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"The central aim of education is to develop rational men who do not sin against themselves and their kind. The intellectual man standing disdainfully uncommitted, the educated man standing impeccably uninvolved, these are the living symbols of imperfection in education and schooling. And these--not the stumbling reader, the guessing speller, the by-chance figurer--are the challenge to educational reform."

John I. Goodlad

I. INTRODUCTION

This issue of the Research News comes at a time that great amounts of time and energy are being spent in faculty preparation, academic evaluation, and grade reporting.

This is also a time when many research studies are being submitted for class requirements. If you, as an educator, receive a paper that has quality, emphasis for an academic community, and you would like to share the paper with others who read the Research News contact the editor at ext. 281. This service is, of course, extended to any member of the Morehead State University faculty, academic staff, or graduate school who would enjoy sharing academic information.

II. NEWS ITEMS

Report From University Breckinridge School:
Implementation of Continuous Progress Plan

The University Breckinridge School in cooperation with the Eastern Kentucky Educational Development Corporation, Title III E.S.E.A., recently completed a three-year planning session and implemented a model Continuous Progress Plan.

The purpose in setting up a model program at Breckinridge was two-fold:

1. To provide better educational opportunities for the students in the Breckinridge School.
2. To provide opportunity for teachers and administrators from the schools of region VII in Eastern Kentucky to observe such a program in operation.

According to Reodus Back, Director of the School, the new program has proven successful on both counts. Through individualizing instruction and allowing each student to progress at his own rate, as he moves from level to level, there has been marked improvement in student progress and in the attitudes of the students toward school. The students feel secure and are happy through experiencing individual success in the absence of unfair competition. The teachers also appreciate the change since they no longer have the responsibility of trying to decide at the end of the year which children will be promoted and which will be retained and branded as failures. In the Continuous Progress Plan, promotion is a continuous process and although all students are not expected to make the same amount of progress, all students do make progress.

Since last September more than 200 teachers and administrators from Eastern Kentucky Schools who are interested in developing a similar program have visited the University Breckinridge School to observe the model program in operation. The opportunity to observe helped the visiting teachers to:

1. See the need for proper planning by the local school personnel who anticipate going into a new program.
2. Better understand the techniques used in individualizing instruction.
3. See some special equipment and supplies needed for individualizing instruction.
4. Understand that a continuous progress plan can function effectively in a traditional classroom building; that although classrooms without walls and other such arrangements may, in some cases be helpful, they are by no means essential.

The Continuous Progress Plan at Breckinridge is currently operating in the elementary school only, but future plans call for a similar program in the Junior High School (September 1968) and High School (September 1970). Eventually a student who enters the kindergarden will be able to progress at his own individual rate through both the elementary and high school.

Through financial arrangements with the Eastern Kentucky Educational Development Corporation, a booklet describing the Continuous Progress Plan at the University Breckinridge School has been made available to the schools of Eastern Kentucky.

Experimental Student Teaching Program Implemented On Campus

Dr. Lawrence Griesinger reports that more than 620 students have participated in the student teaching experience this school year 1967-68. As expected this represents the largest number of students involved in this program in the history of Morehead.

Eighty-four different schools and over three hundred public school supervising teachers are currently involved in the program. Students have been placed from Ashland to Jessamine County and from Bellevue to Whitesburg.

With the increase in numbers, it is felt that some revision needs to be made in the total organization of the program. Steps are being taken to explore other possibilities that will more adequately provide the best experience for the most students.

An experimental on-campus program was initiated this spring semester in relation to the professional semester coursework. Sections were combined and taught by a team of two instructors with individual section seminars built in. In addition, formal coursework in the areas of instructional media and tests and measurements was provided in the afternoons. Evaluation of this organization will take place near the end of the semester and revisions are expected for the fall program.

WMKY-FM Receives Schweitzer Foundation Gift

Morehead State University has received a \$1,000 gift from the Peter Schweitzer Foundation, New York. The gift was presented to Don Holloway, Associate Professor of Communications, by paper industrialist, Louis Schweitzer, for the purpose of purchasing 50 FM radios to be used for adult education in the WMKY-FM listening area.

The first radio was presented to WMKY-FM by Mr. Bert Cowlan, Vice-president of Herman W. Land Associates, Communications Consultants, who was the speaker for the Communications Division Banquet, held May 3, 1968 in Alumni Towers. Mr. Cowlan, a personal friend of Mr. Schweitzer, had suggested that the project was worthy of the Foundation's support, when his company was preparing the research report on educational radio for legislative committees considering the Public Broadcasting Act of 1967. WMKY-FM received a special profile as an exemplary low-watt station in that report.

In other activity at WMKY-FM, Don Holloway and John Elder, a senior majoring in radio-TV at Morehead State University, attended the International Radio-Television Society conference in New York City on April 18-19. The theme for the conference was "Talent for Tomorrow."

The International Radio-Television Foundation and WSAZ-TV, Huntington, West Virginia, granted funds to the Morehead representatives for their participation at the conference.

Morehead Hosts Sub-Regional Upward Bound Meeting

The Upward Bound Mid-Atlantic Sub-Regional meeting was held on the Morehead State University Campus April 22 and 23, 1968. Morehead Directors, Jack Webb, Carole Carte, and Dr. Morris Norfleet hosted some twenty Project Directors and Counselors representing Berea, Eastern Kentucky, Kentucky State, Alice Lloyd, Southeast Community, Clinch Valley, Concord, West Virginia State, West Virginia Institute of Technology, and Morehead State University

The directors focused their discussion on two major areas:

1. Broadening and coordinating Upward Bound's efforts with those of others in the community--C.A.A.'s, other OEO programs, ESEA programs, industry, business, other educational institutions, neighborhoods, city, county, and state agencies.
2. Broadening and coordinating Upward Bound's relationship with the secondary schools served.

Mr. Peter Camp, and Mr. Phillip Wheeler from Educational Associates Incorporated, Washington, D. C. conducted the two day meeting.

Summer School Admissions

The following breakdown on summer admissions has been compiled by Dr. John R. Duncan and the Admissions Staff in planning for the coming summer session.

Students Admitted For the 1967-68 Summer Term*

	Men	Women	Total
Kentucky Freshmen	19	39	58
Kentucky Transfers	<u>10</u>	<u>12</u>	<u>22</u>
Totals	29	51	80
Out-of-state Freshmen	74	24	98
Out-of-state Transfers	<u>11</u>	<u>11</u>	<u>22</u>
Totals	85	35	120
Grand Totals for Summer	114	86	200

*This report does not include returnees to the University or graduate students admitted to the University.

Summary of the Report

Through May 1, 1968, 200 new undergraduate students have been admitted for the 1967-68 Summer term. Of these 200 new students, 114 are male (57 per cent) while 86 are female (43 per cent). Of the new students, 80 (40 per cent) are residents of Kentucky while 120 (60 per cent) are out-of-state residents. This is the result of the special out-of-state freshman program.

Through May 1, 1968, 86 students have been admitted to the special out-of-state freshman program. This compares with 140 special out-of-state freshman who were admitted by this date in 1967. Our total number of admitted students for the summer term is running 15 students ahead of this same date last year.

The 200 new students for the Summer program represent 17 states. The breakdown is as follows:

Connecticut	1	New Jersey	6
Delaware	1	New York	8
Florida	2	Ohio	86
Hawaii	1	Oregon	1
Indiana	5	Pennsylvania	16
Iowa	1	Tennessee	1
Kentucky	111	Virginia	1
Maryland	1	West Virginia	2
Michigan	1		

The new students for the summer term have declared the following areas of interest:

Accounting	3	History	7
Agriculture Science	1	Home Economics	3
Art	7	Industrial Arts	6
Biology	4	Mathematics	4
Business Admin.	17	Medical Technology	2
Business Education	3	Music	7
Chemistry	2	Physical Education	13
Dramatic Art	1	Physics	1
Elementary Education	41	Political Science	1
English	14	Pre-Forestry	1
General Business	5	Pre-Medicine	2
Geography	1	Pre-Nursing	1
Geology	1	Psychology	5
Health	1	Social Science	3
Health and Phys. Educ.	2	Sociology	11
Health, PE and Rec.	2	Undecided	32

162 of the new students plan to reside in campus housing, 19 plan to live off campus, and 17 have indicated their plans to commute.

Summary of Spring Semester Transfer Students to Morehead State University

A study completed by the Office of Research and Development shows a total of one hundred and thirty-six (136) students transferred to Morehead State University during the spring semester of 1968. Forty (40) different colleges and universities were represented.

Thirty-five different majors were chosen by the transfer students with business administration (23), elementary education (16), and history (13) chosen by the greater number of students.

More students transferred as first semester freshmen (45 for 33.0%) and as second semester freshmen (21 for 15.4%). This follows a trend for spring transfers shown in the previous spring semester when the majority of the transfer students were first semester freshmen (39 for 32.2%) and second semester freshmen (21 for 17.3%). The figures this semester do not indicate an increase in transfer students from two-year institutions.

A total of thirty-nine (39) students (28.7%) from the total student body were on probation. This shows an increase from the previous spring semester which had 17.3 per cent of the transfer students on probation.

The increase of transfer students to Morehead State University from the fall semester of 1966 to the fall semester of 1967 was 22.3 percent. From the spring semester of 1967 to the spring semester of 1968 there was an increase of 12.4 percent. From the academic year of 1966-67 to the academic year of 1967-68 there was an increase of 19.3 percent.

Upward Bound Graduates Prove Their Worth

Dr. Thomas A. Billings, national director of Upward Bound, reported today that almost 80% of all Upward Bound graduates have gone on to college, and 76% of this year's freshmen group were in "good standing" following mid-term examinations.

"Upward Bound students have entered college at a higher rate than the general population (80% versus 65% for all high school graduates); and Upward Bound students have attained approximately the same grade averages and retention in college as their better prepared colleagues.

"We think the three year record of Upward Bound, although incomplete, proves the correctness of the basic premise of the program: that there are a comparable number of bright, talented youngsters in the ghettos and plains of America as there are in economically and culturally affluent suburbia."

Of the 7,500 Upward Bound students who have graduated since 1965, 5,988 have entered degree-oriented programs at two and four-year colleges and universities. Whereas only 250 colleges and universities were supported by OEO to run Upward Bound programs last year, 796 accredited institutions of higher education in all 50 states, Puerto Rico, the Virgin Islands, Guam and the Philippines, last September admitted graduates of U.B. programs.

"Another previously accepted fact that has proved to be fallacious," said Billings, "was that higher education would keep the college gate barred against disadvantaged youngsters who did not arrive with all the required credentials and cash. The facts of 1968 are that higher education is clamoring to be allowed to help wage the war against hereditary poverty."

Colleges and universities have waived admission standards, providing counseling and tutoring at their own expense for students in need, and helped to arrange financial packages that include university grants to match Educational Opportunity Grants from the Office of Education. Other sources of financial help are College Work-Study funds, NDEA loans, and private scholarships, some of which have been contributed by college students, faculty and alumni.

Twenty-Seven Upward Bound Students

Twenty-seven Upward Bound students in the Oregon State Prison UBOPPER program protected five of their teachers, including one woman French instructor, from 1400 rioting inmates at the prison in April. As the rioters set fire to the library on the third floor immediately below the Upward Bound area, the inmates in the UBOPPER program sealed off their fourth floor area, and armed themselves with ripped out typewriter rolls, brooms and anything else that might serve as a weapon in the event the rioters broke through.

The resourcefulness of the Upward Bound students, the Salem fire chief reported, is the only thing that saved their lives and the books and equipment used in the Upward Bound pre-college program.

The Upward Bound students tore hopsacking from the walls of one soundproofed room, soaked it in water and nailed it over open doorways and the vent system to prevent smoke and draft from burning out the Upward Bound classrooms and library. Laying on the floor to breathe, they waited 3½ hours, before they were rescued by the Salem Fire Department with an extension ladder and acetylene torch used to burn out the bars. They were taken by ladder over the outside prison wall while the other inmates were still rioting in the prison yard below. The Upward Bound students were congratulated by prison officials for their restraint and good judgment.

Dr. Thomas Gaddis, author of The Birdman of Alcatraz, and director of the Oregon Upward Bound Prison Project, said, "This test of fire" reaffirmed his confidence in the realistic and free approach of the Upward Bound program as an effective agent for rehabilitation of hard-core criminals.

Fifty male and 12 female prisoners are enrolled in the first Upward Bound education program ever tried in a maximum security prison. Thirteen of the prisoners from the UBOPFER project, begun last July, have been released to attend college. Most are attending Portland State College or Oregon State University, and one former inmate is working as a newspaper reporter. Upward Bound is a Community Action Program.

III. FEDERAL PROGRAM NEWS

Title I Proposals Approved

Three Higher Education Act Title I Proposals have been granted to Morehead State University. They are as follows:

1. "The Stimulation and Development of Community Recreation Programs in a Six County Region of Eastern Kentucky" under the direction of Rex Chaney and John R. Duncan, Jr. This program will be directed toward stimulating and developing community recreation programs within Menifee, Lewis; Fleming, Carter, Lawrence, and Greenup counties and continue the consultant service program for Boyd, Elliott, Mason, Johnson, Pike; and Rowan county, which was previously involved in the original proposal, 1967-68.
2. "Model Program of Consumer Education in Public Assistance Families." The purpose of this project will be to establish a one-year model program of consumer education which will serve as a liaison between the community service organizations and the economically disadvantaged in Rowan County.

3. "A Community Service in Continuing Education Project Through Broadcast Utilization" will be directed by Don Holloway, Associate Professor of Communications. The project will use five program series produced by the Institute for Lifetime Learning and will begin July 1, 1968. Elderly and retired adults in the surrounding area will be provided with the five programs and will participate in evaluating the present series. Out of research will develop guidelines for recruitment of adults for radio programming and designs for future programs planned specially for the elderly in rural Kentucky.

Summary of Poverty Programs Thru April

Community Action - Total during Fiscal 1968, \$422,287,612 in Federal funds for 2,961 grants. Project Upward Bound new funding for 1968-69 school year 273 projects, 24,106 students at a Federal cost of \$27,343,009. The Foster Grandparents program for Fiscal 1968, includes 36 refunded projects financed by \$5,223,700 in Federal funds. Under Project Head Start in Fiscal 1968, 158,956 children have been enrolled in the year-round program financed by \$121,401,003 in Federal funds. For the summer of 1967 program, 466,312 children were enrolled at a cost of \$102,552,000.

Neighborhood Health Centers for Fiscal Year 1968 includes 13 grants for \$19,454,049. One-hundred seven Legal Services programs have been helped in Fiscal 1968 at a Federal cost of \$15,654,921. The Migrant projects are financed by \$7,015,149 in Federal funds for Fiscal Year 1968. There are 121 Indian programs at a Federal cost of \$19,035,347 in Fiscal Years 1967 and 1968.

Job Corps - 33,341 youths (23,454 males, 9,887 females) are enrolled in 82 conservation centers, 6 urban centers for men, 18 for women, and 3 special centers. Obligated Federal funds in Fiscal 1968 - \$242,474,747.

Vista - There are now 3,649 VISTA Volunteers. Since inception, there have been 11,072 VISTA Volunteers.

Neighborhood Youth Corps - (Dept. of Labor)- In Fiscal Year 1968, 325,329 enrollment opportunities at a Federal cost of \$228,585,438.

Work Experience - (H.E.W.) - In Fiscal 1968, 156 projects have been approved for 32,264 enrollment opportunities at a Federal cost of \$22,835,398.

Loans - Rural loans-(Dept. of Agric.) - Total \$23,982,278 for Fiscal 1968.

Talent Search

An estimated \$2,984,600, subject to final program and budget negotiations, has been awarded for 50 contracts in accordance with the objectives of the Educational Talent Search Program to institutions of higher education, state scholarship commissions, boards of education, and other public or non-profit organizations. Nine state colleges and universities -- Southern State College (Ark.), San Diego State College (Calif.), Fort Hays Kansas State College, Morehead State University (Ky.), Bemidji and Moorhead State College (Minn.), New Mexico Highlands University, Southwest Missouri State College, and Black Hills State College (S.D.) are actual contractors with funds totaling \$426,000 and eighteen other state colleges and universities will participate under the various contracts.

IV. RESEARCH

Agriculture Education -- Today and Tomorrow by: John L. Mann

Popular speculation indicates that the profession of farming is an outdated, low compensating, low social status occupation. Many farmers have left their farms, 3 million since 1948, and many more shall leave, 2.4 million estimated in the near future. The President in presenting the 1965, budget to Congress reported that the number of farmers who could expect to earn a decent living in the future shall not exceed 1 million.

As the number of farmers decreases the amount each remaining farmer must produce increases so as to meet the demands of an ever increasing national population. The result of this development shall be that many more jobs in agriculture-business, farm management and engineering, agriculture mechanization, and related areas of production shall evolve as the need for agriculture specialist increases.

The field of agriculture is hard pressed to keep pace with the current expanding technology and explosion of knowledge. Agriculture educating has failed to continue the rapid trend in specialization that the agriculture industry now requires. Many high schools are beginning to teach the skills now useful for the vast field of workers needed off the farm in processing, manufacturing and retailing the increased volume of products from our larger more efficient farms.

The vocational agriculture programs in high school should refer to the current "Future Farmers" as "Future Agriculture Specialists." Modern agriculture has mechanized to the degree where a general, meager background of training is insufficient to meet few if any of the vast fields of jobs that are now available. We must think of today's agriculture as being a business operation requiring a great deal of specialization. Only then can we realize the tremendous future of the modern field of agriculture.

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University Research and the Federal Government: Time for Reassessment

SPEECH

OF

HON. JOHN BRADEMAS

OF INDIANA

IN THE HOUSE OF REPRESENTATIVES

Thursday, November 30, 1967

Mr. BRADEMAS. Mr. Speaker, yesterday, November 29, 1967, I had the honor of addressing the annual conference of the National Council of University Research Administrators here in Washington, D.C.

The subject of my address was the relationship between the universities and research supported by the Federal Government.

I insert this address at this point in the RECORD:

UNIVERSITY RESEARCH AND THE FEDERAL GOVERNMENT: TIME FOR REASSESSMENT

(An address by Congressman JOHN BRADEMAS, at the annual conference of the National Council of University Research Administrators, Washington, D.C., November 29, 1967)

I am pleased to have the opportunity today to talk to you about the significance of your work as directors of university research programs, for I believe that the research for which you bear some responsibility is of great significance not only to your respective institutions but to the entire nation.

Yet the wider implications of the structure of research in the United States have received far too little attention from the university community, the Federal executive agencies or from us in Congress.

I recognize that no two universities are organized identically and that your own responsibilities vary from one institution to another. Some of you may function chiefly as brokers between the talent pool of principal investigators on campus and the Federal agencies here in Washington that dispense research and development grants. Others of you may have some major responsibility for molding the policies of your institution with regard to research.

Yet I am sure that nearly all of you, in carrying out your duties, exercise considerable influence in counselling your respective institutions in an area of policy critical importance not only to your university but also, because of the effects of research activities, to the nation.

It is for these reasons and in this context that I should like to share with you some observations on the relationship between the university and government-sponsored research.

TIME NOW TO REASSESS RESEARCH PROGRAMS

Now is an especially appropriate time to reassess this relationship. Why?

In the first place, Federally supported academic research has reached a magnitude such that its impact is pervasive in terms both of shaping the process of education on campus and of yielding insights and advances for the wider society.

After all, in the short span of nearly 8 years that your National Council of University Research Administrators has been in existence, Federal support for research and development has more than trebled, from \$410 million expended by universities and colleges in calendar 1960, exclusive of Federal contract research centers, to an estimated \$1.47 billion for the current calendar year. During the same time, the proportion of total university and college research and development funds received from the Federal government rose from slightly less than 50% in 1960 to about 62% in 1967.

On the other hand, mounting pressures to economize, especially in view of the Vietnam War, are leading both Congress and the Executive Branch to hold the line or even to cut back the level of Federal support for academic research. Consider, if you will, several indices of this economy drive. As you know, the growth of Federally-sponsored research for academic science—including research facilities and aid to students as well as research funds per se—has accelerated sharply in recent years.

Here are some National Science Foundation figures that indicate how fast Federal support of academic science has been growing:

Fiscal Year 1964 saw a 15% growth over Fiscal 1963, Fiscal 1965 a 19% expansion over 1964, and Fiscal 1966 bore a 20.8 increase,

carrying Federal obligations past the \$2 billion level.

DECLINE IN FEDERAL SUPPORT OF ACADEMIC RESEARCH

But in Fiscal 1967 the rate of increase dropped to 8.3%, and, more significantly, the figure for the present Fiscal Year 1968 will show no more than a 2% increase. If we take into account rising costs and inflation, this figure actually represents a slight decline of Federal support for academic sciences.

Moreover, graduate school programs will be subjected to further pressure as the number of Federally sponsored fellowships is reduced. Although precise figures have not been released, some estimates have been made by Dr. Philip H. Abelson, Director of the Geophysical Laboratory of the Carnegie Institution of Washington and editor of Science Magazine. His estimate foresees a precipitous drop-off in newly awarded Federally supported fellowships and traineeships from 15,000 in fiscal year 1966 to 10,500 in fiscal 1968.

These circumstances should compel the universities and those who direct their research to consider with even more than normal care important national policy decisions affecting the structure of research.

I hope, then, to stimulate your thinking about values and responsibilities that go far beyond the boundaries of your own individual universities. For, as a member of the committee of the House of Representatives—Education and Labor—having primary responsibility for higher education, I believe it is not only desirable but essential for the welfare of higher education and the nation to encourage a more sharply focused dialogue about a number of critically important issues raised by the relationship between university-based research and the Federal Government.

THE FEDERAL AND THE UNIVERSITY PERSPECTIVES

Two ways of looking at the issues associated with the advent of major Federal support for research and related activities come immediately to mind.

One might, for example, view matters from a Federal government perspective.

Is there, we might ask, an overall Federal policy regarding the support of research? Or,

have governmental outlays for research simply mushroomed without benefit of guiding logic?

What kinds of policies and procedures have been or might be adopted to administer the current estimated 17 billions of public dollars which flow from the Federal government for these purposes?

How do governmental bodies see research funds affecting the functions and objectives which these bodies were created to serve? How do governmental agencies view the institutions that become the operating users of these funds?

To put the point another way, what kinds of research policies, procedures and programs in the Federal government need re-examination and adjustment?

A second way to view the issue would be to start from the vantage point of the user institutions including universities, Federal contract research centers, independent research organizations and private industry.

What, we might ask, are the effects of Federal policy on those institutions? What kinds of costs and benefits are associated with the participation of different kinds of institutions in Federal research activities?

How are the purposes and functional responsibilities of different kinds of institutions affected for good or ill by the tremendous Federal role in the support of research and development?

Each of these approaches has certain advantages, and certainly Congress should consider both. For that reason, in these remarks I shall, without limiting myself either to the perspective of the Federal government or of the participating agencies and institutions, examine briefly nine issues which I believe have become acute with the rise of major Federal support for research. I propose to sketch out the dimensions of each of these issues and then, at the conclusion, to offer certain suggestions.

ONLY 3.1 PERCENT OF FEDERAL R. & E. FUNDS GOES FOR SOCIAL SCIENCES

1. Let me begin with an issue that is especially timely this year owing to the initiation of legislation in both the House and the Senate authorizing the establishment of a national social science foundation—the adequacy of Federal support for the social sciences.

In the past twenty years we have witnessed a phenomenal growth of Federal support for research and development. The overwhelming proportion, we know, has gone to the support of the natural sciences, including the physical, chemical, biological, and medical sciences. Only a very small porportion of the total funds allocated by the Federal agencies to the support of basic and applied research has gone to support the social sciences. Updated and, I believe, thus far unpublished National Science Foundation figures indicate that in fiscal year 1966 Federal funds for research in social sciences, exclusive of psychological sciences, expressed as a part of all Federal funds for basic and applied research, was 3.1 per cent.

This small percentage of dollars directed to the social sciences is to me a matter of serious concern. Of course, neither the number of dollars nor the percentage of dollars is relevant by itself. A great deal of the debate about inadequate support for the social sciences has been conducted almost entirely in terms of the disparity of the support. Neither the actual dollars arguments nor the percentage arguments make much difference until those figures are weighed alongside the long range benefits to society likely to result from greater support for the social sciences.

But the provision of adequate support for the social sciences and the humanities is based not only on the potential outcomes of either mission-oriented or "free" research in these areas. The social sciences and the humanities are vitally important parts of university, college and lower schooling, and the social studies in the long run stand to suffer if not provided with sufficient means to develop and advance the frontiers of knowledge in their own particular discipline.

FACTS NEEDED TO STRESS IMPACT OF RESEARCH ON TEACHING

2. I pass now to a second issue, one with two dimensions. Its first aspect is the argument that research support is necessary in all fields in order to improve the quality of instruction; its second is the counter argument, voiced in recent years by an increasingly articulate and aroused student body and ably supported by other standard bearers as well, that the presence of large scale research on college and university campuses across the country actually creates a severe drain on teaching.

Both of these questions have been a subject of considerable debate, and the testimony available on all sides of the issues is voluminous. To illustrate my point I need only cite the 1965 hearings published by the House Government Operations Subcommittee on Research and Training Programs following Congressman Henry Reuss' valuable investigation of the potential conflicts between the purposes and operations of the Federal research programs and the nation's goals for higher education.

Intuitively it is easy to see how the presence of research in the university environment contributes to the timeliness, the relevance and the currency of instruction in higher education. I am also aware of the sense of rigor which teaching can impart to research.

In short, there are strong logical arguments for supporting full-fledged research and teaching programs in colleges and universities.

On the other hand, logic and intuition must themselves be subject to the test of reality, and one of those realities is the persistent complaint from various quarters that the rhetoric does not jibe with the facts. Increasingly researchers simply are not teachers, and teachers are not researchers. The functions become separated in the university. The students bewail their lack of access to their professors and complain of

the degree to which they are made to feel that they are a relatively minor and annoying impediment to the real business of the university—which is servicing the research needs of Federal agencies and foundations.

The need for hard data here, for relevant evidence, is clear. While logic is neat and intuition compelling, they cannot continue to be the sole basis of national research policy.

COST SHARING: PRO AND CON.

3. Let us proceed to a third issue—and one of the hottest at the moment—cost sharing.

The idea that research performed on campus is of some benefit to the institution at which it is performed as well as to the agency which supports it has constituted one of the foundation stones for a government policy about which there has been substantial controversy. Accordingly, the principle of cost sharing, or institutional contribution, has been applied almost universally throughout the government by agencies granting or contracting for research with colleges and universities.

Again the issue is a murky one. The problem seems to revolve around several presumptions not all of which are mutually consistent.

On the one hand, the argument for cost sharing is advanced by those who hold that research is mutually beneficial to both institution and governmental agency and therefore should in some degree be supported by both. Others support cost sharing on the grounds that so long as the institution has some of its own funds in each venture, it maintains a degree of academic control over those projects essential to keep institutional priorities in sight. This control, it is said, would be lost if research projects were wholly funded by the granting or contracting agency.

Those who argue against cost sharing do so on the grounds that colleges and universities, under cost sharing arrangements, are forced to sacrifice other aspects of their activities in order to subsidize research which is beneficial to the nation as a whole and which, therefore, ought to be supported wholly by the agency or agencies involved. This approach holds that if the funding agency believes the research is important enough to support, it should be willing to stand the full costs of the project effort.

Some have suggested an interesting compromise. They propose that the granting agency should adopt somewhat more flexible policies, seeking institutional cost sharing where the research activities are proposed and initiated by the academic community, but adopting a policy of full reimbursement where the projects are proposed by a particular government agency to support its mission.

The issue is clearly most important to higher education, for something like two billion Federal dollars are expended each year on research and development in the nation's colleges and universities.

If one adopts as a minimum a five percent figure for cost sharing, simple arith-

metic reveals that as a community, the American college and university must put up \$100 million annually from their own funds. And, as the magnitude of Federally-sponsored university research continues to expand, our universities, already severely pressed for adequate operating funds, will find themselves subjected to increasing financial pressures.

INADEQUATE UNIVERSITY MANAGEMENT OF RESEARCH

4. Cost sharing leads us into the fourth issue, the question of university responsibility for the management of research. This problem arises as much from the system of project grants so fully ingrained in the administrative philosophy of research programs at the Federal level as from the peculiar independence of the academic disciplines and the bargaining power that their independence gives them with university administrations across the country.

My conversations with agency officials in the government reveal the degree to which college and university administrations are often nothing more than transmitting and contracting agents for project directors with most of the administration and negotiation being handled directly by the principal investigators. To be sure, this pattern is now changing, particularly at the larger institutions. Yet the amount of control, or lack of it, that universities have over their research faculties often creates administrative problems.

I shall simply suggest a series of questions which seem relevant here. How much control should universities have in this matter? What responsibilities do principal investigators owe to institutions which have housed their research? How can the obligations on all sides be satisfactory fulfilled?

In what sense, for example, can a university be said to be fully in control of itself if its highest officials do not know, and in some instances are not allowed to know, what kind of research is being conducted on campus?

How can both university and faculty members protect themselves against the extreme mobility of the market place to insure that research obligations are fully satisfied before personnel shifts take place? Is the more important question perhaps one of devising management procedures which insure the development of realistic timetables for research efforts which take place in college and university environments?

THE MERITS OF INSTITUTIONAL RESEARCH SPECIALIZATION

5. A fifth issue relates to the question of inter-institutional cooperation.

This question is now not so much one of research management as university management. To what extent can a university attempt to be universally excellent? Or, to reverse the question, to what extent can a university afford *not* to be excellent in a balanced spread of fields? Excellence, of course, is critical to the performance of research and to the training of graduate students; the two go hand in hand.

The prospects of inter-institutional cooperation are attractive here. But the implications of university decisions to cooperate with one another in order to limit the fields in which they will strive for excellence are obviously far-reaching for the planning and development of research efforts.

Of some interest here may be a relatively new effort in the U.S. Office of Education which may well illustrate the two-fold benefits of specialization. In the Research and Development Center Program of the Office of Education, a mechanism has been evolved whereby an institution with a high degree of competence of a particular sort chooses to identify a specific problem area in education as its own research specialization. If everything is satisfactory the institution commits itself to administering an evolving program of research focused on that problem area, continually regenerating its work on the basis of its findings.

This arrangement requires a strong degree of institutional commitment and the creation of planning and administrative mechanisms equal to the task, but it also tends to free the university, for this portion of its research at least, from the difficulties and dislocations inherent in the project research approach.

Perhaps this Office of Education concept should have broader applicability.

SPREADING THE WEALTH

6. Let me now raise the important question of geographical distribution.

The problem runs deeper than the political pork barrel syndrome.

All research agencies in the Federal government operate at present under an executive order signed by the President two years ago requiring agency officials to pay particular attention to the research needs and capabilities of small colleges and to concern themselves with the more equitable distribution of research funds across the nation.

A whole series of tantalizing issues comes to mind. Do the purposes for which government agencies support research demand that it be done solely on the basis of the most competent personnel? Does not this policy then create a situation where the rich get richer and the poor get poorer?

Or turn the question around. Is it in the national interest that research and development funds should be concentrated in the 40 or 50 strongest research institutions or, in the long run, do not the nation and higher education generally stand to benefit more if the funds are more widely distributed?

If my earlier observation that research tends to improve teaching has any merit, then is it not essential that some research funds be provided to *all* institutions?

To put the point another way, cannot our society afford to support research as a process critically important to the instructional function of higher education as contrasted with research conceived as an activity designed to yield, ultimately, answers to pressing social and technological questions?

THE PERPLEXING PROBLEM OF CLASSIFIED RESEARCH

7. A seventh issue of considerable currency is the perplexing question of classified or secret research. All across the country universities are reassessing their policies concerning classified research projects for the Federal government.

There are at least two elements to this concern. Faculty members are afraid that secret contracts may force scholars to default on their professional obligation to make known the results of their research activities. In addition, it is no secret that opposition by some scholars to the war in Vietnam and to any war-connected research has also contributed to this reassessment.

There are very difficult moral, professional and practical problems involved in this issue. They range from the desire to locate such contracts in universities—because that is where basic research is being done—to the moral and professional concerns I have already cited, the responsibility of American citizens qua citizens who happen to be academicians with a capability of contributing to national security.

8. An eighth major issue centers on the kinds of research functions that universities ought to perform. More than one university operates large, if not huge, contract laboratories for the Federal government. In these laboratories activities all the way from basic research through development and initial testing take place. While the advantages to a university of operating such activities are clear both in financial and public relations terms, it is still relevant to ask whether, in terms of the peculiar missions of colleges and universities in the United States, many of the latter stages of the research and development continuum are best performed in universities. Perhaps other types of organizations are more suitable.

When I raise this issue, I am certainly not questioning the importance of involving the academic community in the application or development stage; I am asking rather whether the university is always or even often the best place to carry out such activities.

NATIONAL RESEARCH POLICY IS OVERDUE

9. I have reserved for last the largest of the issues, namely, the question of the development of a national research policy which would help us allocate wisely funds among, and across the disciplines by which we have, traditionally advanced our knowledge in all fields—the natural sciences, the social sciences and the arts and humanities.

Many, many agencies of the Federal government engage in the support of research and development programs. An Office of Science and Technology exists, one of the purposes of which is to coordinate these efforts. However, certain circumstances conspire to work against the development of a national research policy. I might cite again, for example, the enormous gaps in existing research support for the humanities and social sciences, the traditional independence of the university community and the relative free-

dom of some individual Federal agencies to pursue their own courses of action.

But the growth of science in the past 20 years makes an effort to develop a national policy essential. Of course, in one sense we already have by default a national research policy, but it is *ad hoc* and insufficiently considered.

Many types of people, many competencies, many different agencies will need to be involved in the kind of discussions of which I speak, for it is far from clear what should be the administrative arrangements for formulating and implementing such a national policy. Certainly the dialogue will have to move from an exclusively academic base. In particular, the discussion will have to build much better bridges to the political decision-makers than has so far been the case, for they are the ones who must defend to their constituencies their votes for billions of dollars for research.

The shaping of a national research policy will involve the discussion and analysis of all of the issues I have raised here and more. It will necessarily involve the academic community, industry, the lay public and political figures. It is clear to me, however, that the size and significance of the research effort in the United States—a size and significance, incidentally, which extends far beyond our borders—constitutes probably the best argument for the establishment of some mechanism for the continuing development of such a national policy.

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I have raised a number of issues with you today. In discussing some of them I have indicated my own leanings; for others I have sought only to raise crucial questions. In concluding, however, I want to take a specific stand on two of the issues I have discussed.

First, I am convinced of the need for a substantial expansion in support of research and related activities in the social sciences and the humanities, as well as, I might add, continuing appropriate support for the natural sciences. During recent years we have devised a number of programs aimed at solving the social problems of our country. All of these programs—for examples, health, poverty, education and housing—depend upon the strength and depth of our understanding about men as individuals and as social phenomena. The legislation and the appropriations accompanying them have underscored the national commitment to come to grips with these problems. But we are dependent upon science and upon the scientific tool of research to lend us the competence to solve them.

TOO LITTLE RESEARCH FOR EDUCATION

Second, I believe we should increase substantially our investment in research on education. For we now spend on our educational system, including higher education, nearly \$50 billion a year. Yet in support of this vast enterprise, of such overriding importance for shaping our society, we spend not more than \$150 million a year for research and development aimed at improving

the efficiency, effectiveness and relevance of our educational system. This figure constitutes about two-fifths of one percent of the total effort. Yet fully 3 percent of the nation's Gross National Product goes to research and development for all activities.

As a nation, we have not yet learned enough about how to teach and to learn. It is clear that we must invest more in research on education if we are to reap the maximum dividends from our substantial expenditures on education.

For our children—and the educated men and women they become—constitute the most important natural resource we have. Yet, as Dr. Hendrik G. Gideonse of the U.S. Office of Education has pointed out, it is ironic that we have not found their education sufficiently pressing to devote to it adequate research resources.

With so many critical issues before us—and I am sure you could add others to my list—I want to make one final plea to you as university research administrators. My plea is that you intensify the dialogue on these issues among yourselves, with other university officials, with researchers and teachers, with Federal executives and Members of Congress concerned with the relationship between university-based, Federally-supported research activities.

Not only the colleges and universities you serve but the entire nation has a stake in the fruits of this dialogue.