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ABSTRACT

It is proposed that research universities are a vital component of higher education in the United States because they provide cultural and intellectual leadership, researc potential, and the professional and technical human resources to translate research into social, industrial, and economic action. The future of these institutions in view of declining enrollments and financial resources is discussed. Major factors seen to affect the research universities are financial resources and their ramifications: complex competition for state funds: alleged over- and underproduction of highly trained personnel: inadequate means for assessing costs and benefits of graduate education and research: and inconsistent criteria for establishing and dismantling graduate programs. The high undergraduate dropout rate is viewed as contributing to the problems of research universities, and may be a result of these factors: the decline of general education, emphasis on graduate programs, emphasis on faculty research and publication, and growing departmentalization. Other factors affecting the future of these institutions are competition among universities and collective bargaining for the faculty. (MSE)

THE FUTURE OF RESEARCH UNIVERSITIES

ED HED 511

The Institutions and Activities of Higher Education

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I. INTRODUCTION

Research universities are, according to the Report of the Task Force on Graduate Education (1975), essential to the welfare of the states and the nation. They are significant providers of intellectual and cultural leadership, research potential and the highly educated professional and technical human resources necessary to translate research into social, industrial and economic action. They provide the innovators, the planners and the teachers critical to state and national well-being and survival in the complex interrelated and technologically based world of the last quarter of the 20th century.

More Than Survival suggests that the United States relies more than any other nation on its universities for its basic research, and its universities have performed at the highest level of competitive competence. The nation also depends on its universities for the advanced training of the scientists who participate in both basic and applied research, whether in higher education, or government, or industry.

In these times of declining enrollments and dwindling financial resources, it is appropriate that an assessment be made of the future of this most important component of higher education - the research universities. Therefore, this final paper, will explore the future of the research universities in what many educators are calling the era of a new academic revolution - the war for survival.

II. ASSESSMENT OF THE MAJOR FACTORS AFFECTING HIGHER EDUCATION ON RESEARCH UNIVERSITIES

1. Financial Resources

According to the Report of the Task Force on Graduate Education (1975), a credibility gap has developed between the governors, legislators and citizens, and the research universities. This gap is due to ascending costs, institutional management policies and other factors associated with the status and nature of graduate education. These individuals are seeking answers to such questions as: How much and what kinds of graduate education are needed? Are graduate institutions producing too many overly specialized people for the needs of society? Does society need the number and types of graduate education programs offered by the research universities? In fact, the charge is sometimes made that institutions are not reacting or will not react to meet the changing human resources needs of society and the interests of students - that they seek to perpetuate traditional and sometimes self-serving missions.

Nevertheless, there have been, and should continue to be, varying levels of responsibility and support for graduate education and research at the state level. The research universities received funds during the expansionary period of the 1950's and 1960's earmarked to accomodate a rapidly increasing enrollment and solve major social problems as well. As the institutions responded by expanding programs, hiring faculty and staff, constructing new facilities and providing all the support services required, costs progressively became a major concern. As a result,

higher education came under increasing scrutiny by governors and legislators. They continued to support the institutions, but without clear, understandable information on input and output, needs and costs, upon which to base their policy decisions. Institutions attempted to provide the needed information, but a communications problem compounded the "credibility gap." The ability to communicate an institution's needs and outputs is essential for continuing support from the executive and legislative branches of government. Some of the key problems attributing to these communication difficulties are described below:

a) Multiple Competing Pressure for Funds at the State Level

One of the problems for graduate education is the competition for funds at the state level. In recent years, state governments have been burdened with increasing demands for financial support of social services, such as health, welfare, safety and transportation as well as support of elementary, secondary, career, undergraduate and graduate education. Although state officials attempt to accomodate all areas, the general condition of the economy has resulted in an increasing scarcity of funds. The problem has been exacerbated by inflation, which undermines the effectiveness of increased funding levels. The executive and legislative branches of government are forced to rank the state's public services according to state priorities. Spokesmen for each social service must be able to communicate their service's needs to the government officials in an effective manner.

b) Alleged "Overproduction" and "Underproduction" of Highly Educated and Trained Persons in Certain Manpower Pools

Because of this intense competition for funds, research universities must justify their requests for appropriations that are purported to have the highest per-unit cost at the graduate and professional levels. The issue is compounded today by what appears to be "overproduction", and in some areas "underproduction", of highly educated and trained persons in certain manpower pools. Contributing factors to this issue include the student "demand" for graduate and professional degrees, changing societal "needs" for highly educated human resources in various fields and a decline in academic appointments based on a leveling off in enrollment projections. (National Board on Graduate Education, 1973)

c) Inadequate Data Base and Statewide Indicators for Assessing Costs and Benefits for Graduate Education and Research

Perhaps the central issue in the communications or "credibility" gap is the inadequate data base and lack of statewide indicators for assessing the costs and benefits for graduate education and research. Because of the interrelationship between graduate and undergraduate levels of education, joint costs and other difficult technical problems, common standards for measuring costs of graduate education have not been developed. The wide variance in costs within and among programs as well as the problems inherent in determining costs is well illustrated in The Costs and Benefits of Graduate Education: A Commentary with Recommendations, published by the Council of Graduate Schools in the United States in 1973. Among the recommendations growing out of the graduate cost study is that "additional studies be carried out as rapidly as possible

to provide the information which is needed;...and the result of such studies be reported as soon as practicable in order to provide a sound basis for the public policy and institutional decisions which are now being called for relative to the costs and benefits of graduate education."

The need for an adequate data base is supported by the National Commission on the Financing of Postsecondary Education, which recommended that comparable financial information for the entire postsecondary education enterprise be collected and reported in a timely and systematic fashion. The commission also urged that financial information associated with institutions of postsecondary education be collected and reported in close cooperation with the states. When and if the costs and benefits of graduate education and research can be displayed in a clear, precise manner, state policymakers can set appropriations with some degree of confidence. These are inherently difficult problems and precise answers may never be available. But more effective movement in this direction is essential.

d) Inconsistent and Controversial Criteria for Establishing or Dismantling Graduate Programs

Another current problem at the graduate level is the inconsistency and lack of agreement upon criteria for establishing or dismantling programs. The shifting enrollment patterns, increasing costs and changing societal needs bring pressure upon institutions and state coordinating agencies to develop criteria for approval of new programs and elimination of programs. Although a variety of approaches are

being considered, we are still at an early stage of the art. Until program review procedures are refined and accepted by all parties within states, this issue will remain a central concern.

At the federal level, the Carter Administration continues to stress the need for real increases in federal spending on research, one of the few discretionary areas in the federal budget given such treatment. There is a dilemma, however, in that research production within the university normally yields new doctorates as a joint product, but many of these new Ph. D's will not find suitable employment. During the growth period of the late 1950's and 1960's, the joint production of research, graduate, and undergraduate education within the university operated ideally from an economic point of view; but today, these relationships are less beneficial economically. The continued discussion of free-standing or functionally separate research institutes reflects this fact, posing difficult questions about research management for both universities and government sponsors.

The nation's research universities will face continuing difficulties in financing graduate education, for the likelihood of increased graduate student support from either the federal government or private foundations is virtually nil. Some of the proposals being advanced for reform of the federally guaranteed student loan programs would make increased borrowing more manageable, and graduate students will probably have to rely more and more on debt as a source of finance; however, one

can predict with reasonable certainty that many academic departments will face a shortage of graduate students in the next decade, raising tough problems for the maintenance of these departments as strong centers of scholarship. (Ford Foundation, 1977)

In Washington, there is growing concern about the obsolescence of research equipment and the need to modernize scientific laboratories. There is also concern over the so-called "lost generation" of scholars and scientists that limited academic employment opportunities for the next decade will create. It is possible that a new federal program will be enacted that will provide funds to universities to hire young scholars so that they will not be lost to their professions.

Some financial relief may be in sight for the major research libraries, for legislation creating a National Periodicals Center may be enacted in this or the next session of Congress. Such a center would provide librarians with options not currently available in local collection development and would reduce the growing costs of interlibrary loans. (John Hopkins University Press, 1979)

In conclusion, the research universities will not be immune from serious economic pressures for the foreseeable future, and the tension between humane policies and hard-nosed financial decisions will increase in virtually every research institution.

2. Enrollment

The word "demographic" means dismal to many institutions of higher education. Between 1960 and 1970, the number of five-year-olds, who represents the prime college market of the 1980's declined 15 percent. Faced with the prospect that enrollments may decline by perhaps as much as 40 percent between 1980 and 1990, academic communities alternate between a quixotic faith in the power of admissions marketing and a fatalistic conviction that external forces will carry higher education to the verge of bankruptcy.

The research universities, according to the Carnegie Commission on Higher Education (1971), have managed to attract yearly, on the average, 33.4 percent of the 18-21 year old students to their campuses. With this pool of college-age students shrinking, the research universities must either attract a larger percentage of these students, develop a "new" student pool, retain a larger percentage of the students enrolled or face declining enrollments. If such declines were to occur, they would not only impact the undergraduate programs but would drastically affect the graduate programs as well. This relationship exists because the undergraduate students constitute the available pool from which graduate students are selected, and establish the demand for teaching assistantships, a major source of financial support for graduate students.

The community colleges have attracted the majority of the non-tradi-

tional or part-time students. The comprehensive colleges and universities are doing an effective job of attracting their share of the 18-21 year old students. Therefore, the only viable income avenue available to the research universities, if they are to maintain constant or slightly increasing undergraduate student enrollments, is to concentrate on retaining the students that are currently enrolled. They must find ways to reduce the drop-out rate from its historical 40 percent over the last 40 years (Ben-David, 1972) to a much lower rate.

Some of the factors that contribute to this drop-out rate are worthy of review.

Decline of General Education

Research universities have succumbed to the process of specialization and departmentalism. The undergraduate curriculum is little more than a cafeteria from which students can select virtually any courses as long as they meet the narrow and specialized requirements for a specific major. This environment suggests to students that the institution does not have any real, overall educational mission except to train students for a narrow profession. Moreover, it speaks most loudly to undergraduates as it virtually ignores them as persons - students know they don't matter as much as the mechanical and content-related nature of the course requirements.

There are indications (Feldman and Newcomb, 1969) that much of the

change that takes place in a student's attitudes, values, and learning styles occurs in the first two years of college. Yet it is precisely here that too many universities spend the least amount of time with and have the least commitment to students. Harold Hodgkinson (1971) indicates that the curriculum of the first two years of college is very weak, and that the high attrition rate is the result, at least partially, of ineffective programs during the first year. The programs, he argues, are difficult to change because most of the faculty are not interested in them.

Students of any age are not easily fooled, and most undergraduates learn all too quickly that the "real action" at the university is not in the first-and second-year classrooms. Frequently, those who arrive at universities as enthusiastic and eager first-year students are "turned off" to the learning process and to the institution by the absence of a thoughtful, stimulating curriculum, and by faculty whose priorities are elsewhere. (Sandeen, 1972)

Emphasis upon Graduate Programs

The temptation to create graduate programs almost overnight has been too great for many institutions of higher education to resist in the past fifteen years. Many colleges, public and private, primarily for reasons of prestige and to attract and retain

outstanding faculty, developed master's and doctoral programs in a wide variety of disciplines, sometimes despite inadequate facilities, personnel, and financial resources. Too often, this resulted in lower priority being given to undergraduate programs.

Ashby (1971) argues that while the graduate school has many outstanding accomplishments, it is costly and is likely to impoverish the undergraduate programs. Its success may have some negative effects upon other segments of the institution.

Sandeen (1972) observed that on many campuses that developed large and diverse graduate programs, there existed a well-known and cynically referred to "pecking order" among the students themselves. Undergraduates too often viewed themselves, especially as first- or second-year students, as almost "unworthy" of the time or concern of professors. It was clearly implied on the campus that graduate students (especially those on the Ph.D. level) were the "preferred clientele" since they alone, of course, were capable of doing research, dealing with the real weighty issues, or attending faculty meetings.

There is no attempt here to make a case for deemphasis upon graduate education, nor is any implication intended that graduate programs are not critical to higher education and society in general. Indeed the quality of an undergraduate program can be enormously enhanced and enriched by the presence of strong graduate

programs. On campuses where there are outstanding graduate departments, undergraduate students should be able to benefit significantly from the more sophisticated facilities, equipment, research, library, faculty, and graduate students themselves. The undergraduate program, however, needs to reflect a clear-cut mission of its own, so that students and faculty understand its goals and educational purpose.

Emphasis upon Research and Publications

In his important study for the Carnegie Commission, Institutions in Transition (1971), Harold Hodgkinson noted that as the comprehensiveness of a school increases, the commitment toward teaching decreases. With the striking growth and expansion of institutions in the past fifteen years, it is not surprising that undergraduate teaching programs have suffered from lack of attention. Although there is evidence that larger percentages of faculty are now being granted tenure than before, and that it is being granted earlier in one's academic career (Hodgkinson, 1971), there is still a very strong emphasis upon research and publications in the faculty scramble for promotion. The cliche "publish or perish" is still quite valid, especially in the perceptions of many undergraduate students at large, research-based universities. There is more prestige involved for faculty to be concerned with research projects and "their own work" than with the educational and personal lives of undergraduates. Moreover, the rewards to faculty in terms of promotion, salary increases, a professional reputation are clearly based on the

research, publications, and national exposure they can produce, not on undergraduate teaching. Clearly, some professors are openly bored with "low-level content" of undergraduate courses, and they are tired of having to listen to the "sophomoric concerns and identity crises of these students." There are many other faculty, however, who are genuinely interested in undergraduate students and are inspiring teachers as well, but who are torn between their dedication to the needs of these students and the administration's demands to produce research and publications in professional journals. This emphasis upon reputation, rewards, and money has taken many professors further away from undergraduates in their consulting roles. Faculty represent expertise in a great variety of activities, of course, and many are frequently called to other campuses, corporations, the state and federal governments, school systems, and other countries. This consulting activity has been actively sought out by faculty, as it can enhance their professional advancement, prestige, and pocketbooks. Too often, however, it means yet another reason why undergraduates may not get as much attention from outstanding faculty. As Clark Kerr (1963) has argued, many of the changes that have taken place in universities have separated faculty members from students, and the revolt that used to be against the faculty in loco parentis is now against the faculty in absentia.

Research writing, and professional consultation are not at all incompatible with undergraduate teaching. Moreover, a faculty

member at a modern university most likely is not growing and learning in his/her field if he or she is not actively engaged in at least one of these activities. There are many nationally prominent full professors who, while being involved in significant research activity, also interact frequently with undergraduate students, in and out of the classroom. Indeed, they make better and more concerned teachers because they bring to undergraduates their own sense of excitement with their research and they find ways to involve these students in the problems and issues raised by their ongoing projects. Research activity has tended too often to separate faculty from undergraduate teaching and advising, and it has isolated some faculty from ongoing contacts with the concerns and needs of these students. Although the reward systems in higher education have encouraged faculty to work in those directions, undergraduate teaching can be revitalized and integrated with these professional concerns of the faculty. At the present time, in many institutions, students are "left to their own devices" in their academic programs, and the only persons with whom they ever spend much time in a serious consideration of the content of their work are other students. Although there are obvious benefits to this, the process of higher education must be more meaningful and involved with faculty. For many students, due to this isolation from faculty, Stanley Heywood's (1971) observation that higher education can "indeed be a very dull experience" is too often a reality.

Growing Departmentalization

The only link that the separate schools and departments at a university have, it has been said, is that they share a central heating system! Kerr (1963) has revised this slightly; he views the university as a series of individual faculty entrepreneurs held together by a common grievance over parking!

Warren Bryan Martin (1968) argues that our interest in educating the whole person is inconsistent with our academic specialization. He claims that universities

> "cut off the student's head from his body and have it dissected according to the specialties of various departments, while the victims' body is allotted to student personnel services."

Although well over one-half of all students on many campuses change their academic major at least once, and many more than once, there is a growing tendency among institutions to assume that students, even in their first year, are (or ought to be) firmly committed to a professional field, and should begin a structured, predetermined, and unswerving program to that end. Much of the structure of undergraduate programs today reflects more of the specialized approach of a graduate curriculum than the broad-based one of the undergraduate program. According to Sandeen (1972), students are painfully aware of the penalties involved if they deviate too far from the prescribed departmental requirements. If they "get out of sequence" (one of the major sins that can be committed), they may graduate a semester late, miss good job opportunities, increase their own costs, or incur the disapproval of faculty and parents. To many students

today, the term "elective" is a standing, cynical joke. Their curriculum may be so prescribed that their only "electives" are available in their last two years, and then these must comprise "no more than 5 percent of the total program." One college catalog indicates that students must enroll for at least 9 credits of "sociohumanistic studies," as part of their overall program of 192 credits. Whatever "sociohumanistic studies" are is anyone's guess, but the implication that taking 9 credits in such academic activity constitutes a broadening of the educational experience is both an insult to the academic integrity of the faculty and an illustration of the lack of coherence in undergraduate education. The department reigns supreme. The power and autonomy of academic departments in higher education are a reason for the academic achievements of institutions and for their shortcomings. It is only a very courageous and innovative dean who can make many inroads into the departments and alter or broaden the scope of their concerns. Students enrolled in "their department" become "their students," and in recent years departments have protected and clung to their students for more than academic reasons - the number of students enrolled in the discipline may have a direct impact upon the funding of its programs and the support for its faculty. Students unknowingly become pawns in interdepartmental power and money struggles; and, of course, the lack of any comprehensive and sensible approach to undergraduate education is clearly reflected.

It is too often assumed that once a student enrolls in a particular

department, she or he is not only going to graduate in that discipline, but will also either pursue graduate studies in that area or obtain a job in that field and stay in it for a long time. The actual behavior of students and graduates, of course, does not follow this pattern. Large numbers of students take jobs immediately after college that are not directly related to their undergraduate majors - and more striking, the mobility in the work force now is such that most persons change jobs several times, so that five years after graduation, many are in positions essentially unrelated to their undergraduate concentration. Yet too many institutions continue to increase the narrow and professional nature of their academic programs. Aside from the fact that these approaches do not represent any logical, broad-based educational philosophy, the ironic result is that students are not well served even for their narrow professional purposes, due to their own shifts in academic and professional preferences.

Students, of course, have contributed to this emphasis upon departmentalism by their own insistence on "relevance" and their own academic myopia. All professors have heard students complain about "why do I have to learn this? - It's not related to what I'm going to do." Too often, faculty departments and institutions have reinforced such attitudes with the overemphasis upon course work as a preparation for a job. The current fad for "career education" being pushed by the federal and state governments can only enhance this trend and further the fragmentation of undergraduate programs.

The academic department is a great strength in American higher education. It has become too autonomous and isolated, however, and too free to control a large part of the curriculum for undergraduate students. Strong leadership is needed to develop programs in undergraduate education that take advantage of the strengths of departments with imaginative new arrangements of curricula, facilities, and faculty. (Sandeen, 1972)

It is becoming obvious, according to Zemsky (1980), to senior officers in research universities that intensified recruiting efforts offer only a limited solution to declining enrollments or to fiscal problems; current budget pressures can only get worse as enrollment pools shrink over the next decade. Short-term admissions marketing must now give way to long-range retention planning as an integral part of academic and fiscal management. Until this is done, American research universities will not be prepared to confront the 1980's with confidence in their own ability to remain a viable force in the future of higher education.

3. The Impact of Competition on Research Universities

The research universities are a microcosm of the larger set of institutions in the higher education community. They contain within them much of the variety offered by the three other types of institutions studied. The research universities, for example, offer the B.A., M.A, and those doctorates that are offered by the comprehensive and private colleges. In addition, they also offer, in many cases, the A.A. degrees that are most frequently thought to be solely within the province of the community college.

This places the research universities in competition with the comprehensive, private and community colleges for student enrollments and financial resources.

The research universities seem to fare well in the student enrollment area. In fact, the Carnegie Council on Higher Education (1980) predicts that the research universities will be the least vulnerable to the declines in enrollments over the next two decades. Because of the high admissions standards that they maintain, it is possible for them to regulate enrollments by lowering admission requirements. Further, they also draw their students from national rather than regional or local areas which allow them to be less dependent on localized prospective student pools.

In the area of financing, the research universities, because of the cost per graduate student, have a more difficult task of competing for limited resources with the community colleges and comprehensive colleges and universities.

4. Collective Bargaining at Research Universities

Collective bargaining is now a major issue on many campuses, and faculty, students, administrators, board members, and legislators would do well to consider together its probable impact upon their institution. Ladd and Lipset (1973) have speculated that faculty unionism will be a storm center in the future, and although it has been viewed with disdain by many professors over the years, it will become a major issue for research universities.

Collective bargaining can come, when it does, as a supplement to current forms of governance, if it is confined to bargaining over matters of compensation; or it can be a totally new form of governance covering all decision-making processes. It appears, based on the study by the Carnegie Commission (1973), that a majority of faculty members within higher education favor collective bargaining and also favor greater militancy in asserting faculty interests.

Collective bargaining can become a negative force if it focuses on faculty interests only and not on more broad-based efforts of revitalizing the undergraduate curriculum.

Faculty interests can include teaching and advising loads, class size, research opportunities, involvement in policy decisions, tenure regulations and salaries, among others. Each of these is very important; but if faculty members become so preoccupied with their

own security and working conditions, they may tend to become separated from issues central to the campus's educational program, and the sense of community that exists may be eroded. Collective bargaining places professional members of the academic community into a labor-management relationship and emphasizes a "we-they" conflict between faculty and administration, or, increasingly, between the institution and the governing board. Dialogue among colleagues can be replaced by negotiation, and the emphasis upon various campus "power groups" may become enhanced. The arbitration process may polarize campus groups on various issues, while distant "representatives" argue in formal, legalistic terms one "side's" case against the other. (Sandeen, 1972).

In the Carnegie Commission report on Governance in Higher Education (1973) it is argued that collective bargaining will result in a reduction of campus autonomy, because the people with the money are the legislators and governors. Negotiations will most likely be with these groups, and federal and state employee relations boards will decide such issues as the composition of the bargaining unit and the various matters subject to bargaining. Professional arbitrators may rule on various disputes and grievances. There also may be impacts upon interdepartmental uniformity, on flexibility of treatment of individual faculty cases, and on the tone of the relationships with administrators and trustees.

According to Sandeen (1972), the governance process itself may be

changed significantly depending on the nature of the contract. Faculty and administrative roles may become carefully proscribed, and informal and spontaneous relationships may decrease. Perhaps of greatest concern, collective bargaining raises several bothersome issues regarding undergraduate students and the educational program. If faculty interests "are paramount in a particular contract, most likely students do not have any significant role in the governance process." In effect, some collective bargaining agreements "write out" students from the governance process altogether, or "allow them" only a token "observer" role. Previous gains that students had made regarding involvement in campus issues can be eliminated. More importantly, the perceptions students have of their acceptance as participating members of the academic community can be greatly diminished. If faculty members and others on the campus have been stating their "commitments to undergraduates and their fine contribution to the governance process," then these statements quickly become hollow rhetoric to the students. A sense of community can quickly become a sense of cynicism. In extreme situations, where faculty may actually go on strike, students may become embittered toward their professors, now convinced that "when the chips are down, the faculty take care of themselves first, and the hell with the students." The need for broad-based reform in undergraduate education may not be enhanced by the presence of collective bargaining. Instead of being concerned with campuswide educational programs for students that may involve the breaking down of departmental barriers, faculty may further isolate themselves into their own departments,

secure with the contents of their contract.

On the other hand, collective bargaining can be viewed as a positive force within the educational community if it serves to ensure appropriate professional roles for faculty, and if does not remove campus groups from playing a meaningful role on governance. It can function to maintain effective class sizes, teaching and advising loads, fair and equitable procedures for faculty evaluation, and adequate financial compensation for faculty, all of which may serve the cause of effective educational programs and campus morale very well. By giving a clearer definition of faculty responsibilities, professors may eventually be more free to participate in efforts to create more vital educational options for students. In some cases, of course, the rights of faculty, their prerogatives to determine the curriculum, and the work loads they actually undertake have been abridged or arbitrarily determined. Collective bargaining has the potential in some situations to ensure fairness, and perhaps to protect vital educational principles. There probably has not yet been enough experience in American higher education with collective bargaining to evaluate fairly its impact upon students, the governance process, the institutional climate for experimentation, or the development of new and clearly articulated educational options for undergraduates.

In any case, collective bargaining by the faculty of research institutions will have substantial influence on the autonomy of these institutions and on the rational development of postsecondary education

in general. For the restructuring of higher education will be more and more along political lines which will vastly fuel the probability of a kind of institutional - governmental socialism destructive of academic freedom and thus of institutional freedom.

III. THE FUTURE OF RESEARCH UNIVERSITIES

With the great growth of research and graduate education experienced in the 1950's and 1960's subsiding, the research universities must make severe adjustments to survive this new environment of limited enrollment and declining financial resources.

More Than Survival suggests that these dwindling financial resources can be attributed to the requirements of state funding formulas on the one hand, and the changes in the flow of research funds, from the effects on Ph.D. programs of a poor and changing job market, from the sharp decline in support for graduate students, and from the erosion of their research libraries on the other hand.

Because of this dismal situation confronting higher education, in general, there is a great deal of interest and concern about the current status and future development of graduate education and research.

The concerns rest with the role of the state and the federal governments. It is perceived by the Carnegie Council on Higher Education (1980) that the period ahead will be a state period in terms of new initiative and responsibilities for the welfare of higher education - as the prior 20 years were a federal period in terms of new initiatives.

States will be expected to provide adequate resources to the universities. They must be able to guarantee through legislation and institutional

policy that all qualified citizens have equal opportunity for access to the graduate level, an opportunity that is not denied solely on the basis of ethnic, socioeconomic, sex or age discrimination. They must be able to provide basic institutional support, realizing that without such support, excellent programs could not survive. They must also share in the support of their citizens through state scholarships, grants and loan programs for students. They must be willing to provide this support without yielding to the temptation to seize control of systems of higher education and make them agencies of state governments in the name of saving money.

More specifically, the states must be willing to provide the support recommended by the Carnegie Council on Policy Studies in Higher Education in Three Thousand Futures: The Next 20 Years for Higher Education, namely:

> "We believe that the states generally should be prepared to maintain real per-capita contributions to higher education at current levels. Such a policy will both create some leeway, as public enrollments go down, to give more aid to private colleges and to offset the higher cost per student for overhead as campus enrollments decrease, and also reduce burdens on taxpayers as per-capita real income rises. A few states should raise their per-capita contributions in real terms; several may want to consider adding additional community colleges or equivalent programs in comprehensive colleges and universities to make open access available on a nationwide basis; and a number, we believe, should establish Area Health Education Centers.
>
> We also advise states to:
>
> - Prepare financing formulas that will encourage diversity and new initiatives, that make allowance for rising overhead costs per student as enrollments go down, and that permit institutions

to keep the private funds they raise. The Foundations in several Big Ten universities are a good model for the latter purpose. On formulas, we specifically suggest that reductions be less than the reductions in student numbers, for example, a range of 0.6 to 0.8 reduction for each 1.0 decline in F.T.E.

- Introduce state equivalents of the Fund for Improvement of Postsecondary Education (F.I.P.S.E.).

- Stop pre-audit controls over expenditures, and emphasize instead postaudit measurements of managerial performance.

- Ease the possibility of transfers of funds within institutions, preferably through lump-sum appropriations.

- Provide for portability of state financial aid to students.

- Step in, as necessary, to assist mergers of institutions, which can be costly, and to help with close-outs - particularly the preservation of past records.

The states together, through regional associations and the Educational Commission of the States nationally, may wish to:

- Encourage more sophisticated advance estimates of enrollments than many states now have-bad data give rise to bad plans."

With regard to federal support, the Carnegie Council (1980) has also made recommendations that are worthy of note:

- Continuation of the present level of support for research in colleges and universities at approximately 12 to 13 per cent of total federal support of research and development (R & D), while raising total federal support of R&D to about 1.8 per cent of the G.N.P. which it averaged in the 1960's; it has been around 1.3 per cent in the 1970's, rising recently. This would help offset any decline at the state level as enrollment-driven financing goes down in real terms. It would also make possible urgently needed improvement in the quality of laboratory equipment and other facilities.

- Establishment of a Fund for the Encouragement of Young Scientists. The fund would be used over a twenty-year period to assist the flow of young scientists into faculty positions in selected fields in universities directly or through absorption of all or part of the costs of existing tenure positions. It would be

administered by the National Science Foundation (N.S.F.) upon recommendations as to fields and means of distribution by the National Academy of Sciences and the National Academy of Engineering. We consider this to be a very important investment in the future. We are impressed by the carefully developed proposal of the Committee on Continuity in Academic Research Performance, sponsored by the Commission on Human Resources of the National Research Council.

Recognizing that the shortage of positions for young scientists in research universities will become more acute until about 1991 and then will become less serious as retirement and mortality rates of existing faculty members rise, the committee recommended a program of five-year awards to particularly the scientists (some middle-aged and some relatively young) whose universities would undertake to open up new faculty tenure-track positions to recent Ph.D's, with the number of awards gradually rising to a peak in 1991 and then declining. The costs of the recommended program would increase from $2.1-million in 1981-82 to $39-million in 1991-92 and then decline to the year 2000, and would be met partly by existing N.S.F. funds and partly by increased appropriations. Emphasis would be placed on opening up some of the positions for women and members of minority groups.

We suggest a similar but somewhat more flexible program, with provision for some awards directly to recent Ph.D's and with ten-year awards to established scholars during the first decade of the program (the duration of awards to be reduced after that, as the shortages of positions become less serious). We, therefore, propose added appropriations in excess of the sums just listed, but not exceeding $100-million in any one year.

- Encouragement, through appropriate tax policies, to industry and foundations to grant research funds to universities.

- Introduction of a policy to support research libraries and other research resources, including computers, by including within overhead on research contracts a standard 5-per cent allowance for this purpose; the current level is 1 to 3 per cent, varying among institutions. This policy should be adopted as a supplement rather than as an alternative to existing programs, particularly Title II, Part C of the 1976 Education Amendments. Part II, Part C remains an important element in preserving the nation's research libraries and should be fully funded at its 1979 authorization level of $20-million. Also necessary is the passage of legislation for a national periodicals center. Supplement J sets forth other policies to aid libraries.

We suggest that the federal government also consider:

- Policies to reallocate funds for student financial assistance to target them more on lower-income students, to create a more viable loan program, to place more emphasis upon student self-help, including through the College Work-Study program, and to assist the states with tuition scholarships (S.S.I.G.); all within existing total sums in constant dollars (Carnegie Council on Policy Studies in Higher Education, 1979b).

- Gradual increases in the fund allocated for the Improvement of Postsecondary Education.

On the specific issue of the allocations of financial resources between the state and federal governments in support of research universities, the National Board on Graduate Education stated the following:

> "...we believe that the division of responsibility toward higher education which has been evolving over the past 25 years is fundamentally sound; namely, that the states and the private sector assume responsibility for basic operation of the institutions and that the federal government assumes increasing responsibility for the financing of students, for research and for support of selected institutional programs in the national interest."

In a statement to the National Commission on the Financing of Postsecondary Education, representatives of the three regional interstate compacts (the Western Interstate Commission for Higher Education, New England Board of Higher Education, the Southern Regional Education Board) and the Education Commission of the States agreed to the following position on the appropriate distribution for support of graduate education:

> Federal support for graduate education in the form of student aid, training grants, direct institutional support and research development are critically important for the welfare of the nation. However, we do not believe that it is in the best interest of graduate education, the institutions or the public

for the federal government to assume primary responsibility for graduate education. To do so would tend:

a) To distort federal, state and institutional perspective

b) To encourage federal control of graduate education

c) To overlook the integral relation of graduate education and undergraduate education in complex higher educational institutions

d) To encourage crisis approaches to graduate education development based upon short-ranged manpower and projections and/or current but transient manpower needs

e) To lead to overlooking the necessary lead time in effecting changes in program productivity.

The Carnegie Commission on Higher Education considered graduate-level support as part of its step-tuition program. It advocated graduate-level tuitions three times as high for postbaccalaureate students as for freshmen and sophomores. It also recommended a significant increase in federal support if the nation is to remain in the vanguard of scientific and technological developments. To accomplish this, the Carnegie Commission recommended federal fellowships for doctoral students, together with cost-of-education supplements to institutions. In another report, the Carnegie Commission recommended federal government support of university-based research programs be increased 16 per cent above the 1968 level by 1970, with the annual rate of increase declining from 15 percent in 1970-71 to 10 per cent in 1976. This rate of increase (would) reflect expanding doctoral enrollments' use of more costly technology and the need for expansion into new fields of research.

The National Board on Graduate Education emphasizes that "...benefits of graduate education are both private and social, accruing to the individual student and to the state, region and nation." In discussing the pluralistic sources of support for graduate level education, the board endorsed the following principles for graduate student support, research and institutional support:

- Graduate tuition should be maintained at levels below the "full cost" of graduate education.
- Assuming no major increase in graduate tuition, federal fellowships and traineeships should not be increased to their 1968 highs. Neither should they be phased out.

The conclusions of these reports support the concept of the continuation of a plurality of courses of support for graduate education - philanthropic, business and industrial, state and federal. Student tuition should be set at a level that will not foreclose opportunities for all interested and qualified individuals and should be supplemented by a variety of financial aid programs funded by the federal government. The states have the primary responsibility for basic institutional support that undergirds both the undergraduate and graduate programs, particularly in their public institutions.

Given that both the state and federal governments will follow the above recommendations, the research universities will not only survive, but will be able to assume a leadership role in interinstitutional coordination and cooperation. They will, because of their size and flexibility, be in a good position to generate intellectual growth through the

consolidation of academic units. As indicated in More Than Survival, the research universities' strong professional schools can become resources for new directions in their undergraduate liberal arts program. Given the still growing demand for faculty in the community colleges, universities may be able to help meet these new faculty needs through doctor of arts program.

Their libraries can form regional ties and help point the way to new public policy approaches for better support of America's great research libraries. Their internal resources can be used to develop new management methods. They can explore areas ranging from new forms of increasing productivity to new patterns for early retirement. In summary, the research universities, which were leaders during growth, can also lead in new ways required at a time of declining growth.

IV. SUMMARY

The dependence of the nation on the kind of research and teaching that universities offer is so great that it is mandatory that they survive in order for this country to survive.

In fact, many of the new scientific and technological advances that we experience every day are the results of our research universities. The decline in their support over the past decade and more has injured the nation. Yet, I am of the opinion that the research universities, because of their major contributions to society and the dependency of society upon them still have the greatest possibility of survival of all of the types of institutions in higher education.

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