5%	+19%
Cumulative frequency**	37	17	18	70 (est.)
Per cent change	+131%	-54%	+6%	+289%
Education Doctoral Programs				
Per cent change	+130%	+20%	+22%	+68%
Ratio of research units to doctoral programs (in first year of period, except for 1964)	.61	.80	.31	.27 .65 (1964)

*Annual rates represent the average percentage increase or decrease for each year in the designated period. This average rate was computed by dividing the percentage increase or decrease in each period by the number of years in the period.

**The cumulative frequency refers to the number of units existing in the last year of each period. In the earliest year (1923) there were 16 units.

Sources: Educational Directories, 1923 and 1932, U.S. Office of Education, Washington: Government Printing Office. William Rosengarten, "Organization and Administration of Educational Research in Departments, Schools and Colleges of Education in Universities," Rho Monographs in Education, No. 1, September 1936. Ruth E. Eckert, "Report on the Organization and Services of Bureaus of Educational Research in Leading American Universities" (mimeo), Office of Educational Research, University of Minnesota, 194-. Data for 1964 were provided by our current study. We are indebted to Jonathan Cole for collating and tabulating the data from these studies.

Between 1923 and 1932, the rate of increase in the number of units was exactly the same as the rate of increase in the number of doctoral programs, that is, 131 per cent and 130 per cent. This suggests that the development of research organizations was an inherent feature of the professionalization of education. Along with the acceptance of professional education in the universities, service and research emerged as auxiliary functions. The structural separation of these tasks from the teaching departments, reflected in the founding of research units, was an organizational prerequisite for the performance of these tasks. Later, in the depression years, there was an additional 20 per cent increase in doctoral programs, but a 54 per cent decrease in research units. The stringent financial conditions of the depression, therefore, were more harmful to research units than to doctoral programs. This disparity reflects the marginal university status of earlier units which had found it necessary to rely upon outside support from school systems.

During the following period, which comprised the late 'thirties, World War II and the postwar years, doctoral programs continued to be founded at a faster rate than research units: 22 per cent versus 6 per cent, respectively. It would seem, therefore, that the lag caused by the withdrawal of support in the depression remained until the 'fifties. In the past fifteen years, however, the rate of increase in the number of units far outdistanced that of doctoral programs: 289 per cent versus 68 per cent, respectively. In effect, the lag which developed in the 'thirties and 'forties was eliminated in the past decade or so. This can be seen with greater clarity when we examine the ratio of units per doctoral programs. In 1923, the ratio was .61, and in the

following decade it rose to .80. In the next two decades it dropped to .31 and then to .27. Finally, with increasing support from the federal government for research on education, the ratio of units to doctoral programs climbed to .65 in 1964, which was almost the same level as in 1923.

Although we did not study directly the role of the federal government in the founding of research units, the parallel trends in the growth of federal research funds and the growth of research units can hardly be considered accidental. Indeed, the younger the units, the greater the proportion of funds they were receiving from federal sources at the time of our survey, as shown in Table 3.

TABLE 3

PROPORTION OF BUDGET FROM FEDERAL SOURCES, ACCORDING TO AGE OF THE UNITS

Age	50% or more of budget from Federal Government
1 - 5 years	70% (10)
6 - 15 years	38% (16)
16 years or older	29% (17)

That federal funds were necessary for the growth of research units further testifies to the precarious position of these units in the universities. Quite simply stated, outside money was necessary for the support of the units because the universities themselves were not willing or not able to support them. Moreover, federal funds were also required to permit the units to engage in research as distinguished from service. As

seen in Table 3, the proportion of the units' budgets stemming from federal sources is strongly related to the units' emphasis on research.[1] Thus, 16 per cent of the units that received less than half of their total budget from the federal government were found to be highly research-oriented (i.e., more than 90 per cent of the budget devoted to research rather than to service). This figure contrasts with 48 per cent that received half or more of their budget from federal sources.

TABLE 3

RESEARCH ORIENTATION OF THE UNITS ACCORDING TO PROPORTION OF FUNDS FROM FEDERAL GOVERNMENT FOR "STUDIES" IN THE UNITS

Research Orientation (Per cent budget for research)	Per Cent of Budget from Federal Government	
	Less than 50%	50% or more
Low (0 - 49%)	40%	26%
Medium (50 - 89%)	44	26
High (90% =)	16	48
	100%	100%
Number of units:	(25)	(19)

The trend toward reliance on federal funds to sustain educational research units has increased markedly in the past four years. In that period, nine Research and Development Centers were founded with federal funds averaging almost a million dollars annually.[2] Each of these Centers houses an average of 18 projects, 68 professional personnel, 54 graduate assistants, and 18 other staff members. The contrast in size between the

[1]The extent to which the units emphasized research was measured by the proportion of the budget devoted to research: "Approximately what proportion of the budget is for research, and what proportion is for school services?"

[2]Three of these Centers, the first of those founded, were included in our survey. Most of the others have since been visited by the author.

traditional bureaus of research and the new Centers is therefore quite striking. Another difference concerns the explicit emphasis of the Centers on interdisciplinary work, which is sought by drawing upon the resources of several departments and professional schools within each university.

In sum, not only were government funds required to establish and maintain research units within the universities, but also to insure that research rather than service would tend to be the main purpose of the units. From a pattern of support by outside clients who requested specific services, the units shifted to another pool of outside resources, namely, the federal government. Financially, then, the universities have played the role of idle spectators rather than active participants in the growth, maintenance and goal-setting of research organizations.

These observations concerning outside support for research units bear out a common impression of the way in which innovations are introduced into the modern university -- from the outside rather than from indigenous sources.[3] Thus, not only did the early research units in education originate in the demand of school systems for service, but their shift towards research has likewise been a response to outside resources. This fact should not be lost sight of as we pursue the issue of marginality, for the external origins of research units is both symptom and cause of their failure to achieve greater institutional acceptance. If the units had been promoted purely in response to the needs of indigenous scholarship, it is probable that better administrative accommodations would have been made in their very beginnings. Since they have been grafted onto the universities, their status as a university component is bound to remain

[3] See, for example, the discussion of the role of outside resources by Hefferlin (1967).

ambiguous until the appropriate accommodations are made within the university.

Many successful scholars prefer not to establish permanent research agencies because of the insecure status of these units. Thus, there are a number of large-scale research teams whose members collaborate over an extended period of time but who shun the idea of establishing themselves on a more or less permanent footing. Many of these teams that have continued to survive over a number of projects would seem to provide a fertile seedbed for the growth of research organizations. But apparently such is not the case. One prominent scholar, who directed a sizable team of professional colleagues and research assistants, was reluctant to form his group into an organization because of the demands for sheer survival imposed by the creation of such units. He feared that a formal, permanent structure would compel him to devote attention to its continuance regardless of emergent intellectual interests. As he stated in an interview:

> What happens (as a unit director) is that you do something, complete the cycle, and then have to go looking for money with hat in hand. If I want to shift or get a related interest, a structure can get in my way.

Thus, expectations of rigidity fostered by institutional marginality may prevent a large number of energetic scholars from founding research units. The former director of a research unit that had been disbanded, partly owing to the unit's inability to respond to new intellectual demands, confirms the worst suspicions of many independent scholars:

> It is really only during its first few months that a research Bureau can feel free to commit its resources to most important thrusts. Thereafter, continuation costs become greater and greater, both in terms of funds and personnel. By the time a Bureau has been in existence for a decade, it is extremely difficult to pry loose from ongoing programs to attend to emergent requirements (Guba, 1966).

This lack of flexibility is by no means inherent in the operation of research units, but stems from conditions of financial insecurity and lack of integration with scholarly currents in the university. Left to their own devices, sheer organizational survival tends sometimes to take precedence over substantive goals. Thus, marginality places heavy constraints on the continuing fulfillment of goals.

B. Problems of Staffing

Another symptom of marginality is the serious problem of staffing. The research undertaken by units has represented only a minor portion of the total research effort in schools of education. According to our survey of authors of empirical research articles published in scholarly journals in 1964, only 21 per cent of the researchers affiliated with a graduate school of education conducted their research in association with a research unit. A similar figure was derived from our examination of research proposals submitted to the USOE in the period 1956-63. The proposals were classified according to whether the applicants intended to carry out the project (1) entirely within a research unit, (2) through the facilities of a research unit although not as a staff member, or (3) wholly independently of a research unit. The majority of proposals (68 per cent) were for projects to be conducted outside of research units. Fifteen per cent of the proposals were for facilitated projects, and another 15 per cent were for projects to be conducted by staff members.

The minor portion of research effort represented by the units in our study cannot be solely attributed to their location within professional schools, for the liberal arts and science departments contain only a slightly larger proportion of research personnel affiliated with research units. According to our survey of authors who published in 1967-68, only 4 per cent more liberal arts researchers who wrote an article on education were affiliated with research agencies. And according to our analysis of USOE proposals, only 7 per cent more planned to carry out research in connection with a unit. In short, the infrequent use of educational research organizations cannot be wholly attributed to the marginal status

of empirical research in the context of professional education. Whatever barriers to the founding and maintenance of research units prevail in professional schools, therefore, might also be found in the liberal arts departments.

The difficulty of eliciting the commitment of faculty members to these organizations is reflected in the recruitment problems of the directors. Our study reveals that recruitment of researchers is not only one of the most vital roles performed by the directors of research units, but that it is also one of the most problematic. When we asked the directors to check their responsibilities from an extensive list, 64 per cent checked "securing new staff members to do research," and 70 per cent checked "gaining the assistance of scholars in other departments in the university in planning or executing research." We also inquired of the directors whether they experienced "any difficulty in inducing faculty members in education in your university to undertake studies through your unit." In the response categories we included the option: "No effort is made to induce faculty members." Only 29 per cent of the directors took this option. Thus, judging from the responses to these items, it seems that a clear majority of the directors are engaged in building up and sustaining the staff of their organizations. And more significant, the majority of those directors who try to recruit faculty members indicated

that they experienced difficulty; indeed, a fifth of them indicated a "great deal" of difficulty. These results are summarized in Table 6.

TABLE 6

DIFFICULTY OF RECRUITING FACULTY FROM EDUCATION TO DO RESEARCH IN THE UNIT

"Do you ever experience any difficulty in inducing faculty members in education in your university to undertake studies through your unit?"	Per cent directors
Some effort is made:	
Yes, a great deal of difficulty	22%
Yes, some difficulty	29
No, it does not pose a problem	49
	100%
Number of directors who make an effort:	(41)
No effort is made:	29%
Total number of directors responding:	(58)

Another question that we asked confirms the difficulty encountered by many directors in their efforts to attract personnel:

On the whole, which problem would you say has been more serious in recent years? (Check one)

— Obtaining sufficient personnel to carry on the research program.

— Providing sufficient opoortunities for persons who wish to do research.

— Neither of these has been a problem.

Three times as many directors said "obtaining sufficient personnel" was a problem as said "providing sufficient opportunities." The respective percentages were 53 per cent and 18 per cent, while the remainder claimed

that neither was a problem. Quite obviously, opportunities for research in the units tend to exceed the number of researchers willing to participate. In sum, not only do most directors perform recruitment roles, but many experience some degree of frustration.

Especially disturbing, although none too surprising in view of the pressures for services in professional education, is the fact that recruitment is more often a problem for research- than for service-oriented agencies. In Table 7 we have classified the units according to whether they are predominantly research- or service-oriented. Clearly, service units find it easier than research units to attract professional members from the faculty of education. None of the directors of service-oriented units reported a "great deal" of difficulty, while 27 per cent of the directors of research-oriented units responded in this fashion. A major implication of this finding is that service competes seriously with research for personnel, a problem that we shall take up later on.

TABLE 7

PROPORTION OF DIRECTORS WHO HAVE DIFFICULTY RECRUITING FACULTY FROM EDUCATION, ACCORDING TO RESEARCH ORIENTATION OF THE UNITS

"Do you ever experience any difficulty in inducing faculty . . . ?"	Research Orientation (% budget for research)	
	Service Oriented (0-49%)	Research Oriented (50-100%)
Some effort is made		
Yes, a great deal of difficulty	0%	27%
Yes, some difficulty	45	27
No, it does not pose a problem	55	46
	100%	100%
Number of directors who make an effort:	(11)	(26)
No effort is made	35%	24%
Total number of directors responding:	(17)	(34)

Our data also provide insight into the sources of the recruitment problem faced by research units. Three major hindrances were identifiable on the basis of the directors' reports: lack of time to do research, lack of interest in research and, among those faculty members who were already doing research outside of units, fear of reduced autonomy.

The barriers of insufficient time and lack of motivation are evident in the replies of directors who said they had experienced difficulties in persuading faculty members in education to undertake studies through the unit. Immediately following this latter question, we asked, "What kinds of problems have arisen?" The responses were evenly divided between "lack of time" and "lack of interest in research." Some illustrations of the first problem, as expressed by the directors, follow:

> Small school of education -- staff members have too many roles.
>
> . . . Probably our major problem is to free enough time that faculty can get started on a project. Once projects are under way, one question leads to another and the research tends to be self-perpetuating.
>
> Coordinating their commitments with our schedule demands.
>
> Release time problem.
>
> Lack of time for planning studies.

Competition with non-research roles might present a greater problem in schools of education than in other graduate faculties. Thus, Cooper (1953) has noted the "self-consciousness which educators understandably have about teaching, impelling them to uncommon professional activity in directions apart from their research." Illustrative of the activities related to teaching are workshops, guidance programs, teaching innovations, field trips, off-campus classes, the testing of students, and study

councils. And despite the common provision of reduced teaching loads for research (the great majority of schools afford this opportunity), the proportion of faculty members who take advantage of this provision is surprisingly low. Our calculations, based on information provided by the deans in response to our survey, reveal that only 7.5 per cent of the faculty per school represent full-time equivalent personnel with reduced teaching loads for research. As for exemption from administrative tasks, which duties also absorb a great deal of the professor's time, in only a fifth of the schools is this provision made for research. The deans of education are by no means oblivious of the problem, however. When asked to check the factors that they consider to be either a major or minor hindrance to the advancement of educational research, the second most frequently cited problem (after financial support) was "amounts of teaching, administrative and other non-research duties connected with jobs held by people in education" (60 per cent).

The second barrier to faculty recruitment mentioned by the directors of the research units concerns lack of interest in research. For example:

> They are not interested in research in their own fields . . . they seem to lack ideas for research studies.
>
> This institution has not, historically, done much educational research. Since we are a new Bureau we find it difficult to break the tradition.
>
> Simply will not undertake the research.

There is little question that the climate for research in schools of education has been a poor one. In the late 'fifties, recipients of the doctorate in education ranked eighth in a list of nine disciplines regarding the proportion who had published one or more titles (Berelson, 1960, p. 55). At about the same time, Fattu (1960), drawing upon extensive

field interviews, observed that only 10 of the 94 universities that granted the doctorate in education "could be said to be making a serious effort to encourage research." Nor did the spectacular increase in the amount of federal money for educational research since the mid-fifties increase the number of educational scholars who applied for funds over the period 1956-63. While the number of applications from non-educators increased four-fold, eventually exceeding those from educators, the number originating with educators remained virtually the same. (These figures are based on our analysis of a 20 per cent sample of proposals submitted to the USOE in the period 1956-63.)

The peculiarly unfavorable climate for research in schools of education can also be gleaned from certain of our survey data collected in 1965. When we asked the deans to report the priorities of faculty members regarding the goals of teaching, research and service, only 6 out of 71 deans reported that most of the faculty placed research in the first rank. Even the deans themselves, whom one might expect to be worried about the erosion of teaching, gave higher priority to research: 18 out of 71 placed research ahead of teaching and service as a primary responsibility of the faculty. It is hardly surprising, then, that the directors of educational research units suffer from this value climate when they try to involve more faculty members in the work of their units.

The third source of recruitment problems, namely, fear of reduced autonomy, was identified when we asked the directors about faculty members outside the unit who were already engaged in research related to the unit's program:

> To the best of your knowledge, why have faculty members who are conducting research on topics which are studied by your unit

> remained unattached to the unit? (Here we are particularly interested in the comparative advantages of outside versus bureau research as seen by the faculty.)

(This question, incidentally, was applicable to the great majority of directors, for 79 per cent indicated in our questionnaire that research related to the work of the unit was being conducted elsewhere in the school of education.) And in responding to the question, desire for autonomy was by far the most frequently mentioned factor in the failure of researchers to affiliate themselves with the unit. Here are some illustrative responses:

> Unwilling to commit their available time to control by unit work schedule. This institution has a high order of individual autonomy in faculty, and a reluctance to forfeit it as a requirement for unit affiliation.
>
> . . . They would have to complete agreements and meet deadlines, [and] they would sacrifice individual place in the 'star system.'
>
> One has [done research in areas related to the unit's work]. He prefers to work independently of the strong interpersonal relationships of the [unit].
>
> This is primarily due to different conceptions of type of research, value of individual versus cooperative research, and control over certain units.
>
> Perhaps they felt that they were more autonomous. May prefer to be lone wolves. . . .
>
> Basic philosophy of departmental function -- decentralized philosophy of approach.
>
> Individualism. . . .

The issue of "autonomy" versus "control" by research units was also explored on our field trips to various schools across the country. Interviews with researchers who either desired to remain outside of any established bureau or rejected the notion of founding their own units tended to confirm the perceptions of the directors. One respondent, who

had been collaborating with two others on a program of research, referred to the team's "fifteen years of autonomy" when explaining his opposition to becoming affiliated with a unit that had recently extended the team an invitation to join the staff. In essence, it was feared that the team would fall under the authority of the unit's director and thereby "lose morale and identity."

Such attitudes as those reported above reflect the decentralized, pluralistic structure of the teaching departments as contrasted with the division of labor and formal hierarchical setting of research organizations. The teacher-scholar who is accustomed to having freedom of control over his resources and his research interests is reluctant to forfeit this freedom in behalf of collaborative work within a more centralized setting. As Rossi aptly observes:

> In American universities, departments do not engage in common scholarly enterprises in which a research task is broken down into components, each member of a department taking one component as his contribution. Indeed, when an academician refers to the independence of the academic life, he is usually referring to the fact that once he has met his teaching obligations (over which he has often a great deal of control) he is free to pursue his own intellectual interests within the limits set by local production standards and the amount of research funds he is able to obtain. Indeed, so pleasurable is the lack of a defined division of labor that any attempt to engage in large scale research enterprises has led to the grafting onto university structures of organizational entities in which such a division of labor is possible rather than imposing such a division of labor upon existing departmental structures (Rossi, 1964, 1149-50).

Despite the widespread feeling among academic researchers that intellectual autonomy is jeopardized by affiliation with research units, the point should by no means be accepted as axiomatic. In a subsequent section we explore the reality behind this common assumption.

There is still another barrier to the recruitment of researchers to the unit, one that directly reflects the institutional marginality of research agencies -- the difficulty of gaining tenured status for senior personnel. Where tenure is not available, it is virtually impossible to attract experienced researchers who will devote most of their time to the research unit. Practices in this regard vary a good deal, as shown by the responses to the following question:

> Are staff members without a primary appointment in teaching departments eligible for tenure?

In 23 per cent of the cases, there were no staff members without primary appointments in teaching departments. In about half of the remaining units, personnel without primary teaching appointments were not eligible for tenure. Thus, out of a total of 64 units, only about a third had any staff members whose primary appointment was in the unit and who were also eligible for tenure. The practice of withholding tenure from senior staff clearly signifies a failure to allot full-fledged university status to research organizations.

So far we have discussed only the recruitment of researchers from outside the organization. But there is an alternative means of building up the staff of research units, one which relies on internal recruitment from among graduate students. On the average, there are 7.6 doctoral students working on projects within each unit. Since these students have assimilated the traditions of work in the organization, they would seem to provide a natural pool of manpower for staff positions. In order to see to what extent this source was used, we asked the following question:

> Approximately how many of the doctoral students who worked in your unit in the past three years remained in the unit after graduation?

Out of a total of 42 organizations that employed students (and where the director responded to our question), only 31 doctoral recipients had been retained as researchers in the past three years. Apparently, the security afforded by a teaching position is more attractive to the alumni of research units than the research opportunities of the units. Also, our field interviews with directors suggested that there is a strong prohibition against in-breeding in these organizations. In view of the great investment of these units in student training, and the problems of recruitment and survival which the units continually confront, it seems unfortunate that more students are not kept on for postdoctoral research.

C. Problems of Training

In view of the reluctance of faculty researchers to become engaged in the work of research units, it is not surprising that doctoral students also tend to remain unaffiliated. Only a small proportion of the doctoral candidates in education work on projects in research units. A national survey of doctoral recipients in education reveals that 16 per cent of the 1954 graduates worked in research units during their studies. Among the doctoral recipients of 1964, or ten years later, this figure was even lower: 13 per cent (Buswell, 1966, p. 44). Further, at the time of our

study less than a third of the units had special training provisions for students; and less than half of these units had any funds earmarked for student training.

Shortly after our survey, however, the USOE began disbursing funds for the training of educational researchers. As with support for research, the government was obliged to step in and allocate funds for educational research training, the universities and professional schools having failed to finance this function anywhere near the level demanded by the creation of research positions in educational settings. But even with the influx of federal funds, which have amounted to about $8 million each year since 1965, educational research units have made only moderate headway in assuming a greater responsibility for training. Our study of the new USOE research training programs (Sieber, et al., 1968) revealed that only 14 per cent of the graduate training programs (comprising the same percentage of trainees) were operated by research units, the remainder wholly under the supervision of teaching departments.
being / Discouragingly, this level of participation is almost identical with that of doctoral recipients in education a decade earlier as reported by Buswell. No doubt the USOE program, which included funds for supervisors and required the applicants to afford meaningful apprenticeships in research, provided a better climate for training than prevailed in former years; but it is dismally obvious that the USOE program did not augment the number of students affiliated with research units.

The under-utilization of research units by the USOE programs can be pinned down more precisely. In order to see to what extent the more qualified research units in our survey later participated in the USOE training programs, we identified those units predominantly engaged in

research rather than service and located in schools with training programs, and then determined the number of such units that participated in the training programs. Of the 25 units thus identified, only 13 were slated for cooperation with these programs in the proposals submitted to Washington. In other words, even when a special program for research training exists on campus, the chances of utilizing the resources of a local research unit are only about fifty-fifty.

To be sure, there are many students who work in research units because of a need for money or research experience; but there is no guarantee that sheer employment on projects will contribute to a student's education. Under present funding conditions, projects are regarded as having fixed deadlines with only sufficient funds for research operations. These constraints lead to an emphasis on production of research reports with little attention given to training. To take on an assistant who wishes to learn research skills is time-consuming and costly, since the student's work must be closely monitored. Under the prevailing project system, in effect, there is a built-in conflict between research production and student training. Consequently, many potential recruits to social science research are loathe to work in units that are compelled to meet recurrent deadlines for their bread and butter. One of the directors in our study has described the problem as it developed in a unit without special training provisions:

> The typical Bureau project is very like the typical industry, which when it requires personnel, hangs out the "Help Wanted" sign and waits for applicants. When a new project is to be gotten underway, available graduate students are interviewed for positions as research assistants, and decisions have to be made on the basis of the available pool. The contribution which a

> particular position can make to the training of the student involved is rarely considered either by the project director or the student. The student usually wants support; the project director has a budget line to fill.
>
> Thus, the student is often mismatched to the job. He is likely to be given a task which has little relation to his major substantive interest. . . Further, since the project dates and peak periods have little relation to the academic calendar, the student may find himself in an awkward position in respect to maintaining a reasonable academic program. None of this experience is likely to add up to anything meaningful for the student; he might as well be working the night shift at the local A & P, where, incidentally, he might even earn more money (Guba, 1966, p. 25).

An alternative to the inducement of money, of course, is the offer of academic credit for reserach internship. Providing credit for research work automatically converts the staff researcher and his assistant into a teacher and a student, respectively. Thus, the staff researcher would be paid out of the university's instructional budget, thereby releasing him from full-time commitment to his project, and the student would seek to gain specific internship experiences in an allotted period of time as part of his normal academic career. However, the practice of giving credit for research assistance appears to be rare in the social sciences, even when the mentor has full faculty status. With respect to the field of education, an intensive study of 33 research training programs at the doctoral level in 1967 revealed that although 31 of these programs provided some form of research apprenticeship, only six offered academic credit for the experience (Roaden, 1969). In the absence of immediate academic reward for internships (i.e. credit), money continues to be the chief inducement for students to work on projects for a respectable period of time. This means that an employer-employee relationship rather than a teacher-student relationship will continue to prevail.

The consequences of poor integration of research units with the on-going academic enterprise fall heavily upon graduate students. Further, the reluctance of students to work in research units, or their mismanagement when they do come aboard, jeopardizes the continued existence of many units. Both research work and student training at the graduate level suffer from this chronic state of affairs.

D. The Conflict Between Service and Research

A problem peculiar to professional fields is that of pursuing scholarly inquiry in the face of persistent demands for service. Many research units in education have fought long and hard to stave off the demands of practitioners in order to complete research work on vital, basic issues of education. Indeed, this problem has been one of the major hindrances to the institutionalization of scientific research in the field of education generally. Lacking a clearly defined mission of empirical scholarship, and the institutional support necessary to carry out this mission, research units have been sidetracked by a myriad service demands. Although the problem is felt most acutely in a professsional

field like education, the academic fields have experienced mounting pressure for social services over the past decade. Thus, the history of the relations between service and scholarship in education might carry lessons for the social sciences as they stand on the threshold of an era of greater social involvement.[4]

A plaintive expression of the conflict in education has been contributed by Arthur I. Gates, a leader in the field of educational research for several generations.

> In my first interview with James E. Russell, the famous head of Teachers College, he dangled before me a carrot of a job, and gave me a little lecture on the difference between the academic and the professional mind. I, like Thorndike and others before me, had received only an academic training in the psychological laboratory. Dean Russell was right in believing that in early days the young academically trained psychologist, for example, should open his eyes to the practical problems of education. He could have been forgiven, moreover, for not foreseeing that the young scientist was going to be fighting for his very life-as-scientist against exactly the opposite influence -- the never-ceasing pressure to be practical, to solve the practical problem, to give students practical help, to tell teachers exactly what to do. This pressure, which comes in a flood from one's students, from teachers and administrators in the field, and eventually from the majority of the staff of the school of education itself, has, in my opinion, determined more than any other one influence the history of science in education. If the tide of science in education has been ebbing during the past three decades, it is due in large measure to this relentless pressure of the practical, which takes many forms, and which is an almost inevitable consequence of the fact that school teachers and administrators must act practically on myriads of problems every day.
>
> An outstanding achievement of Thorndike, and most of the other great men of his day, was their success in fighting off this pressure . . . [our italics] (Gates, 1964, p. 297).

[4] Actually, the liberal arts disciplines have been long engaged in meeting social needs. Economists in government and business, sociologists in industry and psychologists in many areas of practical affairs have been representative of the social involvement of the disciplines for several generations. But only in recent years have these roles gained in prestige, and special efforts been made to increase the involvement of social scientists in an attack on national problems.

The ubiquitous demand for services reflects a feature of education which is unique among our social institutions, namely, constant pressure from society to overhaul and streamline the educational enterprise. Education could almost be called one of our abiding social problems. The current crisis in education had its counterpart in the early decades of the century when the schools were flooded with children who would never advance beyond the secondary level. Accordingly, Trow (196) has characterized the agonizing shift to college-preparatory programs in the secondary schools in the past decade as "the second transformation" of American education, the first being the transition from elite education to terminal education in the late nineteenth and early twentieth centuries. In addition to these pressures for drastic overhauling, there have been crises centering on "efficiency" (teens and 'twenties), lack of financial resources and of social consciousness ('thirties), lack of facilities and teachers (late 'forties), lack of appropriate political and moral indoctrination ('fifties) and lack of equal opportunity ('sixties). In short, the American educational system has been subjected to severe pressure and criticism for many decades, and there seems to be little respite in view.

What might be called the "permanent crisis" of American education arises from its peculiar vulnerab. lity to social change. Because education is viewed as a major vehicle for achieving social readjustment, rapid social change is accompanied by demands for equally rapid adaptations in our educational system. But owing to the size, complexity, and decentralized organization of the American system of education, the rate of adaptation is bound to be slower than the rate of social change. The gap that results may even be a whole generation; accordingly, the educational

system is almost continually under pressure to catch up with the times.

The conditions of emergency under which education tends to operate place a heavy burden on expert solutions. And since the production of knowledge by the behavioral sciences has lagged far behind the needs of the profession, expertise has taken the form of practical wisdom uninformed by research evidence. The content of this expertise has been dictated by the rapidly changing needs of education in response to social change, rather than by fundamental questions about the process and structure of education. Therefore, even when important research is undertaken, it is often tailored to the narrowly conceived needs of practitioners.[5]

Many of the administrators covered in our surveys appreciate the problem of conflicting demands between field service and research. This conclusion is suggested by their responses to a question addressed directly to this issue:

> It is sometimes claimed that the desire of school systems for field services draws personnel and resources away from educational research. Do you consider this a problem in your institution? (your unit)? If not, why not? If so, how do you think the problem could be alleviated?

Thirty-seven per cent of the deans, 18 per cent of the coordinators and 25 per cent of the unit directors reported that competition between service and research was a problem in their institution or research unit. And not surprisingly, the drain on research manpower is more often reported for public universities. In Table 8 we have classified the deans and bureau

[5] If the reader doubts that present-day concerns are dictated by social emergencies rather than by enduring needs, we need only point out that researchers are not currently concerned with the education of artists, social activists, entertainers, service workers, parents, and a host of other statuses which are indispensable to our civilization.

directors according to the university's type of control (coordinators are not shown because virtually all of them are located in public institutions). Deans and directors in public institutions are about twice as likely as their counterparts in private universities to report that service work detracts from research. Since we can be sure that service activities loom large in public institutions, these results lend credibility to the reports of the respondents regarding the existence of the problem.

TABLE 8

EXISTENCE OF COMPETING DEMANDS BETWEEN RESEARCH AND FIELD SERVICE IN PUBLIC AND PRIVATE INSTITUTIONS, ACCORDING TO DEANS AND UNIT DIRECTORS

"Are personnel in your institution (or unit) drawn away from research by field service work?	Type of Control	
	Public	Private
% respondents of each type reporting that the problem exists:		
Deans	45%	24%
Number of deans:	(42)	(29)
Unit directors	34%	15%
Number of directors:	(35)	(13)

Those deans who acknowledge the service drain on research manpower mentioned various means of coping with it. Enlarging the faculty so that both functions could be carried out was the solution most commonly offered (59 per cent of the deans who reported the problem so responded). Some illustrative replies follow:

> The demand for field services is more immediate than that of research, so we yield to the demand. Since personnel is limited, research is put off in favor of field services. The problem can

be alleviated when we can supply sufficient personnel to do both.

It is a problem here largely because of a serious staff shortage. A major means of alleviating the situation at most institutions is the development of adequate staff resources.

Very much a problem. The only viable resolution is a larger staff if, as I believe, all professors should be engaged in research and field service, as well as teaching.

It is a problem. Only remedy: appropriated funds for more personnel so that total load can be carried, including service activities.

A number of the unit directors made similar comments about the problem:

I suspect that we "grease the wheel that squeaks" -- that we supply the service that is demanded so that research, as such suffers.

Services detract from research. Our major problem is that when a faculty member conducts research on a relevant educational problem he is harassed for service and implementation.

Yes, it is a problem. The only answers are: (1) more money and personnel, (2) ignore requests of school systems.

Yes. Could be alleviated by establishing a separate affiliated services unit.

It is probably more difficult to protect the integrity of research within bureaus than among departments, since a certain measure of insulation is provided within the school by departmental boundaries. For example, the division of school administration may be heavily engaged in routine providing/services while the department of educational psychology may be equally concerned with academic / research. But research units are much smaller agencies than schools of education, making it more difficult to keep the activities in proper balance.

About two-thirds of the research units in schools of education perform services for local school systems, and about a fourth conduct "service research" for the administration of the university. Thus, service

activities are by no means a rare occurrence in these units.[6] (Table 1 in the Appendix shows the frequency with which services of various kinds are performed by the units in our study.)

A number of bureaus have relinquished their service activities to other units over the years, reflecting the gradual functional differentiation of research from service. In some cases, the service wing expanded and sought a more influential voice in the determination of the unit's program. This eventuated in the separation of services as a means of maintaining the integrity of the research program. In other, less fortunate cases, research was virtually driven out of existence. The following case histories of several research units that survived for about four decades illustrate the problems that have arisen in trying to combine services and research activities under the same roof.

> The Bureau of Educational Research, Minnesota, was founded in 1915 for the purpose of carrying out school surveys and testing, and then publishing the results for the benefit of local school systems. In addition, in 1924 the Bureau began cooperating with a Committee on Institutional Research which was responsible for studies of the university's operations; and in 1937, the Bureau and the Committee were combined under the same director. Thus, for several years the Bureau was engaged in service studies for both school systems and the university. In 1948 a separate bureau was established to conduct school surveys, and in 1950 another separate unit was set up for institutional studies. The creation of these new units made it possible for the Bureau to focus its energies on more basic types of research.

[6] It should be emphasized, however, that services have markedly declined in research units over the past several decades, indicating the emergence of a distinct research orientation. This trend is revealed by a comparison of five surveys conducted at intervals during the past forty years. For example, while about 95 per cent of the bureaus studied by Chapman (in 1927) conducted some form of testing service, only about 50 per cent did so in 1949, and today only 5 per cent of the units are so engaged. The same pattern can be seen for school surveys: 86 per cent in 1927; more than 67 per cent in 1936; 61 per cent in 1949; 46 per cent in 1948; and 43 per cent in 1965. Similarly, with test construction there was a decline from a frequency of 71 per cent (1927), to 50 per cent (1949), and then to 10 per cent (1965). Service research for the university administration and for the state department of education has also declined in roughly linear fashion over the years. The sources of our information about activities are Chapman (1927), Rosengarten (1936), Eckert (1949), Miller (1958), and our own study (1965).

The Bureau of Educational Research, University of Illinois, began operations in 1918 by canvassing the school administrators of the State for problems on which research was needed. It is not surprising that first consideration was given to the conduct of a testing service for the schools. In addition, the Bureau conducted school surveys, including curriculum, plant, and financial studies, and "child-accounting." In 1921, a new director was appointed who sought to shift attention from "research of the philosophical type" (from the questionnaire). But throughout the 'thirties economy cuts in the University reduced the staff to one man -- the director -- and the Bureau was not reactivated until 1947. The new organizational form which the Bureau took at that time included field services as an important activity. According to the current director, "The main organizational goal was to integrate basic research and field services operationally on the proposition that both would be enriched." At about the same time, the Bureau incorporated the High School Testing Bureau as a new unit on evaluation.

The hoped for coalescence of service and research proved to be impossible, however, as a result of a conflict between the director and the head of field services over the proper division of authority. In 1951-52 the staff members involved in field services were moved to a new Office of Field Services where they could more readily expand operations. The unit on evaluation continued to operate within the Bureau until 1963 when a separate Center for Research and Curriculum Evaluation was founded. This separation was also a consequence of the division's desire to expand and to exercise sole authority over its work. As the present director has pointed out in our questionnaire, "This action resulted in the final separation of service from basic research."

The Bureau of Educational Research, University of North Carolina, was created in 1923. Chapman (1927) described the beginnings of the Bureau as follows: "(the bureau) began its work by making a survey of the educational achievements and mental ability of the high school and grammar school graduates in the State. It also engaged in test construction and in a survey of the county-school system in North Carolina."

During the 'thirties, increased pressure for school surveys occurred as a result of centralization of State school systems and financial difficulties arising from the depression. School surveys were conducted until recent years when increased staff in the State Department of Education made it possible to transfer this activity to a State agency. Some services are still rendered to school systems by this Bureau, however.

Two of the seven bureaus which have survived since the 'twenties were less successful in handling the problem of services.

The Institute of Psychological Research, Teachers College, Columbia, was originally one of three divisions within the Institute of Educational Research. The Institute was originally called the Division of Educational Psychology; the other divisions were Field Studies and School Experimentation. Six years after the founding of the Institute, the Division of School Experimentation was abolished, so that the Institute was comprised only of the divisions of psychological research and of field studies for most of the remaining nineteen years of its existence. (Two other divisions operated for short periods during the nineteen years.) In 1946 the two divisions were reorganized as discrete bureaus. However, seven years before this separation, Edward Thorndike had retired from the directorship of the Division of Educational Psychology and was succeeded by Irving Lorge. Lorge had shifted the emphasis of the Institute towards a testing service for schools and for several divisions of the University. Since he was less successful than Thorndike in obtaining outside grants for research, testing services tended to fill the gap.

Another bureau which shifted radically in the direction of services, and which only recently was able to revive its research program, is the Bureau of Educational Research and Services, Ohio State University. The history of this organization is particularly instructive concerning the conflict between research and field services. For this reason it deserves to be presented in some detail.

The Bureau of Educational Research and Service, Ohio State, was originally known as the "department of efficiency tests and surveys." B. R. Buckingham, who was brought from the Bureau at Illinois to head the new Bureau in 1921, felt that the Bureau's obligations to the furtherance of research should be limited to a reference function. Accordingly, he created a library and an editorial division. Buckingham also headed the survey division until 1927, when T. C. Holy assumed responsibility for surveys. In 1925, the Appointment Bureau of the University, which was concerned with job placement for students and alumni, was moved to the Bureau of Educational Research. When Buckingham was succeeded by Charters in 1928, the Dean added three new divisions to the Bureau as a condition for Charter's assuming the post. These divisions were called: University Curriculum, Student Personnel, and Accomplishment Tests. In 1930 a 10-day conference on educational radio was held, and in 1935 a Radio Division was created within the Bureau. Ten years later the University Radio Station was assigned to the Bureau. In short, over the years there was a gradual accretion of service responsibilities to the University

and to local school systems, and particularly in the 'thirties when school systems were trying to stretch their scant funds as far as possible. At the same time, research continued to thrive within the Bureau and the famous Eight-Year Study, undertaken from 1932 to 1940, stands as the most exceptional accomplishment of Charters' directorship.

Increased services did not displace research activities until Holy's appointment as Director when Charters retired in 1942. Holy, it will be recalled, had succeeded Buckingham as head of the division of school surveys fifteen years earlier. During Holy's directorship the Bureau shifted radically toward service and away from research. In the late 'forties a new Dean of Education wished to redress the imbalance, and therefore when Holy retired in 1951, Arthur W. Foshay was selected from outside the University to direct the Bureau. But Foshay was probably looked upon as "the Dean's man" by the Bureau staff. Further, the faculty in the Department of Education wished to use the Bureau as an instrument for their own service activities, which provided a source of extra income; thus, the faculty strongly reinforced the orientations of the Bureau staff. The major source of support for continuance of past arrangements was, of course, the school systems of the State, which eagerly sought the low-cost services of the Bureau. As a matter of fact, the "school plant" division was so beleaguered with requests for help from the schools that it was not unusual for a year to elapse between the first approach of the client and the commencement of work. For these reasons, Foshay was unable to revive the Bureau's tradition of empirical research.

When Foshay left the Bureau in 1957 he was succeeded by H. W. Nisonger as Acting Director. Nisonger had formerly headed the Bureau of Special Education and the Bureau of Adult Education, both of which were devoted to teaching rather than research. In 1958, a Division of Educational Research was created by the Dean in an attempt to re-establish research as a basic activity of the Bureau, and Egon Guba was appointed as the head of this division. The division was liquidated three years later when Nisonger retired and Guba replaced him as the Bureau's seventh director. Like Foshay before him, Guba was expected to resuscitate the Bureau's research orientation. At this time about 90 per cent of the Bureau's budget was devoted to field services.

Guba sought to reorganize the Bureau and met for this purpose with a number of committees. Eventually, five divisions were established, and two of these divisions undertook several new research projects with outside funds. An Ad Hoc Division comprised a number of projects which were facilitated for faculty members. During the same period, the number of service studies conducted by the Bureau declined. This drop in service work was apparently an outgrowth of staff meetings which were convened to discuss the problem of field service, although as the Annual Report for 1963 points out,

> there also resulted "considerable uncertainty about how to proceed to improve" the field service program. And this report goes on to note: "Accordingly, no step-by-step plan has evolved." In essence, Guba sought to redefine services as developmental and demonstration activities based on empirical knowledge.
>
> Guba has summed up his experiences as bureau director in a recent paper as follows: "It is very difficult indeed not to be responsive to persons seeking help. Their cases are generally well stated and their situations are often nearly desperate. To turn one's back on them is almost unthinkable. It is this kind of siren song that can quickly divert what are necessarily meager research resources into the insatiable channels of service. I reiterate again that it is my personal conviction that a University must establish some reasonable posture toward rendering field service, but the existence of a research bureau renders almost impossible the maintenance of this posture at a balanced level."[7]

The adaptations that were made to the demands of public schools, and the effects of different approaches to the problem, suggest that the continuance of research programs has often hinged upon the manner in which field services were handled by these bureaus.

The failure to differentiate service and research roles has obscured the very conception of "research." A necessary condition for the institutionalization of a science is a high order of agreement on the activities which distinguish the science from non-scientific pursuits. By "institutionalization" we simply mean widespread consensus on the rules of the game and on the legitimacy of a particular group's acting in conformance with those rules. Thus, if the "game" itself is ill defined, then it is unlikely that the "rules" can be developed. In short, the scientific must be somehow distinguishable from the non-scientific. In the field of education, however, it seems that the appeals of service work have become

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[7] This historical case study of the BERS is based on the works of Chapman (1927) and of Miller (1958), field interviews conducted by Sidney Spivack and by Sam Sieber, annual reports, and the questionnaire received from the director. Guba has set forth his views in a paper delivered at the conference for Research and Development in Education, February, 1966, Chicago.

so dominant that the very definition of research has been blurred.

Anticipating this possibility in our study, we asked our respondents to check from a list of activities those which they considered "research." The question read as follows:

> Since the term "educational research" is used in a variety of ways, it is often difficult to know what a person means by it. To which of the following kinds of activity do you ordinarily apply the term "educational research?"

Four of the activities in the check-list were highly service-oriented. The proportions of deans, faculty research coordinators, and directors of research units who applied the term "research" to each of these endeavors are shown in Table 10. More than half of the respondents regard "school status studies" as research, while sizable minorities regard "designing" and "school surveys" as research. More than a fifth of the unit directors apply the term educational research to "dissemination." In general, the unit directors are the most likely of the three groups to apply the term to each of the activities listed.

That the directors of research units are more liberal than deans and coordinators in their definition of "educational research" attests to the impact of service activities on conceptions of the nature of research, an effect which has been reenforced by the institutional marginality of these units. In order to make this clear, we have classified the research units according to whether they are performing the activities alluded to in our list of definitions of educational research, and then observed the definitions of research expressed by the directors.

TABLE 10

SELECTED ACTIVITIES CHECKED AS "EDUCATIONAL RESEARCH" BY DEANS, COORDINATORS, AND UNIT DIRECTORS

Types of "educational research"	Deans	Coordinators	Unit Directors
Collecting statistics on school practices and educational outcomes, sometimes called "school status studies":	54%	52%	55%
Designing new curricula and methods of instruction:	33	32	50
Local school surveys (curriculum, financial, plant, etc.):	33	26	41
Disseminating new curricula, methods of instruction, or other school practices:	4	3	22
Number of respondents:	(73)	(31)	(64)

Table 11 provides evidence for the notion that engagement in traditional service activities is detrimental to the maintenance of scholarly standards. If the borderline between the systematic production of new knowledge (research) and the provision of direct aid to a client (service) is not clearly observed, then it becomes difficult to stipulate those skills, standards and perspectives which are required for scientific work. Training in research as well as the quality of output might suffer as a consequence. That this borderline is unclear in education as a result of involvement in service activities is shown by the fact that directors whose units provide certain services regard these services as "research" much more often than other directors. Thus, we see that directors of research units which conduct school surveys are far more likely to define research as "collecting statistics" and as "school surveys." Likewise, directors of units which help schools implement new programs

TABLE 11

PROPORTION OF DIRECTORS WHO APPLY THE TERM "EDUCATIONAL RESEARCH" TO SELECTED SERVICE ACTIVITIES, ACCORDING TO WHETHER THE SERVICE IS PERFORMED BY THE UNIT

Activities checked by directors as defining "educational research"	(Per cent directors who checked each activity according to):	
	Services performed by the unit	
	School surveys	
	Yes	No
"Collecting statistics"	69%	49%
"School surveys"	77%	17%
Number of directors:	(26)	(35)
	Help schools implement new programs	
	Yes	No
"Designing new practices"	63%	35%
"Disseminating new practices"	40%	6%
Number of directors	(30)	(31)
	Supply consultants to local schools	
	Yes	No
"Disseminating new practices"	30%	12%
Number of directors:	(37)	(24)
	Publish journal, bulletin, or newsletter	
	Yes	No
"Disseminating new practices"	33%	15%
Number of directors:	(27)	(34)
	Prepare bibliographies on educational topics	
	Yes	No
"Disseminating new practices"	47%	14%
Number of directors:	(17)	(44)

more often define research as "designing new practices" and as "disseminating new practices." Finally, directors of units which supply consultants, publish a journal or newsletter, or prepare bibliographies are also more likely to define research as "dissemination." These results are striking evidence of the effect of service preoccupations on conceptions of research. The dependency of university research organizations on the resources and esteem of clients outside the university -- a clear-cut symptom of institutional marginality -- is largely responsible for this state of affairs.

E. Summary

Research units in education have suffered from precarious funding for a number of years, as shown by their high mortality rate, and especially during periods of financial stress. The units that have survived tend to be quite small, and even those professional persons who seek their assistance do so on a limited basis. The directors are therefore confronted with the serious problems of recruiting and retaining staff members. Apart from the poor climate for research in schools of education, the reluctance of researchers to become associated with the units can be traced to (1) conflicts between research, on the one hand, and teaching, service and administrative obligations, on the other; (2) the traditional concern for collegiual autonomy in the formulation and pursuit of scholarly interests; and (3) reluctance to grant tenure to personnel in the unit. These factors are indicative of the failure to integrate research units into the existing structure of higher education. Consequently, students also remain unaffiliated with research units, or else are employed as hired hands; and even when federal funds are provided for training in research, the units tend to remain under-utilized. In effect, the marginality of research organizations is reproduced in each subsequent generation. Only by "growing their own" can research units attain continuity and develop an effective tradition of intellectual work. This point will be elaborated further when we turn our attention to the unique advantages of research units for student training.

The reliance upon school systems for support, and the precarious position of research within professional schools of education, have fostered a preoccupation with service to the detriment of research. So compelling have been the demands for service that they have eroded the very conception

of "research" as a distinct enterprise. In this as in other respects, then, the marginality of research units has hindered the achievement of university goals. Despite their marginal status, however, the units contribute a great deal to the advancement of knowledge and the fulfillment of other university objectives. This is the subject of the following chapter.

CHAPTER II

THE CONTRIBUTIONS OF RESEARCH ORGANIZATIONS

In light of our preceding analysis of the marginality of research units, it would be none too surprising if their contributions were found to be meager. But this is far from being the case. In several respects, it can be demonstrated that research units perform functions which are sorely needed, not only by the substantive fields to which they address their efforts, but by the university whose growing complexity has placed enormous strain on an outmoded organizational scheme. In the present chapter, we present findings from our study that affirm the value of research units in serving both intellectual and organizational needs. First, we look at the units' contribution to knowledge; second, we examine their role in overcoming the extreme pluralism of the university structure.

A. Contributions to Knowledge

Virtually every research topic related to the understanding and improvement of education is being studied by research units in schools of education. Table 12 shows the proportion of units that devote attention to each of the topics listed in the questionnaire for directors. Some units specialize in one area alone (36 per cent of the units), while others encompass a variety of topics.[1] Overall, about five topics were under

[1]Since the time of our study, the six additional R & D Centers created by the USOE have increased the number of specialized units by nine. These Centers focus on such areas as school organization, teaching, individualized instruction and pre-school stimulation for learning. For a description of their activities, see USOE-Funded Research and Development Centers (1968).

TABLE 12

TOPICS OF RESEARCH

	Per Cent Research Units
Tests and measurements	58%
Methods of instruction	52
Educational administration and organization	52
Reading	31
Psychology of learning	31
Teacher personality	28
Research methodology (other than tests and measurements)	28
School-community relations	28
Talent, creativity of students	27
Social studies curriculum	25
School finance	25
Special education	22
Guidance and counseling	22
Mathematics curriculum	20
Language arts (other than reading and foreign language)	20
Natural sciences curricula	16
Child development	16
Teaching as a profession	16
Adolescent development	14
Comparative education	6
Foreign languages curriculum	6
History of education	5
Physical education	2
Number of units:	(64)
Mean number of topics per setting:	5.5

investigation in each unit. But whether research units are undertaking projects that mark a departure from traditional educational studies hinges on the identification of differences between the research of the units and that of independent scholars. Once again we draw upon our surveys to examine this question.

Deans and research coordinators were asked about research being conducted outside of any existing research unit, while the directors were asked about the work of their agencies. Ranking the topics listed in the questionnaire according to frequency of mention within each of the two settings yields similar results ($r = .73$). We therefore rank-ordered the percentage differences between work on topics in the two settings, in order to discern particular differences in priority. Table 13 presents the topics according to this rank-order. We have divided the topics into three categories according to the degree of discrepancy (size of percentage difference) between the two settings.

Among the topics that are most highly characteristic of independent scholars (category I) are two areas based mainly on library research: history of education and comparative education. Three other areas in this category tend to be psychologically oriented: guidance and counseling, special education, and psychology of learning. The one remaining topic in this category is perhaps the oldest and most researched field in education, i.e., reading.

In the bottom section of Table 13 (category III) we find six topics which are studied in bureau settings as often as in non-bureau settings. (Since the units comprise only a small proportion of the faculty of education, this category represents those topics which unit personnel are more

TABLE 13

RANKING OF RESEARCH TOPICS ACCORDING TO THE EXTENT TO WHICH THEY ARE MORE CHARACTERISTIC OF RESEARCH OUTSIDE OF RESEARCH UNITS

	Per cent difference between extent of research outside and inside research units*
I	
Guidance and counseling	+ 42
History of education	+ 28
Comparative education	+ 26
Reading	+ 20
Special education	+ 20
Psychology of learning	+ 18
II	
Physical education	+ 14
Mathematics curriculum	+ 13
Natural sciences curricula	+ 13
Child development	+ 13
Social studies curriculum	+ 12
School finance	+ 12
Business and distributive education	+ 12
Talent, creativity of students	+ 9
Foreign languages curriculum	+ 8
Methods of instruction	+ 7
Adolescent development	+ 7
III	
Educational administration and organization	+ 2
Teacher personality	0
Research methodology (other than tests and measurements	- 2
Language arts (other than reading and foreign languages)	- 2
Tests and measurements	- 3
School-community relations	- 3

*(+) denotes excess of non-unit research, while (-) denotes excess of unit research.

likely to study.) None of the areas in this category are based on library research, and only one of the topics is psychologically oriented, i.e., teacher personality. And it is noteworthy that this latter area differs from the psychological topics characterizing non-unit settings in its focus on faculty rather than on students. Finally, two of the topics have an empirical social science orientation (educational administration and school-community relations) and two are methodological subjects (tests and measurements, and other methodology).[2] These findings lead to the conclusion that investigations in research units are more likely to be related to the empirical social sciences and to be methodologically innovative. In view of the overwhelming emphasis in education on psychological approaches, it would not seem inappropriate to characterize these concerns as lying on the "frontiers" of educational research.

The emergence of research units, then, reflects not only the functional differentiation of research as a relatively new academic role, but also differentiation within this role according to emphases on new intellectual problems. Both the newer activity and the newer content of the activity have required the innovative structure of research units.

It should be underscored that these differences between the foci of research units and of individual scholars are in marked contrast to the

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[2]Similar results pertaining to social science research were found when we examined the proposals submitted to the U.S.O.E. Seventeen per cent of the proposals submitted by applicants in research units were devoted to an investigation of the community context of schools, compared with only 5 per cent of the proposals submitted by individuals who were in no way affiliated with such units. When we compared the disciplines of the principal investigators, we found that 19 per cent of the bureau applicants had social science backgrounds compared with 8 per cent of the non-bureau applicants.

notion that pioneering efforts are most likely to be exerted by the researcher who works independently of a research agency. This notion is part of the mythology created by traditional scholarship to legitimate its mode of activity. One of the schools of education in our study -- one of the largest and most highly respected in the country -- had deliberately discouraged the establishment of research organizations as a result of this ideology. As the dean explained in a published report on the school's research activities: "Individual research, whether or not it enjoys the benefits of special financial support, represents the growing edge of knowledge in all fields." As well as we can judge from our data, this notion is not supportable.

Another symptom of the innovative nature of research undertaken by units is the larger scale of their projects. Educational research has long been criticized for its fragmentary, small scale character. Lack of research funds was undoubtedly a contributing factor; another was the psychological nature of most educational studies, which made it possible to rely on small-scale, experimental designs. With the advent of federal support in the mid-fifties, opportunities arose for larger, more complex projects. And it was the research unit with its more efficient division of labor, rather than the independent scholar, that took advantage of this opportunity.

Drawing upon our content analysis of the research proposals submitted to the USOE in the years 1956-63, we note that proposals from research units contained plans for studies of greater magnitude than proposals from individual researchers. Table 14 shows the proportion of proposals submitted by (1) staff members of units, (2) faculty whose

research was intended to be facilitated by units, and (3) independent faculty researchers, according to three measures of magnitude: amount of funds requested, number of full-time equivalent professional persons planned for the study, and intended duration. With respect to all three of these measures of magnitude, the projects proposed by the staff of research units tended to be more ambitious in scope than those of independent researchers. And it is especially interesting that the greatest discrepancy occurs in the instance of money rather than personnel or duration. This signifies that more funds were also intended to be spent on execution of the research plan (data collection, processing, etc.) rather than only on salaries of the additional senior personnel found on larger projects. In

TABLE 14

SIZE OF PROJECTS SUBMITTED TO THE USOE ACCORDING TO AFFILIATION WITH RESEARCH UNITS

	Staff of Unit	Facilitated Faculty Researcher	Independent Faculty Researcher
Amount requested			
$50,000 or more	63% (62)	46% (67)	39% (289)
Number of full-time professionals (f-t equivalents)			
Three or more	45% (60)	43% (65)	31% (282)
Duration			
Two years or more	49% (64)	52% (67)	40% (292)

*The bases of percentages vary because it was impossible to ascertain amount requested, staff size, or duration in some cases.

any event, it is obvious that the staff of research units more often felt qualified to propose studies of larger scope.

Nor did this tendency to bigness jeopardize the approval of proposals submitted by the units, for these had a slightly better chance for support than those submitted either by facilitated researchers or by independent scholars: 27 per cent, 22 per cent, and 20 per cent, respectively. Of course, everyone concerned could have been misled -- the staff of the units might have overestimated their qualifications for large-scale studies, and the judges might have been unduly impressed by the sheer sponsorship of a unit. What is needed, therefore, is a direct measure of the quality of output stemming from research units. In order to pursue this question, we undertook an evaluation of research articles published in 1967-68.[3] A survey of the authors ascertained their affiliation with research units and their location in schools of education. (The return rate was approximately 85 per cent.) Each article was rated on three criteria: contribution to theory, use of method and contribution to practice. The three criteria were defined as follows:

Theory	The ideas or empirical findings presented; their substantive contribution to any field(s) of theoretical knowledge in education or a discipline.
Methods	The study's utilization of (or contribution to) research methods.
Practice	The ideas or empirical findings presented; their substantive contribution to any field(s) of educational practice.[4]

[3]Each of forty judges rated eleven research articles on educational topics. Judges were selected from a range of substantive specialties corresponding to the distribution of topics in the articles, and were assigned papers in their specialty. For details of the study design, see Persell (1970).

[4]Although these statements might seem to be vague, and might therefore offer little guidance to the judges, Persell has found that they

Scale values were described in the rating form as follows:

I. Ranks with the best empirical research studies known to me; or a par with the top 5 or 10 per cent in this respect.

II. Better than average, though not "outstanding" in this respect.

III. Run of the mill in this respect; neither better nor poorer than the bulk of research that I have seen.

IV. Not up to average standards; less than mediocre in this respect (although not entirely lacking).

V. Incompetent in this respect; among the poorest examples of research that I have encountered.

In Table 15, we show the proportion of articles rated either "best" or "better than average" (categories I and II above) on theory, method and practice, according to whether the author conducted the research through a research unit, and also whether he was primarily affiliated with an education department or with another department in the university. (Authors who were located outside of universities are excluded from this table.) And without exception, researchers who worked in research units, both in education departments and in behavioral science departments, were more likely to receive a higher rating for their research articles than authors who conducted their studies independently of bureaus. Either research organizations afford a superior setting for the conduct of studies or they attract more qualified personnel, or both. In either case, it seems evident that the quality of work in university research units excels that of independent scholars.

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yield higher consensus than a much more detailed rating form. The statements pertaining to criteria and scale values were developed by David Nasatir.

TABLE 15

QUALITY OF RESEARCH ARTICLES, ACCORDING TO LOCATION OF RESEARCHERS

	Per cent articles rated "best" or "better than average"	
	Research conducted through research units	Research conducted outside research units
Contribution to theory		
In education department	35% (54)	24% (132)*
Outside education department	36% (36)	32% (72)
Utilization of method		
In education department	41% (54)	28% (132)
Outside education department	34% (35)**	29% (72)
Contribution to practice		
In education department	37% (54)	28% (132)
Outside education department	39% (36)	28% (72)

*Numbers in parentheses represent the basis of percentages.

**A single author was not rated on methodology.

Now let us turn to the contributions of research units to the reorganization of the university.

B. Integrative Functions of Research Units

In our introduction, we noted that differentiation within institutions of higher education has become excessive. The "multiversity," a type of organization comprising a host of functions and specialists with only minimal coordination and control, dominates the academic landscape. Consequently, conflict among goals has become more characteristic than a meshing of tasks and personnel. The faculty is rewarded for the publication of research, which is an avowedly important aim of graduate departments; but research diverts energies from classroom roles and promotes the fragmentation of specialties. The government and other deserving clients require the services of academic experts; but the tradition of aloof, disciplined inquiry dictates withdrawal from the world of affairs. The explosion of knowledge in each of the disciplines places greater strain on interdisciplinary relationships, and especially those between the practical arts and the basic disciplines. And together with the growing size and complexity of the university, the bureaucratic sector has proliferated into a network of offices, divisions and committees whose operations are unknown to most of the faculty, thereby promoting an even wider gulf between administration and teaching than prevailed in the past. Thus, a central problem of higher education has become one of reintegrating the component parts of the university.

The federative organization of departments makes it very difficult to attack the problem at an institution-wide level. In most organizations, increased division of labor is accompanied by modifications in the line structure of authority; but this authority structure does not exist in the university. At best, piecemeal efforts at reintegration are made on the

part of individual departments with limited resources and little attention paid to other segments of the institution; and at worst, no one takes the initiative for organizational change because of the guarded rights of the departments and the traditional sovereignty of individual professors. Unless the entire structure is brought under critical scrutiny, therefore, each component will continue to resist reformation on the grounds that the other components are not compelled to undertake changes of similar magnitude. Rather than tinkering with existing arrangements, radically new organizational forms and social roles that span the entire institution might be required to counter the trend in excessive differentiation. The development of research units may be viewed as an adaptive response to the organizational need for reunification of tasks and personnel at a level that spans many sectors of the institution.

Research organizations in the American university arose in response to the demand for specialized facilities and a coordinated division of labor for the production of knowledge. For the most part these organizations have been successful, despite their institutional marginality. The visibility given to empirical scholarship by the founding of the units attracted students in search of training, clients in search of services, scholars in search of like-minded colleagues, and foundations and government agencies in search of established expertise. Thus, the creation of research units made it possible for a wide repertoire of tasks and roles to develop in a single setting, a setting that transcended the barriers between disciplines, between scholars working in the same problem area, between teachers and students, between service and research, and between administrative and intellectual tasks. It is precisely these integrative accomplishments of

research organizations that occupy our attention in the following section. First, we indicate the extent to which the research units have fostered collaborative work. Second, we take up the interdisciplinary accomplishments of research units. Third, we look at the relations between teaching and research. And fourth, we examine the relations between service and research. The integration of administrative and intellectual tasks is reserved for the following chapter where we introduce the notion of "the managerial scholar."

1. Research Collaboration

It has become abundantly clear that collaboration in research has increased in almost every field over the past several decades. Further, it appears that the natural sciences exceed the social sciences in rates of collaboration. Berelson's study of graduate education in the late fifties, for example, reveals the following percentages of multi-authored papers within selected fields: chemistry, 83 per cent; biology, 70 per cent; psychology, 50 per cent; and professional education, 20 per cent. Before seeking an explanation for the low rate of collaboration in professional education, the field which most concerns us here, it is necessary to raise the question of whether collaboration is associated with quality of research output. If not, then our concern with the contribution of educational research units to collaborative research is clearly misplaced.

The pros and cons of team research have been the subject of heated debate for some time.[5] Those who view the growth of collaboration with misgivings argue that group interaction places a damper on the creativity of individual members, that problems of low risk tend to be selected for investigation, that only mediocre scientists are attracted to teams, and so forth. The proponents of collaboration have been equally emphatic about its merits, pointing to the stimulation received from colleagues in different specialties, the cumulative wisdom that is afforded by interaction, and the

[5]For an overview of the debate, and data showing trends in multi-authored publications, see Zuckerman (1965).

high standards that are maintained for each member. While a review of this controversy lies beyond the scope of our study, we should take note of recent evidence supporting the contention that teamwork is significantly related to quality. Zuckerman (1967) reports that Nobel laureates in science have more often collaborated than other scientists "with 62 per cent of their papers being multi-authored compared with 51 per cent of the papers by men in age-matched groups" (p. 395). While it cannot be concluded from these data alone that collaboration insures better scientific output (having achieved eminence early in their careers, the laureates probably attracted other researchers to them), it is at least obvious that teamwork did not hamper the creativity of these scientific elite. Further, Zuckerman provides a good deal of qualitative evidence from interviews with the laureates that affirms the vital role of collaboration in their own training and research.

But can these findings be extrapolated to the social sciences? It could be argued that the natural sciences stand to benefit more from teamwork because of the greater technological complexity of their research, the greater degree of specialization which calls for the re-integration of competencies, and the more advanced intellectual stage of the natural sciences in general. Thus, it is important to examine the question within the context of the social sciences; and Persell's study of authors of research articles on educational issues gives us the opportunity.

It will be recalled that the judges were instructed to rate the articles according to each of three criteria: contribution to theory, methodological adequacy and contribution to educational practice. Table 16 shows the percentage of articles that were rated either "best" or "above average" on each of these criteria, according to the number of authors. With respect to theoretical contribution, publications with three or more authors were judged to be of higher quality than those with fewer authors; and with respect to methodological adequacy, those with two or more authors were rated higher. There does not appear to be a linear relationship between

TABLE 16

COLLABORATION AND QUALITY OF RESEARCH ARTICLES

No. of Authors	Per cent "Best" or "Above Average"			
	Theory	Methods	Practice	N
One	29%	28%	31%	(218)
Two	29%	37%	28%	(130)
Three or more	38%	40%	35%	(37)

number of authors and contribution to practice. These data lead to three conclusions: (1) both theoretical and methodological quality are related to collaboration; (2) theoretical contribution requires a larger team than methodological adequacy, indicating that breadth of theoretical perspective requires more co-workers than does improvement in the technical aspects of research; and (3) applied research is not the major beneficiary of teamwork, as has been assumed by some writers.[6] Having seen that collaboration is related to quality of research, let us now turn to the reasons for the relatively low level of collaboration in the field of educational research.

In pursuing this issue in our talks with directors of research units, we were informed that a major source of non-collaborative research was the pressure for institutional advancement. Several directors pointed out that greater notoriety accrued to scholars in education who published their work alone. As one director expressed it, "People don't want to join in team efforts because promotion is based on individual research." Another characterized the reward system as "pressure for individual productivity." In still another university we learned that a junior faculty member who had sought permission to supervise doctoral theses was turned down by the administration

[6]See, for example, Whyte (1956): "The marked shift to group work is closely related to the emphasis on the applied, for such research puts a premium on highly directed, cooperative effort" (p. 241).

because all his works had been published jointly. Again, a dean in a large public institution was faced with the serious problem of promoting only one of four associate professors who always had published together. Unable to determine which individual in the team had been most productive, he considered leaving the decision up to the team members. It is not clear, however, why the norm of individual publication as a means of institutional advancement should be stronger in education than elsewhere in the university. Perhaps the absence of a strong reference group of researchers that transcends institutions causes educational researchers to be more oriented to advancement within the local setting.

A more important reason for individualistic orientations to research in education might be the marginality of research in general. Research is but one of a variety of roles that professors of education are expected to perform. Collaborative work might require fuller commitment to research than is typical of these professors: since other team members are depending on the effort that each team member is expected to exert, there is perhaps greater pressure to finish work on time and to measure up to the standards of performance set by the most productive member of the team.

Another explanation for the low incidence of collaborative work in education concerns the departmental structure of schools of education. Departmentalism might reduce the likelihood of collaboration by imposing the hurdle of divisional boundaries. In effect, a team effort is often required to be an inter-departmental effort. This problem does not confront the liberal arts departments, which provide sufficient research personnel within their boundaries to permit the emergence of teams.

Finally, there is the possibility that the study of education has not advanced to a point where its major theoretical problems are recognized as requiring collaboration. Studies in the sociology of science suggest that teamwork is related to the intellectual development of a field. The more complex the problems that are focussed on, the greater the need for a pooling of resources. In short, teamwork might be simply one indicator of a more advanced state of a discipline.

Since the staff of research units have greater commitment to research than the faculty at large, are engaged in projects of larger scale and are drawn from several departments in the university, we would expect a higher incidence of collaboration within these units than outside. And indeed, information supplied by the deans and research coordinators, on the one hand, and by the directors of research units, on the other, shows that the units are much more likely to afford a context for collaboration. In fact, outside of research units there are more than three times as many individual projects as collaborative ones; while within units, there is a balance between these two types of projects. The mean numbers of individual and team projects inside and outside of research units (within the same schools) are shown in Table 17. Since we know from other data provided by the respondents that there are roughly two and a half professional persons per team, it appears that team members outnumber individual investigators in research units by about two to one. In the teaching departments, however, the individual researchers are in the majority.

There is some evidence that the units themselves exert pressure in fostering teamwork. In the first place, very few directors prefer highly individualized effort, as shown by the responses to the following question,

TABLE 17

THE EXTENT OF TEAMWORK WITHIN RESEARCH UNITS AND OUTSIDE OF RESEARCH UNITS

Mean number of projects in each setting which are:	Within Research Units	Outside Research Units (only schools with research units)
Single investigators	3.8 (50)	10.1 (26)
Teams	3.2 (50)	3.4 (26)
Ratio of teams to single investigators:	.68	.34

which also inquired about the prevailing mode of work:

> Research projects are organized in several ways. Which of the following types of research effort would you personally prefer that persons associated with your unit engage in, and which type would you say is prevalent in your unit at the present time?

As shown in Table 18, half of the directors reported that "highly individualized effort" was the prevalent mode of research within the unit, while the remaining directors mentioned "diversified team effort" and "consolidated team effort" to about an equal extent. But among those who stated a preference, individualized effort was mentioned by only a small minority (13 per cent), while 61 per cent preferred some form of collaboration.

If we classify directors according to their preferences, and then observe the prevalent mode of research according to these preferences, we find a strong relationship between the director's desire for teamwork and the prevalence of teamwork. This relationship is disclosed in Table 19. If the directors' preferences can be interpreted as reflecting the units'

TABLE 18

PREVALENCE OF TEAMWORK AND PREFERENCE OF DIRECTORS OF RESEARCH UNITS*

	Prevalent	Preferred
Highly individualized effort -- each researcher pursuing his own line of inquiry independently	48%	13%
Diversified team effort -- two or more members cooperating in inquiry related to but concerned with different dimensions or facets of the same problem	24	28
Consolidated team effort -- two or more members cooperating in inquiry on the same facet of the same problem	28	33
No particular preference	--	26
	100%	100%
Number of units or directors:	(54)	(54)

*The response categories in this table were gratefully borrowed from Raymond J. Young, A Directory of Educational Research Agencies and Studies, Bloomington, Indiana: Phi Delta Kappa, 1959.

climate of expectations, then it might be the case that units foster teamwork. In view of the mutual proximity of personnel in a small organization, it would be surprising if this were not true in many cases. Still, half of the directors would like to see more collaboration than exists. The emphasis on independent work, therefore, seems also to characterize many research units despite the preference of their leaders for closer collaboration.

TABLE 19

PREVALENCE OF INDIVIDUALIZED AND COLLABORATIVE EFFORT WITHIN UNITS ACCORDING TO THE DIRECTORS' PREFERENCE

	Preferred		
Prevalent	Highly Individualized	Diversified Teamwork	Consolidated Teamwork
Highly individualized	72%	53%	28%
Diversified teamwork	14	40	17
Consolidated teamwork	14	7	56
	100%	100%	100%
Number of directors:	(7)	(15)	(18)

2. Interdisciplinary Relationships

The difficulty of building relationships between education and the behavioral sciences has long been recognized as a stumbling block to the advancement of a "science of education." Since all of the behavioral science disciplines are relevant to the understanding of education as an institutional process, extensive contact with the disciplines is viewed by many as the sine qua non of good educational scholarship. And yet, it is common knowledge that barriers of communication between the profession and the disciplines have persisted for several generations. Any number of conferences, symposia, committees and publications have been addressed to the issue. Its persistence, despite the plethora of debate, analysis and good intentions voiced on both sides of "the street," suggests that the problem is deeply rooted in the structure of higher education.

Our survey shows that several formal arrangements for bridging the gulf between professional schools of education and the liberal arts

departments are fairly widespread: participation of non-education professors on examination committees for the doctorate (95%),[7] joint teaching appointments (73%), interdisciplinary committees or seminars concerned with scholarly issues (69%), visiting professors from other universities for teaching (53%), participation of non-education professors in the selection of the education faculty (43%), joint research appointments (41%), and visiting professors from other universities for research (28%). It should be noted, however, that the academic faculty participates in the recruitment of education professors in less than half of the schools. Also, the two joint arrangements for research are the least common provisions. The most common provisions, on the other hand, have to do with graduate training rather than with the interaction of scholars, i.e., participation on examination committees, and joint teaching appointments.

The importance of these arrangements in advancing the cause of educational scholarship is suggested by the fact that the presence of each of them is associated with the "research quality" of the school of education. Our measure of research quality was derived from the following question, addressed to deans and research coordinators:

> Which graduate schools or departments of education in the nation are doing what you consider to be the most competent and worthwhile research?

Table 20 shows the proportion of schools having each type of arrangement which were named as doing the best research. (The provision of joint doctoral examinations, which exists in almost every school, is omitted from this table.) Most highly related to research quality are "interdisciplinary committees or seminars concerned with scholarly issues" ($\zeta = 1.00$) and

[7]Percentages refer to the responses of education deans.

TABLE 20

RESEARCH QUALITY ACCORDING TO THE EXISTENCE OF JOINT ARRANGEMENTS WITH THE LIBERAL ARTS AND SCIENCES

		Per Cent Schools Doing Best Research	Q Coefficients of Association
Interdisciplinary committees or seminars which are concerned with scholarly issues			
	Yes	33% (42)*	1.00
	No	0% (23)	
Participation of non-education professors in the selection of the faculty of education			
	Yes	50% (32)	.95
	No	2% (43)	
Joint teaching appointments			
	Yes	29% (56)	.75
	No	5% (19)	
Joint research appointments			
	Yes	38% (32)	.64
	No	12% (43)	
Visiting professors from other universities for research			
	Yes	38% (21)	.51
	No	17% (54)	
Visiting professors from other universities for teaching			
	Yes	28% (40)	.29
	No	17% (35)	

*Numbers in parentheses are the bases of the percentages.

"participation in the selection of the faculty of education" (Q = .95). In view of the strong association between joint selection of faculty and research reputation, it seems unfortunate that fewer than half of the schools follow this practice. As a matter of fact, if we compare the ranking of the provisions according to their frequency with the ranking according to their association with research quality, we find a rank-order correlation which is not very high (r = .57). Thus, if we can assume that joint arrangements influence the quality of research, it would appear that certain of these arrangements are not sufficiently widespread.

Brown (1966), whose study of interdisciplinary relations was undertaken in connection with our study of educational research, has shown that informal contacts are considerably more frequent than participation in formal arrangements. She also notes, however, that "communication is sporadic and never continues long enough for a common universe of discourse to develop," and she refers to an "atmosphere of futility" pervading the interaction of educators and behavioral scientists. Much of the difficulty is traceable to a cultural gap between the profession and the disciplines regarding the emphasis on immediate application:

> Perhaps the greatest impasse is to be found in the feeling of the liberal arts professors towards the concerns of practitioners. It is not the ultimate needs of the practitioners which constitute the major difficulty. Rather, it is the use, by colleagues in education, of the practitioners' frame of reference, concepts, terminology, etc. in the choice of a research problem and the statement of research design. The fact that education colleagues do not formulate research problems in the same universe of discourse as liberal arts professors is a major source of frustration. One behavioral science department chairman tried to characterize his reactions to the concentration on applications which he encountered among his doctoral candidates from education:

> "In talking to them about any subject, they always have practical problems in the back of their mind. This means both that they may make valuable suggestions and that they can't follow a purely abstract argument . . . their associations don't run in the same channels as those of [other] psychologists . . . but about quality, I don't know. . . ."

In the extreme case, the liberal arts researcher, especially if housed in the school of education, feels that he is apt to lose his disciplinary identity. For example, a leading researcher comments,

> "People get so enmeshed in education that they lose the social science identity, identify too much with the problems of practitioners."

A researcher who has left education tried to pinpoint the specific frustrations he encountered:

> "The school systems want research relevant to issues they choose. . . . The critical variables are defined by the client. No one is interested in research that doesn't have application to problems. . . . [Yet] nobody wants a study where you . . . get the wrong answers. . . . Where a deeply felt area of policy is involved, administration and community leaders feel restricted by research. The school system needs to be free to manuever, so implementing rather than inquiring studies are preferred. . . . There is no theoretical guidance, but raw empiricism. They take variables out of the hopper."

A number of respondents in the survey of professors commented similarly. One behavioral scientist noted that "There seem to be discrepant levels of generalization between the educational researcher and the arts researcher." Another respondent objected to the dominant role of "values in education, the applied and practical emphasis." Still another remarked that educationists' "interest seem to be addressed to petty problems and to applied concerns."

In the survey of professors, substantial differences were found between educational researchers and behavioral scientists in attitudes towards applications. Sixty-five per cent of the educationists indicated that practical applications were "moderately important" or "very important" to them, as compared with 37 per cent of the psychologists and 41 per cent of the sociologists. Furthermore, about 20 per cent more behavioral scientists indicated a willingness to do research on a topic where there were no practical applications. These results confirm the feeling of the liberal arts professors that the professional concerns of the school of education are very real and must be confronted whenever contacts with the school of education take place.

We have already seen that the research units have overcome the reluctance of educational scholars to engage in team research. The need for specialists on larger projects, the more intimate atmosphere of the unit as contrasted with the teaching departments, the unit's transcendence of departmental boundaries (and the greater research commitment of the staff members) were offered as explanations for this fact. If these explanations are valid, that is, if collaboration signifies a combination of different backgrounds, then we should also find greater interdisciplinary effort in the units. Let us turn, then, to the backgrounds of personnel associated with educational research units.

It is by no means the case that research units in education are exclusively manned by "educationists." Although staff members are predominantly from education, on the average about a quarter of the new staff members per unit in recent years have come from behavioral science departments. For the school of education faculty as a whole, about a fifth (19 per cent) received most of their training for their highest degree outside of a school or department of education.[8] Thus, the research unit is somewhat more likely to attract behavioral scientists than the school as a whole.

The directors were asked:

> Approximately what proportion of the professional staff of your unit in the past three years were recruited from the following sources?
>
> ____Behavioral science departments outside of your university.
>
> ____Behavioral science departments within your university.
>
> ____Schools or departments of education outside your own university.

[8] This figure is derived from the responses of deans and research coordinators.

___The school or department of education within your own university.

____School systems.

Table 21 shows that about a third of the staff, on the average, were drawn from the local school of education. And it is highly suggestive of the barriers between education and the liberal arts and science departments that a larger proportion were recruited from other schools of education than from behavioral science departments within the home university. A mean proportion of 19.2 per cent of the recruits came from education departments in other universities, while a mean proportion of 14.8 per cent came from behavioral science departments in the same institution. This suggests that the ties between schools of education in the nation are at least as strong as those between these schools and other departments within the same university. The fact that disciplinary barriers place as great a restriction on mobility of personnel as geographical barriers testifies to the problematic nature of interdisciplinary work on education.

It should be noted, however, that 79 per cent of the directors were aware of projects in non-education departments in their university that were related to the unit's program of research. Most commonly their contacts with these projects were through informal conversations. Two-thirds of the directors who knew of such projects mentioned this channel of communication. Almost as many, however, indicated consultative relationships, which shows that more formal types of communication do occur.

When we asked specifically about various types of formal arrangements with academic departments and with other professional schools, we found that consultation was the most frequently cited interchange, as seen

TABLE 21

SOURCES OF RECRUITMENT OF PROFESSIONAL STAFF
IN RESEARCH UNITS IN PAST THREE YEARS

	Mean Per Cent of New Staff Members Recruited in Past Three Years
Source of Recruitment:	
School or department of education	
Inside the university	34.6%
Outside the university	19.2%
Behavioral science departments	
Inside the university	14.8%
Outside the university	11.4%
School systems	11.6%
Number of units:	(46)

in Table 22. Slightly more than half of the units (56 per cent) maintain contacts with academic departments through this avenue, and less than half (40 per cent) maintain contacts with other professional schools in this way. The remaining arrangements were mentioned much less frequently and to about an equal extent, with the exception of "visiting professors from other universities for research." Nineteen per cent of the units have such persons from academic departments, and 14 per cent have them from professional schools. On the average, there are only 2.0 joint arrangements per unit with academic departments (out of the six arrangements listed), and only 1.2 with other professional schools. In short, formal joint arrangements are relatively rare among research units in schools of education. Since a sizable majority of the directors mentioned "informal

TABLE 22

EXISTING ARRANGEMENTS OF RESEARCH UNITS WITH ACADEMIC DEPARTMENTS OUTSIDE THE SCHOOL OF EDUCATION, AND WITH OTHER PROFESSIONAL SCHOOLS

Joint Arrangements	With Academic Departments	With Professional Schools
Consultation on specific studies	56%	40%
Interdisciplinary committees or seminars which are concerned with scholarly issues	35	19
Joint research appointments	32	16
Joint research publications	28	16
Interdisciplinary conferences	25	18
Visiting professors from other universities for research	19	14
Number of units:	(57)	(57)

conversations" with directors of cognate projects outside the school of education, it seems evident that informal contacts are far more frequent.[9]

One reason that contacts with the disciplines are not more common is the service-orientation of many units. This is shown by the fact that units which are heavily involved in research as distinguished from service are considerably more likely to maintain relations with the liberal arts and sciences. Table 23 contains several measures of involvement in interdisciplinary contacts, including two of the questions discussed above, according to the research orientation of the units. (Research orientation

[9]The greater frequency of informal contacts is borne out by Brown's study, op. cit.

TABLE 23

INTERDISCIPLINARY RELATIONSHIPS ACCORDING TO RESEARCH ORIENTATION OF UNITS

	Research Orientation (Per cent budget for research)		
	Low (0-49%)	Medium (50-89%)	High (90% +)
1. Mean number of relationships with academic departments (out of 6 possibilities):	1.4 (14)	2.0 (15)	2.8 (16)*
2. Mean per cent of senior research personnel associated with unit who are teaching in academic departments:	4.8% (16)	7.4% (13)	25.4% (16)
3. Mean per cent of students associated with unit who are from non-education departments:	23.6% (11)	37.0% (16)	43.1% (11)
4. Mean per cent of professional staff recruited from various sources in past three years:			
School or department of education			
Inside the university	32.2%	36.0%	35.9%
Outside the university	40.2%	6.1%	10.2%
Behavioral science departments			
Inside the university	4.7%	12.6%	29.0%
Outside the university	5.9%	14.2%	14.3%
	(16)	(16)	(14)

*Numbers in parentheses represent the bases of mean percentages, and vary because of non-response on different questions.

is based on the proportion of the unit's budget that is devoted to research.)

We learn from Table 23 that research-oriented units are much more likely to have formal relations with academic departments (line 1) and to have a higher proportion of staff members who are teaching in academic departments (line 2) than service-oriented units. It is not surprising, then, that research-oriented units also contain a larger proportion of students from outside of education (line 3). Finally, we see that research-oriented units more often recruit staff members from behavioral science departments located both inside and outside the local university (line 4).

What is especially noteworthy in Table 23 is that highly research-oriented units recruit more personnel from behavioral science departments, both inside and outside the university (29.0% and 14.3%, respectively), than from education departments outside the university (10.2%). In other words, these units have not only managed to overcome the interdisciplinary barriers within the institution, but they have shifted the frame of reference from the national system of professional education to the liberal arts and sciences. Only those units that are chiefly engaged in service activities maintain strong ties with professional education.

If the ability of research units to attract behavioral scientists is due to their transcending departmental lines, then we should find that the units which are relatively autonomous within the school are more likely to include behavioral scientists in their programs. In order to test this idea, we classified the units according to whether they facilitated the research of faculty members or carried out their own self-directed

TABLE 24

MEAN PROPORTION OF RESEARCHERS IN UNITS WHO ARE TEACHING IN ACADEMIC DEPARTMENTS, ACCORDING TO WHETHER THE UNIT IS FACILITATIVE OR AUTONOMOUS

Type of unit	Mean per cent in academic departments
Facilitative	6.6% (28)
Autonomous	19.2% (21)

program. Table 24 shows the mean proportion of senior researchers in the unit who were teaching in academic departments, according to whether the unit was facilitative or autonomous. And we find that the autonomous units have three times as large a proportion of behavioral scientists (per unit) as the facilitative units. Obviously, the attraction of behavioral scientists hinges on the unit's ability to conduct its own staff program apart from the interests of the teaching faculty in education. And this is especially true of units which are highly research-oriented. In those units with budgets devoted mainly to research rather than service, a mean of 36.4 per cent of the researchers in autonomous organizations teach in academic departments, compared with a mean of 6.1 per cent in the facilitative units. Thus, it is the autonomous, research-oriented unit that affords the greatest opportunity for interdisciplinary effort. In view of the fact that only 19 per cent of the faculty of education were recruited from the behavioral sciences, it is safe to say that the magnitude of interdisciplinary recruitment on the part of these units far exceeds that of the teaching departments in education.

In sum, while units which are devoted to research rather than to services are more attractive to behavioral science scholars (for reasons

that are obvious), structural relationships with the organizational context are equally important in furthering interdisciplinary contacts. Thus, units which are least integrated into the teaching departments are most likely to engender these contacts. Presumably, the greater programmatic flexibility of these units, which is made possible by their autonomy from professional education interests represented by the departments, renders them more suitable as a breeding ground for interdisciplinary relations.

Research bureaus that engage in interdisciplinary work are relative newcomers to the universities. Education is probably typical in this regard. Originally founded and staffed by professors in a particular department or school, the units continued to maintain close ties with these subdivisions to the exclusion of outside departments. But with the influx of federal funds and the need to bring the efforts of several disciplines to bear on educational problems of increasing complexity, the units became more cosmopolitan in their recruitment practices. This trend is evident in Table 25, where we show the mean number of arrangements with academic departments and the proportion of researchers associated with the units who are teaching in academic departments, according to the age of the units. And there is little question that the newer educational research units exhibit more interchanges with the liberal arts and sciences, especially with regard to the proportion of staff members from the academic departments. Thus, educational research units are more and more providing an avenue of exchange between education and the disciplines.

The most innovative type of unit, then, is that which recruits personnel from outside of education as well as concentrates on research. And not only have these units been founded more recently, but they have

TABLE 25

RELATIONSHIPS WITH ACADEMIC DEPARTMENTS OUTSIDE THE SCHOOL OF EDUCATION, ACCORDING TO AGE OF THE UNIT

	Age of Unit		
	1-5 years	6-15 years	16 years +
Mean number of relationships with academic departments (out of 6 possibilities):	2.2	2.2	1.6
Number of units:	(14)	(24)	(26)
Mean per cent of researchers associated with unit who are teaching in academic departments:	25.9%	10.3%	2.1%
Number of units:	(11)	(21)	(18)

also grown more rapidly since their founding. Thus, 33% of the interdisciplinary units doubled their budgets in the three years prior to our survey, compared with 19 per cent of the research-oriented, non-interdisciplinary units, and 17 per cent of the service-oriented units.

Just as federal funds were necessary to mount the new effort devoted to research, these funds were also required to promote the interdisciplinary nature of research. Table 26 shows the mean percentage of funds that were derived from various sources by the three major types of research units. On the average, the interdisciplinary units received more than half of their research funds from the federal government, while the other two types received much lower proportions from the same source. And, as mentioned earlier, six additional research and development centers have been established by the USOE since the time of our survey, all of which centers are committed to interdisciplinary work.

TABLE 26

SOURCES OF FUNDS IN THREE TYPES OF UNITS
(Mean percentages)

		Research-oriented	
	Service-oriented	Non-interdisciplinary	Interdisciplinary
Federal government	29%	37%	56%
School systems	24	16	3
University	18	20	12
School of education	5	6	3
Foundations	3	11	11
Other			
Number	(15)	(19)	(13)

It is of course possible that the interdisciplinary character of these units is more apparent than real. Scholars from the various disciplines might still carry on their work independently of one another albeit within the framework of a research unit. The sheer presence of behavioral scientists on the scene is no guarantee that they will work together on common research undertakings.[10] The problem is by no means insurmountable, however; and in point of fact, units with interdisciplinary staffs are far more likely to be engaged in collaborative work. The ratio of team to individual projects in the three major types of units are as follows: service-oriented, .46; research-oriented, but non-interdisciplinary, .36; and research-oriented, interdisciplinary, .62. In short, the interdisciplinary bureaus are actually fostering the interrelatedness between

[10] A case study of one R and D Center revealed considerable distance between educators and behavioral scientists (Smith, 1966).

fields and specialties through day-to-day collaboration. The most innovative structures for scholarship within the universities, then, are the interdisciplinary units that have been made available to universities by outside resources -- structures which are sorely needed for the reintegration of the university community.

It might be that the major, long-run significance of interdisciplinary collaboration is the training which is thereby provided for graduate students through research involvement in interdisciplinary teams. Traditionally, efforts to foster interdisciplinary scholarship have followed an external strategy, namely, the bringing together of researchers who have received all of their training in the separate disciplines. Due to the emphasis on thorough grounding within a specific discipline before undertaking professional work, the difficulties of creating interdisciplinary communication have persisted from one generation to the next. In contrast to this traditional strategy, an internal strategy entails graduate education in several disciplines simultaneously. But owing once again to the problem of breaching departmental barriers, this sort of experience is rare. Thus, research units that have succeeded in recruiting and amalgamating personnel trained in several disciplines furnish the best opportunity to produce young scholars with a perspective that spans a variety of disciplines. If this strategy were pursued with great vigor, recurrent problems in the fostering of interdisciplinary cooperation might be largely precluded by the emergence of a new generation of multi-disciplinary scholars. In the light of these observations, then, it becomes all the more important to examine the training opportunities afforded by university research units.

3. Student Training

A third area of intense concern to observers of trends in higher education is the apparent shift in emphasis from teaching to research. The complaint is often voiced that research takes eminent scholars away from classroom duties, while others point out that research enhances graduate training through involvement of students in the frontier questions of their discipline. Which of these consequences is more likely to prevail depends upon the organizational setting in which research is carried out. Given the present student-faculty ratio, it is obvious that relatively few graduate students can benefit from involvement in the research of faculty whose sole appointments are in the teaching departments -- there are simply too many students to be supported on the research projects of these faculty members, especially when their projects are of small scope. But participation in a research unit is a different matter. Since the projects tend to be larger, more students have an opportunity for participation. Also, since many research units comprise staff members with none or minimal classroom teaching duties, more time is available for student advisement and supervision in connection with their project work. And because a number of projects are undertaken in a single locale, students are able to move around and pick up needed skills in a shorter period of time.

Perhaps most important of all is the social climate that prevails in research units. The closeness of the relationship between senior researchers and their assistants breaks down the traditional barrier between faculty and students. There is also frequent consultation among colleagues to which students are exposed, creating an atmosphere in which methodological and theoretical issues become a part of everyday discourse. And the

students themselves coalesce around common projects, research interests and research techniques, which relationships are sometimes formalized in special seminars attended by students and professional staff alike. In effect, the aspiring scholar is exposed to the role models of his profession who are acting not only as conveyors of knowledge but as producers. When this exposure takes place in the company of other students, a cohesive social system emerges that prepares the student to interact with future colleagues and generally to perform in a more professional manner. And finally, commitment to a career in research is enhanced. The available evidence lends some support to these impressions.

The great majority of educational research units (86 per cent) have graduate students working on projects or associated with them in some other capacity. On the average, there are 7.8 doctoral students per unit working on projects, or a total of 429 doctoral students in 55 (out of 64) units. Fifty-one per cent of all projects have doctoral students as assistants, with about 1.9 students per project. Further, many students use the data or facilities of the bureaus for preparing their dissertations, namely, 9 doctoral candidates per unit. Thus, it is obvious that opportunities for both apprenticeship and dissertation work are fairly widespread among units (although, as mentioned in Chapter I, only a small proportion of the doctoral students in education participate in research organizations).

Seminars or courses in methods of research are also quite common: almost half of the units that involve students in their programs seek to prepare researchers through these means. According to information received from the directors, the topics of courses and seminars fall into several distinct categories: (1) reviews of research methods and findings in

several fields; (2) special techniques in designing studies and processing data, e.g., experimental design or computers; (3) research related to a special field; and (4) the on-going work of the unit. Although in most cases credit towards the degree is given for attendance (62 per cent of the units with courses or seminars offer credit), only in a minority of cases (31 per cent) are special funds provided for courses, seminars or training programs.

The paucity of funds for training at the time of our study accounts for the fact that more units did not make a systematic effort to monitor the progress of their student assistants. Shown in Table 27 are the percentages of units that pursued three courses of action regarding research assistants. Only a little more than a third shifted students among projects to match their needs and abilities with research opportunities. About the same proportion hired students for particular jobs which, when completed, left them without further employment. The importance of paying special attention to students is strongly suggested by the large proportion of doctoral recipients who entered positions where research was a primary responsibility when special training provisions did exist. The directors were asked to indicate the number of research assistants over the past three years who had entered a variety of positions after receiving the doctorate. Table 28 presents the mean proportion of doctoral recipients who entered research positions, according to whether the unit provided some special means of training.

Units which move students among projects according to their needs and abilities are far more productive of researchers than those which do not. Units which offer seminars for student training are also more

TABLE 27

PROPORTION OF RESEARCH BUREAUS WITH VARIOUS TRAINING ARRANGEMENTS

Which of the following statemen s is most applicable to your unit?

There is a training program, allowing students to be moved from project to project as best suits their abilities and needs.	37%
Although there is no training program, students manage to get around to various projects.	28
Students are hired to do specific tasks and tend to leave the unit as soon as their job is completed.	35
	100%
N (units with students):	(55)

TABLE 28

PRODUCTION OF RESEARCHERS BY UNITS ACCORDING TO SEVERAL TRAINING PROVISIONS

	Mean per cent doctoral recipients entering research positions
1. Type of apprenticeship program	
Students are moved among projects according to their needs and abilities	39.0 (16)
Students are hired for specific tasks then tend to leave the bureau	20.1 (13)
Students are not assigned but manage to get around to projects	11.7 (13)
2. Seminars or courses for research training	
Seminars	30.2 (20)
Courses	20.7 (7)
Neither	18.4 (21)
3. Funds for training program	
Yes	40.7 (6)
No	23.3 (30)

productive. But the greatest productivity of young scholars was found in units that had funds earmarked for training.

Since bureaus that have apprenticeship programs also tend to have seminars, it is worthwhile seeing whether these two arrangements contribute independently to the production of researchers. Table 29 provides the statistics for answering this question. There we find that the existence of a seminar is related to the production of researchers regardless of whether the unit has a training program for moving students among projects. The systematic handling of apprentices is much more important, however.

TABLE 29

PRODUCTION OF RESEARCHERS BY BUREAUS ACCORDING TO THE EXISTENCE OF A SEMINAR AND SYSTEMATIC APPRENTICESHIP

		Systematic Apprentice Program*		
		Yes	No	Difference
Seminar	Yes	40.9 (9)	22.4 (8)	+ 18.5
	No	36.7 (7)	13.7 (17)	+ 23.0
	Difference	+ 4.2	+ 8.6	

Mean difference according to apprentice program: + 20.7

Mean difference according to seminar: + 6.4

*Bureaus which shift students among projects according to their needs and abilities were classified as having this program, i.e., "Yes."

That more units do not bestir themselves to monitor the progress of their research assistants stems from lack of special training funds. Five of the eight units with funds earmarked for training shifted their research assistants according to their needs and abilities, while only 11 of the

34 units without funds did so. Thus, units with funds are twice as likely to conduct a systematic apprenticeship program. The absence of special financial support for training of students in connection with their research assistantships reflects the ambiguous status of the units in the universities. The fact that many units are engaged in teaching students how to do research, despite the paucity of funds, suggests the natural superiority of these settings for the preparation of future scholars.

The ability to rotate students among projects so that they will learn a spectrum of skills is an opportunity not found in the teaching departments where the dispersion of projects among professors working in isolation and the absence of central management prohibit the assignment of students according to their needs. And even when the departments have an officer specially appointed to oversee the research program (almost half of the schools in our survey have a "faculty research coordinator"), far less attention is paid to student training than in the research units. Thus, when a list of 18 activities was submitted to the faculty research coordinators and to the unit directors, we found that the directors were much more often concerned with "providing opportunities for students to participate in research." Fifty-five per cent of the faculty coordinators checked this role, compared with 83 per cent of the directors of research organizations. Among coordinators, this responsibility ranked seventh with respect to frequency of mentions, but third among the directors of research units. Obviously, the role is more important among directors.

The attention given to training by research units eventuates in a higher level of scholarly output on the part of their alumni. A national study of the doctoral recipients in education in 1954 (Buswell, 1966) has

revealed that graduates who worked in research units during their studies were considerably more productive than other graduates in the years that followed the award of the doctorate. This finding, of course, could be due to the initial commitments of the students, that is, those who were more dedicated to research careers might have sought out a research unit because of the experience that it offered. But it so happens that students who were research assistants for professors outside of research units, while also more productive in their professional years than those who did not enjoy this opportunity, were not as productive as those who had worked in bureaus. Also, those who had not participated in the work of a research unit were less productive than those who had not served as a research assistant to a professor. In other words, working as a research assistant in an organization made a much greater difference in later productivity than working as a research assistant to a professor. Table 30 presents the relevant statistics.

TABLE 30

RESEARCH PUBLICATION, ACCORDING TO EXPERIENCE AS A RESEARCH ASSISTANT TO A PROFESSOR OR IN A RESEARCH UNIT*

Worked as research assistant	To a professor	In a unit
Yes	47% (62)	58% (59)**
No	25% (291)	19% (325)
Per cent difference:	22%	39%

*Data in this table were recomputed from information provided in Buswell's report.

**Numbers in parentheses are the bases of percentages.

The measure of research productivity used in Buswell's study was publication of two or more research articles after graduation. Thus, we find that 47 per cent of the doctoral recipients who had served as a research assistant to a professor published at least two research articles, whereas only 25 per cent of the remaining doctorates did so. But 58 per cent of those who had worked in a research unit met this criterion of production, compared with 19 per cent of those who did not work in a unit. The percentage difference with respect to working for a professor is 22 per cent, but the difference with respect to working in a research unit is 39 per cent. If we assume that these two groups of doctorates -- those having worked for professors and those having worked in a research organization -- began with equivalent levels of commitment to research training, then it appears that participation in a research unit is a causal factor in productivity rather than merely reflecting the self-selection of more dedicated students.

Because so few doctoral recipients in schools of education publish more than a single research article throughout their careers, productivity is an acute problem in the field of professional education. But the importance of encouraging productivity should not be permitted to override the question of quality. Even if bureau trained students do publish more often, the possibility remains that the value of their research is not on a par with that of other doctoral recipients. For instance, if indoctrination with the sheer pressure to publish, regardless of the calibre of one's work, is an outcome of association with a research unit during graduate study, then the quality of research might be independent of the frequency of publication. In short, we need to consider the contribution of one's

research to a field of knowledge or of practice if we wish to assess the value of training within a research unit. Once again we draw on Persell's study of research publications in 1968-69 to answer this question.

Table 3a shows the proportion of articles which were rated "best" or "above average" by the judges in Persell's study, according to whether the author had worked in a research unit as a graduate student, and also whether he had received a degree from a school of education or from a liberal arts division. And regardless of where the degree was received, those authors who had worked in research units tended to be rated higher than those who had not. (The one possible exception occurs in the instance of contribution to practice among liberal arts doctoral recipients. This exception is quite interesting insofar as it belies the notion that research units in the behavioral sciences promote an applied orientation among graduate students.) In sum, the data suggest that not only productivity, but also quality of research is enhanced by association with a research unit during doctoral studies.

Finally, to revert to our earlier question concerning the value of interdisciplinary centers for student training, it is clear from our data that the interdisciplinary units have been more productive of research scholars than the other types of units. The proportions of the three major kinds of research units which contributed more than a third of their doctoral recipients to research positions are as follows: service units, 28 per cent; non-interdisciplinary research units, 28 per cent; and interdisciplinary research units, 54 per cent. If we can assume that research assistants are frequently exposed to interdisciplinary collaboration within these latter units -- an assumption that seems justified in view of the

TABLE 30a

QUALITY OF RESEARCH ARTICLES,
ACCORDING TO HAVING WORKED IN A RESEARCH UNIT AS
A GRADUATE STUDENT AND DIVISION WHERE RECEIVED DEGREE

	Per cent articles rated "best" or "better than average"	
	Worked in research unit	Did not work in research unit
Contribution to theory		
Education degree	36% (61)	23% (136)
Liberal arts degree	46% (28)	38% (69)
Utilization of method		
Education degree	42% (60)	24% (136)
Liberal arts degree	53% (28)	33% (69)
Contribution to practice		
Education degree	34% (61)	23% (136)
Liberal arts degree	39% (28)	38% (69)

*Numbers in parentheses represent the basis of percentages.
**A single author was not rated on methodology.

preponderance of team members in these units (see p. 77 above) -- then it would seem that the interdisciplinary centers are far more likely to produce scholars with multi-disciplinary perspectives. Further, since we have seen that the research units as a whole exhibit a greater frequency of teamwork and also produce a larger proportion of researchers than the teaching departments, it becomes evident that the interdisciplinary units far exceed the teaching departments in the production of scholars with multi-discipline frames of reference. If the future integration of the disciplines is viewed as a worthwhile goal, then the way to bring it about is through the founding of interdisciplinary centers and the training of graduate students within these organizations.

4. From Service to R and D

Schools of education, and especially those under public control, have a clear mandate to improve the educational system. The serious problems created by the service orientation of many educational research units, therefore, do not warrant the abandonment of efforts to contribute to educational practice. Rather, according to a growing number of professional leaders, the need is for a redefinition of service and a concomitant restructuring of roles relevant to service. A new type of organizational structure in education has evolved to fulfill this need, namely, the research and development center. Before describing the work of these centers, let us first consider the traditional features of service activities in education.

The services traditionally provided by research units have been characterized by the following features:

a. definition of the problem by practitioners;

b. narrowness of problems, that is, lack of conceptualization in terms of fundamental educational processes;

c. emphasis on immediate solution;

d. absence of a research base for recommended solutions;

e. restricted applicability of solutions to a single setting (school system or area);

f. specialization of service personnel by area of professional practice (rather than by R & D competencies).

The request of a school superintendent for the implementation of a new reading program in the elementary grades for the coming year, which request is met by an expert in reading instruction who develops a reading program for the school, exemplifies all of the features noted above. These features of traditional service work arose from the market economy of educational service whereby practitioners provided the major source of funds for school improvement. Consequently, as noted in the preceding chapter, service has not only remained unrelated to scholarship but has set barriers to the advancement of scholarship. In bending to recurrent pressures for immediate help, service personnel have had little time and almost no financial support to ascertain (1) the conditions underlying the utility and acceptability of recommended practices, and (2) the implications of service work for basic knowledge about education. School practitioners have a ravenous appetite for expertise that will alleviate the uncertainties of their job. Ministering to this appetite on a day-to-day basis does not permit inquiry into the basic nature of educational structure and process.

Aware of the failure of education to comprise more than a conglomeration of professional fads and commonsense solutions to daily operating

problems, a number of authorities have advocated new social arrangements for the development and implementation of tested innovations. Thus, in contrast with the features of traditional service work, the new system of federally-supported R & D is characterized by:

a. definition of the problem by scholars in several fields and disciplines, with reference to the practitioners' wants and concerns;

b. definition of problem areas so that a solution will affect a wide spectrum of discrete operating problems;

c. emphasis on thorough, long-range investigation of the problem and corresponding deemphasis on the immediacy of answers;

d. marshalling of existing empirical evidence and undertaking of new research on all aspects of the problem and its solutions;

e. generalizability of solutions to many settings (with appropriate adjustments to particular settings);

f. specialization of service personnel in various R & D roles (or at the very least, specification of tasks required in an optimal R & D program), e.g., research, development, evaluation, diffusion and implementation.

In short, the R & D model that has been borrowed by educators from industry, medicine and agriculture is now widely advocated in behalf of systematic identification and solution of problems identified by scholars in the light of sound research, development and implementation.

This revolutionary conception requires a new organizational format. The traditional separation of service and research, the vulnerability of research to service demands, and the difficulty of integrating the separate R & D tasks must be overcome by careful organizational planning. Consequently, in recent years the educational community has witnessed the founding of several R & D Centers in universities with substantial support from

the U.S.O.E.[11] Thus, once more it has become apparent that the healthy integration of university functions depends upon the grafting of sub-structures onto the traditional organization of the university.

While there is a good deal of variation in the internal structure of these nine organizations, each provides for research, development, evaluation and diffusion. Sometimes these tasks are represented within teams of experts, while in other instances they are fulfilled by different divisions or programs. For example, a project at the Wisconsin Center for Cognitive Learning has tested the effectiveness of a sequencing of concepts in English language and composition, examined the relative effectiveness of programming techniques in the teaching of these concepts, conducted field tests of instructional and curricular materials, and so forth, by drawing upon personnel in different divisions. This developmental work is built upon research on concept learning conducted at the Center and elsewhere.

The centers have also explored various means of disseminating new practices and implementing change in schools by means of demonstrations, conferences, publications and consultation. One of the centers has evaluated different arrangements within schools which are designed to induce continuing change. An example of one such arrangement is the R & I unit (research and instruction) which is conceived as a more flexible means of scheduling for instruction than team teaching or the self-contained classroom, while also providing for discovery and utilization of new practices. Another mechanism is the change-agent committee, which is system-wide in perspective rather than restricted to a particular school building, as in

[11] For details of organization and programs, see Glaser (1966), and USOE-Funded Research and Development Centers (1968).

the case of the R & I unit. However, with the USOE's establishment of regional educational laboratories whose chief goals are the development and dissemination of practices, the centers have shifted some of their responsibility for diffusion to these inter-institutional agencies.

A recent overview of the R & D centers by an independent observer concludes:

> The centers demonstrably are increasing the body of knowledge relevant to teaching, learning, and the organization of educational institutions. They also are producing, testing, and making available to other agencies several programs or systems designed to improve educational practice through changing teacher behaviors, stimulating cognitive development, and otherwise influencing learning environments. . . . The majority of the centers, in collaboration with regional educational laboratories and other agencies, now seem to be functioning in ways which promise not merely to speed up the application of relevant knowledge and technology to education, but also to provide mechanisms and processes for continuous modification and refinement of programs, procedures, and institutional settings (Chase, 1968, p. 13).

In sum, the integration of academic and problem-oriented research, and of research and development, has depended upon the creation of special sub-structures within the university. In view of the growing concern in the social sciences for the amelioration of problems in society at large, R & D structures similar to those in education may be expected to assume greater importance.[12] With the appropriate structuring of roles so that academic interests and client demands are balanced and viewed as mutually supportive, fears that the multi-versity is becoming a "service station" may turn out to be unfounded.

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[12]Cf. NSF, Knowledge into Action: Improving the Nation's Use of the Social Sciences (1969), especially Chapter VIII, "Social Problems and Research Institutes."

C. Summary

The present chapter has been devoted to a demonstration of the contributions to knowledge and to the fullfillment of organizational goals of higher education that are afforded by research units. Not only do the units furnish a superior context for research, as shown by the quality of their output and their concern with areas of investigation lying on the frontiers of educational knowledge, but they serve to reunify the increasingly diverse roles and purposes of higher education. With regard to their integrative functions, we have seen that the units foster collaborative research, especially of an interdisciplinary nature; that they reintegrate teaching and scholarship, and ultimately are more productive of future scholars than the teaching departments; and that they are capable of overcoming the barriers between service and research, thereby achieving a closer relation between academic expertise and societal needs. That these contributions have been forthcoming in spite of the tenuous status, or "marginality" of these units within the university, is dramatic demonstration of their utility. However, such outcomes are by no means automatic, for research units require a special managerial style to exploit their opportunities. The nature of this style, and the doubtful ability of traditional academic roles to fulfill it, are the chief concerns of the following chapter.

CHAPTER III

THE MANAGERIAL SCHOLAR

The position of director of a research organization is a highly important innovation in the history of higher education, for it represents a coalescence of roles that have tended to drift apart as a consequence of the growing size and complexity of the university. In essence, it brings together administrative expertise and intellectual enterprise in a period when faculty members are reluctant to become involved in administrative tasks and administrators are anxious to recognize the intellectual autonomy of the faculty. Thus, the managerial scholar fills a power vacuum in the university. By combining scholarly interests with managerial skills, he is able to modify the university organization in accordance with emerging intellectual needs.

This hybrid status is not an easy one to fill in the universities -- or rather, it is not easy to fill with the right kind of man. The managerial scholar must be able to direct and train his staff, and to create training programs for students. He must know the skills and interests prevailing among faculty members so that research opportunities can be brought to their attention. He must be adept in dealing with clients and funding agencies, not only for the purpose of acquiring funds but also to adjust the interests of funding sources to those of his staff. He must be technically proficient in a variety of research methodologies and substantively up-to-date. And he must be concerned

with the image of his organization in the eyes of the administration, faculty, students and outside agencies. These duties require both intellectual and executive prowess.

Since the managerial scholar performs a leadership function which is sorely needed, the purpose of the present chapter is to describe the role in some detail. We shall pay attention to the following issues: (1) the vital role of the directors in the operation of research units; and (2) their styles of leadership and innovativeness. With respect to the last point, we shall see if there is an optimal style of leadership for the supervision of research organizations, a style based on the integration of administrative and scholarly roles.

A. The Role of Directors in the Development and Maintenance of Research Units

The question of the directors' role in promoting and appraising the work of their units should be divided into two basic issues: are the directors really critical agents in the life of their units?; and if so, does their power lead them to violate the norm of intellectual autonomy held by academic personnel? If we are correct in assuming that the managerial scholar is uniquely qualified to lead the university toward the achievement of its goals, then the answer to the first question should be an affirmative one, while the answer to the second should be a negative one. In other words, if the managerial scholar is able to combine scholarly and executive roles in a manner that contributes most effectively to the success of the university, then he should be able to carry out administrative functions in a way that

contributes to scholarship while at the same time observing the important norm of academic freedom. In the section that follows, we discuss each of these questions in turn.

1. The Importance of the Director

An examination of the histories of research units highlights the contribution of directors to the survival and success of their organizations. In particular, the development of the bureaus at Ohio State University, University of Minnesota, Columbia University and University of Illinois, described in the preceding chapter (see "The Conflict between Service and Research"), demonstrate the impact of a change of directors on the units' goals and activities. Information from the questionnaires received from the sixty-four directors in our study further substantiates this conclusion.

First, let us examine the responses of the directors to the following question:

> Would you briefly describe any highly significant turning points in the course of the units' history -- for example, the appointment of a new director with different ideas about the program, the influx of new funds, the appointment of a new president or dean, the beginning of an important new research project, etc.?

While changes in the administration of the school were mentioned by several respondents, the turning point most frequently cited was the appointment of a new director. The following responses are typical:

> The most significant turning point was the appointment of _____ who in 1948-54 stabilized the publication program of the School of Education. He also formally organized the procedures for conducting school surveys, assumed responsibilities for research, and created a more independent unit. Through his professional competence and excellent background he brought professional status to the position of director.

> The present director is more interested in classroom rather than laboratory research, i.e., testing of theory in classrooms. Basic objectives of present director assume a commitment to public education and attempts to improve it through research, not just service.

> The Institute was primarily the idea of one woman who obtained a grant to establish it. The faculty were against the idea and the appointment of the first director was a disaster. . . . The Institute director resigned and a new one with a name in sociology was appointed. He exerted less pressure on faculty either to do research, participate in research, or to bring their research under the aegis of the Institute. He was primarily involved in his own research and made no effort to develop a real institute or bureau of research. However, his tenure had one beneficial effect; namely, to reduce faculty hostility toward the Institute.

> . . . in 1957, _____ was appointed Principal of the school and his ideas about how a lab school should be run have greatly influenced the total program.

In these selected responses we can discern at least four ways in which bureau directors may substantially affect the development of their units: by reorienting the program of the unit, by enhancing the prestige of the unit, by creating a more autonomous organization, and by improving public relations with the faculty. Conversely, by failing to take the initiative in these matters, they may permit the research unit to decline. In addition, these excerpts alert us to variations in the leadership styles of directors, to be discussed in detail later on.

After asking the respondents about the most important turning points in the unit's history, we inquired about the individuals, groups, or agencies which had been "most influential in setting the current goals of the unit." More than half of the respondents (56 per cent) mentioned either themselves or one of the former directors. By contrast, a university administrator was mentioned by only 25 per cent. Of par-

ticular interest is the fact that the directors of research-oriented units are especially influential in setting the goals of their organizations. Table 31 shows that 73 per cent of the directors of highly research-oriented units cited themselves as being influential in setting current goals, compared with only 12 per cent of the directors of service-oriented units. These results reflect the more traditional character of service units. As we saw in Chapter I, service units are older than research units. Presumably their goals have been firmly established either by prior authorities or by the emergence of commitments from day-to-day experiences. The current director of a service unit, therefore, tends to be a guardian of past mandates rather than a goal-setter himself. Clearly, the highly research-oriented units are the most innovative types of organizations since their directors still have the opportunity to establish goals.

There is a third question in our survey that bears on the director's contribution to the development of a research unit. The question was as follows:

> Since becoming the dire tor, have you introduced any innovations in terms of organization or activities? If so, please describe them briefly.

Although one might expect the respondents to exaggerate their own contributions to the unit's work, when we consider the magnitude of the innovations cited it becomes clear that they have substantially influenced their organizations. The innovations that were mentioned include: inter-disciplinary research; the training of students; the separation of field services and research; the provision of consultation services to

TABLE 31

GOAL SETTING OF THE DIRECTOR ACCORDING TO RESEARCH ORIENTATION OF UNIT

Of all those involved in the founding and operating of the unit, what person, group, or agency has been most influential in setting the current goals of the unit:	Research Orientation (% budget for research) Low (0-49%)	Medium (50-89%)	High (90%+)
The present director:	12%	44%	73%
No. of units	(17)	(18)	(15)

the faculty; the setting up of workships, seminars, and colloquia; the formulation of a constitution and by-laws; the reduction of teaching loads of staff members; the founding of special research divisions within the bureau; and expansion of the staff. Most of the directors mentioned innovations of the magnitude of those cited.

It is conceivable that research organizations in general are more dependent on the policies of their directors than other types of organizations. Staff members are probably reluctant to become involved in administrative matters, and are therefore willing to confer a good deal of decision-making authority on the unit's chief. Now let us turn to a more detailed consideration of the specific roles performed by directors.

The reluctance of scholars to assume administrative roles is often premised on the belief that a formal position of leadership in the university seriously interferes with one's intellectual life. It could be argued, however, that directing a research organization is no more in conflict with scholarly work than is teaching. The director is faced with a variety of research problems which permit him to try

out his intellectual taste and skills, while the individual scholar might find himself committed to a study prematurely chosen. The multitude of data passing through the director's hands can considerably broaden his experience; staff conferences can provide a unique sounding board for new ideas; even negotiations for grants can open vistas into other worlds which a researcher can turn to good use in his own work.

It is true that research directors need to perform important administrative duties in order to keep the unit alive, but it is equally true that they must give considerable attention to developing and sustaining the intellectual life of the organization. It is the unique combination of these roles that distinguishes the "managerial scholar." And while there is room for conflict between administration and intellectual obligations, there is also much room for accommodation. Thus, it is certainly not the case that administrative responsibilities usurp all or even most of the time of research directors. When we asked the respondents to indicate the three activities to which they devoted most of their time, we found that intellectual activities are performed more often than administrative tasks. This conclusion is drawn from Table 32 which shows the distribution of directors on the check-list of twenty-four possible activities included in the questionnaire.

Fifty-seven per cent of the directors said that they spent most time on at least one intellectual activity, while 37 per cent said that they spent most time on at least one administrative activity. The two intellectual activities most frequently mentioned were "assisting staff members with analytical problems which arise in their research" (29%),

TABLE 32

THE ROLES MOST OFTEN PERFORMED BY DIRECTORS OF RESEARCH UNITS

Organizational Roles	% Saying Role Is Among Those Most Often Performed*	
Intellectual Activities		
Assisting staff members with analytical problems which arise in their research	29%	
Assisting staff members in writing proposals	21%	57%
Facilitating communications among researchers	14%	at least
Judging the adequacy of research proposals written by individuals associated with unit	10%	one activity
Formulating the goals of a research program	10%	
Encouraging staff members to undertake research which is of general interest to scholars in education	8%	
Administrative Activities		
Seeking funds for researchers	16%	
Providing facilities for researchers	11%	
Communicating the needs of the research program to the administration	11%	37% at least one activity
Negotiating with or reporting to funding agencies	10%	
Collecting and disseminating information about financing of research	8%	
Budgeting for the unit as a whole	6%	
Own Studies		
Conducting your own research	41%	
Directing or facilitating service studies for schools in the area	19%	
Other (not classifiable above)		
Encouraging individuals associated with your unit to undertake research which is of immediate help to schools	10%	
Gaining the assistance of scholars in other departments in the university in planning or executing research	5%	
Handling problems of interpersonal relations among staff members	3%	
Encouraging researchers in the university who are not associated with your unit to become associated in some way	2%	
	234%	
N directors:	(63)	

*The respondents were instructed to list no more than three activities to which they devoted most of their time. Hence, the total per cent exceeds 100 per cent.

and "assisting staff members in writing proposals" (21%). The administrative activity most often mentioned was "seeking funds for researchers" (16%). These results do not bear out the common assumption that bureau directors are chiefly administrative agents whose intellectual life is severely restricted by their directorial duties. To repeat, the nature of a research organization requires the director to maintain an intellectual climate, and in doing so he has many opportunities to enrich himself as a scholar.

When it comes to carrying out his own research, however, the duties associated with the directorship do sometimes interfere. As a matter of fact, more directors said that their duties had interfered with their own research than said that the position had helped their research. This conclusion is derived from the following question:

> On the whole, would you say that the duties associated with the directorship have hindered or helped your own research?
>
> ___Hindered
> ___Helped
> ___There has been no appreciable effect one way or the other

About half of the directors (48 per cent) claimed that their duties had "hindered" their research, while a fifth said there was "no appreciable effect," and a third said they had been "helped."

Despite the larger percentage who said the position had hindered their research, it is important to recognize that the hindrances are not inherent features of the position. For several conditions determine whether the position becomes a hindrance or an asset to the director's own work. First, directors of units which specialize in a particular research area more often feel that their position is an asset to their

own research, as shown in Table 33. It is mainly in the diversified units that difficulties arise; and as mentioned earlier, most units are diversified in substantive focus. What this result indicates is that directors who do not share a universe of discourse with their staff are less likely to receive stimulation for their own work.

The importance of interaction with staff members in contributing to the director's own research was revealed in the responses to the following question:

In what ways have your duties hindered or helped your own research? Directors who claimed to have been helped in their research frequently mentioned the intellectual stimulation from colleagues as a contributive factor. Here are some illustrative replies:

> The opportunity to exchange ideas with those having similar interests has been invaluable. In fact, merely having them around working on their problems helps create a research atmosphere that makes my own work easier.
>
> As my major interest is methodology and test development, the problems raised by others have provided opportunity to sharpen my own ideas and to contribute to those studies.
>
> Fruitful interaction with others.
>
> Helped by enlarging range of communication with scholars.

But not every kind of interaction with the staff guarantees intellectual rewards. If staff members are poorly prepared to execute research, then the director may have to assume the role of an intellectual nursemaid. Thus, one director who said that the job had hindered his research explained:

> I spend so much time assisting others who are ill prepared in experimental design and statistical analyses that I don't have time for my own work.

TABLE 33

CONTRIBUTION OF DIRECTORSHIP TO OWN RESEARCH ACCORDING TO SUBSTANTIVE FOCUS OF UNIT

Have duties associated with directorship hindered or helped own research?	Substantive Focus of Unit	
	Specialized	Diversified
Helped	44%	24%
Hindered	35	58
No effect	22	18
	101%	100%
No. of directors	(23)	(38)

And another replied:

> Time is taken up designing studies and writing proposals for others.

In short, poor qualifications of the staff may be responsible for the feeling of some directors that their interactions tend to be exploitative rather than rewarding. In addition to sharing an area of interest with the staff, then, a second factor influencing the opportunity to reap the intellectual fruits of their job is the quality of the staff.

A third factor is the size of the research organization. As shown in Table 34, directors of small units are as likely to feel helped as hindered, while directors of larger units are more likely to feel hindered. The relationship is not a linear one, however, for it seems to be the medium size unit which presents the greatest difficulty to the director. The explanation might be that the largest units have administrative assistants who absorb routine managerial duties so that the director has more time to continue his research. One director mentioned that he was looking forward to the time when an

TABLE 34

CONTRIBUTION OF DIRECTORSHIP TO OWN RESEARCH, ACCORDING TO SIZE OF THE UNIT

Have duties associated with directorship hindered or helped own research?	Staff Size of Unit*		
	1 - 5	6 - 10	11 or more
Helped	35%	21%	29%
Hindered	35	72	52
No effect	29	7	19
	99%	100%	100%
No. of directors:	(17)	(14)	(21)

*Includes both staff members and facilitated faculty members.

administrative assistant would make it possible for him to recommence his own studies:

> Administrative duties have hindered conduct of my research; however, we are seeking a full-time Administrative Officer of the Center. If we can secure an Administrative Officer, my continuing as Co-Director will not hinder and may even help the conduct of my own research.

Our discussion of the factors affecting the director's opportunity to derive benefits for his own research demonstrate that directing a research organization is not inherently antithetical to one's scholarly pursuits. Moreover, the degree of "hindrance" does not seem very serious, for the great majority of those who complained that the duties of the directorship hindered their research were nevertheless doing research. Seventy-nine per cent of the directors who made this complaint were engaged in research at the time of our survey. (All of the directors who said the position had helped their research were

conducting studies, however.) Further, as mentioned at the outset, our data suggest that the opportunities for intellectual intercourse with colleagues in the unit exceed the requirements of administration. This fact, together with the potential help to one's own research, make it possible for the managerial scholar to reap unusual intellectual benefits from his position.

2. Observance of the Norm of Academic Freedom

That the directors play such an active role in the life of their units, and especially in the intellectual domain, raises the question of whether staff members enjoy less autonomy than researchers outside the units. Earlier we saw that fear of reduced autonomy was the reason most frequently cited by the directors for the reluctance of faculty researchers to join the organization. Since it would be necessary to interview staff members themselves to settle the question, our survey of the directors can only give indirect evidence bearing on the issue. However, certain data from our study are at least sufficient to cast doubt on the assumption that faculty members relinquish control over their own work when they join the staff of a research organization. In order to explore this question, it is useful to compare the unit directors with the faculty research coordinators.

As mentioned earlier, many schools of education have created the position of a coordinator to oversee and facilitate the research of individual faculty members who remain unaffiliated with research units. According to our surveys of coordinators and directors, coordinators spend much less time in the performance of their duties. (The coordinators spend an average of 48 per cent of their university time

on the job while the unit directors spend an average of 63 per cent of their time.) As we would expect, then, the scope of the coordinator's activities is much narrower. The mean proportion of coordinators performing each of the fifteen activities listed in the questionnaire is 50 per cent, compared with 70 per cent of the unit directors. Obviously, then, there is far less opportunity for the coordinators to "control" the work of the faculty than there is for the directors to "control" the work of their staff. If it is true, therefore, that staff members in bureaus are more restricted as a consequence of the director's supervisory position, we should find that the unit directors more often exploit their administrative opportunities to impose their will on the staff in intellectual matters. One of the questions in our survey of coordinators and unit directors permits a test of this notion. The question reads as follows:

> Under which of the following circumstances, if any, have you ever intervened in an on-going study?

It is true that the unit directors intervene more often than the coordinators; but their greater frequency of intervention is wholly confined to administrative matters. This can be seen in Table 35. (In particular, the directors are far more active in dealing with personnel problems, reminding us of the difficulty of recruiting and retaining the unit's staff, discussed earlier.) As for passing on information which seemed valuable to a study, or helping an investigator who was having difficulty analyzing his data, however, the unit directors are no more active than the faculty coordinators. Thus, while the unit directors are much busier in administrative ways, they do not seem to

TABLE 35

CIRCUMSTANCES UNDER WHICH UNIT DIRECTORS AND COORDINATORS OF FACULTY RESEARCH HAVE INTERVENED IN PROJECTS

Under which of the following circumstances, if any, have you ever intervened in an on-going study?	% Unit Directors	%Coordinators	% Difference
Administrative Interventions			
A project was having personnel problems.	61%	21%	+40
A study was failing to meet its deadline.	28	14	+14
A sponsor or client was worried about the progress of a study.	23	11	+12
A project was having budgetary problems.	23	25	-2
Intellectual Interventions			
You passed on information which seemed valuable to a study.	61	57	+4
An investigator was having difficulty analyzing his data.	28	32	-4
Practically never intervened, regardless of circumstances	26	39	
Total responding:	(61)	(28)	

use their greater opportunities to intervene in the intellectual work of their staff. Apparently, the directors of research organizations are restrained from exercising greater authority over the work of their staff by the pervasive norm of intellectual autonomy in the university. In fact, there might be a fairly equal exchange of power between the managerial scholar and his staff. Since the staff is reluctant to become involved in administration, they confer a good deal of authority on the director. The director in turn recognizes the desire of the staff to control their own work, and therefore con-

fers authority upon the staff members in carrying out their research.

This does not necessarily mean that the directors play a passive role in the intellectual domain of staff research, however. The point is simply that the role they play is facilitative rather than interventionist. This can be shown by comparing the responses of the coordinators and directors to two separate questions, one of which inquired about "assisting" researchers with intellectual problems and the other about "intervening." Table 36 presents the percentage of directors and of coordinators who indicated that they "assisted," and the percentages who indicated that they "intervened" in handling the same kind of problem.

TABLE 36

THE PROPORTION OF UNIT DIRECTORS AND OF COORDINATORS WHO "ASSIST" AND WHO "INTERVENE" IN ANALYTICAL PROBLEMS OF RESEARCHERS

	% Unit Directors	% Coordinators
Current activity: Assisting staff members with analytical problems which arise	74% (64)	48% (31)*
Circumstance under which has intervened: An investigator was having difficulty analysing his data	28% (61)	32% (28)

*Numbers in parentheses are the respondents who replied to each question.

While the directors have no more often intervened than the coordinators, they have far more often assisted with analytical problems. Thus, despite their greater investment of time and energy, and the smaller setting over which they exercise authority, the directors are

no more "interventionist" than the faculty coordinators. But they are far more active in an advisory capacity. In short, the notion that faculty members relinquish authority over their work when they join a research organization is not supported by these data. While admitting the limitations of our data on this point, it at least seems highly plausible that what little the researcher loses in autonomy is more than offset by what he gains in intellectual stimulus and advice.

C. Leadership Styles and Innovative Behavior

The most cursory observation of research administrators indicates wide variation in the way they perform their job. Awareness of this variation led us to develop a typology of leadership styles in order to examine the sources and outcomes of different patterns of management. And because we were especially interested in the unique combination of roles represented by the managerial scholar, a combination that promises to bridge the gap between administration and intellectual interests in the university, we decided to focus on the dimensions relevant to this distinctive integrative feature of their status. Specifically, we sought to classify the directors according to their performance of intellectual or administrative roles. In doing so, another aspect of their integrative position emerged, namely, orientation to the environment of the unit. As will become clear, certain directors are distinguishable by their taste for dealing with the world outside of their unit.

Our classification of leadership styles marks a departure from previous studies of leadership which have sought to characterize the leaders in terms of certain universal dimensions. Most frequently the dimensions that are employed refer to instrumental and expressive activities, such as Halpin's well known distinction between "initiating structure" and "consideration."[1] Rather than attempt to replicate findings that concern such universal dimensions as these, we have chosen to examine leadership in terms of what we have postulated to be the requirements of effective leadership in the university setting, namely, the combination of intellectual and administrative skills. Thus, our typology is tied to the social organization in which the role of leadership is performed. While this approach limits the generalizability of our typology to other contexts, it has the distinct advantage of reflecting the leadership requirements posed by a given social structure. From the viewpoint of advancing our knowledge about the relationship between social structure and leadership roles, the question might even be raised whether the emphasis on universal dimensions has been misplaced. While the latter strategy might eventually produce an abstract theory of leadership applicable to many contexts, such theory might be gained at the expense of a better understanding of the leadership needs of a particular social setting. In any event, it would seem worthwhile to direct more attention to this question than has been the case in the social psychological tradition of leadership studies.

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[1] For a review of several studies based on the instrumental-expressive dichotomy, see Gibb (1969).

It will also be noted that our typology is not derived from empirical patterns of activities, but from the theoretical assumptions of our study. Thus, we have not factor analysed the activities of the directors, but instead have classified the directors according to a priori categories of observation. What has appeared to us as a growing cleavage between the intellectual and the administrative domains has prompted us to consider the consequences of their mal-integration. We therefore identified directors of research units who were engaged almost exclusively in either of the two types of activity, as well as those who were engaged in both. In so doing, we found that the purely administrative type was so rare among these managerial scholars as to warrant exclusion from our analysis. We discovered another type, however, when categorizing our directors according to the circumstances under which they "intervened" in the work of their staff. A sizable minority asserted that they had never intervened, either administratively or intellectually; and further analysis revealed that these directors, whom we called the Outer-Directed leaders, were mainly concerned with the unit's relations with its environment. We therefore arrived at three types of directors: the Outer-Directed, the Scholar, and the Integrator. The features of each type and their derivation from our survey material will be presented in detail in the following section.

Typologies of the kind developed here have important functions. In the first place, they furnish a means of reducing a welter of social facts to manageable proportions. This is the most obvious use of typologies in the social sciences, and might be designated as the

descriptive function. But since social reality can be dimensionalized in a myriad ways, depending upon the theoretical perspective of individual investigators, there is danger of scientific sterility stemming from an endless proliferation of constructs. The descriptive function, therefore, must serve not only the requirement of conceptual parsimony, but also the requirement of cumulative theoretical relevance. This is the point at which deductive typologies differ in their utility from inductive typologies. The latter sort of scheme, which is based on statistical manipulations of discrete empirical observations in a search for patterns of attributes (e.g., by means of factor analysis) can rarely serve to advance analysis in terms of pre-existing formulations. In short, the second function of the kind of typology that we sought to develop (based on the intellectual-administrative distinction) is that it provides a tool for the testing of theory.[2]

The two functions mentioned above -- the descriptive and the theory-testing -- are both relevant to academic concerns. But in the context of our study of universities as manageable, goal-oriented enterprises, there emerges a third function which is more policy-oriented. Depending upon the problems that are diagnosed in particu-

[2]As briefly noted, one type of director was identified partly by inductive means, namely, the Outer-Directed leader. Rather than relegating this type to the residual category of a non-intellectual, non-administrative director, we discovered that this type was chiefly concerned with the external relations of the organization. Thus, our final typology was derived by means of both deduction and induction, the former playing a primary role, however.

lar research units, individuals with special strengths that are highlighted in our typology might be sought to fill the post of director. A unit which is suffering from a dearth of research grants, for example, or a bad "image" among its clientele, or indifference and even hostility on the part of university officials, might wish to reexamine the director's managerial style for evidence of skills in handling external relations. Perhaps what is needed by this sort of organization is an Outer-Directed leader, at least until such time as the organization has gained a secure footing in its environment. If the unit can anticipate continued dependence upon external sources of support, then it might be wise to employ this type of leader as a permanent associate director. On the other hand, if it is the intellectual life of the unit that seems to be waning, then the Scholar is called for. And finally, if the unit has reached a stage of development where it is assured of both external support and intellectual maturity, but needs to broaden its disciplinary scope or to achieve a still higher level of intellectual vitality, then perhaps the Integrator should be sought. (There is also evidence that the Integrator is most effective in the early developmental stage of a unit when it is suffering a variety of growing pains.) If resources permit, perhaps it would be advisable to seek the joint leadership of all three types of directors. But whatever the grounds for policy decisions, in these examples it can be seen how our typology of leadership might alert policy-makers to particular qualifications of directors for meeting the emerging needs of an organization.

The involvement of the directors in intellectual or administrative tasks is mainly based on structural considerations. There remains a more dynamic dimension that also needs to be taken into account: the extent to which the directors engage in innovative behavior over a span of time. Some directors exercise a great deal of initiative in developing their research units -- in terms of actual modifications or in terms of long-range planning -- while others are more oriented towards guiding and maintaining the existing structure. We therefore developed an index of innovativeness in addition to our typology of integrative styles.

In sum, we decided to examine the directors from the perspective of two distinct dimensions, the integrative and the innovative, one structural and the other developmental.[3] The following section describes the derivation of leadership styles according to their integrative functions, while the innovative dimension is discussed in a subsequent section.

1. The Integrative Typology of Leadership Styles

Several items in our questionnaire were used to classify the directors according to their integrative style. They were first examined according to their responses to a question that we have already mentioned:

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[3] For a similar perspective on university administration, see Kerr (1963, pp. 36-39). Kerr characterizes the university president as essentially a "mediator-initiator." His identification of these two dimensions was helpful in our formulation of the integrative and innovative dimensions, respectively.