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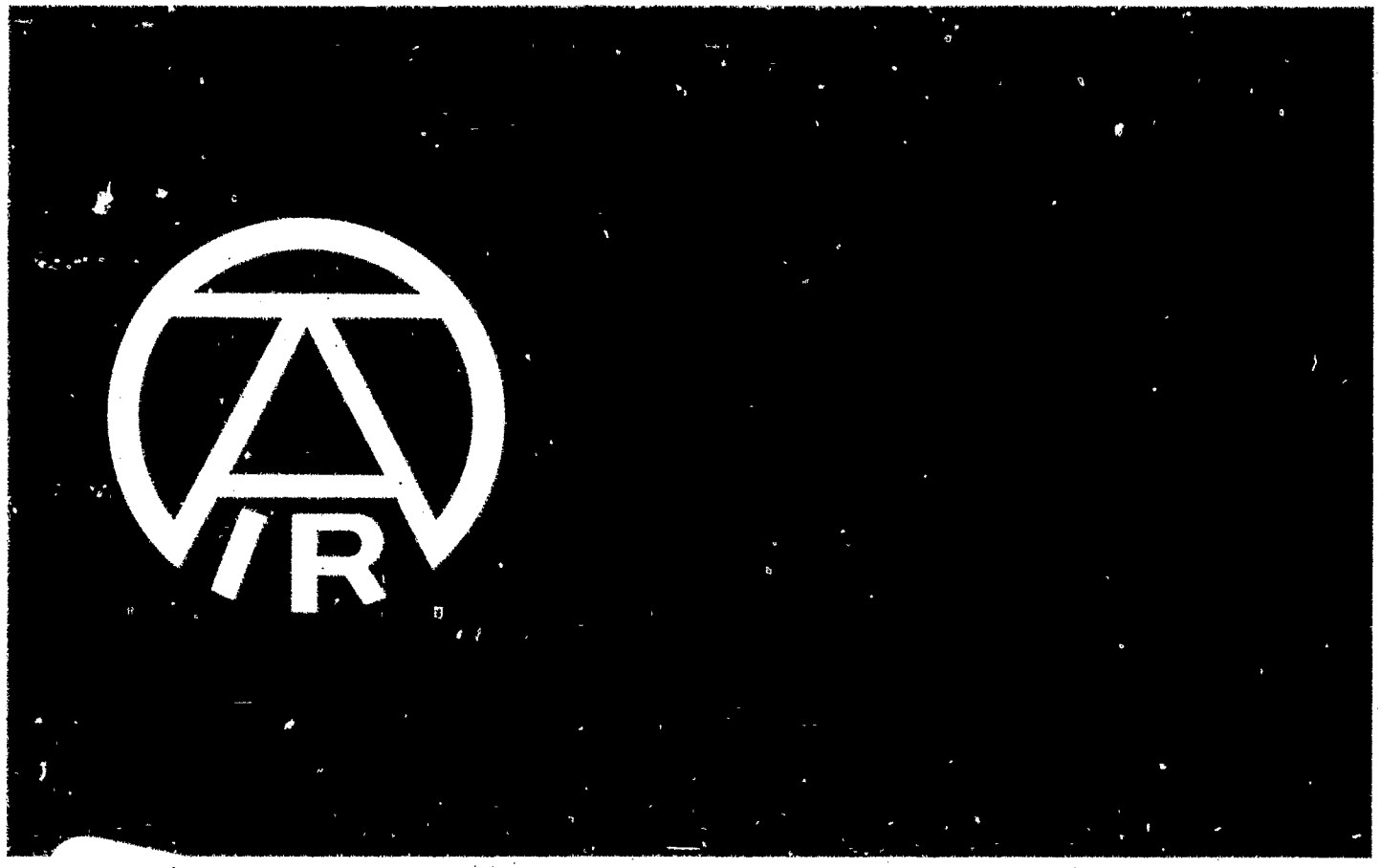
ABSTRACT

Selected panel discussions and papers presented during the 14th annual forum of the Association of Institutional Research present analytical approaches--if not solutions--to imperatives identified in 1973. The articles build upon the six major policy reports on higher education released during the academic year: Carnegie Commission, Committee for Economic Development, National Board of Graduate Education, National Council of Independent Colleges and Universities, Newman Report, and the National Commission on the Financing of Postsecondary Education. (Author/KE)



Selections from the 14th Annual Forum Washington, D.C.

The Association for Institutional Research

PUBLIC POLICY:
ISSUES AND ANALYSES

Edited by Robert G. Cope
University of Washington

Selections from the
14th Annual Forum
Washington, D.C.

The Association for Institutional Research

Annual Forums on Institutional Research

1963 — The Role of Institutional Research in Planning
1964 — A Conceptual Framework for Institutional Research
1965 — Design and Methodology in Institutional Research
1966 — Research on Academic Input
1967 — The Instructional Process and Institutional Research
1968 — Institutional Research and Academic Outcomes
1969 — The Challenge and Response of Institutional Research
1970 — Institutional Research and Communication in Higher Education
1971 — Institutional Research and Institutional Policy Formulation
1972 — Reformation and Reallocation in Higher Education
1973 — Tomorrow's Imperatives Today
1974 — Public Policy: Issues and Analyses

Preface and Acknowledgements

Public Policy: Issues and Analyses, prepared from selected panel discussions and papers presented during the 14th Annual Forum in May, 1974, presents analytical approaches — if not solutions — to the Imperatives identified in 1973. The tone of the articles is one of confidence, building upon the six major policy reports on higher education released during the academic year: Carnegie Commission, Committee for Economic Development, National Board of Graduate Education, National Council of Independent Colleges and Universities, Newman Report, and the National Commission on the Financing of Postsecondary Education.

While last year's Imperatives are not solved, the interdisciplinary research employed by members of the Association shows promise for the year ahead. I am convinced that, in the study of our colleges and universities, interdisciplinary considerations are essential. At the same time, I am equally convinced institutional researchers must deal with their problems as *specialists* employing modern sciences and technologies on processes. In so doing we obviously examine how a thing is done rather than focusing on objectives. Unfortunately, seldem is the question asked, "Why?" There is a not so obvious danger in this. It seems our practitioners avoid the unmeasurable query because it is devoid of meaning, since, in our advancing technological culture, what is relevant can only be something that is measureable — quantifiable. Under such an ethic there is no need to inquire about the human ends and human purpose.

As usual the preparation of this volume is a team effort from which the Editor takes cues. Most of the cues came from two groups: the Association's Publication Board, and the Proceedings Evaluation Committee. The latter selected papers for presentation and then reviewed the papers for inclusion in this volume. Denis J. Curry, Arlon E. Elser, Bertrand L. Hansen, James R. Montgomery, Robert J. Parden, Marvin W. Peterson, Gloria D. Scott, and Gary Stock skillfully critiqued the contributed papers.

I am especially grateful to Bernard Sheehan, James Montgomery, and Lois Torrence for making my task easier, and to Anne-Marie McCartan, who ably assisted in the preparation of the manuscripts, and whose attention to detail carried the project to its conclusion.

University of Washington
July 1974

Robert G. Cope

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POLICY STUDIES: BLUEPRINTS FOR PROGRESS — OR SOCIAL SECURITY FOR SOCIAL SCIENTISTS

Harold Howe II, Ford Foundation

For a long time mankind has been trying to figure out what his problems are and what results his remedies for them are likely to produce. His way of addressing these matters has varied from age to age.

The ancient Greeks saw their affairs as largely controlled by the whims of a group of gods and goddesses, whose motivations and actions were as irrational as those of human beings. So the Greeks used considerable time and energy in serving or placating the dieties with the hope that human affairs might go better.

Mohammed led his followers to believe in the will of Allah, over which they had little or no control, but to which they had better pay attention if they wanted a chance at the glories of the next world. This theme of acceptance of the mess mankind is in as the price of future glory can be found in other human responses to the world. Our Hindu bretheren today still bet on reincarnation, and no doubt some of those gathered here harbor sneaking hopes that turning in their final chips in the game of life will lead to a jackpot in the next.

All of these views are based on some form of faith rather than on reason. The faith is, of course, supported by the evidence of various miracles that are reported to have occurred from time to time over the course of history and that lend credence to the hopes implicit in the faith. I have no intention of entering into argument about the validity of the miracles. What evidence there is each can judge for himself, and I suspect that the judgement of each deserves as much respect as that of the next.

But it is true that for most of human history our explanations for our fortunes and misfortunes and our efforts to promote well being and avoid difficulty have had a significant relationship to the realm of the supernatural. And at the same time it is true that men have slowly built some understanding about the impact of their own behavior and planning on what was likely to happen to them in the future.

The experiences of devising hunting techniques, of developing agricultural skills, and of planning to take advantage of the variation of the seasons were certainly important in implanting in our forebears some simple notions of cause and effect, of action and reaction, and of the consequences tomorrow of things done or not done today. Without knowing anything at all about biology, someone found out about the importance of crop rotation and irrigation and fertilizer for growing food. Whenever this kind of thing happened, a new, self-conscious, independent element entered man's being. While he might still believe that the gods caused the annual floods of the river Nile, he knew at the same time that practices over which he had control in relation to those floods would affect his future food supply and his well-being.

If one accepts Aaron Wildavsky's simple statement that "planning is the attempt to control the consequences of our actions," it seems reasonable to argue that planning by humans started in some such ancient circumstances as those suggested here. Since that time it has become more complex, and today its complexity threatens to inundate us. Indeed, we increasingly find ourselves in a ridiculous situation. The techniques, disciplines, and methods employed by planners and policy analysts have become so complicated and so specialized that the people who must user their product — the political leaders and administrators in the case of public problems or university presidents in the case of institutional planning — are no longer able to understand and participate in the processes that are supposed to assist with their decisions.

There is, of course, nothing new about this gap between the person with responsibility and authority and advisors who attempt to illuminate issues he must act upon. In the olden times referred to earlier, princes often went to soothsayers whose methods were by definition mysterious; the oracle at Delphi was known as a source of guidance to future action; and legend has it that examination of the entrails of chickens could reveal to the properly receptive psyche the correct policy choices for the future.

So we might argue that today's planners with their systems and simulations don't have to be understood by those whose policy decisions will affect all our futures. They just need to be believed. But in a

world that is hesitantly but doggedly trying to base its actions on rationality, such a view is not really acceptable. It is contrary to the spirit of science that has increasingly dominated our thinking. Somehow we have to find accommodation and communication between those on the one hand who bear responsibility for action and those on the other who try the illuminate the implications of the various options action must consider.

In the remainder of these remarks I want to offer a few comments that are generally related to this broad problem of the gap between the policy analyst and planner on the one hand and the implementer, political leader, administrator on the other. Within the bounds of the problem I include the tendency of the practioners of policy science to develop their own mystique and the parallel tendency of politicians and administrators to act as if they understood it. Nothing confers status like seeming to be a participant in the newest and most fashionable mysteries!

It is only fair to tell you that these observations come from a prejudiced viewpoint. I can lay no claim to having penetrated the depths of any social science discipline — leave alone what are now being called "the policy sciences." I come at this subject from one side — that of a person whose responsibility it has been to decide what to do and to try to get it done, always with a sense that it would have effects and usually with hopes about what those effects might be. In the course of my experience I have employed planners and evaluators, bought computers, set up management information systems, and listened to a great deal of talk I did not understand at all regarding such matters as cost benefit analysis, systems analysis, program budgeting, management by objectives, social indicators, game theory, computer simulation, and various other modern counterparts of the ancient chicken entrails.

In the course of these experiences, I have encountered a large number of persons who shared my perplexities. Among them have been state and city officials responsible for education planning, governors of states, mayors, congressmen and senators, state legislators, heads of federal and state departments and agencies, college and university presidents, officials of foreign governments ranging from prime ministers to lesser bureaucrats, and a very large number of intelligent, well-informed, reasonably well educated citizens in various walks of life who are not directly responsible for actions and policy except in their roles as citizens, which they care about and want to discharge effectively. I feel quite certain that were this group of assorted persons I have listed assembled in one place and asked to give some answers to questions like the following their responses would range across a wide spectrum as would their confidence in them:

- What is cost benefit analysis, and can it help me to make better decisions?
- What are the kinds of questions with which the analytical methods of social science can be most helpful?
- Are there systems of management that will guarantee greater efficiency and what are the gains and losses from adopting these?
- Is computer simulation a useful technique for exploring possible policies or programs and determining their consequences?

Such questions could be multiplied ad infinitum, and a wide range of them is confronted today by almost anyone who is responsible for allocating major resources or for trying to decide what the effects of alternative policy options will be. What's more, we have moved into a world that is so complicated by technological development that the people who must decide what to do are likely to have imperfect knowledge, not just about the new tools of planning and decision making that we are discussing here, but also about the scientific validity of the solutions to human problems that their decisions will launch.

There was a fascinating story in the New York Times of April 13 regarding a new "people mover" being installed in Morgantown, West Virginia. In that seat of learning, the Federal Mass Transportation Administration has expended some $57 million to interconnect the three campuses of the state university with a computer controlled electric transit line that is planned to avoid city traffic and move students and faculty over a two or three mile distance. A mix of planning, new technology, and new policy objectives in the realm of mass transportation have resulted in a rediculous fiasco and an excellent illustration of how politics, planning and technology don't easily mix. There are now serious proposals to dynamite the entire enterprise and others to buy individual golf carts for students and professors in the hope that some use can be made of the two mile concrete "guideway" that has already be constructed.

This noble enterprise has had the full benefit of economic analysis, attention from management experts, the expertise of the Boeing Company's talent, and other special inputs that have combined to provide a failure of significant proportions. It should make us both humble and wary about elaborate technological solutions to our problems, as should the San Francisco subway the the Concorde airplane — that magnificent machine that will get a person across the Atlantic in about half the time for ten times the cost.

Of course planners can't be held responsible for technological failure — that belongs to the engineers. But they might be expected to ask some questions about relative costs and to get some hard answers to them when enterprises like these are being considered. The problem is that the planners and policy analysts, those who are trying to foresee the outcomes of new departures using scarce resources, are no more equipped to deal with the engineers than the administrators, politicians, and public officials are to judge the planners. The worlds of science, of social science, and political decision making are all involved in the significant decisions of the future regarding every aspect of our individual lives and of our national existence. In health, in education, in defense, in the problems of transport and communication, in the environment, and in the management of services in urban centers there is inevitably a mixture of these three elements that don't understand each other well, that communicate ineptly, and that somehow combine to set the pattern of the future for all of us. It's enough to make one nervous about that future!

But before you get too nervous, it might be wise to take a look at where we really are with modern sophisticated tools for planning and managing our complex affairs. While I can't presume to give you an authoritative picture of the current scene, I can give you some impressions. They add up to the view that there is more common sense in the worlds of planning and policy studies today than there was a few years ago.

Program — Performance — Budgeting — Systems

I can well recall the big excitement in the Johnson administration regarding the introduction of program planning and budgeting into the Bureau of the Budget and the domestic departments of the government generally. PPBS had been until that time the preserve of the Defense Department, where Robert McNamara aided by an inventive group of social scientists had created a new way to look at policy options and their potential costs and outcomes. Its use throughout the civilian establishment was heralded as a system that would sort out the social programs, identify those that would work, and somehow get them working.

Vast amounts of paper were created by people only a few of whom had the vaguest idea what they were doing. It was collected into notebooks and sent to cabinet secretaries, commissioners, and other functionaries. Each of these worthies kept a little private file that categorized all his appropriations in traditional fashion, the way the Congress acted on them, while talking learnedly to Bureau of the Budget officials about the new cross cutting categories found in the PPBS system.

This charade was not hard to play, and I for one rather enjoyed it. Every once in a while it provided a valuable insight. For example, by using the PPBS categories HEW found out how much it was doing in the area of early childhood education — something it might never have known through the standard rubric of the appropriations procedure.

I recall also during the same years the delivery to the Congress of what was reported to be the largest scale social science study that had ever been done. It was called *Equality of Educational Opportunity*; it cost close to $3,000,000; and it was planned and carried through by very able people led by James Coleman, then of Johns Hopkins University. This document was some 700 pages in length and employed sophisticated, quantitative analysis to examine the effects of various school factors on learning.

There have been various allegations made that HEW tried to bury this report because one interpretation of its findings might cast a shadow on the usefulness of Federal efforts to desegregate the schools and on parallel efforts to improve the opportunities of disadvantaged children by pumping more Federal funds into the schools. I don't think that these allegations are correct, although I am quite willing to agree that there was considerable hanky panky in HEW about the writing of the summary report. Part of this came about because few people could understand what the report had to say and how it arrived at its conclusions; part of it developed because various parties in HEW, realizing that the summary was the only part of the document anyone in a policy deciding position would or could read, wanted to "tilt" the summary so that it would avoid embarrassing queries about the efficacy of school integration and Federal funding; and part of it resulted from experience with two separate trial drafts of the summary done by two different social scientists. These drafts were clearly not going to communicate with the Congress of the United States to whom the report was addressed.

The report was delivered to Congress in early July of 1966. I had the interesting responsibility as the then Commissioner of Education of trying to decide whether the administration should recommend any changes in program or policy as a result of it. Frankly there was a great deal about it that I did not understand — particularly its methodology. So in August of 1966, I assembled a group of distinguished social scientists from Harvard, Chicago, and other universities in a private meeting without the press and asked them to advise me on one question: "What should the Federal

Goverment do that was different from what it was doing as a result of the Coleman findings?"

I won't try to review that meeting except to say that it produced a great deal of discussion, no clear advice, and the recommendation that further research was required. As all of you probably know, this research evolved in the form of a year long seminar at Harvard chaired by Patrick Moynihan. The seminar resulted in a book by Moynihan and Mosteller reviewing the methodology and the findings.

I shall add to this tale only one point. It is that the most useful statement I know about the so called "Coleman Report" was written by Gerald Grant, a newspaperman who has turned social scientist. We need more like him. In the *Harvard Education Review* of February 1972 you will find his review of the book by Moynihan and Mosteller. Here is a quotation from it:

> What we have after five years of analysis and reinterpretation is a confession of ignorance, an appeal for more research, and an enlarged sense of mystery about what the nation's educational policy should be. More than that, a sober look at the history of the reanalysis of the Coleman data gives little cause for optimism about the capability of social science to provide very clear guidance to policy makers in the near future.

The point in mentioning these experiences with PPBS and with the Coleman studies of school effects is to emphasize that new methodologies for planning and for policy analysis tend to be much exaggerated in their significance when they are launched. PPBS was certainly exaggerated by the Johnson administration. This is the same phenomonon that occurs with new social programs. It is just not possible in our political system to start something new without fanfare. We had to have the War on Poverty and the Great Society to pass some social legislation that was not very large in terms of dollars when compared with our defense expenditure and not very adventurous in terms of policy when compared with what other nations around the world have done. But to try some needed experiments and to make a few adjustments for the lower income people in the United States, we advertized a new millenium.

This same apirit of exaggeration characterized our efforts in the 1960s and early 1970s to turn the social sciences to the service of society through new methods and systems. The Rand Corporation was prepared to straighten out New York City. New programs, ostensibly based on carefully worked out policies, were launched in numerous cities only to flounder in the morass of politics and bureaucracy. Vast new energies went into training people who would do the necessary planning and policy analysis. Consulting firms multiplied. Universities started all manner of new interdisciplinary institutes for policy studies. Independent centers for policy studies emerged in both profit and non-profit formulations, together with specialities on behalf of blacks or women or some other group. It is probably fair to say that the last ten years have seen a flowering of persons and institutions with the sole purpose of telling other people how to run their affairs that is not only unprecedented in human experience but is likely to hold that distinction for a long time.

Realism About What is Possible

Yet in spite of this ballooning of activities and institutions, I believe that we are heading for a more sensible view of these phenomena right now than we were a few short years ago. One reason I feel this way is that some leaders of the effort to adapt the social sciences to planning and to policy analysis are being quite hard headed and realistic about what's possible. In the December 28, 1973 issue of *Science*, Aaron Wildavsky, Dean of the Graduate School of Public Policy at Berkeley, had the following to say in a review of a book by Garry Brewer:

> New information systems proliferate faster than we can keep track of them. The futurists are here; technology assessment is established by mandate of Congress; management by objectives is enshrined in the Office of Management and Budget; research on social indicators grows apace; variants on program budgeting are adopted the world over almost as fast as old ones are abandoned; and management information systems of all kinds breed faster than rabbits. Despite apparent differences, all these devices have certain attributes in common: they are established without a single successful demonstration; they are tried everywhere and they do not work anywhere. They require theory that no one has and data that no one can get. All claim to enhance societal learning, but none contain operative mechanisms for benefiting from their own mistakes.

This statement by Dean Wildavsky is to say the least a refreshing qualification of the over optimistic view that there are readily available new methods and systems that will solve all our problems. It is a theme that Wildavsky echoes in some of his other recent writing. I refer you to the book *Implementation* that he published in 1973 with Jeffrey Pressman as co-author. Here is a case study in how very difficult it is to cause anything actually to happen as the result of

a Federal initiative in an American city. Two quotes will give you some of the flavor:

> The view from the top is exhilerating. Divorced from problems of implementation, federal bureau heads, leaders of international agencies, and prime ministers in poor countries think great thoughts together. But they have trouble imagining the sequence of events that will bring their ideas to fruition. (p. 136-7)

> Our assumptions about new public programs are far removed from reality. We assume that the people ostensibly in charge can predict the consequences of their actions, and that is often not the case. (p. 125)

Another sobering account by a competent student of the new methodologies is found in Garry Brewer's book *Politicians, Bureaucrats and the Consultant*, Basic Books, Inc. 1973. This book outlines "the disastrous experiences of two major cities — San Francisco and Pittsburgh — when consultants were called in to design urban renewal programs with the help of the latest theoretical techniques." Let me quote again to give some sense of this political scientist's reservations:

> Public officials may be led to expect too much, from social science research in general and from simulation activities in particular, in the way of answers to a class of difficult questions that are not scientific in the commonly accepted sense. Unfortunately, these are political questions, such as 'What should the goals of the city be?' 'What should politicians do about them?' 'To whom should it be done?' In the absence of information on limits and possibilities of present day social science, expectations become inflated. Prediction is expected even when the crudest understanding has not yet been reached. This particular misconception is widespread and not limited to any special group of individuals. Indeed, underestimation of the difficulty of integrating computers into the urban decision context is a basic theme in the collective lament. (p. 234)

I can't resist reporting to you also the complaint that Garry Brewer attributes to a local official opressed by the intrusion of academics into his city's affairs:

> . . . guys come out of the University, give you the word from the mountain, and then get out before they have to get any of the consequences of what they are going to do . . . . And then they write another book or an article on [our] idiocy which increases their academic standing, which also happens to give them a higher hourly or daily rate the next time they go out to consult. There is a kind of madness in that. It is what I call mountaineering. (p. 224)

Brewer and Wildavsky and others like them are not complete skeptics about using social science and its new tools of analysis to help figure out what policies might be worth pursuing and what their outcomes might be. But they do seem to have a reach to reality that is not always present among social planners and policy analysts.

A sociologist who has had broad experience in policy related research is James S. Coleman now of the University of Chicago and mentioned earlier in these remarks. His essay, "Policy Research in the Social Sciences," General Learning Press 1972, explores in depth the relationships between discipline research and policy research. He cites a number of principles that must apply to policy research and argues strongly that the university is probably not the best setting for it. In all of this discussion, Coleman seems to me to add his voice to those of others with reservations about the immediate and effective usefulness of social science as a tool for defining solutions to social problems. Note these brief observations taken from his essay:

> There is no body of methods, no comprehensive methodology for the study of the impact of public policy as an aid to future policy . . . . the policy sciences have not really regarded themselves as policy sciences, with the exception of some parts of economics and a few of the older areas of political science. In general, as the social sciences have become self conscious as disciplines, they have busied themselves with internal development of the disciplines. The systematic methods they have developed are methods for aiding this disciplinary development, not for such externally imposed irritants as the evaluation of public policies. . . .

As clinching evidence that the movement for applying analytical thinking to management and policy problems is in a reasonably healthy state of skepticism about itself, let me present you with the thoughts of Norman G. Anderson, Professor of Science and Management Techniques. writing in Science, February 22, 1974. There he cites his indebtedness to the Office of Management Resources for permission to share a report that had "earned commendation at the Secretaries level for thoroughness and originality." The report grew from the discovery that a large city's symphony orchestra

was not cost-effective — a problem that was studied by an independent investigator from a government agency. Selections from the investigator's report follow:

> It took only the most casual observation to discover that, while musicians are paid in full for their time, they do not play all of the time. The fault is partly in the choice of music. Using a simple computer program, it was possible to score musical programs for degree of involvement for each player and to choose programs on this basis. This has resulted in a Musician Participation Improvement Program that should be more widely adopted. It will be administered through the newly created Office of Participation Improvement which has a skeleton staff of 148.
>
> There appears to be little evidence of modern technology and of modern management principles in our orchestras. The piccolo clearly needs to be redesigned, and no attempts appear to have been made to improve violin design since the last century. However, the most immediate improvements are to be had by applying modern management expertise to orchestral direction.
>
> There is one specialty that appears to be in short supply, however, and that therefore demands a high salary, which contributes greatly to cost. This specialty is conducting. Of all performers, the conductor is the most vigorous, and he is the only one who performs constantly. The basic reason that there are few conductors is that there are no good tests on this vocation. Training programs whould therefore be encouraged and should teach the essentials in this field once they have been catalogued. That will take some time, however. For the present, we need new and innovative solutions such as the one I propose here. Time-motion and eye-movement studies confirm my observation that conductors are able to fix visually different performers at precisely defined times and then make sweeping gestures in their direction. In a previous study, I found that successful quarterbacks do the same thing, singling one player out of many after a precise number of counts and, with a precise overhand motion, projecting a score object in that player's direction. Since plots of quarterback and conductor ages show little overlap, it is evident that one could quite successfully become the other. This concept, called Sequential Career Commonality Utilization, is now being applied in many other fields, and the Sequential Career Commonality Utilization Branch is slated to achieve bureau status in a few years. The greatest breakthrough achieved by this branch was the finding of politician-night watchman commonalities, such as random walking, peering into darkness, and lack of a requirement for intelligent conversation, suggesting that either could serve as the other.

If any further evidence is needed that the high moguls of management and policy analysis have some reservations about their stock in trade, I don't know what it is. At the same time, it is quite clear that those of us who have to make hard decisions continually look to them for support. We naively hope that some system will be discovered that will take from our shoulders the burden of judgement. Indeed, this interest in new techniques of management and analysis is so pervasive in America that there are some signals indicating a real shift in values. As evidence of such a shift, I call to your attention that six weeks after it appeared on the best seller list of the *New York Times*, Peter Drucker's recent book, *Management*, moved up the list and superseded *The Joy of Sex* among the nonfiction offerings. No doubt there are other interpretations of this phenomenon, but I claim that this preference for management over sex is a significant measure of our hope that social science will solve our problems for us.

Lest this discussion give the impression that I am against social scientists, or good management practice, or thoughtful and systematic analysis of our problems and our policy choices, let me hasten to say that I am not. I think that all of these have their place in the scheme of things and that the person responsible for making and carrying out policy can be helped by them. At the same time, I join the skeptics (whom I have quoted) from the world of social science in the belief that these disciplines and systems have limitations.

Values

The most significant of these limitations is in the elusive arena of values. Men do things or they don't in part because of their beliefs in what is right or wrong, important or unimportant, in their interest or contrary to it. They don't agree at all on value questions, and where these are matters of public action by public authority, value questions get sorted out in the political arena. Neither the formulation of positions that are defined by value judgements not their sorting out through politics (whether in the faculty meeting

at the university or the state legislature or the United States Congress) lend themselves to ultimate resolution by social science analysis.

One way to describe this state of affairs is to say that we are continuing to follow the irrational elements that are so strong among us. Such a judgement implies that some combination of emotional feeling and philosophical or religious belief is more significant in human affairs than reasoned positions based on fact. Another way to characterize the situation is to say that the social sciences are in their infancy, that they aren't really ready to act as the determinants of what we should do and how we should do it. Such a position implies that we are fortunate to have limited these power hungry disciplines and to have continued the tried and true judgmental and political processes through which men have painfully sorted out their problems for many years.

In fact, neither of these characterizations seems to me to have merit. Instead, I take the position that the larger the issue the more likely it is to be loaded with value considerations in which social science will not be at home. Whether or not the Federal Government should provide major funding for the support of public and private schools and colleges in the United States is a very broad question that is heavily value laden. To some degree, attempts to answer the question can be illuminated by evidence produced by economists, political scientists and others. But the ultimate political decision that had to be made on this matter was not heavily influenced by their studies nor were the outcomes either predicted or predictable. Within this larger question, however, are literally thousands of other more explicit, more detailed, and somewhat less value laden issues that lend themselves in significant ways to exploration by social scientists and that ought not to be settled without their contribution. I would go even further and say that when politicians and administrators rush ahead solely on the basis of value judgements they do so at their peril and sometimes with negative results and more unforseen problems than are necessary.

This is not an effort to say that the proper place of social scientists is in dealing with the insignificant issues. That is clearly not true. Very large questions about our tax system, for example, can best be illuminated by the work of economists. But the value questions including those that relate to the self interest of groups with power and political leverage will continue to have very large effects on changing that system. This should not deter the economists. It should just make them simultaneously more argumentative and more humble.

Most of you work in colleges and universities and you are trying to make those institutions more rational by helping them to know themselves better and manage their affairs more efficiently. Your interests probably range from such simple measures as eliminating low enrollment courses to save money to such elaborate possibilities as creating computer simulations of the institution to explore the likely effects of various policy choices and alternative resource allocations. This same problem of values set against efficiency surely crosses your horizons every day. Economic analysis may identify a small group of research professors engaged in exploring esoteric questions as extremely costly in terms of any measurable output. Yet the value judgement of the President of the institution may well be to keep this activity in spite of its cost and in the face of major institutional problems. That's the way it should be. The President must make the value decision, but he should know accurately what it's costing him.

Finally, I want to return to the problem of communication raised earlier in these remarks. This is a tender subject for an educator to discuss, since educators probably produce more uncommunicative prose than any other group of university-trained people in the country. If they do, I, as their representative, would like to take this opportunity to award second prize in this respect to the social scientists. What's more I believe that the social scientists would continue to hold this distinction even if Talcott Parsons and his descendents were removed from their number.

By way of constructive suggestions, I have only a simplistic idea to offer. It is that when studies are done in the expectation of illuminating the possible effects of policy choices or the hoped for results of better management, the authors ask themselves two simple questions: Who must understand this study if it is to have any effect? Can such people grasp its method and its message?

If a study is one that hopes for nothing more than an audience of other social scientists, no one from outside that realm can legitimately complain. But such studies should be mostly those that are concerned more with the development of the discipline than with promoting changes in policy or in the use of public resources.

If on the other hand a study seeks action that will change an institution or a public policy, it must choose one of two courses: either it must explain itself to a wider audience than the specialized scholars who produced it or it must seek a translator who can accurately and sensibly turn it into a document that communicates with laymen. The first option is to be preferred because it draws directly on the authors who understand all the innuendos, but it they don't

have the skill they will be fortunate to have the sense to recognize the need for translation. Otherwise they are headed for either misunderstanding or limbo or both.

As an example of a report on a complex and technical subject with major political overtones yet one which communicates well with laymen, let me cite the recent publication by the Energy Policy Project supported by the Ford Foundation entitled *Exploring Energy Choices*. I hasten to add that I had nothing to do with this exercise. It falls outside my part of the Foundation bureaucracy. It seems to me to present a set of complex, interrelated issues in a fashion that will assist a large number of people to think about them more rationally.

There is another side to this discussion, and I wouldn't be surprised if it was on the minds of some of you. It is, perhaps, reasonable to ask whether politicians and administrators and college presidents and other functionaries who choices you want to illuminate and whose management you want to improve shouldn't learn something about the policy sciences and about management techniques. The answer is that of course they should. Some of them are trying. If I were speaking to them instead of to you, I might spend more time on this side of the issue. But since I'm not, I hope that you'll meet them half way.

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THE CHANGING FEDERAL ROLE IN HIGHER EDUCATION

Peter P. Muirhead, Deputy Commissioner for Higher Education

This is a particularly timely occasion for the Association for Institutional Research to be focusing on the Federal role in postsecondary education. Because even as your deliberations are going on, the legislative branch of our Federal government is engaged in funding and reexamining the provisions of legislation which will surely bring about profound change in the years ahead in the institutions you serve and represent and indeed, writing the script for the identification of appropriate national priorities and an effective role for the Federal government in postsecondary education — lest you forget where I work, I must also add that the executive branch is engaged in appropriate ways with the Congress in this all important task. I refer, of course, to the education amendments of '72 which include provisions that will have an historic impact on the roles our colleges and universities will play in the last critical years of the 20th century. In the opinion of many higher education leaders this new law embodies the most comprehensive higher education legislation in the history of this country. It establishes major new dimensions of Federal concern and broad new relationships with postsecondary institutions. It may very well be that this legislation will provide an affirmative answer to one vital question: Can the Federal government contribute significantly to helping our postsecondary institutions become more effective in attaining national education goals without at the same time imposing unwarranted Federal control over the education process? In this regard, I would hope that you would use some of your precious resources and talents in the continuing development and refinement of a model that would measure not only the impact of the Federal interest on such important national objectives as access, choice and opportunity but that at the same time provide an equally critical reading of the effect of national funding strategies on the strength, diversity and independence of the postsecondary education system itself.

Of course, it is too early to predict how the law will affect the course of education. Even in the short run, its impact on institutions cannot be ascertained because the budget requests seeking to translate some of its important authorizations into appropriations are even now before the Congress and thus far have fallen short of the bill's promise for an effective federal role in postsecondary education. It will be months, possibly years, before the provisions of the act, either as they are now written or subsequently revised in the re-authorization process, are fully implemented. It is not too early, however, to discuss the implications of the new law and particularly before a group so well versed in contributing knowledge that leads to public understanding — and so accustomed to being both patient and persistent in the process.

First, I would like to review breifly the highlights of the law, because many of its important provisions have received relatively little public notice. The bill is essentially higher education legislation of great scope and magnitude. It was the product of 27 months of discussion between the administration and the Congress. Legislation, which in the finest traditions of American politics, members of both parties worked very hard to produce.

Second, I would like to explore with you what some of the programs authorized may mean for the future of higher education in its continuing quest to suit its pluralistic form to the increasingly pluralistic needs of its students. What the law provides, I will suggest, is the promise of a more rational structure for federal assistance and a long step toward a coherent national strategy for higher education.

To begin, then, with the bill itself. I have already described it as possibly the most comprehensive higher education bill in our history. I should also note that it is historic in other major respects. *It provides authority for an unprecedented national commitment to extend postsecondary opportunities to all young people regardless of their financial ability.* A new research effort intended to revitalize our entire educational system, a major new thrust to support and encourage institutional renewal, and a recognition that the national interest requires support for institutions to serve the disadvantaged.

Student Aid

The law provides that aid to students enrolled in postsecondary institutions be expanded and redirected to assure that every student be eligible for a combination of federal grants, work opportunities and loans sufficient to make up the difference between their college costs and what their families are able to contribute. These provisions are aimed at closing the cost gap for low and moderate income families.

The new program of basic opportunity grants combined with the college work-study and guaranteed student loan programs, provide an opportunity to achieve now what has been described as a "Great American Goal." Suiting fiscal action to these words, the FY 1975 budget request now before the Congress includes $1.8 billion for student aid — an increase of $300 million over FY 1974. Translated into much more important statistics, this means that about 4 million students will receive assistance during the 1975-76 college year as compared with 2.7 million receiving assistance this year.

The Congress also endorsed a new federal role in encouraging and facilitating reform and innovation throughout postsecondary education. The Fund for the Improvement of Postsecondary Education is designed to stimulate nation-wide interest in institutional renewal, and to encourage a new concern for diversity of training opportunities to match the diversity of needs, abilities, and interest of the incoming students. The budget request of $15 million for FY 1975 is a precious resource and is intended to encouraging the reform, innovation and improvement of postsecondary education and facilitate the providing of equal educational opportunity for all.

A New Research Effort

In establishing the National Institute of Education, the Congress noted that as a nation we spend less than one-half of one percent of our education budget on research, compared with 5 percent of our health budget and 10 percent of our defense budget. The expectation was expressed that NIE, when fully developed, would be an important element in the nation's educational system, overseeing the annual expenditure of as much as a quarter of a billion dollars.

The National Institute of Education is now established as a new research institution within the Department of Health, Education, and Welfare, with a presidentially-appointed director and a distinguished national research council. Its mission is to undertake a systematic national effort to make education more effective at all levels. It is intended to mobilize the best minds from a variety of disciplines to deal with a range of important problems, from improving compensatory programs to developing broader and more sensitive measurements of learning and ways to employ our technology to greater educational advantage. The NIE is as essential to the federal interest in education as the research is to the mission of any great university. Congress has affirmed the need for the Institute and the purposes envisioned for it.

As you consider your agenda of priorities for institutional research, I would suggest that you consider ways in which you can contribute to a fuller understanding on the part of the Congress about the critical mission of the National Institute for Education and the urgency of providing adequate support to achieve that mission.

The Significance of the New Law

Simply outlining some of the authorities in the law does not begin to describe their significance. Nor does a recitation of their potential funding levels, estimated to total somewhere between $18 and $20 billion. Here a word of caution is in order: the gap between funds authorized and funds appropriated is almost destined to be very large, particularly in the initial stages of implementing new legislation and in the face of the many other pressing priorities facing our nation. The assumption that all funds authorized will be appropriated is something which never was and never will be. It should be reported, however, that the major thrusts of the legislation — equal educational opportunity, institutional reform and research to make education more effective are now in place and are being given priority consideration in the President's FY 1975 budget requests now before the Congress. Given an appropriate improvement in the economy, it is reasonable to project that the framework for an effective federal role in assisting our postsecondary education system to continue to enrich our lives and strengthen our society will also be in place.

What more is there to be said of the significance of the new law? What of the changes which these new student aid provisions imply for the rest of the educational system?

We can only speculate, for example, on the implications of a technical change in the law making half-time students, and students in vocational or proprietary postsecondary institutions, equally eligible for all higher education student aid provisions. But surely this is no mere technical change: it represents a dramatic change in national policy.

For decades, we have proceeded on the assumption that a four-year liberal arts education was to be encouraged. If a student wished to go to college to study full time, our laws have provided that the nation's taxpaymers would help pick up the tab. At the same time, a working man attending college at night, or a

high school graduate finding it necessary to enroll less than full time or preferring to learn an honest trade at a business school or some other less than collegiate level, had to make it on his own without federal assistance. In retrospect, it is hard to describe this as sound national policy, and the change is eminently desirable.

What will be the effect of this new policy as well as providing aid directly to students? Hopefully they will be able to make sounder career choices, hopefully this will mean a strengthened sense of purpose in all postsecondary students, whatever kind of institutions and their programs, and therein lies the real challenge for improving postsecondary education.

These student aid provisions, in brief, contain built-in incentives to encourage greater flexibility and diversity throughout the total structure of postsecondary education. To introduce institutional reforms designed to expand individual opportunities for entering and reentering institutions and pursuing programs of study tailored to individual needs. Clearly the design here is to effect far more than piecemeal improvements in the existing structure of postsecondary education.

Even more clearly it places upon the office of education a compelling responsibility to ensure that information about postsecondary education is collected, and coordinated in a timely fashion and made readily available in appropriate forms to public and private agencies.

Now, the new act does not solve all of our problems. In fact, it creates some. The new act contains some pitfalls which could, with insufficient attention, lead to the imposition of unwanted controls on the education community. The so-called "bailout" provision for institutions in critical financial distress is a case in point, for it invites the Federal government to establish standards by which the Federal government could decide which institutions should survive, and which should be allowed to die.

But such a potential danger should be warning enough. Its very existence should serve to alert the education community against unwanted inroads on academic freedom. Undue federal control is unlikely to occur as long as the academic community is determined to resist it and our record in that regard is a good one.

We need not and must not allow responsibility for education to shift to federal hands so long as we are determined to preserve institutional autonomy and local control in this country.

We still lack a national policy for the whole of higher education, particularly in the field of graduate education. The federal establishment has barely begun to consider the impact on colleges and universities of shifts in priorities and funding for its many programs outside the office of education — in defense, NASA, AEC, NIH, and other agencies — which comprise 82 percent of the total federal outlays for higher education.

Nevertheless, the foundation for a sound national policy is inherent in the Education Amendments of 1972. The Act recognizes, for the first time, the national interest in maintaining a strong and versatile system of postsecondary institutions to meet the educational needs of the entire population. It reiterates a sound federal policy — that public and private higher education is a single great natural resource to be supported in all of its parts as even-handedly as possible. A policy that is being replicated in a variety of ways in 36 states. A lack of personal funds has been effectively removed as a reason for anyone to be denied whatever level of postsecondary education they may be qualified to seek. The need for federal support and encouragement of institutional research has been recognized and present budget requests, although far from adequate, underscore the importance of the priorities to the nation's welfare.

I opened these remarks by underscoring the timeliness of your working session in relation to the federal budgettary and legislative process. It is also an opportune time for you to be about the business of contributing to better understanding of national priorities — because we now have on stream, as you know, no fewer than six major reports by eminent national groups — each making a worthy contribution to that discussion. I refer, of course, to the reports of the Carnegie Commission, committee for Economic Development, National Board of Graduate Education, National Council of Independent Colleges and Universities, the Newman Report and the National Commission on Financing of Postsecondary Education.

On this score, I would hope, that in addition to carrying forward your exemplary role of adding to the storehouse of knowledge, that your priorities would also include an analysis of the recommendations in these reports and how well they would serve the objectives for postsecondary education identified in the national commission on financing of postsecondary education report — objectives, which were implicity or explicitly in agreement in each of the reports.

Finally, while wearing your A.I.R. policy hats you have been instrumental in helping to build a healthier higher education enterprise. In your capacity as acknowledged leaders in higher education I would hope that you would insist on a voice in implementing this landmark legislation and to maintain watchful oversight of the way in which its provisions are carried out. The extent to which it realized its vast potential will depend not only on the executive and legislative branches of the Federal government, but even more so on the higher education community itself.

CAN WE GET MORE FROM HIGHER EDUCATION FOR OUR MONEY?

Donald C. Lelong, University of Michigan

Most of us in institutional research have spent a good part of the last several years struggling with such concepts as productivity, efficiency, and cost-effectiveness as these concepts are thought to apply, or not to apply, to higher education. Accusations of inefficiency and cries for more cost-effective educational programs have been so pervasive and so persistent that few of us have escaped the need to defend what, how, and why our institutions do as they do.

The repeated assumption by the working bees outside the higher education beehive seems to be that the academic drones on the inside could do a lot better if they would only get down to work and apply some of the efficiency methods and measures of the outside world. If educators are to be objective about it, they cannot respond with a simple opposing assumption that higher education is different from industry and is efficient in its own context. The key question is: Can we reasonably and realistically expect to get more from higher education for our money? Institutional researchers are probably the right target for this question. If we have spent a fair share of our recent professional lives grappling with the problem and we cannot answer the question, then who can? If any group should have the necessary insights then institutional researchers should.

However, like the doctoral student in the middle of a dissertation, I now wish I had selected another topic. My reasons are the same as the doctoral student's. To get the subject down to manageable size, it is necessary to concentrate on only a few of the most important aspects. Then in the course of analyzing those few specifics, I find each one inseparably connected to at least a dozen other important considerations — and those in turn appear to be inherent parts of whole systems of pertinent phenomena which cannot possibly be covered adequately. In short, I find it impossible to excise this question from other searching questions about the universe, and needless to say I find it equally impossible to analyze the universe. So, again like the doctoral student, I have written something which leaves ample room for "investigation by others."

To know whether or not we can get more from higher education for our money, one must first know who "we" are, and then ask, more of what? — and finally ask, whose money? "We," collectively, include at least students and parents, Federal, state and local government decision makers, private benefactors, and finally "we" the faculty, if not "we" the administration as well. Then to make an apparently simple question even more complicated, each component of the collective "we" has its own specialized list of more educational services.

According to Alexander Astin's most recent survey, students most frequently want to develop greater self understanding and an adequate philosophy of life, while in college.[1] They also want to gain competence in some field of endeavor, and to be well off financially, as college graduates. I might add that a survey of potential rather than actual students would probably show that they want the opportunity to attend college regardless of their parents' ability to pay for it.

Faculties want protection from interference in the pursuit of truth wherever that pursuit leads, and they want society to support learning and discovery of knowledge for its own sake. There's also ample evidence that they want higher education to maintain faculty living standards in the face of accelerating inflation.

Collectively the Federal, state, and local triumvirate of governmental officials expects higher education to supply the skilled manpower which will ensure national economic growth and national security. Government at all levels looks to higher education for help in the solution of pressing social and scientific problems and it views higher education as a critical supplier of that enlightened and responsible citizenry without which democratic institutions cannot survive. As a matter of social justice, government looks to higher education to help implement its objective of mass higher education — or more accurately, universal access to post-secondary education. And finally, government officials express more vociferously than others the desire to get more from higher education for the money.

Educators have long been frustrated by the difficulty of satisfying their many and diverse constituencies. Suffice it to say here that a dramatic breakthrough, which would permit us to serve all for less, is simply not in sight. If higher education continues its commitment to satisfying all the demands of the collective "we," then the public can expect an increasing fraction of its income to be devoted to higher education. Nevertheless, the answer to the original question almost has to be, "Yes, we can get more from the resources devoted to higher education," because in virtually every complex human institution there are ways to improve performance, even if only modestly. The trick is to find the ways and implement them. Recent literature on the subject is replete with recommendations. Ten which are frequently cited are these:

1. Emphasize a variety of educational options for high school graduates, and encourage those who don't really want to be in college not to go, or to leave.
2. Increase the retention rate among students who do want the college experience and can profit from it.
3. Do more and better manpower planning; then match academic program enrollments to anticipated needs for skilled manpower.
4. Accelerate and integrate instructional curricula.
5. Develop more consortium agreements and other forms of inter-institutional cooperation.
6. Accelerate the development and use of educational or "informational" technology.
7. Adopt a year-round calendar to make better use of physical plant.
8. Make faculty members teach more; put them "back into the classroom."
9. Utilize economies of scale and other analytical concepts to arrive at more optimal levels of operation.
10. Allocate more of the resources of higher education directly to students, and force institutions to compete more vigorously for students.

Time limits us to an examination of only a few of these ideas, and the choice is difficult, but perhaps these four are of more than average interest to institutional researchers.

1. The allocation of more resources directly to students rather than to institutions.
2. The prospect of making faculty members teach more.
3. The use of analytical tools to arrive at more optimal levels of operation.
4. The acceleration and integration of academic programs.

Direct Funding of Students

The arguments and proposals in behalf of funneling more higher education dollars through students are many, but the basic point is quite simple. If institutions received a greater share of their dollars through students fees, then they would be more responsive to the needs and demands of students. Since students are one of the prime benefactors, if not the major benefactor, of higher education, colleges and universities providing the best educational service — those doing the most cost-effective job — would prosper and the least efficient would be forced out of the market. In his address to this Association last year, Howard Bowen stated that his particular scheme, ". . . derives in part from the economist's traditional love affair with the market as an allocator of resources."[2] Obviously students are not the only component of the collective "we" who want more for our money, but it would be difficult to argue that they are not the primary client of higher education. Students and their parents now pay only 20% of the cost of running the higher education enterprise, while local, state and Federal governments pay 59%.[3] If cost effectiveness is defined in terms of response to student priorities, then a shift of at least some governmental funding from payment to institutions to payment to students is in order.

Unfortunately, plans which would fund students (who in turn would fund institutions) are often challenged not on their own merits, but on grounds that such plans would increase student fees. Most opponents of increased fees accompanied by increased student aid admit that the combination might well make institutions less responsive to government bureaucracy and more responsive to student needs, but they fear that these advantages would be undercut by a political "cop-out." Government policy makers who espouse direct student funding as a better way to allocate resources might really be seeking merely a means to reduce the ever-escalating public cost of higher education. They will, it is feared, withdraw public monies from institutions without replacing them in equal or greater quantity in student support. A recent policy statement adopted by the Directors of the American Council on Education states in part, "ACE is fearful that the net political effect (of such recommendations) will be an increase in tuition without relief. Already existing pledges of aid to help low-income students are woefully underfunded."[4] That danger is a real one, but it does not detract from the potential advantages in cost-effectives of mechanisms under which the student allocates a greater share of the resources going to colleges and universities.

Students can also help, perhaps more significantly, in the *internal* distribution of resources. Ample

evidence suggests that individuals learn in different ways and that even a single individual does not learn all subjects in the same way. Yet the undergraduate has virtually no good means of getting an academic department or college to use the instructional methods which do the job best for him or her. For example, the student has no way of distributing his tuition so that he can get high-cost tutorial help in contemporary poetry, which he finds difficult, in exchange for a low-cost, large lecture in mathematics which he finds easy. If academic departments were to offer varying amounts of personalized attention, differentially priced, then the learners could distribute their fee monies in a manner which would bring forth a better institutional response to their learning styles. The learner could get a great deal of help in one subject and pursue another almost independently. There would be substantially more incentive than there is now for the academic department to allocate faculty and other instructional resources to their most productive use. This departmental management technique, known as internal pricing, is currently employed in large industrial corporations. Although the obstacles to successful implementation in an academic environment are formidable, to say the least, the potential benefits are also great. For a provocative analysis of the possibilities of internal pricing, I urge you to read, "Internal Pricing Within the University: A Conference Report" edited by David Breneman and published by the University of California.[5]

Putting Professors "Back into the Classroom"

Turning to the prospects of more faculty teaching, a rash of recent measures has sought to ensure that we get more for our money out of college and university faculties. During the last several years, legislation in the States of Florida, Michigan, Ohio and Washington has specified faculty teaching loads. Similar legislation was passed in the State of New York but vetoed by the Governor. The clear implication is that college and university faculty members do not do as much teaching as they should, and accompanying that implication is an apparently widespread belief that professors have a relatively soft life. They only work nine months a year, and while they are working they are only in the classroom a few hours per week. In spite of the fact that an occasional professor does not earn his money, the proposition that we shall get more cost-effective education by putting faculty members into the classroom more hours per week is largely misguided and erroneous.

First, for those who are willing to examine it, there is overwhelming evidence that professors work equally long or longer hours than their professional colleagues in commerce and industry. It is true that much of the evidence comes from reports of faculty members themselves and therefore has been criticized as biased. Nevertheless it comes with remarkable consistency from thousands upon thousands in U.S. institutions as well as from their British and Canadian colleagues, and some such surveys have been corroborated by more objective time studies. To give just one example, a study by the National Academy of Sciences indicates that scientists employed in academic institutions consistently worked about five hours more per week than did scientists in non-academic jobs.[6] Most such reports reveal that faculty members average some 50+ hours per week and spend approximately 30 of those hours on tasks directly related to the instruction of classes. Furthermore there is evidence that the time expended on instruction-related activities tends to be inelastic. That is, when a faculty member is given additional classes to teach, he or she does not spend proportionately more time on instruction but merely distributes a slightly greater amount of time among more classes and more students. If this evidence is supported by further investigation, institutional researchers might then conclude that imposing increased course loads upon faculty actually results in their devoting less time and attention to instruction on a per-student basis. This, I believe, is contrary to the intent of the state legislators who have enacted laws specifying teaching loads.

Actually, clock-hour teaching loads in this country's major doctoral-degree-granting and research universities have declined substantially during the last 40 years or so. One of the Carnegie Commission reports estimates that median classroom hours per week for faculties in these universities have declined from about 15 to 7, or by about 53%.[7] Under the circumstances, one might ask why it's not possible to put the professor "back into the classroom." The answer lies quite clearly in the information and knowledge explosion, in the vast increase in graduate programs and graduate enrollments, and of equal significance, in the research demands made upon these faculties in post-Sputnik years. One of the first lessons in economics is that there is no such thing as a free lunch. Someone has to pay for it, and if we want more graduate education and more research productivity, then we must expect fewer faculty hours in the classroom. This explanation of declining teaching loads is supported by other data from the same Carnegie report. Teaching loads in comprehensive universities and colleges, (defined to exclude the major research and doctoral granting institutions) have not declined as much, relatively. Over the same period faculty teaching loads in these institutions dropped from an average of 16+ to

10+ hours per week, or about 38%. In two-year colleges, the relative decline is even less — from an average of 17½ to about 14½ classroom hours per week, or approximately 17%. So there does appear to be a rather obvious, inverse relationship between the time a professor spends in the classroom and his obligations to graduate instruction and research.

These observations with respect to faculty teaching loads are not meant to deny some cogent arguments which can be made against the publish-or-perish syndrome on many campuses. Nor are they meant to imply that judicious increases in class size cannot enhance teaching productivity (which we shall get to presently). Not all faculty members should be given the same release time from classroom obligations for the sake of research. Nor should all, or even most, institutions of higher education include graduate instruction and basic research among their primary goals and objectives. Those goals, adopted too often by too many institutions, promise to encourage misallocation of faculty energies in a costly and ineffective manner.

On the other hand, it's erroneous and misleading to think that, as a general proposition, we can get more in total out of higher education by requiring college and university faculties to spend more time in the classroom. Most of them already work as hard and spend as many or more hours on the job as do other contributing members of our society. Given the environment in which they work, professors are probably the best judges of the proper distribution of their time, and forcing them to spend more of it in formal instruction might well result in actually reducing the per-student time they devote to the instructional part of their jobs.

Optimal Levels of Operation

Another of the 10 recommendations which is receiving growing attention is that concerning adjustments in size to attain optimal levels of operation. Proposals run the gamut, from adjusting the size of entire institutions, to adjusting individual class sizes. Many institutions are too small to be efficient, so the reasoning goes, and we could get more for our money if they were to enroll more students. That way the cost of providing some of the essential services, such as library and student services, the president's office, and the athletic program could be spread over greater numbers at less cost to each. At the same time, larger enrollments would justify a greater variety of services at acceptable cost levels. There is increasing evidence that this argument has merit, and we in institutional research need to pay more attention not only to the scale of institutional operations but also to the sizes of specific programs. According to a summary of studies on the subject reported by the Carnegie Commission, cost per full-time-equivalent student declines quite sharply as institutions increase in size from very small to moderate levels, after which the decline occurs at a diminishing rate or levels off.[8] An equivalent statement could be made with respect to most curricular sequences and degree programs.

Analysis of optimal operational cost levels is a fairly technical and a voraciously data-consuming exercise, but the analytical tools developed by such organizations as NCHEMS, the Systems Research Group, and others are specifically designed to elucidate these problems of scale. Good data bases in all the major areas of institutional activity are needed to make good use of these aids, but they do enable the institutional researcher to estimate the resource requirements and cost effects of altering input and output variables of a given department or degree program.

Actually the age-old questions about appropriate class size focus on just one facet, perhaps the most crucial facet, of the optimum-level or optimum-scale problem. Of all the ways to cut costs, the most direct and probably the easiest is to increase the average size of classes. Direct cost of instruction is usually more sensitive to average class size than to any of the other factors making up direct cost. The reason is easily discernible. Variation among class sizes from department to department and college to college is usually much greater than variation in other cost factors. No president with an interest in his future career would seriously propose that faculty salaries be cut by 10% as a means of getting more instructional service for the institutional dollar. Nor would he propose, with growing faculty unionization, that professors spend more hours per week in the classroom. However he might accomplish the same cost reduction by increasing the average number of students per class by only two or three. That has typically been the least painful way to reduce teaching costs.

Whether that step reduces cost and maintains quality or instead diminishes the value of the learning experience continues to be debated. Researcher after researcher has concluded that no significant relationship exists between the number of students in the class and performance on examinations on the subject matter. Nevertheless psychologist William McKeachie, in what is perhaps the most comprehensive review of all such studies, drew three basic conclusions: (1) that neither large classes nor small classes were found to be clearly superior when quizzes and examinations were used as the index of learning; (2) that small classes were found to be slightly superior when retention of knowledge over a year or two was the measure of learning; and (3) that small classes were

found to be superior when problem-solving capacity and changes in attitude were used as the index of learning."

One of the promising features of an experiment in which students would be permitted to distribute their tuition monies among course offerings priced in proportion to their costs would be that we might learn how students feel about the cost-effectiveness of large and small classes in terms of their own ability to learn from them. We might find that they disagree quite radically with our predominant modes of instruction and even our over-all allocation of instructional resources. While many attempts have been made to evaluate the effect of large and small classes on student learning, these studies have typically ignored the relationship of learning effectiveness to cost, and much still remains to be discovered about that relationship. In any event, the essential task remains that of finding the optimal scale of operation, whether it's an institution, a program, department, or class. If the solution doesn't take both the cost and effect sides into account, it treats only half the problem.

While most studies to date suggest that optimal levels will call for scaling up the size of the institution or program, there is nevertheless the strong possibility that some universities have far exceeded the scale most conducive to optimal use of resources. There appears to be less hard data to support the accusation of over-expansion, but some of the arguments are persuasive, nevertheless. As a college or university grows, it tends to take on new obligations and new objectives which proliferate its programs and undermine not only the quantitative advantages but also the qualitative advantages of doing a limited number of substantial things well. Not only in universities but in all organizations, as the number of functions grows so grows the number of staff members, offices, departments and bureaus. As these increase arithmetically, lines of communication to keep the place running increase exponentially. Communication and administrative control become confused and muddled. Organizational complexity runs beyond the capacity of any group of top executives to comprehend it, and the institution suffers from lack of clearly articulated direction and process. The dinosaur's cumbersome body outgrew the capacity of his cerebral communications system to cope with it, and this innate limitation applies not only to big government and the big corporation but to the big university as well.

Another explanation of the declining effectiveness of overgrown institutions is advanced by John Galbraith in his most recent book.[10] Professor Galbraith claims that as institutions increase in size and in power they tend to turn inward serving themselves instead of the society they were created to serve. The accretion of additional resources can be accomplished more easily by exerting power and influence and by using connections than by serving the public well. Most of us have probably witnessed occasions on which the budget of the university depended more heavily upon a backroom deal struck with a few key legislators or Board of Regents members than upon the validity of justifications based on more and better educational service.

All of these considerations make achievement of optimal scale an important part of the answer to the question of whether or not we can get more from higher education for our money.

Acceleration and Integration of Programs

Finally, various schemes have been proposed, and some implemented, to accelerate and integrate curricular programs. Distinction between the two terms is ambiguous, because most curricular modifications cited as examples — the accelerated M.D. program, the Doctor of Arts degree, the three year bachelors degree — reduce formal requirements by "integrating" courses and thus "accelerating" the student's progress. Integration, both vertically and horizontally, can reduce costs if, and the conditional word is important, if that integration serves to eliminate overlapping and duplication without reducing learning proportionately. Some claim, for example, that present student disaffection with higher education can be traced at least partly to repetition in the college-freshman year of substantial material covered in high school. The three-year bachelor's degree and the Doctor of Arts degree have probably received the greatest publicity, and most of us would agree that these two programs are less costly than the four-year bachelor's and the Ph.D. respectively. From the student's viewpoint, such acceleration can reduce costs dramatically. Not only is it likely to reduce out-of-pocket school expenses, but more important it minimizes the time he or she is out of the labor market, foregoing the earnings of a full-time member of the labor force.

Similar claims are made for horizontal integration, though the savings accrue directly to the institution rather than to the student. We are all familiar with courses like basic statistics which tend to be taught in four or five different departments, perhaps each with a relatively small enrollment in its statistics sequence. To the extent that these can be consolidated, and to the extent that larger classes are as cost-effective as small ones, then the horizontal consolidation of these courses into fewer offerings holds promise.

So far, the evidence indicates that integrated and accelerated curricula can cut costs, but that is only

half of the equation. What about the product — the learning experience? To the extent that second-time-around courses and learning experiences do not impart greater depth of understanding, they probably do represent relatively unproductive use of educational energies. But the word acceleration suggests covering the same ground with increasing speed. The actual educational process often turns out to be hopscotch or puddle jumping, in which the instructor lands only here and there on the most important points and in which the student misses what's between. There is certainly a limit to the rate at which human beings can or will learn and absorb additional knowledge.

As alluded to earlier, a bonus system under the Comprehensive Health Manpower Act of 1971 has promoted accelerated programs in which medical students can complete both their undergraduate and medical school training in five to seven years versus the traditional eight.[11] Perhaps your reaction is similar to mine — of all the programs in which we might experiment with acceleration, prudence suggests this as one of the last. Frankly, when it comes to my family physician, I'd rather have a slow learner than a five-year wonder.

Acceleration of the medical school program, or any other academic program, must be based either on the proposition that students can and will increase the speed with which they acquire skills and absorb knowledge, or that some of what they are now learning is not worth the cost of teaching it to them. If neither of these propositions holds, then acceleration of programs represents merely an attempt to cut costs but not increase cost-effectiveness. There is a real and present danger that some of the proponents of integrated and accelerated programs are focusing upon speed as primarily a cost-reducing measure with only secondary attention to effectiveness.

One more closely related reservation is worth mentioning. It bears directly on the effectiveness side of the equation, and it comes more from the father of one college-age son and two daughters in high school than from an institutional researcher. The fate of future generations is almost certainly more education rather than less. This is the history of our society and its prospect for the future. Many of today's college students are already the product of accelerated secondary education. Both our high school and college age groups seem to be under much greater pressure than we were a generation ago. Pre-law and pre-medical students are under an incredible strain to perform simply to gain acceptance into those professional schools. The extent to which the whole process can be compacted and accelerated even further should be closely examined lest we go too far in the name of efficiency. Taped to a secretary's desk in our building is a poster picturing a turtle and a beautiful bouquet of daisies. It reads: "There must be something more to life than greater speed."

Perhaps one of the reasons for dropouts and stopouts is not boredom through repetition of what was learned once before but battle fatigue from the long-term stress of information cramming. Education is at least partly a consumer service rather than an investment in potential productive contribution. As a service to the consumer of education, at least the undergraduate years might be a time for unhurried reflection. Those consumers will rarely be so strongly inclined toward philosophical reflection again. Perhaps we in institutional research should be dissenting from the accelerating pace of human existence and searching for deceleration alternatives, such as lifelong learning curricula which stretch the process out rather than compact it. One wonders how many "pounds" of education the three pound human brain can absorb in a day, a month, or a year.

Conclusions

So much for integration and acceleration of instructional curricula. Forty minutes is barely adequate even to scratch the surface of these issues, but I have now drifted into subjective pronouncements of educational philosophy, and even old friends and colleagues can take just so much of that!

To paraphrase again from Howard Bowen's address last year, an inherent difficulty resides in allegations about efficiency. Though the inputs can be measured both physically and in dollars, the outputs or outcomes are largely nonmeasurable except through intuitive judgement. People of equal knowledge and integrity can reach quite different opinions. Not only are good measures of educational effectiveness extremely elusive, but our entire system of higher education is in good part the product of complex cross currents of American politics. The system is never tidy; it is based on no single ideology; it is full of compromises; it is hard to understand; it fully pleases no one; it is likely to change through gradual evolution, not through radical departures.[12]

Nevertheless, I believe some useful generalizations can be made about the four recommendations discussed. First, the reallocation of a portion of government funding from Institutional support to direct student support holds the promise of more effective resource use. Colleges and universities can themselves improve their cost-effectiveness by paying more attention to optimal size in their academic programming. On the other hand, specifying overall increases in clock-hour teaching loads of faculties represents only

bureaucratic regulation which is not capable of reallocating faculty resources in any meaningful way. Finally, the potential effects of integrating and accelerating academic programs defy easy diagnosis. While some programs might be made more cost-effective others would merely be devalued, yielding a zero or negative net benefit.

Returning to the original question, the answer still has to be: Yes, we *can* get more from the resources devoted to higher education. In virtually every complex institution there are ways to improve performance. Through persistent, often frustrating analysis, we in institutional research are beginning to find them.

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[1] *Chronicle of Higher Education*, February 11, 1974, p. 8.

[2] Bowen, Howard R., "Goals and the Financing of Higher Education," *Tomorrow's Imperatives Today*, Association for Institutional Research, 1973, p. 7.

[3] National Commission on the Financing of Postsecondary Education: *Financing Postsecondary Education in the United States*, U.S. Government Printing Office, 1973, p. 69.

[4] American Council on Education: *Higher Education and National Affairs*, February 15, 1974.

[5] Ford Foundation Program for Research in University Administration: *Internal Pricing Within the University*, Breneman, David W., ed., University of California, 1971.

[6] The Carnegie Commission on Higher Education: *The More Effective Use of Resources: An Imperative for Higher Education*, McGraw Hill Book Co., 1972, p. 70.

[7] Ibid, p. 69.

[8] The Carnegie Commission, op. cit., Appendix.

[9] The Carnegie Commission, op. cit., p. 66.

[10] Galbraith, John K., *Economics and the Public Purpose*, Houghton Mifflin Co., 1973.

[11] The Carnegie Commission, op. cit., p. 54.

[12] Bowen, Howard R., op. cit., p. 7.

PANEL DISCUSSION ON THE RECOMMENDATIONS OF THE NATIONAL COMMISSION ON THE FINANCING OF POSTSECONDARY EDUCATION: THE POLITICAL AND THE ANALYTICAL

Fred J. Taylor, University of Arkansas
George Kaludis, Vanderbilt University
John Brademas, U.S. House of Representatives
George Weathersby, Harvard University

FRED TAYLOR: May I have your attention, please.

Our evening session features one of the most interesting topics that we have had during this meeting. Probably no topic is of more interest to us at this point than the financing of postsecondary education, and we do have, by having the meeting here, the advantage of having people who have worked very closely, and particularly three gentlemen who have worked with and on the Commission that sponsored this study.

The Chairman who will chair the panel tonight is Vice-Chancellor of Vanderbilt University. He has had experience with NCHEMS, with various other groups, and he is still very active in the association at WICHE. I am going to present him and he will present to you the other panel members.

At this time it gives me great pleasure to present to you Mr. George Kaludis of Vanderbilt University. George. (Applause.)

GEORGE KALUDIS (Vice-Chancellor for Operations and Fiscal Planning, Vanderbilt University): I guess my first question would be to John, to ask if the primary results are in yet. (Laughter.) That happens to be a piece of anxiety. 80 per cent of the vote is in, John, and I'm not sure it's going too well. (Laughter.) Ladies and gentlemen, in the way of introduction, I should say that the years 1973 and '74 were not the best for Greeks in Washington. (Laughter.) First of all, Secretary of Commerce Pete Peterson ran afoul of the Administration. Secondly, Vice President Agnew ran afoul of his past. And finally, Brademas and Kaludis were appointed to the National Commission on the Financing of Postsecondary Education. In true equal-opportunity form, however, we allowed some names like Lawrence and Weathersby to slip in somehow. For 14 months the Commission and its staff struggled with the Herculean task given it by the Congress. In spite of the affectionate christening of the group as the Who's That Commission by the Chronicle of Higher Education, this group was one of quality and diverse background.

Two persons here tonight played important roles in the conception, work, and outputs of the group. In a time when one tends to be cynical about the state of the national government, I was strongly impressed by the energy and ability of the Commission's Congressional members.

Congressman John Brademas of Indiana's Third District served on the Conference Committee which spawned the Commission. Contrary to the typical introduction, I believe it appropriate not to forego a comprehensive listing of his accomplishments.

Phi Beta Kappa at Harvard, a Rhodes Scholar, a college professor, a member of the visiting committees of two schools of Harvard University, a college trustee, a church leader in the United Methodist Church, a eight-term Congressman with 15 years of service on the Education and Labor Committee, Chairman of the Select Subcommittee on Education, with a primary role in the major education legislation of our day, through the Environmental Education Act and the International Education Act and, as mentioned above, a principal in the Educational Amendments of 1972.

The Commission could not have completed its work without the brains and perseverance of the staff brought together to contend with the multiple dynamics covered by the charge of the Congress. It was, on the surface and below, a kamikaze type job, not enough time to address three decades of accumulated problems. George Weathersby, however, bit the bullet and became the Commission's Associate Director and Director of Research. He had already been guaranteed a challenging year as a White House Fellow but consented to serve the Commission.

Mr. Weathersby is no stranger to the national policy scene for higher education. Beginning with his work in the Office of Analytical Studies of the University of California, he compiled an impressive track record as a member of the NCHEMS Technical Council, as Director of the Ford Research Program in University Administration at the University of California, and now serves as a lecturer on education at Harvard's Graduate School of Education. Two very qualified people.

Congressman Brademas will lead off our discussion, to be followed by Mr. Weathersby. And then if there is anything left to say, I will try to come into the fray somewhat. I will be very wary about following

such a dynamic duo but will try to make some contribution. We will take questions and comments at the conclusion of our remarks. And might I say we did try to get Dave Cowens and Kareem Abdul-Jabbar to be here with us tonight but they had another engagement.

John, would you please start.

JOHN BRADEMAS (U. S. House of Representatives, Indiana): Thank you very much, George.

At the outset, let me say how gratified I am to have been presented to you by my friend George Kaludis. I am pleased for two reasons. First, without any question, George was one of the most influential persons in shaping the work of the Commission and drew on his own experience at Vanderbilt and elsewhere in contributing significantly to the final product. Second, I am delighted because, as the Greeks say, we are patriotes. And, while I appreciate George's observations with respect to some of the fortunes of our Hellenic compatriots in this city over the last year, as one of the few original members of the White House Enemies list — (Laughter.) — I think you ought to know that so far as I am concerned, and speaking as the Dean of the Greek Bloc in the Congress of the United States — (Laughter.) — Spiro Agnew is a Turk! (Laughter; applause.)

I am going to try to offer some contribution to the discussion today from the perspective of a practicing politician. Indeed, as I remarked at dinner tonight, I began my day by voting at six o'clock in Indiana in the primary, and then going off to Gate 4 at the South Bend Bendix Plant to shake hands with some of my brothers of the United Auto Workers for half an hour before getting on the airplane back here. So I am a politician, but also a legislator who has been sitting on that Committee of the House of Representatives with chief responsibility for writing education legislation.

Let me say a word first about the context of the work of our Commission, because in 1972 Congress approved the Omnibus Education Amendments, which contained a broad range of provisions, not all of which affected postsecondary education. Some provided for the establishment of the National Institute of Education, in which I have a deep interest and which I think is directly relevant to our discussion tonight, and others provided the Basic Opportunity Grants program and the general institutional aid program, making this legislation a really significant advance in the field of higher education in the United States.

But I think that for our purposes here tonight, and I believe for the long-run future of American postsecondary education, it may well prove to be the case that the provision of the statute that authorized the establishment of a National Commission on Financing Postsecondary Education will be seen to be as important as anything else that our Committee did.

And I only offer as an aside the observation that in the last several months and the last few years we have seen the publication of a variety of reports from a number of commissions — the Newman Commission Report, the Final Report of the Kerr Commission, the Carnegie Commission on Higher Education, the Report of the Committee for Economic Development, the Report of the National Board on Graduate Education. And now here is our Report of the National Commission on Financing Postsecondary Education.

In my judgment the National Commission report is not at all at odds with the other reports but is, rather, representative of a different thrust in seeking to understand the role of postsecondary education in the United States.

The Commission, you will recall, was a 17-member commission, 13 appointed by the President, four from Congress, two from the House, two from the Senate, one of each Party.

Now, why the National Commission? I think the answer is fairly straightforward. Members of Congress who worked closely on the Omnibus Education Amendments of 1972 felt enormously frustrated at our failure to obtain from the higher education community in this country what we felt were thoughtful, reasoned analyses that could have enabled us more effectively to deal with the issues with which we were wrestling, and in particular with the issue of the appropriate formula for the provision of general institutional aid. We were, to be very blunt about it, mightily distressed by the failure of the American academic community to pay sufficient serious intellectual attention to the economics of higher education.

To use one example: most of you in this room are aware of the several reports of recent years contending that many of our colleges and universities are in deep distress. But when our Committee in the House of Representatives attempted to find a definition of "financial distress" or even of "financial need," our inquiries fell on stony ground because there are too few commonly accepted standards of economics in higher education. And, while simply to state the problem is not to solve it, in my judgment educators must appreciate the dangers for the future financing of higher education, particularly so far as public monies are concerned, in the continued absence of more systematic study of such problems by the scholars.

Therefore, those of us who sat on the National Commission worked to fashion not so much a list of laws that Congress ought to pass to help postsecondary education in this country. Rather we set for ourselves what in my view was a far more formidable and im-

portant task, that of developing an analytical framework within which all those who have any responsibility for making decisions about financing postsecondary education — Congressmen, Senators, governors, state legislators, administrators — can more soundly, more rationally, if you will, make their judgments. In short, we attempted to build an intellectual construct for looking at postsecondary education and to do so from first principles. So this was hard work.

The first thing we had to do was evolve a definition of postsecondary education. We agreed, after a time, on what from our point of view should be the objectives of postsecondary education. And I hope that George Weathersby will address himself in his remarks to some of the flesh, some of the substance of our report, because as Research Director of the Commission, Dr. Weathersby played a crucial role in helping us formulate the problems with which we had to deal and then to resolve some of those problems. And I think that he and George Kaludis are both representatives of what I as a politician feel to be an indispensable new breed of education decision-maker in this country, those who have knowledge of the substance of education but at the same time have an appreciation of the policy-making process and the need for rigorous analysis.

After coming up with our objectives, we then had to describe the operation of current patterns of financing postsecondary education in the United States and next to assess the impact of those patterns on achieving the objectives we had stipulated. And, because Congress had specifically mandated a study of financial distress, we did a chapter on that subject.

But, to reiterate, the heart of our report was our effort to develop a framework for analyzing policies for financing postsecondary education. So, if you look at our report — and our report is hard going, it is not easy work — it is both an explanation of our analytical approach, which we call an analytical framework, and which we believe to be applicable to federal, state, and local levels of public decision-making as well as an application of this analytical framework to the determination of national policies for financing PSE. Our analytical framework consists of the linking of ten major elements, to which I hope George will refer.

We were not at all unaware of the pitfalls of attempting to quantify a lot of factors which we realized were not easily susceptible of quantification. And I know also that even expressing an awareness of the need for a more rational effort to link educational objectives to financing policy often raises the hackles of university administrators and teachers who commonly — I have found in discussing this matter — and inaccurately, charge the authors of such admonitions with wanting to quantify everything in sight. We did not recommend applying a slide-rule to the world of postsecondary education, nor did we ignore the issue of quality and the need to exercise judgment.

To reiterate, our Commission did not suggest that we can measure all the problems of American postsecondary education with a ruler or a computer and then read the printouts to know what we ought to do. We proceeded, rather, on this assumption, that with respect to shaping policies to support the institutions that advance and incarnate reason in the American society, we require a more systematic, a more rational, if you will, effort to apply reason.

One of the persons who helped us a great deal was Bob Andringa of the minority staff of my Committee, the Committee on Education and Labor. And he put it very well, I think, in remarking on the rising insistence on the part of Congressional policymakers for more accurate data and more reasoned analyses from higher-education people. Says Andringa: "Did the intellectual community which first held the magnifying glass over tax inequities, industrial polluters, excessive defense expenditures and racial discrimination believe their own campus strongholds would forever excape similar scrutiny?"

I hope that you will not assume that the two Georges and I and other members of the Commission and our staff concluded that our product represents the last word on this subject. Rather, I think it is accurate to say that we hope that our report will mark the beginnings of a dialogue across the country.

I would conclude by saying that I speak as one who has been called a big federal spender for education as well as for a number of other programs in the domestic sector. But I think I have some sympathy with those who warn against the view that the fate of universities in the United States depends solely on who sits in the White House and who warn against the argument that only federal money will solve all the problems of American postsecondary education. Obviously the well being of postsecondary education depends on factors other than whether or not a friend of education is President. On the other hand, I hasten to add that any enterprise as large and complex as American higher education particularly, and postsecondary education generally, will in large measure be shaped by the nature and the amount of the public support it receives, particularly from our national government.

And, while the case for adequate support for our schools and colleges and universities may be self-evident to you and me, I think you would agree, to put the point as gently as possible, that not evervone shares that faith.

And, therefore, Mr. Chairman and ladies and gentlemen, in my view, we need, if we are to justify increased expenditures on education in this country at every level, the most thoughtful, the most reasoned, the most honest analyses and the most telling arguments and evidence about education that we can muster. And it is to provide a framework for making such judgments about the financing of postsecondary education that our Commission labored mightily for a little over a year.

KALUDIS: Thank you, Congressman.

George.

GEORGE WEATHERSBY (Graduate School of Education, Harvard University): Thank you, George.

I would like to follow John Brademas' example and be brief and succinct. Unfortunately, he kept adding items to my list. Maybe that is the prerogative of he who speaks first.

I came to Washington in the fall of '72 as a White House Fellow and was first assigned to the State Department, which was not quite as lively as it tends to be now. After being there about a month, the Secretary of State, a gentleman you all remember, Mr. — um — um - Rogers — (Laughter.) — said Why don't you come talk to me? I said, I'd love to. I arrived, he said, "I've read your biography and I see you're from the University of California. I'd like to ask you a question. Why didn't my daughter get tenure?" (Laughter.) And I said, Gee, I really don't know. I didn't know you had a daughter and I didn't know she was at Berkeley. (I saw that I hadn't done my homework properly.) He said, "That's all right, I've got an assignment for you that I think will really fit into your training. I would like you to be the chief staff member on the Cabinet Committee to Combat Terrorism." (Laughter.)

I don't know if he thought being at Berkeley had some special skills involved for doing that. (Laughter.)

Maybe the fact that our office was just a stone's throw from the Berkeley campus had something to do with it. (Laughter.)

I would like to note both a difference in the pace of activity between the Department of State and the Commission and a difference in the level of intellectual activity, largely stimulated by John Brademas and others, that brought about what for a year of my life was one of the most impressive, stimulating and exciting times. Living in a pressure cooker, I had a feeling I must have aged five years and at least gained that many pounds, but it was an experience that I certainly will treasure.

As John indicated, the results of the Commission were not so much a product as a process. I think that this is very important, because it was a conscious decision; it wasn't that we waited until the end and then decided that we would settle on a process. It was a conscious decision from the beginning to construct a process.

Don Leonard, the Chairman of the Commission and not a person who has been intimately involved in education, used an analogy that I found very amusing later, that is, a keyboard. We were trying to design a piano keyboard on which many different tunes would be played; instead of trying to write a national anthem, we were trying to design a keyboard. And that turned out to be a pretty good analogy to what we ended up doing: putting together both a framework that would enable individuals — you, members of the community, members of various kinds of interest groups here in Washington, of the Administration, and of Congress — to formulate a variety of financing alternatives and to evaluate those within a common framework, and a language, a set of data and a set of relationships among those data that people could basically agree to. Then the parties involved can debate what the appropriate policies ought to be. That was a very exciting process to be involved in.

We really shouldn't oversell the process itself. It is a very logical attempt to apply reason and a set of definitions in a common way to the financing of postsecondary education.

Once things get labeled and cast in computer code, they take on a life all their own, which is often wholly inappropriate. What we were trying to do was just to codify logic, and nothing more than that.

The ten steps of the process that John alluded to, I will condense down to several fewer than ten. But they began with the question of objectives. Instead of beginning with what kind of financing program should we have, we started at the other end, asking what kind of objectives are we trying to achieve with whatever kind of financing program we have?

It was not nearly as easy as we thought to sort out both a statement of objectives which were meaningful, made sense, and hung together, and to identify a set of measures that said whether or not we were attaining those objectives or whether we had much hope of attaining those objectives.

A second, parallel, stream of analysis was the development of a categorization of financing programs. It came as a surprise to me, and I think to other members of the Commission, that there were something like 385 to 390 different federal programs that are financing postsecondary education. They had never been added up before. The annual OMB catalog lists a total expenditure of about $5 billion. When we added up the bits and pieces, we came up to over $9 billion.

Eighty per cent errors even in OMB are a bit unusual. Prior to our analysis, there just was no notion of the size of the system.

One can't deal with 385 or 390 individual federal programs, plus all 50 state programs and the variety that exists there. Consequently, we developed a classification system on financing, establishing categories of delivery mechanisms and recipients, creating a vocabularly and a coding structure that enabled us to put all of these various financing programs into a common framework.

Then we asked, How do these two parallel paths intersect? That sounds like a contradiction in terms, but we were concerned with the interrelationship between the kind of decisions that states, the federal government, private sources, institutions, and students make in the provision of financial resources and the resulting accomplishment of objectives.

It was at that point that we drew upon a very large data base that was compiled, a set of research that had been done, of which many of you have been a part, into how institutions and individuals respond to various kinds of financial conditions, and from these data and research findings to try to estimate, as best we were able to, what the impact of different kinds of financing mechanisms would be on the measures that would describe whether or not our objectives would be attained.

We were concerned with providing more information that would be a basis for judgement, not a process to replace the kind of important political judgment and intuitive judgment that are essential at every level, at the state, at the federal, at the program, at the institution, at the individual level.

We were trying to put together a structure that would interrelate in a simple and understandable fashion financing decisions, institutional decisions, student decisions, and to trace through what would be the implications in terms of the attainment of objectives.

The results that are reported in our Report (*Financing Postsecondary Education in the United States*) and in the staff reports that are now in press focus almost exclusively in the quantitative terms on student objectives.

This, again, was a conscious decision, not indicating that the institutional objectives were not important; in fact, very explicitly indicating they are equally important. But we are into a dilemma. One is the question of the availability of appropriate measures and data. The other is the acceptability of appropriate measures and data. There is more information currently available and acceptable which describes the extent of student choice than data which describe the extent of institutional excellence or institutional independence.

Because of the available and acceptable information, the work that is reflected in the Commission's report focused on student objectives, but with full awareness of the existence and importance of institutional objectives.

What about our findings? One of the things that we were aware of from the very beginning was the expectation of many people that the Commission would endorse one or more particular financing programs. There was an equally conscious decision right from the very beginning that that probably would not be the most effective thing for the Commission to do.

I should let John and George speak for the Commission and I will just indicate what kind of substantive findings we had.

One of them was that postsecondary education, as currently envisioned implicitly in legislation and in terms of the eligibility of various individuals and institutions for the current array of federal programs, is really much larger than most of us previously realized. In postsecondary education, we are talking about over 10,000 institutions, over ten million students, over $30 billion expended annuully. And that was two years ago. That was bigger than we thought. You and I are used to talking about 2600 institutions or 2950 campuses and don't keep in mind the 5,000 proprietary schools whose students are eligible for receipt of federal funds, and the other 2,000 noncollegiate institutions which are also in that situation.

One of the things we attempted to do was to array a variety of financial plans. We began by looking to the Education Amendments of 1972, the landmark legislation that John referred to, and asking the question. What would be the likely impact of that if its major provisions were funded much more fully than they are now?

In addition, we attempted to price out the effects of the Carnegie Commission's proposals. They gave some indications of where they thought prices and support ought to go, but no indication of what it would cost or what the impact of that would be.

We tried to trace through the implications of the CED, the Committee for Economic Development. They, in turn, gave some ideas of what costs might change and what kind of financial aid might be provided, but no idea of what the implications of that would be, and what numbers they provided were for 1969 while while we were concerned about 1977 and 1980.

In addition, we examined five other alternatives that ranged from increased tuition to zero tuition in public lower division, from more institutional support

to less institutional support, from differential prices to nondifferential prices, and including a variety of different kinds of categorical and general assistance programs.

One of the main thrusts of the Commission was to lay out in a comparative table the same set of measures which indicate the degree of inpacts of these alternative financing policies. A second set of tables compares, at the same level of public funding, the impact on these common measures of the different methods of delivering funds.

These analyses occupy about 40 pages and a number of tables. I won't try to summarize them here. I will be happy to respond to questions, if you would like. But the two key parts of the analysis were that we used a common set of measures and a common level of funding to see what difference it made to deliver money in different ways.

As John also indicated, we looked at the question of financial distress and, using the best data that we had available, tried to show what were the causes, nature and extent of institutional financial distress. We reached the conclusion that, while there are reasons for concern, and visibly so in certain sectors where the closing rate is quite high, and while the increase in student aid deficits and financial operating deficits are quite high, financial distress seems to be more of a problem of the direction of change rather than the absolute magnitude of financial difficulty. There is some concern that the direction of change would exacerbate financial instability as institutions strive to reach the access and choice objectives by increasing their student aid deficits. There was little evidence that the direction of change will be towards financial health.

One of the things we looked at was the effectiveness of need based student grants, a program, as you know, which has been expanded greatly at the federal level and at the state level. We looked at what the marginal additions would be to enrollment and what the marginal additions would be to cost under a need based student grant program. This analysis I think, may be one of the major contributions of the Commission's study.

In the past, the basic assumption in many quarters has been that all of the recipients of a student grant program will be new people attending postsecondary education for the first time. We estimated that if a need-based grant program were funded at $1.2 billion a year, that would have an impact of increasing low-income enrollments by about 6 per cent, which would increase over-all enrollment by something less than 4 per cent, and the cost per additional student would be on the order of $3,000 to $10,000, depending upon which additional students we want to count.

What we did was to look at the effect of price changes on the demand by students to attend postsecondary education. I think the consistent treatment of price changes, the effect these changes have on student demand and tracing through the change in student demand on institutional cost is one of the real contributions of our study. We tried to be quite consistent and to treat all alternatives equally, using the same parameters.

Finally, there is the question of institutional supplements. Just to cover the induced institutional costs of student access, we estimated the institutional supplements which would be needed if they were provided as following grants for individuals who were receiving the need-base student aid. We came up with a range of estimates in the order of $60 to $130 per student receiving financial aid. That, as you know, is a factor of 5 or 10 less than the currently proposed levels in legislation.

This result does not argue that institutional supplements of greater amounts would not be beneficial. I think all of us who are now in institutions realize that discretionary funds are beneficial. Our analysis indicated how much of the additional amount would be absorbed in the additional cost associated with the grant stimulated increase in student enrollment.

Let me summarize by saying two things. One is that I have given you a very brief sketch and I would be happy to respond to comments so that we can focus our discussion on topics of your direct interest.

And, second, the conclusions of the Commission have to do with process and with general framework rather than specific financing recommendations — and that is why I have dwelled on those much more than on the specific conclusions. It was our intention to create a consistent process that was orderly and logical. John Brademas took five days of his Christmas vacation to edit the draft of the final report to make sure that we were as orderly and logical as possible, a contribution that I greatly appreciate. It has been the major commitment from the beginning both to develop a common framework, a common language, so that we can talk with each other and with other individuals who are active in the field of postsecondary education and to agree on a process of evaluating alternatives so that we can argue about the values, the objectives, the purposes, rather than the basic facts.

Thank you, George.

KALUDIS: I would like to attempt to talk about the strengths and weaknesses of the Commission's work. And, along the way, you will note that I will inject some personal bias about some of the topics.

First the weaknesses: One could say that the report was too thin. It was a fat report, but it did not

and perhaps could not move in depth to discover the interaction among funders, students, programs, and institutions. George stated it; our focus was on students, student information, student behavior, student response. And we realized throughout this process that there was a multiple dialectic operating — federal/state, private/public, student/institution, differential pricing/nondifferential pricing. You can make the list as long as you want to.

Secondly, as both John and George have mentioned there were no definitive recommendations on a financing model. And I think the expectation was that we would have some sort of crisp proposal such as the CED or the Carnegie.

Thirdly, and something that I have received some criticism for personally and probably deserve, little attention was paid to graduate and professional programs and to the newly legitimized postsecondary definition.

I think all of us realized that we were paying glancing attention to some of these very important factors.

Contrary to what has been said so far, some would say that the report is too data-oriented and not enough attention paid to the gut-level thinking about national priorities for postsecondary education.

It was and is too easy perhaps to assume that the analysis of alternative financing patterns was based on the unit cost approach. Those of you who read Change magazine noted that the editor of that magazine jumped to that conclusion in his editorial on the work of the Commission. He has since been disabused of that notion.

It is altogether too easy, in my view, to sweep the problems of financing postsecondary education under the rug of cost per student by level, by discipline. More about that later.

Another major fault of the Commission's work — and remember I am pointing the finger at myself as well as others — is our failure to recognize the significance of the potential loss of a major base of financial support for students — parental contribution as it relates to the implications of the 18-year-old majority.

Similarly, we did not give enough emphasis to the related question of the expanding use of credit, loans, to finance student costs.

I am sure you could list more weaknesses, as I could. But this list is intended to demonstrate that Commissioners and staff alike know that our work was imperfect.

On the other hand, the Commission Report represents a new direction. From the beginning, as stated, the Commission believed that one failsafe contribution of the effort would be a synthesis of information about postsecondary education. I consider that such a synthesis was accomplished and provides a base for future study.

The confluence of data from various sources provided a stimulus for a macro-mind-set rather than the shrinking perspective symbolized, in my opinion, by unit cost data.

One of the staff reports of the Commission, which will be published, as I understand, is a 950-page document reviewing the 380 or 395, depending on when you look, programs, federal programs, touching on postsecondary education. And as a scholarly contribution, this may very well be one of the most important documents that the Commission will publish.

A second and, I must admit, unexpected synthesizing effect has been the progress made by something called the Joint Accounting Group. Representatives of the National Association of College and University Business Officers and the National Center for Higher Education Management Systems stimulated, I believe, by the Commission, have produced agreements on financial reporting which should reduce the variety of financial reports institutions have to produce. I regard that as an accomplishment.

The Commission's work has also had some positive effect on those agencies which collect data from postsecondary institutions. As you might know, one of the Commission's recommendations is to create an independent agency for such data collection.

By putting institutional financial distress into a broader perspective, the Commission reduced the possibility that financing alternatives would be fashioned around financial distress. In my view, a distress-oriented financing solution could at best be a short-run solution not addressing the larger issues of national objectives, pluralistic support, institutional and program quality.

The matter of uniform cost standards is related to the distress issue. Uniform cost data might be the line of defense needed against wailing institutional officers who are now claiming that financial conditions are quickly transforming streaking from a sport into a necessity. That is, distress could not be justified if an institution displayed a high cost per student.

The matter of uniform cost procedures was a trying one. Some had almost blind insistence for such procedures and they seemed oblivious, in my view, to the limited utility and potential unmanageability of such data. I can imagine the mountains of unread, unreviewed, and unanalyzed data that would arrive in Washington. On several occasions I have told my colleagues — and they can verify it — that I was almost sadistic enough to let it happen.

The resultant recommendations, heavily qualified, lean to the NCHEMS information exchange pro-

cedures methodology, a system originally labeled as appropriate — and which I participated in — as appropriate for internal institutional management and voluntary exchange among institutions and most certainly not as a cornerstone for national policy.

Nevertheless — all this personal bias in place — the Congress had instructed the Commission to make recommendations on cost procedures. The Commission would have been derelict in its responsibility if it had not made such recommendations based on the present state of the art.

I am pleased with the response made by Commissioner Ottina to the Congress on the subject of uniform cost standards. He had a statutory responsibility to do so, and I believe he thoughtfully stated that unit cost data per student by level and by discipline would produce a tendency for institutional management decisions to be made at a central level, perhaps the federal level, in his view and mine, and I think in the view of my colleagues here, an inefficient and inappropriate approach.

The message is: Let the measure fit the means. Cost per student is appropriate as an evaluative tool for programs such as that currently in place for our medical schools, the capitation program. If in fact a financing mechanism is based on that type of approach, money per student, then the unit cost type approach may be very appropriate.

The objective of the analytical effort was to suggest a direction for postsecondary policy analysis. The alternatives studied, which George mentioned, were not an exhaustive list but did cover the spectrum between full public funding and full private funding.

As we worked, the political climate for consideration of alternatives changed drastically. Newman, the Committee on Economic Development, and the Carnegie Commission reported with major recommendations about financing. The latter two especially, with proposals to increase tuition at public institutions, generated an anxiety about the forthcoming report of the National Commission. Would the Commission's Report and conclusions reinforce CED and Carnegie? Associations representing public institutions suddenly took more interest in us. The American Council on Education released a position paper supporting low tuition.

It is my judgment that the Commission did reinforce CED and Carnegie, but only in a limited and carefully qualified way. That is, if access to postsecondary education by students from low-income families is the sole objective to be served, then targeted aid to the students is more effective than general institutional aid and low tuition. Very simple, narrow, and very highly qualified.

The generalizations about financing alternatives stated on pages 308 to 318 of the Commission Report are the guts of the analytical report, and I suggest that you read them.

As I close, I don't wish to leave you with the conclusion that the Commission duty was onerous to me. It was a very challenging time and rubbing against the minds of the two gentlemen on the stage was one of the most pleasurable things that I had to do.

We all know that there were controversial matters involved in the Report. If we talked till the end of the world, we probably would not agree on all of them. I had the pleasure and still cherish the opportunity to have worked with John and George and, all of us having introduced perhaps some controversy onto the scene, I will allow John or George to make any remarks they may wish to before we go further.

John.

BRADEMAS: Thank you, George.

I would just add one other observation, that does not necessarily flow from what any of us has said, but that happens to be a particular concern of mine, which I think you will perhaps, having heard what I said in my own remarks, understand. And that is that the longer I am in Congress, the more deeply I am persuaded that we have to do a much better job than we have been doing to develop linkages between, if you will, the decisionmakers and the thinkers. The politicians have to know more about what you are doing in your world as educational researchers in particular. I have already discussed this need in terms of the particular subject of our discussion here tonight, but I could make the same point with respect to other areas of public policy. And, in turn, you need to know much more than I fear many of you do about how we go about making policy. You need to know more about the process of policy-making.

Let me just cite three instances. I have already alluded to one, which helped give birth to the Commission that George and George and I have been discussing, namely, the problem of getting our hands on the right formula for distributing general institutional aid to colleges and universities.

There is another problem with which I have been wresting, and that is the question of Title I of the Elementary-Secondary Education Act, which since 1965 has been the major federal program of aid to our schools. The problem we have been examining is this: How effective is compensatory education in improving the education of those whose education it is designed to improve? And we have wrestled long and hard with that problem in our Committee. And it has not been an easy question. And that is one reason that my colleague Congressman Al Quie, Republican of Minne-

sota, and I got together on an amendment that we put in the House version of the Elementary and Secondary Education Bill that authorizes several million dollars for a study of compensatory education in this country, not only Title I but state programs of compensatory education.

A third example of what I regard as the need for more linkages between the public policymakers, on the one hand, and the thinkers and the practitioners of education, on the other, is in the field of education of handicapped children.

I have introduced a bill with Senator Harrison Williams of New Jersey, the purpose of which is to provide federal funds to states to enable states to reimburse local school districts for up to 75 per cent of the excess cost of educating handicapped children over non-handicapped children. This legislation is occasioned by the confluence of three factors: one, that the experts tell us that it costs up to twice as much to educate handicapped as non-handicapped children; two, about 40 per cent of the handicapped children in this country don't get the special education appropriate to their needs that they should have; and three, courts across the country are now ruling that handicapped children have a constitutional right to an education.

When you put those three factors together, you have a very serious problem in this country. And I think we have the political steam perhaps to pass a bill.

But my question is not a political question; my question is an intellectual question; my question is a knowledge question. My question is, for example, How do you calculate "excess cost" for the various kinds of handicapped children who must be educated?

How do you define cost, if you are going to use excess cost as part of the formula?

This question, you see, is analogous to the Title I problem and to the general institutional aid problem, and these are three instances of knowledge problems that have the most profound implications for public policy in the real world. Either the thinkers haven't been thinking enough about these problems or, if they have, they have not been effectively communicating their thoughts to us who have to make decisions — or, in turn, we the politicians have not been doing an effective enough job in articulating what we need from you.

I make this comment in order that you should appreciate that from my point of view, you, the people who are concerned about research, have an infinitely more important and crucial role to play in the country than I think perhaps you yourselves realize. It is in large part because I don't think we think enough about what it is we do that I was so strong an advocate of the National Institute of Education.

I will never forget what Lyndon Johnson once told me. And, having been in Congress for some time now, I appreciate it all the more. He said, "My problem is not so much doing what is right; it's knowing what is right."

Well, to oversimplify, I am in the doing business and you're in the knowing business. Yet obviously you have to do and I have to know. But I think there needs to be a good deal more intercourse between these two worlds than there has been.

And that is the only other observation, as the students would say, that I would like to lay on you. (Applause.)

KALUDIS: George.

WEATHERSBY: John is always impossible to follow. There ought to be a rule in Washington that he goes last. (Laughter.)

Let me just share with you some factual information that you might like to know and that is not easy to find out.

One of them is that the Commission assembled a large data base, and that data base is still available to people who would like to use it. Virtually all the files are open. It is currently being maintained in Santa Monica. It will soon, in the next several months, be transferred to Washington and be available on a time share system, where you dial in and the only cost to the user is for transmission and compute time.

To find out more about the data base, you can drop a note to our office, or you can, in the next several weeks, get a copy of the data base directory from GPO.

Basically, the data base includes a series of HEGIS files for the last three fiscal years, to which we have added some coding, putting in the Carnegie categories, the AAUP faculty salary catagories, the USOE Title III Higher Education Act, black college participating categories, and so forth. We have done our best to make the file formats compatible for those three years. Anybody who has dealt with HEGIS knows what kind of an investment that is.

Also there is a series of student information files. A Student Resource Survey file from four states is available. Six state scholarship commissions' complete files are available, and so forth.

In the noncollegiate sector, the Carnegie, Federal Trade Commission, and our own surveys are available. And, finally, the Council for Financial Aid to Education's last two years of data are fully available.

There are about 22 files in total; about 110 or 120 million bytes of data are currently available on a time share system. To my knowledge, it is the largest single data base in postsecondary education, and

it is available to the general public. I thought you might like to know about that.

A second question is that of staff reports. You have a copy of the final report, the red and white one. If you haven't, if you will drop us a note, we will get it to you.

There are several things coming out in the next several weeks: First of all, another staff report on the analytical framework, the data base and the model that gives the documentation and the computer programs.

There has been quite a bit of interest in a number of states in using the same analytical framework for state financing studies. We have written this report in some detail to make it more useful to you; the computer program and user documentation are readily available, if you would like to use that.

There are staff reports on a number of issues that George Kaludis mentioned that were not covered in the final report: the financial implications of the 18-year-old majority and using student income versus family income for the current needs based criteria for student grants; an analysis of student access drawn from Project Scope and Project Talent which tries to estimate the partial impact of financing; an analysis of major tax credit bills that are before Congress and similar ones before states to estimate the actual dollar value which would accrue to families by income group and type of institution, and then a report of our own noncollegiate survey of public, proprietary, and private nonprofit noncollegiate institutions; the first national probability sample that included financing.

That is the collection of items that are currently important and that soon will be available. In addition, there is the report that George Kaludis mentioned on the 385 federal programs. (Note being handed to Congressman Brademas.) John, it looks like you're getting your good news.

BRADEMAS: According to this, with 134 out of 334 precincts, I have 81 per cent of the vote in my primary. I have to find out who that 19 per cent is. (Laughter.)

WEATHERSBY: If they are not disadvantaged now, they will be soon. (Laughter.)

That is the end of my list. I just wanted to make you aware of what information is available and that additional staff reports will be coming out. Those of you who have written in and asked for them, you will be sent them automatically. If you haven't, if you will drop me a note, we will make sure you get them.

That's all.

KALUDIS: Questions or comments.

PROFESSOR PASCHA HUSSAIN (New Mexico State University, Las Cruces, New Mexico): I have a few short questions. One for the Congressman.

You mentioned that this study is the beginning and not the end. Can you tell me what you had in mind for the future? Will it be an extension of what you have done or will it be greater depth to what you have done, or would it be a combination of the two?

The second question — (Laughter.) — is this. George has mentioned the different objectives that you have identified and measured. Have you made any attempt at rating these objectives and establishing an objective function? And if so, what success have you had?

And the third question for George the Greek, lest he think I am discriminating against him — (Laughter.) — Can you tell me what you think would be the main result of this Commission as it would affect financing of higher education? And can you take off your official hat and give me your frank opinions? I won't quote you. (Laughter.)

KALUDIS: If you didn't hear it, the first question, for Congressman Brademas, was that if the Commission, the work of the Commission, is the beginning, what is the end?

BRADEMAS: I would make two responses to that question, two brief responses.

In a specific way I would like to see a good deal more dialogue go on across the United States on a periodic basis on the general subject matter of the Commission's work, on the whole question of how we go about thinking through, how we go about making decisions on, financing postsecondary education.

For example, I could well see a conference held every couple of years in the several HEW regions of the country that would involve state legislators, people from the several higher education and postsecondary education associations at the national and state and regional level, regional officials of HEW with responsibility in the PSE field, administrators, particularly researchers and analysts like yourselves who work in these fields, with some sort of specified agenda on some area or areas of discussion. Then the work of the Commission would not remain bottled up in that red and white report but would become the subject of ferment and conversation across the country.

The second point I would make to the questioner is, of course, that the Commission itself no longer lives, at least for the most part. Our work, as it were, is basically completed; it is not an ongoing, permanent enterprise.

So, if you want an answer to the question of what happens now, I would have to throw it right back to you and say, "That all depends on you." Fundamentally, what I hope happens is thought, which is what you ought to be engaged in.

KALUDIS: Thank you, John.

The second question related to the objectives, actually the measurement of the objectives adopted by the Commission and whether we had done any rating as to the impact or relative effect of these objectives.

Is that correct, Pascha?

PROF. HUSSAIN: Yes.

WEATHERSBY: That is the simplest one. The answer is no. (Laughter.)

KALUDIS: You can't get off that easily. (Laughter.)

WEATHERSBY: You ask a straightforward question and you get a straightforward answer.

No. In fact, there was a conscious attempt not to rank objectives for a number of reasons. One of them is that, as I indicated, some of the objectives were much more specifically defined in terms of measures and criteria, and if you start weighing objectives it will give predominant weight to what is measurable, and you end up funding what you can measure rather than funding what you think is important. I think that was realized and people set that aside.

Part of it, though, is that at this stage of the game we weren't trying to do any optimal control or optimal estimation approaches to federal planning. What we were trying to do was to say "Here is a vocabulary for thinking about objectives." When you listened to the debate and talked with people around Washington a year and a half ago, you didn't hear that kind of talk in very many quarters about what we meant by objectives and how you would know if you had attained those objectives, and the vote was really, Are you in favor of providing money to students or are you in favor of providing money to institutions? You might reply, "Well, what are you trying to accomplish?" And the answer was, "I am trying to give money to students or I'm trying to give money to institutions." And if you asked, "Well, why?", that was about where the conversation would end.

I don't know if John might want to comment on that.

But one of the things we were trying to do was to develop a vocabulary for answering the question "Why? What are you trying to accomplish?" both with respect to the nature and quality of the experience the students might have is postsecondary education and the nature of quality of services that institutions might offer.

So we are really at a much more primitive stage than being able to formulate some formal objective function, we are really at the stage of developing a vocabulary, not yet really fully measurable and certainly not yet measured.

KALUDIS: The third question, which isn't so simple, is let your hair down and actually say what you think the impact of the Commission Report, and of anything else, I guess, for that matter, will be on the financing of postsecondary education.

Well, the first fact that we have to recognize is that, what?, two, two and a half years ago, with the beginning eligibility of a proprietary institution, or students — better said, students at proprietary institutions for federally insured loan program, began a — I started to use the word "dilution," but that is pejorative, I didn't really mean to say that. But the syrup isn't going to go quite as far on the pancake with the — with more people eligible.

At the same time, as Mr. Brademas has mentioned and as Mr. Weathersby has mentioned, we have been in a period, a protracted period, for the last few years of looking to the federal purse for the bailout.

The Commission Report, many thought, or the Commission itself, was put in place to disabuse people of that notion. And, although I didn't have that as a prejudice to begin with, I believe we did, to some extent, and I think probably rightfully so, that we have been under a very grand delusion that somewhere down the track the Lockheed notion, or however you want to put it, or something would occur to pull us out.

Well, the plain fact is, for the traditional sector of higher education as we move into the early '80s, we have overcapacity, and there is going to be shrinkage of institutions and unless we can do better in defining the so-called new markets, the open university, a recertification of professionals and what-have-you, — These are excuses in a way. I am sure we can find new things to do. But the fact is that we have too many institutions and too many places for the students who won't be there in the very near future.

That is different from, in my view anyway, the panicking and saying that we are all going to go to hell very quickly. I don't think that is going to happen. I think there will be an adjustment. There will be less money. And the competition — and another cliche, we say that we are competing with other programs. I'm not sure that that will be the case. I believe we are getting some reasonable proposals now out of places like the National Board for Graduate Education on levels for fellowships and trainingships that ought to be maintained, and I believe that kind of thing will be listened to by people like John Brademas and others. It is not pie in the sky. And if this kind of dialogue continues, I believe we will see a leveling off or, if you will, a bottoming out.

The BOG program, if fully funded, as people from institutions like my own will recognize, isn't that much of a boon. The first year, if you will forgive me for being parochial, the first year of the BOG program meant $17,000 in scholarship money to Vanderbilt, and

I am sure there are other institutions in the crowd where that kind of thing occurred.

I can't see that helping us a lot. I can see it helping other kinds of institutions, and perhaps it will allow a shift of funding from the Federal Government — of state funding to the Federal Government in support of students at perhaps two-year community colleges, with the prices raised in order to qualify for higher grants and allow some state money to be freed to support private-institution medical education and professional education.

There is going to be a checkerboarding, I think. The monies aren't going to be that much different. There will be fewer institutions of the kind that we represent, and there will be another kind going after a slice of the pie, which will make your job and my job a lot harder.

Are there other questions or comments?

A MEMBER: My question is directed to the Congressman.

It is increasingly more difficult to obtain information about the population of handicapped and/or disadvantaged people, culturally or economically, or whatever-have-you. Now, if institutions have difficulty getting that information and then, in turn, refuse to turn it over to researchers to try to determine what the needs of these individuals are, it would be most difficult, then, to know what the total cost, including the excess cost, would be.

What is the Congress doing to make it possible for these institutions, first, to get the data and then to give it to those who know what to do with it?

BRADEMAS: I'm not sure that I necessarily accept or reject the premise of your plea. You asserted that it is difficult to get the information. Why is it so difficult?

MEMBER: Because —

BRADEMAS: We in Congress are not withholding it from you, I hasten to tell you.

MEMBER: Apparently there are some legal entanglements in trying to get — At least this is the case in Wisconsin — in trying to get information about — information to determine what the population of the handicapped individuals is, and institutions refuse to classify them.

BRADEMIS: If that is the case, I don't think you need necessarily repair to the Congress of the United States to resolve that problem. You ought to be able to solve that problem within the confines of the State of Wisconsin.

I don't think Congress has to pass a federal law to make it possible for you to find out data.

KALUDIS: The gentleman over here.

EDWARD H. LYELL (Colorado Commission on Higher Education): I would like to know, possibly, or most likely, from Dr. Weathersby, what work has been done by the Commission on looking at the elasticity of the supply curve and using that with this unit cost information in the way that they have the demand curve.

WEATHERSBY: The question was have we looked at the elasticity of the supply curve with the unit cost information and used that in conjunction with the demand curve?

That sounds like a simple question maybe, but it is a complicated answer. Let me just give you a brief one, and then if it is not satisfactory, perhaps you could see me afterwards and we could follow it in person.

One of the things that we were concerned about was the supply side, and particularly how institutions would respond to various kinds of stimuli, mainly financial, to increase their willingness to accept students.

The situation that most of us perceive, with perhaps the exception of a number of elite colleges that have excess demand, is that we are suffering from a condition of excess supply. So that would lead us to some speculation of what that might be.

Basically what we did do was to draw upon some work of estimating production functions, not using unit cost technology, but using other types of technology, to try to get some idea at one stage of our analysis of what the likely resource impact would be of changes in the level of activity of an institution.

That is not a direct answer to your question, but it is more correct of what we have done. And if that doesn't satisfy you, I will be happy to talk with you later.

Is that okay?

LYELL: Yes.

KALUDIS: Over here on the left.

A MEMBER: Many of us are especially concerned about the recommendation for an independent statistical center. A) How might it differ from NCES? And B) How has it been received by Washington sources? And C) What is going to happen to that proposal?

KALUDIS: I'll take part of it, and maybe George will take the rest.

We had some problems during the tenure of the Commission in securing data. Now, in all fairness to those involved, there were questions of confidentiality, restrictions on data placed by institutions, some of which probably are represented here in the room. And I guess it was what? — Maybe six months? —

WEATHERSBY: Yes.

KALUDIS: — into the work of the Commission before we had the financial information with which — which we needed to use in our analyses.

We all know — And I know it has been

improving — that there is a matter of — a problem of real time availability of information. Now, there is no panacea, and an independent agency would not necessarily have a faster delivery time or processing time than NCES. But one of the notions that went around the Commission at least was that there should be some improvement in the real-time availability of information, especially as represented by the needs expressed by our Congressional delegation.

There are bits and pieces of information that are in our data base, the Commission's data base, now which are not routinely collected in the process administered now by NCES, and it was thought that it could be better done through some independent agency.

The proposal is essentially moribund, I would say, unless somebody in the Congress or the Administration cares to do something about it.

I will let George fill in further, because he is certainly much more intimately involved with this.

WEATHERSBY: In the Commissioner of Education's reply, former Commissioner Ottina indicated that he was opposed to the creation of an independent agency and that he felt all of these questions should be resolved in the normal budgetary process of the National Center for Educational Statistics.

That should come as no surprise to you.

How it should differ falls out. I think into three areas. One is the question of scope. Right now the largest single program supporting postsecondary education is the GI Bill. NCES doesn't collect a scrap of information about the GI Bill.

The second largest program supporting postsecondary education is Social Security Survivors' Benefits. NCES doesn't ask many questions about that either.

And then you get into areas of direct institutional support, largely through contracts and grants, and you are into NSF and AEC and NASA and NIH and NIMH, all of which are outside of the scope of the data which NCES regularly collects.

Then there is the question of the fiscal operations reports. Any of you who have to deal with those know that these never get back to the program officers.

Therefore, there is a question of scope; the specific scope of NCES, while technically and conceptually much broader than currently administered, by the nature of its organizational location and by the nature of the political pressures brought upon it, is forced to be narrow. One of the surprises that we brought to the scene was the breadth of scope of postsecondary education. There is no data collection, integration and reporting agency that deals with that kind of scope.

The second major area is the question of legality of access that George referred to. There is currently a federal law prohibiting the interchange of information between agencies at the level of the individual reporting element, which happens to be institutions for most of what you and I are involved with now. Thus, it is technically illegal to exchange HEGIS data. Don't tell anybody; we'll all get arrested.

But that was the argument held up, not against confidential data but about individual institutional data. This is a requirement which probably came out of concern with the IRS that the only kind of data that could be made available on inter-agency exchange should be aggregated data.

When you start aggregating into various categories and then want to do an analysis by state, you find out that you just can't do it. So one of the concerns is to create an agency that would have a broad enough scope that it could do that kind of analysis without getting caught in the NCES dilemma.

The third area is a question of advocacy. NCES data, as you know, are not neutral. Data very much are instruments of advocacy. The concern we had was that data should be readily available to people who might advocate different sides of the issue. We thought that wide utility of national data was much more likely to happen if they were at a relatively high level of visibility than if they were kept several levels down within an executive agency.

So those are three reasons that were presented for an independent data collection agency.

KALUDIS: I believe Mr. Brademas has a comment on that issue also.

BRADEMAS: Only that I believe that one of the members of the Commission, Senator William Hathaway of Maine, has proposed in the Senate the establishment of an information center along the lines of the one to which the questioner made reference.

Whether it will go much further than a proposal, it is now difficult to say.

KALUDIS: Mr. Curry.

DENIS CURRY (Washington Council on Higher Education): Not to at all downgrade the efforts and results of the Commission — You know what that means.

KALUDIS: It mean's you're going to.

CURRY: That's right. (Laughter.)

In a way, yes. You know, it seems to me that when the Amendments were written, it was a question of how to. There were struggles in the Congress; Mrs. Green was advocating one position, other people were advocating another position, on how to provide federal assistance.

Now it seems more of a questions of whether. Maybe the problem will go away. Maybe institutions will kind of dissolve into dust and maybe a BOG program will somehow escape administrative restric-

tions so that it will become effective; maybe work/study will stay alive, maybe EOG will stay alive, maybe banks will start lending money under the FISL program.

But in a state setting we are beset with problems of not knowing, in fact having very little knowledge about, where the Federal Government is going. In fact, we are doing all kinds of contingency planning. In fact, we have just passed a state work/study program on the anticipation that the federal work/study program will go belly-up.

KALUDIS: You will probably reinforce that decision.

CURRY: Yes. You know, it's real hard to plan.

Now if it's a question of data, we will provide it, if the lines are there. And I think the work of the Commission has been good in establishing a data base.

The fact of the matter is that there was an anticipation when the Amendments which established the Commission were passed, there was an expectation that it was a question of whether — or a question of how. Now it is a question of whether.

From a state point of view it is really important that Congress come down on one side or the other of the issue and either say No, we haven't got an interest except in special-purpose grants or except in some type of student aid, or else say Yes, we're in the business. Because at the state level we are just caught in betwixt and between, with costs rising and all the other factors that are — you know, that you have probably faced in all of your discussions.

And, quite frankly, this is the thing that I was most disappointed in in the report, is that it gave us at the state level very few clear guidelines.

And any of you, all of you who are really well prepared to speak, can respond to this probably a speech. But at least it's a question of Hey, what's up? What's coming off and what can we expect?

KALUDIS: Actually this is a commercial for Denis's program which will be later on in the meeting. (Laughter.)

This is done by other TV networks and other media.

I think Congressman Brademas would like to respond.

BRADEMAS: Yes. I am not terribly moved by the eloquent pleas of the gentleman who just put that question.

Whoever told you that you had a right to expect certainty in this world?

I think you are completely wide of the mark — and I am responding very candidly and rather brusquely, in order to make a point, obviously — when you charge this Commission with having failed to solve your essentially political problem. You're not talking about an intellectual problem; you're talking politics.

We wrote, in my view, a perfectly sound law in 1972, a law with perfectly sound provisions in respect of, for example, the basic opportunity grant program, with a perfectly sound general institutional aid program. The reason we don't have money for these programs is no fault of the National Commission on Financing Postsecondary Education. It is because a lot of people in this room, to be very blunt about it, voted for a man who wasn't much interested in education and put education very low on his agenda of priorities.

And the only way you are going to cure the kinds of problems that you have just been raising, which are very serious problems, I am the first to agree, is to bring about a change in public policy attitudes on the part of the President of the United States and on the part of Members of Congress. And you will find that we in Congress, at least in the present Congress, have some sympathy in moving in the directions which you suggest. It is we, after all, who have been inflicting more BOG money on the Administration; it is we, after all, who have been preventing the Administration from eliminating the National Direct Student Loan Program and from eviscerating other student aid programs.

But that is politics we're talking about here; that is not the kind of effort to which we on our Commission were addressing ourselves. We were sitting there with another hat.

Now, if you really want to respond existentially to the problem you have been talking about, you are going to have a great opportunity on the 5th of November. (Laughter; applause.)

KALUDIS: Denis, let me just add two things.

First of all, I could infer from your comments that the Report of the Commission might have been viewed as a rehash of the Green, Quie, Pell — whatever names you want to put on it — debate in the Conference Committee. And one might mention the results of the Commission as to whether the expression of direction in the '72 Amendments was overturned by the work of the Commission. The answer to that is no, it wasn't, that I know of. Nor was it fully supported. I mean it is still there and I think what has happened is that it is going to be tested. And if more money goes into it, as is planned, maybe somebody studying this two years later will know whether our response, our predictions, were accurate.

The second thing is that, as we learned earlier tonight, congressmen get elected, every two years. And the one thing that we can count on is that the directions are going to change. And, further, the best we can hope for, in my opinion, is one plea of the Commission, as other reports have also included, that if directions change, let's let it off a little bit easier

than we have before so that contingency planning can be done and so that if a program has priority within a state or within an institution, resources might be put together to keep it going.

I can't see, in perpetuity, some commitment for a college work/study or for a Title III or whatever program you want to mention. And I don't think you do either.

CURRY: No, George. I have got to agree with you on that. Although the Morrill Act has stood for a long time.

KALUDIS: What percentage is it of your expenditures?

CURRY: I know. I know. But it is the idea, and I think I have got to reinforce what you say, that the more planning and the more phasedown or phaseup, the better.

And, you know, I wasn't — I am not really here taking shots, because I think there is a lot of good work that was done. And maybe I had just better sit down and shut up.

KALUDIS: Okay. (Laughter.)

Yes, sir. The gentleman in the front here.

ROBERT CLARK (University of British Columbia) As a Canadian I would like to ask a question to Dr. Kaludis and Dr. Weathersby, which I expect will be exercising a number of people here.

I am addressing this to you in your capacities as individuals, not speaking on behalf of the Commission.

Dr. Kaludis, you said there are too many institutions of higher education in the United States. And Dr. Weathersby agreed with that. That suggests that there is likely to be a diminution in the number.

I would like to ask: Do you anticipate that this diminution will be simply in terms of the number of private institutions or do you expect also a diminution in the number of universities, public ones, public universities? Do you expect to see a diminution in the number of colleges?

Would you comment on that general theme.

KALUDIS: I hope that the diminution will be of all kinds, having a vested interest of my own.

We can see it — Although the Tennessee Legislature came close to passing an inane act about coeducational dormitories, they were wrestling with the problem of overcapacity of institutions of higher education, and, as legislatures are wont to do, passed an act to create a new institution — two of them, as a matter of fact. But this didn't solve the problem in anyway. There are community colleges in Tennessee that have dropped one-third or more in enrollment over the last year or so and are just not going to make it if things continue that way.

What I hope will happen — And there is certainly no guarantee of this, in the Curry line — is that public policymakers will understand that it is not just the nongovernmental institutions, public as they are, as well as the governmental institutions, which should take the brunt of this reduction in demand.

I think the evidence so far, however, is that these are the kinds of institutions that are moving out of the picture.

In time, I hope that there will be some, as I said, enlightenment that will prevent that from happening. There is no guarantee. And it may be that it will be just private, or nongovernmental schools, to say it better, which will go out of business.

George.

WEATHERSBY: I am always saddened by personal failure, and in this case the apparent failure to communicate accurately saddens me even more, because my personal views are exactly the opposite of what you assert they are. And that is because I am even more of a heretic than you probably implied that I am.

I think what is happening is not the coming about of a steady state, which, for those of you who study archeological phenomena, just precedes the Ice Age, and by analogy maybe we should identify a few dinosaurs. But I don't think we are in a steady state at all. I think we are in a rapidly growing, expanding state in postsecondary education.

To give you a couple of ideas, we were talking about 2900 campuses and about another 7,000 in the noncollegiate sector. As you move outside of that into the adult community, you are talking about an additional 66,000 institutions.

What I think we are seeing is a change in composition, not a change in absolute magnitude.

It is a long topic which I would be happy to chat with you about. I have done some work in sorting out the numbers in the last few years on that, and, to just give you a couple of figures that expand my mind, the number of adults currently enrolled in non-degree credit courses exceeds the number of high school students in America by about half a million students, 15.7 million versus 15.1 million. The rate of growth in the adult population participating in postsecondary education is better than 7 per cent a year.

When we had that rate of growth in the youth population, we called it burgeoning growth, explosive growth, and demanded new campuses all over the map. We are currently having a participation rate of people who have some college or have completed college that exceeds the participation rate of 18 to 24-year-olds.

I think we are facing a very different world from that of the people who are giving you the gloom and doom of steady state. And it is the gloom and doom of steady state that lead to the conclusion that we ought to shut down large numbers of institutions.

I am personally quite hopeful of a very different

world, not because it is changing as rapidly as the expansion from 2900 to 10,000 to 78,000 implies, but simply because we are opening our eyes and seeing what has been going on in our institutions for a long, long time.

Tom Crooks, who directs the adult programs at Harvard has an enrollment of over 5,000 students. That is the same size as Harvard College. Harvard doesn't report the additional 5,000 to anybody because nobody asks them for that number. They ask them thousands of other numbers, including the unit cost of toilets. They don't ask them about adults. That's fascinating. It's also wrong, in my opinion. So I don't agree with your assertion and I don't want that ascribed to my personal point of view.

TAYLOR: George, the popularity of our topic has exceeded what we expected. The hour is late and we had anticipated we would close this around ten o'clock. If there are others of you who have questions that you must ask, would you approach the panel members afterwards, if you can catch them before they get out.

On behalf of the Association, I would like to thank the panel members for taking of their time to provide us with this information on the important study they have done. We do appreciate it. Thank you very much.

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PANEL DISCUSSION ON THE RECOMMENDATIONS OF THE CARNEGIE COMMISSION ON FINANCING HIGHER EDUCATION

Bernard Sheehan, University of Calgary
Robert Harman, Brookings Institution
Paul Bragdon, Reed College
Nolen Ellison, Seattle Community College
Robert Henle, Georgetown University
Robert Wood, University of Massachusetts

CHAIRMAN SHEEHAN: Good morning, ladies and gentlemen. My name is Bernie Sheehan and this is the last General Session of the Forum. This morning's Panel on the Recommendations of the Carnegie Commission on Financing of Higher Education consists of Moderator Robert Hartman, President Paul Bragdon of Reed College, President Nolen Ellison of Seattle Central Community College, Father Robert Henle, President of Georgetown University, and we hope President Robert C. Wood of the University of Massachusetts.

Dr. Hartman served on the staff of the Assistant Secretary for Planning and Evaluation at the De- of Arts degree at Queens College in New York City. Dr. Hartman served as a teaching fellow at Harvard University, receiving his Ph.D. in economics from this institution in 1964. He was a member of the economics faculty until 1968 at Brandeis University.

Dr. Hartman he served on the staff of the Assistant Secretary for Planning and Evaluation at the Department of Health, Education and Welfare and joined the Economics Studies Staff at Brookings in 1969. He is the co-author and author of numerous articles and books. Dr. Hartman.

ROBERT HARTMAN: One of the advantages of having the job of just introducing speakers on a panel is that by sending a long biographical sketch and then giving brief introductions to the panel members, one can raise one's status in the world rather quickly. (Laughter.)

I intend during this session to recognize each of our speakers, who are instructed to talk for about ten or 15 minutes, after which we would like to leave as much time as possible for questions and discussion.

The topic of the Panel, as you know, is a discussion of the recommendations of the Carnegie Commission on the future of higher education, and the members of the panel were chosen in part because they represent different perspectives in looking at higher education, and hopefully we will generate some differences of opinion among them.

Let me introduce, then, our first speaker, Father Robert Henle, the President of Georgetown University. Father Henle is widely known as a writer and thinker on American Catholic higher education.

Before coming to Georgetown, he was a member of the Philosophy Department at St. Louis University and rose through the ranks to become Vice President of that institution.

In addition to being President of Georgetown, he is also Chairman of the Health Services Research Training Committee of HEW and Chairman of the Board of Directors of the Association of Jesuit Colleges and Universities. He also has served on the Washington Consortium of Universities and was President of the higher education group in Washington.

It is my pleasure to introduce Father Henle.

ROBERT J. HENLE (President, Georgetown University, Washington, D. C.): Thank you very much. Ladies and gentlemen. I presume that my perspective is private higher education, particularly the university sector. I would like to say first of all that I do not share some of the optimism that has been expressed recently with regard to private higher education. We all know that private higher education in the last eight years has gone through a very severe financial crunch, which has been dramatized by the fact that a number of private institutions have either given up, quit, gone public, or amalgamated with other institutions.

Some institutions that were running deficits have now balanced their budgets and, as I say, there is a certain amount of optimism that most of the private institutions have survived the crunch.

But I agree with President McGill of Columbia University that we are going into phase two of the financial crunch for private higher education in this country.

The means that we took in private institutions to balance our budgets and which were successful included not only external means — increase of funds from foundations, alumni, and so on — but an enormous reform within the institutions, economies of all kinds, even such mundane things as, instead of cleaning faculty offices every day, we clean them twice a week; instead of having the maids clean the dormitory

rooms, the students clean their own rooms, if and when they do it. So, as McGill said about Columbia's budget, which was finally balanced after years of deficits, there is no more fat left in these budgets.

We are all convinced, I think, that inflation and the general escalation of costs, increases necessary in faculty salaries to meet inflation and living costs, will continue. We have increased our tuition in private institutions, especially the elite expensive institutions, to a level where we feel that increases, which will equally increase costs, have become impossible. We anticipate that there will be tuition increases. But can we increase tuition adequately to meet the total costs in the future? I think most of us in private institutions would agree that we cannot do that.

In a study that I made in 1964 I identified about 13 private institutions that I thought would never really be in deep financial problems. But I also identified the rest of the private institutions in this country as facing a very difficult future. And I think I have been vindicated on that.

Before I even published my report, two of the private institutions I was discussing had gone public.

It is against this kind of background that we talk about the future, it seems to me, of private higher education in this country.

I believe that most people are convinced that the multiple system of higher education that we have is one of the great strengths of the United States.

I have done a lot of consulting in Latin America; I have been in countries where private institutions, up till quite recently, were not allowed. And I think it is very unhealthy when all the institutions of higher learning are under a general ministry of education or depend upon the central government or upon state governments. I think that it is of great importance to the quality, the the central government or upon state governments. I think that it is of great importance to the quality, the freedom, the diversity of our educational system that private higher education be preserved in this country. I have no hope that we can preserve private higher education at the present percentage level of students. I am convinced that in phase number two more private institutions will disappear and that the ones that survive are going to do so by heroic economic measures and by a great appeal to philanthropy, to foundations.

But I also believe that it is in the public interest that both state and federal governments help to preserve private education. A lot of people seem to think that as we propose to the Federal Government or the state governments that they subsidize private education, we are asking for a huge subsidy. I don't think this is the case at all. If you look at our budgets and the amount of federal money that goes into them and that we are asking for, it is minimal. And I would be very much opposed, for instance, if Georgetown were to receive 40 per cent of its budget from state and federal funds. I would think this was a very unhealthy situation for a private institution.

But I believe the Federal Government has to accept some burden in some fashion for the support of private higher education and that the state governments must do so.

But I think this can be done in a variety of ways, and I am unhappy when we have a report or a recommendation from a national association that specifies too clearly one special way of doing it.

I think the states are experimenting with a variety of ways of providing universal access to higher education, universal opportunity of choice, and particularly support for private institutions.

I am not prepared to say that the best way, certainly not the only way, to preserve private higher education and to preserve the possibility of access by all segments of our population to elite institutions if they qualify for them, or to the private sector or the public or community colleges, is to raise tuition in the public institutions. This may be a solution that may work in a given state, but I think there have to be a variety of solutions and that we ought to experiment with a diversity of ways of doing this.

I personally would favor much more a system of student aid which would assist students, whether they went to the private institutions or the public institutions, to have a freedom of choice between all the institutions in a given area that would enable them to have enough help that if they wanted to go to a private institution, the difference between going to that institution and a state institution would be not so great that it would render it practically impossible for them to take a private institution as the place they wanted to go.

I think the State of Illinois, for example, has a scholarship program that is exemplary, and I would say in such a state, to increase the tuition in public institutions is not necessary, as long as they have a generous scholarship program across the board that helps students go to whatever school they want to go to. I would say that is a solution, and a good one.

I thought we had agreed some years ago that the Federal Government should assume a partial responsibility for all higher education in this country. And I think this is being reduced, whereas it ought to be somewhat increased. I believe that the Federal Government has to pick up a margin, not a large margin, but a margin of the cost of higher education across the country.

I would argue that this varies with the type of education. I am on a commission appointed by the

governors of the states to consider what is the responsibility of the states now that the Federal Government is withdrawing from graduate education.

I cannot see good graduate education as anything except a national resource, a national responsibility. A good graduate school, whether it is a private institution, like Georgetown or Harvard or Chicago, or whether it is in a public institution, a good public institution like the University of Wisconsin, is not, cannot be, in my opinion, organized and controlled on the basis of local needs. All good graduate schools serve the entire nation, and in fact serve international needs.

So that at different levels, it seems to me, there are different responsibilities. And I would argue that at the present moment, for example, the Federal Government is not accepting its full responsibility for medical education, for nursing education, and for graduate education, because these are not totally and completely local concerns, and certainly not the concerns of individual states.

I know from my discussions on this Commission, state legislators are saying, "Why should we support a great Ph.D. program in English when 80 per cent of the Ph.D.'s leave the state and go somewhere else?" I think it would be tragic if we began to contract the graduate schools of this country to a local or regional service.

So I would argue that the Carnegie Report is too restrictive in its recommendations. I think we have to experiment with a large number of ways of financing higher education. But it seems to me the basic principle from the standpoint of private education is that it is in the public interest to maintain the great diversity of our educational system, to maintain private education, healthy, quality, elitist, if you will — I am in favor of having elitist institutions. I am not a popularist, I guess. I think it is essential to a democracy that it have elitist leadership and elitist institutions. And that is in the public interest, and therefore both the states and Federal Government should find means to help preserve and support not only the existence, but the quality, of private higher education.

But I would not be as restrictive as this report and say that it should be done by such and such methods. I think there are many ways to do this: Capitation grants, educational aid grants connected with scholarship money, scholarship funds, loan funds, and so forth. And I think the burden should be distributed. But I think the private institutions have a right to ask for a certain amount, a reasonable amount, of public support in a variety of ways.

Thank you very much. (Applause.)

HARTMAN: Thank you very much.

Our next speaker is President Nolen Ellison, who is the President of Seattle Central Community College in Seattle, Washington.

Dr. Ellison, previous to his current position, was an assistant to the Chancellor of the Metropolitan Junior College District in Kansas City, Missouri, and, prior to that, served as Assistant to the President of Michigan State University.

Dr. Ellison will address his remarks toward an analysis of the Carnegie Report and its implications for two-year junior and community colleges.

NOLEN M. ELLISON (President of Seattle Central Community College, Seattle, Washington): Let me go directly to several issues that I have attempted to write out and see where we come out in terms of a perspective on two-year colleges in relationship to the Carnegie Commission report and specifically as it relates to the report. Who pays? Who benefits? Who should pay?

When I was asked to be on the panel to review the recommendations of this Report, I gave an almost immediate affirmative response. I couldn't resist the desire to present my personal views of this Report, which, as you know, is one of the several that have been completed in the past two years on the current state of financial affairs of higher education. Such analyses appear to be an escalating trend, and today's panel is another step in the public debate on this significant topic.

In reviewing the report for discussion this morning and its specific import for the nation's 1100-plus two-year community, junior, technical and branch institutions, it was necessary to put in perspective the report's recommendations by reviewing the suggested role, function and mission of these two-year institutions as perceived by the Commission in two other reports.

These additional Carnegie documents are the 1970 report of the Commission entitled "Open-Door Colleges: Policies for Community Colleges" and the recently-released "Supplemental Statement on the Report of the Carnegie Commission on Higher Education on "Who Pays? Who Benefits? and Who Should Pay?" These documents contain the basic framework in which the rather short tuition policy recommendations for two-year institutions contained in the report under discussion today must be viewed.

One additional observation necessary to a full discussion of the Commission and its recommendations regarding financing higher education is that the Commission recognized that its report was at best a difficult, if not impossible, task to undertake. To deal effectively with the issues of costs, benefits, and support responsibilities entailed the acceptance of certain assumptions regarding goals and desired outcomes of American higher education. For community colleges, the several recommendations contained in the report must be

viewed in relationship to the accepted goals of access and opportunity and their relationship to the suggested outcomes of social justice and social effectiveness.

My remarks this morning are not addressed to the acceptability of these four elements which were posed by the Carnegie Commission but instead presumes them to be valid and views the recommendations for community colleges in light of this stated framework.

Because the Commission saw one of the principal goals for higher education being access and opportunity for all who could benefit from it, the Commission's recommendations can be generally categorized into the following three major areas: Funding of students, preferably through targeted aid because of its less regressive effect on opportunity for the economically disadvantaged student; funding institutions; and funding special institutional programs for the financially and educationally disadvantaged student.

This third element is separated from the previous two categories because of the accepted recognition, both by institutions attempting to serve large number of the traditionally non-college-bound students and the Commission, of the position that increased access and opportunity for large numbers of such students cannot properly occur without funding of special student support and additional instructional support program efforts beyond the traditional activities and programs of higher education.

For community colleges and four-year institutions seeking to provide increased access and opportunity to larger numbers of the traditionally non-college-bound population, additional dollars to meet the added support services and educational program needs are essential to the accomplishment of the above-stated goals and outcomes.

The Commission recognized the legitimacy of this need for the additional institutional assistance in recommending that federal cost of education supplements be made to institutions admitting large numbers of financially disadvantaged students. This financial recommendation will be increasingly important for all institutions attempting to meet the additional expenses associated with institutional programs and special efforts designed to provide for students who, with less than adequate skills and background preparation, have entered institutions of higher learning.

Similar to its general recommendations regarding all higher education, the Commission's recommendations for community colleges can be reviewed in two aspects: Funding for students to insure access and opportunity; and funding for institutions to insure an appropriate support level for development and operations.

While it recognized the need to increase student tuition in public four-year institutions of higher education to a level equal to one-third of the actual instructional costs, the Commission recommended the exemption of two-year colleges from any such increases in tuition, recommending, instead, the maintenance of low or, preferably, no tuition for these institutions.

The Commission also recommended that for present considerations tuition rates for public two-year institutions should not be increased beyond established levels.

This recommendation is in line with the Commission's accepted philosophical position on the role of community colleges in postsecondary education. In this regard the Commission has supported open access to the open-door colleges for all high school graduates and otherwise qualified individuals who could benefit from education and training beyond the high school level.

The open-access theme for two years of public-supported education beyond high school will continue to be heard in the future. This proposal will continue to surface in the future under the continuing push for national funding of two years of education in the bank beyond high school for all Americans, to be drawn upon at whatever stage in life the individual finds desirable.

The role of two-year colleges will be important to such thinking and in any succeeding national policy directions in this regard.

Perhaps the most important proposals relative to the over-all funding of two-year colleges was not contained in this report, "Who Pays? Who Benefits? and Who Should Pay?" but instead in the Carnegie Commission Report, "Open Door Colleges."

The Commission recommended in this report that financing the cost of operating two-year postsecondary educational institutions should be a cooperative responsibilitiy between federal, state and local governments. The Federal Government should provide not only program support but also start-up construction grants for an additional 230 to 280 community colleges needed by 1980 to insure a stong national system of such institutions.

Regarding the financing of operations, the Commission took the position that states should expand their contributions to the financing of these two-year postsecondary institutions so that the states' share amounts in general to one-half or two-thirds of the total state and local financial burden, including operational and capital outlay costs.

The Commission took a significant policy position, in my estimation, in opposing the elimination of all local financial obligations for these institutions on the grounds that if local governance and policy-making responsibility is to be meaningful, it should be accom-

panied by some substantial degree of financial responsibility.

I left the State of Washington yesterday with a number of major considerations being given to the questions related to the existence of a strong state system of community colleges, with appointed boards of trustees who don't have responsibility for raising local revenues for the support of these institutions. A serious question has been raised relative to the policy responsibility of local boards and whether or not these community-based institutions can responsibly respond to local community education needs.

The Commission pointed out that in reviewing the issue of financial mix between state and local funding, state systems should insure total appropriations for operating expenses large enough to permit the institutions to follow a policy of either no tuition or very low tuition.

Other specific and significant recommendations of the Carnegie Commission regarding the over-all funding and financing of two-year colleges are:

One — Federal provisions for institutional support for community colleges should be expanded.

Two — Barriers to access should be eliminated through expanded federal programs of student grants and student loans.

Three — Federal construction grants and loans, as well as startup grants, should be available to states starting new community colleges.

And, fourth — Federal cost-of-education supplements to institutions admitting large numbers of financially disadvantaged students should be provided.

This fourth item and its importance were reflected upon in my earlier comments.

In summarizing my views of the report, "Who Pays? Who Benefits?, Who Should Pay?" and its supplement, four major areas appear to emerge which should be considered if the recommendations of the Carnegie Commission as they relate specifically to community colleges are to be fully understood.

These areas are:

First — The recommendations should be viewed in respect to the full Commission's stance on the role and mission of two-year colleges as an integral part of higher education and its existence as a vital national resource. In this regard the three Carnegie reports cited must be viewed as complementary statements on financing public two-year institutions.

Secondly — Higher education access and opportunity should be viewed as essential to providing for everyone in the nation who can benefit from higher education the opportunity to participate in it. This is recognized by the Carnegie Commission as a shared responsibility between federal, state and local governments, particularly in respect to these two-year institutions.

Thirdly — Quality as well as equality of opportunity were viewed by the Commission as essential concerns for serving higher education. The dual issues of social justice and social effectiveness must be considered when viewing the over-all goals and outcomes of higher education.

Fourthly — In order to insure a proper adjustment of higher education to the new conditions confronting it, a series of interrelated and interdependent financing relationships must occur for the entire enterprise of higher education, public and private, if the goals as outlined for any segment of higher education are to be accomplished.

This latter point was made quite clear and emphasized in a supplementary statement on tuition policies released by the Commission staff on April 1st. Two brief points should be acknowledged in respect to this document: First, the Commission staff felt that in light of the current national and state activities, the issuance of a supplementary statement was important and necessary to clarify the position of the Carnegie Commission on tuition policy and to distinguish the Commission's recommendations from those of other groups that have been recently released, that is, the reports of other groups on the financing issue.

Secondly, the report was issued to reinforce the Commission's position that recommendations in the earlier report regarding financing higher education should of necessity be considered all at once and no one recommendation should be taken out of context of the total additive approach to financing both higher education and higher education opportunities.

It appears that these concerns must be considered in their totality if the Commission's statements on financing two-year postsecondary institutions are to be viewed in proper perspective.

In conclusion, while my remarks this morning appear to support strongly the Carnegie Commission in it's observations and recommendations, I must conclude with several concerns which I see on the horizon. If these concerns are not addressed with great care at all three levels of governmental influence in public higher education, then these two-year community-based institutions will indeed become revolving-door institutions or dumping grounds for higher education, as suggested by some scholars writing in the field today.

First — The Commission did not elaborate extensively on the manner in which private two-year liberal arts colleges could best address their financial futures. These institutions, caught in the middle of spiralling operating costs and decreased enrollments, face circumstances similar to, if not worse than, private

four-year institutions. At this point the future is not bright for any except the extremely well endowed private two-year institutions.

On student mix and quality programs, I have this particular concern: The current imbalance of response to the several interrelated elements of financing students and institutions is bringing about a less than desirable mix and support for increased numbers of minority and disadvantaged students who have entered institutions of higher education in the past six years.

The maintenance of low or no-tuition direction for community colleges, coupled with rising tuition in four-year institutions and underfunding or inadequate federal and state student aid programs, as well as continued inflation and rising cost-of-living factors, have the direct result of shifting or moving low-income students from four-year institutions and toward community colleges. This current phenomenon accompanied by a general lack of acknowledgment of the extra costs involved in educating this financially disadvantaged group, as well as the increasing number of traditionally non-college-going students entering the educational mainstream, could make for an uncertain future for two-year institutions attempting to respond in a qualitative fashion to this challenge.

The current effects of the lack of adequate funding of targeted student aid, as well as institutional aid, must be addressed if appropriate responses are to be made by all of higher education, and certainly by these two-year institutions. Most critically affected at this time, in my judgment, are the downtown inner-city campuses of multi-unit community college organizations.

A brief response on the proprietary institution. It seems to me the Carnegie Commission did not adequately address that question and it is one yet to be dealt with fully in terms of their impact on two-year public institutions trying to provide both functional education and training.

The final concern I see is that of the challenge of providing "community-college education" versus "community colleges." Much like the decade of the '60s when the emphasis was upon building facilities for these two-year institutions, it is certain that the decade of the '70s will most likely focus away from facilities and on educational programs, quality programs and quality staff issues.

The financial implications of these concerns are grave and are yet to be determined. (Applause.)

HARTMAN: The next member of the panel to speak is Paul Bragdon, who is President of Reed College.

He has served in that position since 1971, and prior to that he was a Vice President for Public Affairs at New York University. Mr. Bragdon served in the New York City government before going to NYU and was a practicing attorney in New York City for a number of years.

President Bragdon.

PAUL E. BRAGDON (President Reed College): I am invited to comment on the Carnegie Commission Report and the supplement on tuition following fast on its heels from the vantage point of the small private institution, of course, and specifically from the base of a small liberal arts college. And I will do just that in what might be called comments on piety and public policy. Before subsiding into that prescribed particularism, however, I would like to try to cast a perspective on postsecondary education.

Before the onset of the blahs of the late '60s and the realities of the treacherous waters of the '70s, a significant part of the populace had added colleges and universities and those associated with them to the list of those meriting a vote of no confidence. In fact, if you will look in this morning's newspaper, you will see that colleges and universities are among those that lag behind the U. S. military in popular appreciation at the present time.

The reasons for the fall from the former high state are numerous and diverse and of markedly different qualitative value. The bill of particulars, with items describable as expressions of frustrated great expectations unrealistic from inception, as well as telling criticisms, would include: the assumption that the four-year college is a synonym for higher education and that it represents an appropriate experience for everyone: failure to solve the ills of society, failure to guarantee upward economic mobility, evidence that many of those associated with colleges and universities had neither the courage nor the conviction to defend their institutions and their stated purposes when under savage attack from within; development of the anti-rational thrust which has always been part of the Western intellectual tradition into a major force on campus and assisting in the transmission of antirationalism into the popular culture; curricular disintegration in response to political pressures and/or the explosion and fragmentation of knowledge; deliberate development of surpluses in trained personnel, with full knowledge and notice of the facts, and duplication and proliferation of programs and facilities to the detriment of definition and distinctiveness and at unnecessary cost to taxpayers and philanthropists.

No doubt other matters could be added to the list. Colleges and universities are human institutions, peopled by human beings; hence, they are fallible. It is probably altogether a good thing that the public at large has become aware of this fact and it is to every-

one's advantage that accountability be imposed on higher education. What is not a good thing is to have a skepticism, in part warranted, obscure from the view of the public or from our own view the essential truth of what we have been doing and what we are now doing in American postsecondary education. What would be even worse would be the failure of the public to understand the significance of our institutions to this troubled nation and world.

In the immediate past this society has been attempting to provide places in colleges and universities and other institutions to meet the demands of population growth and to widen the access routes to educational opportunity. The percentage of high school graduates going to college before World War II was 15 per cent, but by 1960 it had risen to 62 per cent. Enrollments went from 2,285,000-plus in 1950 to 3,600,000 in 1960, and almost 8 million in 1970. The median educational level among those aged 20 to 21 is now 12.8 years, almost a year in college. Among persons aged 65 to 74, the median is 9.1 years, just over a year of high school. No society on earth, now or in the past, has attempted to provide the places at the postsecondary level for so large a part of the population and to widen so significantly the access routes to educational opportunity. While making this massive effort, we have been creating a system of higher education described very well by President Martin Meyerson of the University of Pennsylvania, who said:

> The student who wishes to deal with emerging intellectual problems, not only of natural sciences, but also of social and psychological behavior, of linguistics, of medicine, of econometrics, of the cultures of the developing countries, and of subjects such as the visual arts, can find more stimulus in the American college or university than anywhere else in the world.

With the task of providing new places accomplished, higher education is evolving into a system of postsecondary education, including a range of programs and experiences utilizing the resources of public and private institutions of higher education, programs of varying lengths and purposes associated with these institutions and programs available through proprietary schools, industrial training centers and other educational facilities. The prospect is for even more options and alternatives for men and women at different stages of life. Indeed, the years ahead, whatever they may hold for institutions pressed by high costs, limited resources, and competition for students, are likely nevertheless to be golden ones for students of all ages.

Rather than subsiding into defensiveness, I would think that we should take pride in being participants of the development of a system with wide access, diversity, and quality and an expanding number of options and alternatives. May I add parenthetically that most of the places, much of the expanded opportunity and most of the new options and alternatives now available have been provided, and necessarily so, by the public system, including the two-year college component, and for that we can be particularly appreciative.

In facing the world, moreover, we should find ways of telling people that this complex society with complex problems very much needs our educational institutions. Dr. Stephen K. Bailey, Vice President of the American Council on Education recently said:

> Looking ahead, it is preposterous to assume that this nation alone or in concert with other nations will solve such recalcitrant problems of the political economy as inflation, the gut-rending trade-offs of the energy and environmental crisis, international money, international development, and the benign exploitation of the ocean resources, without superbly educated human beings. Technicians and practical geniuses are needed in abundance. But there is also a need for apostles of new paradigms; preachers of new prophecies. A bright geneticist stationed in one of the various grain institutes of philanthropy can help to fashion a green revolution in Asia. But it takes a Cliff Wharton to suggest that the problems caused by the green revolution may be more complex and attenuated than the problems that stimulated it. In the next few years and decades, whether the human race is searching for ways to tame the Promethean fire of fusion, produce an anti-aphrodisiacal protean additive, wrestle with the ethics of cloning or illuminate the chemical base of mental illness, the academy is the root producer of requisite talent. Whatever caricatures are sketched by our detractors (sometimes, alas, by ourselves), the academy remains very nearly the state's most precious resource.

It is from the perspective suggested in these opening remarks, one in which I hope we can all share, that I move to my role of commentator from the private sector on the Carnegie Commission report and its supplement. The independent institutions are a valuable contributor to, and a vital component of, the post-

secondary system I have described and are partners in public service with the tax-supported institutions.

In the supplement to the main report, the Carnegie Commission asks: "Are private institutions under competitive pressure from public institutions?" The Commission answers in the affirmative, noting that among four-year institutions the greatest pressure is on the "comprehensive colleges and universities" and the "liberal arts colleges." I concur.

The Carnegie Commission, noting the effect of the growing gap between the tuition charges of the private institutions, where the student or his parents pay a significant part of the cost, and those of the public institutions, with substantial taxpayer tuitions subsidies, urges three steps for narrowing the gap:

First, and most important, state support should be made available to private institutions.

Second, the rate of rise of private tuition that marked the 1960's should be slowed down.

Third, there should be a modest and gradual rise of public tuition on the average.

Again, I concur — but can't help wonder how tuition costs can be slowed down with the impact of the accelerated inflation on essential items from food, electricity and fuel to frogs for the biology lab!

I believe that the case has been stated as well as anyone by President Richard W. Lyman of Stanford University. He wrote recently:

> Under pressure of financial difficulties many private universities are undergoing amputation of this or that limb. St. Louis University has abolished its engineering and dental schools. The University of Pennsylvania has recently published a report telling three of its component schools that, unless they can balance their budgets within three years, they may face extinction. New York University, one of the largest of all private institutions, has had to sell its Bronx campus to the public system of New York City.
>
> Has this happened because of any rational, explicit, and conscious national decision that the private sector in higher education should shrink or be phased out? To ask the question is to answer it. Quite the contrary, it has been happening amidst a cloud of amiable rhetoric about the virtues of pluralism and diversity and the value of a healthy private sector. Yet without a conscious decision to preserve and to nourish the private sector, the phase-out will eventually take place. Without such a decision, private institutions will disappear one by one or become subunits of state systems. If it reaches the point where Harvard, with its $1.25 billion endowment, and a handful of others are all that remain, it is doubtful that even they can be wholly immune. One thinks of Oxford and Cambridge, ancient and laden with traditions of independence, but now relying heavily upon the state and subject to rationalization as part of the general state-supported system.
>
> Certainly those of us involved with private institutions would not argue that the private sector is of higher quality across the board than the public. The great state universities of this country are themselves unique phenomena of tremendous importance to the continuing vitality of our society. What we should urge is support for a reasonably competitive academic structure. We should not expect the government to supply all of our needs, for that would mean the end of independence. Where government, at whatever level, does help, it should do so in ways that preserve our individuality and foster free choice.
>
> I hope that the states will act to diminish — but not to eliminate — the steadily growing gap between what it costs to attend a public institution and what it costs to attend a private college or university. The gap was, on the average, about $500 in 1957. Next year it will be $1800, with no sign of lessening. The process cannot continue indefinitely without some counter effort on behalf of the private sector, if the private sector is to survive.
>
> In all of this, I am not suggesting that anyone has a monopoly on wisdom, much less that either private or public institutions should or can live by cutting each other's throats. . . . We are convinced that higher education need not be turned into a vast machine or a soulless bureaucracy and that the surest way to prevent this from happening is to encourage healthy competition between the public and private sectors.

Amen to all of that.

The nagging, nasty question is whether or not the Carnegie Commission recommendations with respect to the private sector have already been absorbed in the "cloud of amiable rhetoric" to which President Lyman referred. Has there been any dramatic increase in the awareness that a significant contributor to our system of higher education is in jeopardy? Has there been any urgent activity in the Congress or in legislative corridors across the nation to help create a more open system, giving maximum freedom of choice to students?

On the contrary, I would say that one suggestion in the Carnegie Commission report has received attention almost to the exclusion of anything else. That feature, of course, is the proposal for a gradual rise in tuition charges in public institutions. First came the wounded cries, then came the concerted moves within the educational associations to decry the proposals and similar ones from other sources. Then, lo and behold, the Carnegie Commission trotted out a supplemental report, the most newsworthy feature of which proved to be data demonstrating that the tuitions in public institutions are in fact closer to the Commission objectives than had been originally supposed. Somewhere in the machinations of the wealthy, powerful, majority in post-secondary education — the public sector with its backing of the awesome taxing power of the state — the presumed focus on the problems of the private sector disappeared, save for the usual "cloud of amiable rhetoric."

I approach the issue of tuition charges in the public institutions from the basic premise that each citizen should be able to choose the educational experience appropriate to him or her, regardless of where the person comes from in American society. Conceptually, then, I have no objection to a more realistic costing-out of the public sector, provided there is a corresponding increased appropriation for student assistance. Practically speaking, I recognize that such a proposal contravenes the time-honored notion of what is sacred among those associated with public higher education, that it could cause confusion and misunderstanding in the general public and that it could be used by budget-cutters in public office as a way to slash the appropriations for public institutions, i.e., raising the tuitions without a corresponding arrangement for student assistance, thereby reducing educational opportunity.

Alternatively, then, the public is entitled to know the per capita amount of the taxpayer tuition subsidy in the public sector, to have full disclosure of the profile of the beneficiaries of such subsidies, and to have assurance that the public sector will not build duplicate facilities or create redundant programs. And it is in the public interest for prospective students to be able to choose private institutions appropriate to their needs, which would require a pattern of public support for private institutions such as those advanced by the Carnegie Commission and others.

In concluding, I am reminded of a conversation with Dr. Charles W. Cole, then President of Amherst College, 25 years ago when I was an Amherst senior. At that time, the University of Massachusetts, a one-campus institution, was a struggling infant across town. President Cole said: "The University is the wealthy institution". He meant, of course, that the taxing power of the common wealth stood behind the University. Prophetic indeed. And now it is time for the wealthy and powerful to rise above the "cloud of amiable rhetoric" to the recognition that their interest as well as the public interest calls for a continuing contribution from the private sector. (Applause.)

HARTMAN: That was a fitting introduction to President Robert Wood of the University of Massachusetts, who will be our next speaker.

Mr. Wood was formerly Chairman of the Department of Political Science at MIT and then served as the Director of the Joint Center for Urban Studies at Harvard and MIT.

He also was Under Secretary of the Department of Housing and Urban Development and, for a short period, Secretary of that Department. He then went on to become Chairman of the Massachusetts Bay Transportation Authority before going to the University of Massachusetts.

When Professor Wood was a professor of political science, he wrote many studies on state and local government, and I am sure that his recent experience has enriched and broadened his knowledge of that field.

President Wood.

ROBERT C. WOOD (President, University of Massachusetts): I apologize to you and to my colleagues and to the members of the Association for a late arrival. I am concerned this week with a pragmatic aspect of financing of education. The University's 1975 budget is before the State Legislature. It moved from the House to the Senate, from the Senate this week to conference committee, and a funny thing happened on the way to conference committee. We lost $2 million and Warren Gulko, a fellow member of this society and my colleague, has lost six members of his Institutional Research staff, unless we restore it in conference. (Laughter.)

So I decided it was probably more important to be in Boston last night than to be at the Kennedy Center. But I regret missing the opportunity to join you for a longer time.

I also want to acknowledge a reassociation with my old friend Paul Bragdon. His eloquence is such that sometimes you hardly have the heart to examine his logic. (Laughter.)

I wish to proceed in that vein as we address ourselves to the Carnegie Commission report. For even if one restricts one's attention to the financial parts of the Carnegie report and you leap over the other volumes that make it the first five-foot shelf since the Harvard Classics, $6 million in five years, a structured impression is hard to come by.

Two overriding observations come to mind initially. First is that as you read through the reports, the

final report and the supplement, you note that the academic instinct for self-destruction is still very strong. And, secondly, that the way, apparently, Carnegie chose for us to die is not with a bang but a whimper.

The Commission overall has produced a series of interesting insights, but the net effect, my proposition will be this morning, is that it has gone against the vital interests of the academic community, public or private.

I am particularly sensitive to this situation because of a headline from the Boston Globe a year earlier when the Governor of Massachusetts, Francis Sargent, was seeking to make unprecendented cuts in the budget recommendations for higher education. The inch-high headline read: "Carnegie Hones Ax, Sargent Swings It." And there was a smaller headline just above which said: "Public Higher Education on Block."

It was very helpful for Clark Kerr to write a letter to the editor of the Globe a couple of weeks later saying that the Commission's recommendations were not necessarily applicable to a state which ranked 49th in per capita support for public higher education. (Laughter.)

And yet as I read the "Who Pays? Who Benefits? Who Should Pay?" again, and the final report, I can't help but believe that the ax is still being honed, not only for public higher education, but for public and private education.

And I didn't feel any better about it when I read Clark's one-sentence precis of the report as quoted in The New York Times, "You can say that low tuition for the middle class that can afford to pay more is a subsidy of the middle class at the expense of the high-income groups who pay much more in taxes and particularly at the expense of low-income groups whose kids can't afford to go to college."

Lately, as you know, the Commission has been indulging in some revision in the supplement that Paul referred to. But this development appears to have escaped the attention of all but the educational trade press.

The March supplement of the Commission staff is actually a remarkable document for people presumed to be familiar with cognitive approaches of thought, of capacities for analysis, and academic respect for reliability.

The 17 per cent error to which the Commission staff confesses is like the 18 minutes in lost tape time. (Laughter.)

Let me just cite the numbers in the staff paper. In Table 1 the Commission said: The actual 1973 percentage of educational costs in public institutions met by tuition was just 17 per cent. And, as Paul has indicated, they recommended that we should go to 33 per cent in ten years.

Now, the more recent and more precise information is that that figure is at least 24 per cent. And if you adjust the figures to leave out the costs of graduate and medical education, the average percentage of undergraduate public education costs paid by tuition is more likely to be 27 or 28 per cent.

That is not very far below the level the Commission recommended that we get to. But the staff does not acknowledge that its recalculations can jeopardize either the timing or the balance of the earlier analysis.

It is, in my judgment, simply incredible that a statistical error of this sort in an academic undertaking can be committed, and that we are still asked to regard seriously the reliability of many of the other analyses.

Since the Commission, however, wishes to stick with its recommendations, let me state briefly some of my own objections to them.

In effect, three flaws, in my judgment, mar the analysis of the Commission.

First — It has an excessive reliance on an economic analogy that I think is inappropriate to the character of the institutions, public or private, with which we are concerned.

Second — It is elitist in terms of how it judges the thrust of universal participation in education.

And third — It is peculiarly empty of substantive educational content.

I suppose I feel most strongly about the economic analysis, and I take most vigorous exception to the analogy that compares higher education, public or private, to the railroad industry. It is disturbing to say that students in classrooms are like pigs in freightcars going to market. If students were automobiles and if classrooms were factories, it would be appropriate to make an industrial productivity analysis. But that is not our business. The ways of measuring and judging, as this audience knows better than any other, the kinds of results we get in education require a long lead time and delicate and fragile instruments and indices. And this is not helped by a comparison to an industry that was done in by the automobile and by the airplane as much as by itself, and to compare it where we have no similar comparisons.

Second, there is, I am afraid, a quality of elitism associated with the report, for the report, in the name of the plurality and the diversity that we have identified, calls for supporting all institutions that happen to exist. Academic Lockheeds can receive the same help as the most diligently led, effectively directed institution of education. Whether or not it is a ladies' finishing school or a soak-the-returning-veteran vocational program, in the name of diversity and plurality, we are to keep it afloat.

The Commission has its pets. It regards great

research institutions as essential and it says small private colleges are especially to be preserved. It asks an increase in tuition for public institutions and it calls for a moratorium on building.

But it is part and parcel of a broader conservative doctrine abroad in the land that is detrimental and derogatory toward the capacity of education.

It is caught up with that disease of galloping Jencksism that now affects the judgments of the potential of ordinary people and the sons and daughters of ordinary people. And it has implicit, if not explicit, some of the worst assumptions of the Elizabethean poor laws.

So far as education is concerned, breeding counts; genes are what are important, family background. Scholars are born, not made. In the pursuit of understanding and knowledge, you have it or you don't. And that doctrine is deadly dangerous to institutions which are committed to the belief that people, though different, can learn and through effort increase their potential.

The third fallacy or flaw that I see in this over-all effort is the absence of commentary of what it is that one is about in our business. No hints of the Harvard reports or the Columbia reports of a generation ago; no review of general education or professional education. Indeed, the Carnegie Foundation has just created another five-year study to take up that analysis. But no concern with what it is to be a competent American in the present society. No one copes and comes to grips as a person, as an individual, as a member of the working force, as a citizen with the characteristics of our present society. And that may be the greatest fallacy and difficulty of all.

Finally, the net effect of these kinds of analyses, these efforts at looking at our bungling past, of protesting the rhetoric of popularism and the value of education, is to make it more difficult for private and public institutions of higher education to collaborate.

It forces us as carnivores around the last waterhole in a circling dance that can be destructive.

We are trying very hard in Massachusetts to avoid that kind of pattern. We have proposed through a forum of public and private institutions, an Educational Opportunity Program that would give to every high school graduate who has a desire to pursue higher education the opportunity to do so.

The scholarships from this pool would go a minimum of 15 per cent to public institutions and a minimum of 85 per cent to private institutions. The calculation of student need would be based on the total cost of attendance of the institution involved. We think the program will help to maintain the pluralism of institutions that are ready to be accountable and that are attractive to young people who want to choose them. We will be asking the Legislature to appropriate a total of $35 million for this program next year, and we will be doing it with a virtual unanimity of public and private higher education in support of it.

But these efforts of finding funds, of maintaining institutions of quality, come hard in the context of the Carnegie report. For the Carnegie Commission's decision that universal participation in higher education will never occur reflects a free-ride cliche that ignores the basics of how to allocate cost of higher education, how to put more investment into higher education than trips to the Caribbean or snowmobiles, and ignores the concept of investment that most of us have believed in.

So this is the difficulty in which we find ourselves, that we are now told purposefully, directly and authoritatively that that wishful notion of aspiration to equal opportunity through education is unrealistic and not to be pursued.

This is contrary, of course, to most of the traditions of public and private education in this country over most of our time.

The first trustees of the University of Massachusetts in their first report in 1866 perhaps said it best of all: "Republicanism," they explained, "has undertaken in America to recast society into a system of equality. It proposes to create true and safe equality not by conferring it on the ignorant and degrading the rights of citizens, but by raising all, through education, to the full dignity of free men."

Nothing in the Carnegie Commission reports suggests that the Commission shares that sense of purpose. And for that I think we should all be disappointed.

Thank you. (Applause.)

HARTMAN: Let me start the question period off with a question for President Wood, since he is revved up.

One of the things that framed the Carnegie Commission's recommendations, I think, was the feeling that in the period of growth in the '60s and the early '70s we really didn't need a planning system for higher education because a lot of hard decisions didn't have to be made because the number of students was growing so fast and seats were being filled. As they looked forward to the 1980's the Commission saw a period of slowdown or even contraction. One of the conclusions that follows from that, I think, is that decisions will have to be made about paring back institutions or programs, and there are really only two ways to go about that. One is sort of a market test: let students vote with their feet. And the alternative is a much more political and administrative process in which fine distinctions will be made between 85 per cent of scholarships going to one sector and 15 to another.

Do you feel that the second process, which you implicitly seem to be endorsing, is the right one for an era in which really very hard choices will have to be made in higher education?

WOOD: I have summarized, Bob, probably too quickly the Educational Opportunity Program plan that we are trying to develop in Massachusetts.

It is a mixture actually of the market and the planning, rational allocation, approach.

And I guess I would just say two things about the basic concepts and then add one other dimension.

My reservation about a complete "let the students vote with their feet" is that after ten years of consumerism and an analysis of man as the economic rational calculator of pleasure and pain, I am somewhat reluctant to let teenage consumers in present secondary education vote these choices on inadequate information and with their hands held only by those sterling figures of educational guidance counselors.

I am not sure that, left alone, that comes out to rational results.

So I believe that, along with that has got to be a much heavier emphasis on rational planning in the higher education community. And I think that is what this Association is mostly about, and this is clearly the kind of tradeoff that we are seeking in private and public education in Massachusetts.

The third thing I would say, that ties in more with the Carnegie commentary, is that while we have a pretty good fix on our traditional market, and I am prepared to live with demographers in that undertaking, I think we don't have a fix on the nontraditional market. I think it is a very fuzzy, squishy kind of demand situation right now. And a lot depends on what the product is, which gets me back to the issue of the competent American.

And so in that area I think that is probably the only way one gets out of a decade of restriction and reallocation of increasingly scarce resources.

HARTMAN: Yes.

PROF. PASCHA HUSSAIN: Father Henle, I think you talked in support of governmental funding, greater governmental funding. Would you agree that there is a point or a line or a threshold beyond which this will adversely affect the institutions' local autonomy, individuality and academic freedom? And, if so, how far is this line from where we are? How can we push it further away? How can we counter its adverse effects? Would you comment?

HENLE: I think I said that, while I believed that we should have more state and federal aid for private institutions, I would be very much opposed to this federal aid becoming the main support of private institutions.

No matter how careful we are in framing legislation and setting up administrative rules, after all, the people who supply the money will always have a great influence on any institution.

My own position with regard to Georgetown is that there should be more federal aid, but not a great deal more; but as we get it, there should also be an equal increase in our private support, so that we will have a balance of sources on which we depend. And I believe this is the source of liberty. If you depend on many different sources, no one source is going to command you. The alumni can't command you, or the foundations can't command you, the government can't control you.

In addition to that, however, I believe both for the public and private sector, the old cliche — the old cliches are generally true — that the price of liberty is eternal vigilance. I think we have go to be very careful in dealing particularly with government agencies that now write these enormous lists of administrative regulations. This is one way to cut down on our freedom of choice.

I have said that some day when I retire and can speak freely, I will write an article on the deterioration of self-determination in private institutions in the United States. Everyone is telling us what we can and cannot do. And we have got to be very vigilant to maintain our autonomy. But, on the other hand, if we are broke, we don't have an autonomy either.

So there is a line, and I don't know how you draw it mathematically. I would say that I would be very unhappy if 30 per cent of Georgetown's income were federal money. I would feel that that is too much. Now, you say where is the line? 25 per cent? 20 per cent?

But I agree with you. It is a dangerous thing to permit federal money or state money — We're not in a state, we're in the District of Columbia — to become so large an element in the financing of private institutions. This is a worrisome thing.

I have tried very hard at Georgetown to increase the private support so that we will always be able to rely on those sources and at times can say we don't want this program from the Federal Government, it doesn't agree with our projects or our academic desires. I know that many presidents of universities, as soon as somebody says there is an appropriation of $50 million for X projects, run around their universities and say "Who's got an X project, let's get it in here." I think this is a dangerous distortion of the internal planning of private institutions.

ELLISON: Mr. Moderator.

HARTMAN: Yes, sir.

ELLISON: I would like to make one statement not in defense and not specifically designed to cast any more positive light on the Carnegie work, but to point out at

least two major concerns that I had when the Foundation itself, the Foundation for the Advancement of Teaching, suggested, Dr. Wood, its second approach at the Council on Policy Studies.

I had conversations with the Carnegie people and the issue there, they recognized, was one of form versus substance, which is part of the undergirding issue here today in terms of the Carnegie reports.

In the early reports there was a basic question, it seems to me, for institutional researchers. I am stepping outside now the perspective from just community colleges that I tried to present. A kind of lethary and inertia seemed to have grasped higher education nationally in the decade of the '60s. If the commission did nothing more than to stimulate the questions, the rightful questions, in my best judgment, this should be central to the concerns of those of you in institutional analysis and institutional evaluation. In the absence of the kind of planning that President Wood talks about, whether it is the 1202 commission forced upon us by the national government, whether it is some kind of internal reaction because of the legislative and the public outcry about the credibility of higher education generally, it seems to me that the stimulating role of any foundation work ought to be to raise the questions and not necessarily to provide the answers.

I would be one to say that the answers will never come out of the questions of foundation undertakings.

The question is, can the issues be focused? Are we willing to accept that challenge? And are we willing to rebut those kind of critical false analyses with better data to put us on the offensive in higher education, rather than being in what I would say is really a rather parochial, defensive position, whether it has been the private four-year institutions, whether it has been the community colleges in search of an identity, whether it has been the large state public university that felt that they were impeccable?

It seems to me that the role of stimulation to create honest self-evaluation about one's goals and purposes and missions and, in fact, outcomes, is a worthwhile role and mission for someone to play in the larger society today as we grapple with these issues.

WOOD: I would subscribe both to the honesty and integrity and the real dose of realism that the Commission in its many reports gave to us all. It is just that after I have had one bucket of cold water on my head, I don't need 32 more coming down. (Laughter.)

HARTMAN: Yes, sir.

A MEMBER: President Wood, did you report that Massachusetts is considering a financing system under which students would get a level of support based on the costs of the institution to which they aspired?

MR. WOOD: Yes. In the proposal as it is now being presented, we have a basic student effort figure. I think it is now pegged at $750. We then add on as deducts the federal grants, BOG and others. And then the state award is to be made related to the cost of education of the particular institution which a student chooses. And they run at $4,000, $3,000, $2,000 and what-have-you.

This has come about by what we call a public-private forum, which is composed of 16 presidents, equally divided, and a non-voting chairman and a lay person.

And it has been the result of several months of negotiation, because it has obvious differential impacts on the community colleges, on the expensive private colleges, the small ones and the others.

Unfortunately, we don't have enough data for any one of us to figure out what will happen with it. (Laughter.)

MEMBER: I am going to guess that that represents a compromise from a position you might have taken.

But I am going to go further and ask you explicitly, do you believe that it is good public policy to provide subsidies or supports in relationships to the expensiveness of the appetites of the students?

WOOD: That is an incredibly penetrating question.

That is really the issue of how we handle cost control at the end of this and how we distinguish between costs that are related to some kind of product and costs that are related to poor management. And this one, I am afraid that we have not yet really come to.

HARTMAN: Yes, sir.

A MEMBER: I would like to rephrase that last question in a more specific way.

Our president at a large public community college, has described his opposition to public student aid in proportion to the cost to the student of tuition.

He was concerned that, going back to the analogy of public transportation, while we have an obligation in society to provide public transportation, particularly in urban areas, we don't have to give everybody a Cadillac. We don't have to give everybody the opportunity to be educated in a palace.

I would like some reaction from both the private and public sector on that.

HARTMAN: Paul, do you have a comment?

BRAGDON: It seems to me that what we would talk of from the private sector is something that just makes it possible and it would not be equality in the subsidy that is given.

It has been stated here that that would be bad for the institutions. I think it would be bad public policy.

I do think, at least getting away from the community college level to the four-year college situation, very frequently the actual cost of education between a

public college as a part of a public university and a private college will not be that different. And there are states as a matter of fact, where the actual cost would be higher in the public system than in many of the private colleges. But that is not reflected in the charges.

So I think the point of view from the perspective of the private sector is to make the costs more nearly akin to the actual costs and to give the student the opportunity to pay the extra money if he chooses to go to Harvard rather than a branch of the state university. It is not to eliminate the differential, it is to make it narrower.

HENLE: I think that analogy of the Cadillac has several false assumptions in it.

The difference between a private institution and a public institution is not the difference between poverty and luxury or between middle class and the wealthy class.

In the public institution the state is already underwriting a large amount of the cost of the student. If the student is going to be supported by the state at a private institution, it seems that it should underwrite something somewhere proportionate to the total underwriting of the student in the public institution.

If there is a differential of cost of education — education, now, not tuition — at Georgetown as opposed to a public institution and some of this was due to the fact that Georgetown provides some services or quality or something that public institutions do not provide, I would not argue that that should be underwritten by scholarship aid.

But it seems to me that you have to take into account that if the state is supporting education, when a student goes to a public institution, he needs scholarship aid for himself, but at the same time the state is already paying a large part of the bill for his education.

If he goes to a private institution and the state wants to support his education there, then you have a different kind of bill. But you have to compare the two bills, total bills, and not just the difference in tuition.

HARTMAN: If I can comment on that a little bit, it seems to me that once we get into student aid related to total costs or to total charges, it is inevitable that, either at the state or federal level, wherever this was done, the question will arise at some point as to what are allowable costs and which are necessary costs, which ones correspond to tastes for high living and so on, and that that would be very disruptive of whatever independence is left for private higher education.

So, paradoxically, I think that private institutions would be advantaged by a system in which their students or they themselves received subsidies from governments that were based, in effect, on flat amounts. For example, a private institution would receive the same subsidy as is given in the average public institution in a state.

That would seem to me to be a fine arrangement for private institutions, simply on the grounds of long-run independence, even though they might get more if the subsidy were related to their actual costs.

I find it very hard to get that point across, to persuade private institutions that they would benefit from such a system. But it seems to me that that is the case.

HENLE: Well, I can tell you one private institution that accepts that. (Laughter.)

HARTMAN: Yes.

A MEMBER: Dr. Wood, you mentioned that you didn't have enough data to answer those questions fully.

We have been requested by another commission to provide cost data. Do you feel that cost data is sufficient data or good data for making public policy?

WOOD: I think it is good data. It is not sufficient.

Let me revise and amend my remarks on that general subject.

What I hope for, to go back to the Moderator's comments, is a mixed package of institutional and student aid. And I should emphasize that our present plan of the Educational Opportunity Program has sliding scales. The higher the costs, the lower the percentage covered by the aid will be.

Essentially my comments about that are that I just feel in my position the need to have a lot more than we have operated on. My facetious remarks about the situation with the public-private forum are that it is so fragile an alliance at the present time that the truth can hurt it. But down the road, it is clear that the sophistication of analysis has got to go up by several quantum leaps if we are going to be able to really come to some judgment on these matters.

HARTMAN: I would like to announce that the coffee "hour" will be for the next 15 minutes in the Senate Room.

And on behalf of the audience, I would like to thank all the panelists for a good presentation.

ACADEMIC PRODUCTIVITY AND INSTITUTIONAL-LEVEL THEORY: UNOBTRUSIVE MEASURES FOR THE UNDER-COMPUTERIZED INSTITUTION*

James Steve Counelis, University of San Francisco

The public forum on American higher education is flooded with the argot of the businessman, the efficiency expert and the systems analyst. Like the 1920's arena of American built school education, strident voices are rising with panaceas that came from the business/industrial model. Much over reaction is setting in, goaded by financial stress. Indeed, presidents of some of our most prestigious universities are exchanging the word "education" for the more limited term "training."

As is the case of American business, industry, and labor today, so goes the one financial rub for American higher education, viz., productivity. Academic productivity is a new term, having a technocratic ring. But it is a good one for our purposes. There is no doubt that all would agree that academic productivity needs to be at a high rate, excellent in quality, diverse in character and reasonable in cost. Much "bad-mouthed" discussion, especially among faculty groups, is being heard on the topic of academic productivity, particularly in relation to faculty accountability.

Academic productivity has not been adequately conceptualized in holistic university terms. And more importantly, the following question must be asked: When institutions do not have sophisticated management information system (MIS), how can they effectively manage their problems related to academic productivity? Though an MIS is not necessary, conceptualized data are required. Current year operations and multi-year university planning require a rational means to guide and monitor the institution's academic productivity toward effective educational results. The University of San Francisco will serve as Hegel's "concrete-general" to explain a functional concept of academic productivity and its planning implications.

Concept and Measures

The University is conceived to be a whole integrated entity, one that is best described as an open system (Counelis, 1971). And for this system to operate effectively, cybernetic reality-testing must obtain. Cybernetic reality-testing is exemplified in this pursuit of conceptualizing and empiricizing academic productivity in a particular university for university planning, budgeting and evaluation.

Academic productivity (P) is the result (R) of expended effort/resources (E) upon specific materials (M). Hence, RoMeEoM, that is, the academic product (R) varies on the effort/resources (E) used, which effort/resources (E) is expended in given ways upon materials (M). This academic productivity model fits instruction, research and public service. Note the following examples:

(1) *Instruction*: Results (R) could be a competent student in calculus, the effort/resources (E) used could be a professor teaching calculus in a class of 40 students, and the material (M) could be a freshman student.

(2) *Research*: Results (R) could be a Freudian analysis of Dylan Thomas' poetry, the effort/resources (E) could be Professor X on sabbatical leave, and the materials (M) could be the full corpus of Dylan Thomas' papers.

(3) *Public Service*: Results (R) could Be Professor Y's chairing a civic committee on environmental control, the effort/resources (E) could be the university's release time for this civil role, and materials (M) could be the area of civic responsibility carried by the committee chaired by Professor Y.

Simplifying, academic productivity (P) is a function of how the results (R) are obtained through the effort/resources (E) expended, given particular materials (M). This is the conceptual basis for an output/input model, wherein the ratio $P = R/E$ is obtained, given particular materials (M) found in the results (R), (Greenberg, 1973).

All material and social output/input systems are inefficient to a certain degree. Output never equals input in any quantitative sense. Therefore, $P = R/E < 1$, that is academic productivity (P) is always less than 1, or less than perfect. Having defined academic

productivity by rigorous proposition and operational terms, permit the elaboration of the idea in university areas of finance, instruction, research and public service.

Financial Indicators

To evaluate our university audits systematically in the absence of computerized records and technical literature in the field, the need arose for "benchmarks" or "indicators" peculiar to the university as a not-for-profit educational enterprise (Henke, 1966). In December 1973, the Office of Institutional Studies completed a study that enumerated a number of financial indicators, extrapolating them for the FY 1968-1969 to FY 1972-1973 audits (Counelis and Rizzo, 1972). Comparability of the charts of accounts among the several audits was achieved by reclassifying all areas in accord with those categories developed at Boulder's National Center for Higher Education Management Systems (Goddard, Martin and Romney, 1973) and Scheps and Davidson's *Accounting for College and Universities* for those aspects of private university management not covered by the NCHEMS work (Scheps and Davidson, 1970). Though it is true that a five year time series of comparable financial categories gives important trend insights, the need for some limited output/input measures is significant. Chart No. 1 illustrates a few output/input measures of interest and significance, particularly the ratio of income and expenditures to FTE students and the difference between these two figures. Through such information gleaned from manual records on a systematic basis, the administrative handles to managing the university enterprise are developed. These financial time series and derived indicators illustrate the use of 'unobtrusive measures' on a practical non-reactive research problem in the field of university management (Webb; *et al.*, 1966).

Chart No. 1

THE UNIVERSITY OF SAN FRANCISCO, SELECTED FINANCIAL INDICATORS, FY 1968-1969 TO FY 1972-1973

SELECTED FINANCIAL INDICATORS	FY 1968-1969	FY 1969-1970	FY 1970-1971	FY 1971-1972	FY 1972-1973
A. FTE Students	5,006	5,119	5,087	5,026	5,250
B. Income FTE Student	2,027	2,073	2,424	2,610	2,689
C. Expense FTE Student	2,088	2,367	2,654	2,717	2,805
D. Net Income (Expense) FTE Student	($61)	($294)	($230)	($107)	($116)
E. Percent of Program Expenditures to Total Expenditures					
Primary:					
Instruction	38.9%	39.9%	43.5%	42.0%	42.9%
Research	13.0%	12.4%	11.6%	10.2%	8.7%
Sub Total	51.9%	52.3%	55.1%	52.2%	51.6%
Support:					
Academic	7.3%	8.9%	9.7%	9.1%	8.3%
Student Services	8.0%	6.3%	2.4%	5.1%	4.5%
Institutional Support	12.7%	14.6%	15.6%	17.4%	17.4%
Independent Operations	20.1%	17.9%	17.2%	16.2%	18.2%
Sub Total	48.1%	47.7%	44.9%	47.8%	48.4%
Total	100%	100%	100%	100%	100%
F. Percent Expenditure of Educational Administration to Instruction	5.7%	9.3%	7.9%	7.8%	7.2%

Instructional Effort

Faculty workloads and the efficiency of the university enterprise have been tough nuts. And because of economic necessities, the whole issue of faculty instruction is coming under review. Over the last two years, the Office of Institutional Studies has attempted to get handles to this problem. There is no adequate conceptualized treatment of this matter though Goodwin discussed the University of Connecticut pattern and the California State Colleges and Universities have complicated staffing formulae based upon course classifications (Goodwin, 1970). None of these approaches suited our needs at the University of San Francisco.

Taking a commonsense approach, the registration processes provided the following six variables that are related to the question of instructional effort. For each instructional unit, the following frequency categories were collected: (1) the number of faculty; (2) the number of courses and sections; (3) the number of students; (4) the number of course-units taught as distinguished from SCH generated in those courses; (5) the number of faculty contact hours per week; (6) the number of students in contact with faculty per week. These data individually can be construed as measures of instructional effort, given the qualified context in which these measures are construed. Chart No. 2 provides Fall 1973 data for these six categories by college and school, at the departmental level of aggregation.

But such gross frequencies per instructional unit even in a time series matrix, do not serve as critical indicators for management purposes. Chart No. 3 provides a series of instructional effort measures based upon the output/input model of academic productivity. There are ten such instructional effort measures in Chart No. 3: (1) the number of courses/faculty; (2) the number of students/faculty; (3) the number of units taught/faculty; (4) the number of faculty contact hours per week/faculty; (5) the number of students instructed per week/faculty; (6) the number of students/course (class size); (7) the number of units/courses; (8) the number of faculty contact hours per course; (9) the number of students taught per week/course; (10) the number of students taught per week/the number of faculty contact hours per week. Depending upon the educational/administrative problem being solved, one of these output/input ratios would be appropriate.

Of particular interest as to the issue of getting a good measure of instructional effort in the context of organized course structures, I believe the last ratio is of particular use heuristically and administratively. What this ratio of the number of students serviced instructionally per week to the number of faculty instructional contact hours per week is the average number of students serviced in terms of a single faculty contact hour in instruction. Thus, lectures, discussion, laboratories, field work, seminars, athletics and all types of non-standard instructional formats can be given the common base of faculty contact hours per week. In comparing departments, schools and colleges, the differentiating patterns of instruction can be noted as well as those elements with common patterns with particular empirical emphasis. The planning of curriculum and the allocation of faculty to that curriculum is given empirical foundation, to say nothing of the *post hoc* evaluation merit of these measures. Here again, a non-reactive research problem in university management is provided with a solution through manual records yielding 'unobtrusive measures' of great utility (Webb, *et al.*, 1966).

FTE Faculty

The definition and empiricization of the FTE faculty concept is very difficult. Many rules of thumb (generally called "equivalencies") are used that are not well based upon the empirical facts. Most of these "equivalencies" tend to be "political" decisions rather than rational decisions built upon a concept that is rigorous and throughgoing, a concept that takes into consideration all types of instructional formats, be these typical and atypical. In wrestling with this issue at the University of San Francisco, the following FTE concept is presented here for broad discussion (Counelis, 1974).

For educational and budget planning, some estimate of the number of faculty is required. At the University of San Francisco, the standard faculty contract is for 12 SCH/semester of instruction or some agreed upon equivalent. This 24 SCH faculty contract does not address itself to issue of academic productivity in the instructional sense, for the absurd end of that productivity scale could indicate the instruction of courses that generate 24 SCH of student instruction for the year. For purposes of a statistical standard at which a FTE faculty could be defined, 600 SCH/academic year was defined and calculated as follows: (1) 4 courses @ 3 SCH/course with an average class size of 25 students = 300 SCH/semester; (2) 300 SCH × 2 semesters = 600 SCH/academic year. However, this 600 SCH definition of a FTE faculty person does not take into consideration the peculiarities of the Carnegie unit. Hence, all atypical formats, e.g., laboratories, field work, clinics, athletics and others, are not equitable because Carnegie unit values for courses do not equate to contact hours. Hence, the "political equivalency" formulae are introduced.

Chart No. 2

THE UNIVERSITY OF SAN FRANCISCO BASIC INSTRUCTIONAL EFFORT DATA, UNDERGRADUATE, GRADUATE AND PROFESSIONAL, FALL 1973

COLLEGE/SCHOOL/ DEPARTMENT	FACULTY (N)	COURSES (N)	STUDENTS (N)	COURSE UNITS TAUGHT (N)	FACULTY CONTACT HOURS/ WEEK	STUDENTS' CONTACTS WITH FACULTY/WEEK
	1	2	3	4	5	6
Arts:						
Communication Arts	10	36	489	101	103	1,481
Economics	7	19	646	57	57	1,938
English	35	77	1,353	224	224	4,171
Fine Arts/Music	3	6	76	17	17	227
Government	16	43	43	109	109	109
History	23	57	775	138	138	2,292
Humanities	3	3	35	9	9	105
Interdisciplinary	3	16	212	42	42	534
Languages/Classics	12	47	451	151	151	1,554
Military Science	7	14	174	37	39	392
Philosophy	16	45	1,572	135	135	5,175
Physical Education	13	40	461	71	95	1,537
Psychology	14	44	1,116	61	75	3,352
Sociology*	21	77	1,165	215	215	3,486
Theology	20	44	896	138	138	2,694
Sub Total	203	568	10,177	1,505	1,547	31,187
Business Administration	36	83	2,193	234	242	6,380
Education	39	83	1,061	202	482	8,711
Evening College:						
Arts	75	106	1,750	319	319	5,712
Business Administration	23	29	604	83	83	1,831
Science	24	30	390	86	100	1,189
Sub Total	122	165	2,744	488	502	8,732
Law	29	54	2,901	152	152	8,872
Nursing	32	43	799	190	476	7,888
Science:						
Biology	18	92	1,773	197	308	6,181
Chemistry	15	55	1,105	74	148	3,951
Computer Science	9	62	740	84	112	1,529
Mathematics	9	37	883	96	104	2,264
Physical Science	3	3	61	9	9	191
Physics	7	24	681	45	63	1,914
Sub Total	61	273	5,243	505	744	16,030
Total University	522	1,269	25,118	3,276	4,145	87,800

*Includes Anthropology, Social Welfare and Ethnic Studies

Chart No. 3

THE UNIVERSITY OF SAN FRANCISCO, BASIC MEASURE OF INSTRUCTIONAL EFFORT, UNDERGRADUATE, GRADUATE, PROFESSIONAL, FALL 1973

COLLEGE SCHOOL DEPARTMENT	COLLEGE FACULTY	STUDENTS FACULTY	UNITS FACULTY	FACULTY CONTACT HOURS/ FACULTY	STUDENTS' FACULTY CONTACT PER WK FACULTY	STUDENTS COURSE	UNITS COURSE	FACULTY CONTACT HOURS/ COURSE	STUDENT'S FACULTY CONTACT PER WK/COURSE	STUDENTS' FACULTY/CONTACT FACULTY CON. HOURS
	1	2	3	4	5	6	7	8	9	10
Arts:										
Communication Arts	3.6	48.9	10.1	10.3	148.1	13.6	2.8	2.9	41.1	14.4
Economics	2.7	92.3	8.1	8.1	276.9	34.0	3.0	3.0	102.0	34.0
English	2.2	38.7	6.4	6.4	119.2	17.6	2.9	2.9	54.2	18.6
Fine Arts Music	2.0	25.3	5.7	5.7	75.7	12.7	2.8	2.8	37.8	13.4
Government	2.7	47.3	6.8	6.8	140.6	17.6	2.5	2.5	52.3	20.6
History	2.5	33.7	6.0	6.0	99.7	13.6	2.4	2.4	40.2	16.5
Humanities	1.0	11.7	3.0	3.0	35.0	11.7	3.0	3.0	35.0	11.7
Interdisciplinary	5.3	70.7	14.0	14.0	178.0	13.3	2.6	2.6	33.4	12.7
Language Classics	3.9	37.6	12.6	12.6	129.5	9.6	3.2	3.2	33.1	10.3
Military Science	2.0	24.9	5.3	5.6	56.0	12.3	2.6	2.8	28.0	10.1
Philosophy	2.8	98.3	8.4	8.4	323.4	34.9	3.0	3.0	115.0	38.3
Physical Education	3.1	35.5	5.5	7.3	118.2	11.5	1.8	2.4	38.4	16.2
Psychology	3.1	79.7	4.4	5.4	239.4	25.4	1.4	1.7	76.2	44.7
Sociology	3.7	55.5	10.2	10.2	166.0	15.1	2.8	2.8	45.3	16.2
Theology	2.2	44.8	6.9	6.9	134.7	20.4	3.1	3.1	61.2	19.5
Whole College	2.8	50.1	7.4	7.6	153.6	17.9	2.6	2.7	54.9	20.2
Business Administration	2.3	60.9	6.5	6.7	177.2	26.4	2.8	2.9	76.9	26.4
Education	2.1	27.2	5.2	12.4	223.4	12.8	2.4	5.8	105.0	18.1
Evening College:										
Arts	1.4	23.3	4.3	4.3	76.2	16.5	3.0	3.0	53.9	17.9
Business Administration	1.3	26.3	3.6	3.6	79.6	20.8	2.9	2.9	63.1	22.1
Science	1.3	16.3	3.6	4.2	49.5	13.0	2.9	3.3	39.6	11.9
Whole College	1.4	22.5	4.0	4.1	71.6	16.6	3.0	3.0	52.9	17.4
Law:	1.9	100.1	5.2	5.2	305.9	53.7	2.8	2.8	164.3	58.4
Nursing:	1.3	25.0	5.9	14.9	246.5	18.6	4.4	11.1	183.4	16.6
Science:										
Biology	5.1	98.5	2.1	17.1	343.4	19.3	2.1	3.3	67.2	20.1
Chemistry	3.7	73.7	1.3	9.9	263.4	20.1	1.3	2.7	71.8	26.7
Computer Science	6.9	82.2	1.4	12.4	169.9	11.9	1.4	1.8	24.7	13.7
Mathematics	4.1	98.1	2.6	11.6	251.6	23.9	2.6	2.8	61.2	21.8
Physical Science	1.0	20.3	3.0	3.0	63.7	20.3	3.0	3.0	63.7	21.2
Physics	3.4	97.3	1.9	9.0	273.4	28.4	1.9	2.6	79.8	30.4
Whole College	4.5	86.0	1.8	12.9	262.8	19.2	1.8	2.7	58.7	21.5
Total University	2.4	48.1	6.3	7.9	168.2	19.8	2.6	3.3	69.2	21.2

*Includes Anthropology, Social Welfare, Ethnic Studies

The suggestion is made here to provide some biasing equivalency weight that would reflect at the least the contact hour instructional effort of faculty for all courses of record. Chart No. 4 provides Fall 1973 data through which the U/H ratio is used to bias the standard of 600 SCH for one FTE faculty. The U/H ratio is generated by the number of SCH taught courses (Carnegie Units) divided by the number of faculty

Chart No. 4

THE UNIVERSITY OF SAN FRANCISCO FTE FACULTY, FY 1974-1975 —A COMPARISON OF TWO FTE CONCEPTS (Cols. 7 and 8)

COLLEGE SCHOOL BY DEPARTMENT	SCH FY 1974-1975 BUDGET	CALCULATION VARIABLE FTE FACULTY					NUMBER OF FTE FACULTY (@ 600 SCH FY 1974-75
		NUMBER SCH (U) TAUGHT FALL 1973	NUMBER FACULTY CONTACT HOURS (H)	U/H RATIO COL. 3 ÷ COL. 4	U/H RATIO × 600 SCH	NUMBER OF VARIABLE FTE FACULTY FY 1974-1975	
1	2	3	4	5	6	7	8
Business Administration: F, Sp	12,677	234	242	.967	580	21.86	21.13
Education: F, Sp	6,400	220	482	.456	274	23.36	10.67
Evening College: F, Sp, Su	16,400	488	502	.972	583	28.13	27.33
Intersession	2,138	487	487	1.000	600	3.56	3.56
Law: F, Sp, Su	17,566	152	152	1.000	600	29.28	29.28
Liberal Arts: F, Sp	57,245	1,505	1,547	.973	584	98.02*	95.41
Communication Arts	2,847	101	103	.981	588	4.84	4.75
Economics	3,595	57	57	1.000	600	5.99	5.99
English	7,132	224	224	1.000	600	11.89	11.89
Government	4,117	109	109	1.000	600	6.86	6.86
History	4,059	138	138	1.000	600	6.77	6.77
Humanities	232	9	9	1.000	600	.39	.39
Interdisciplinary	1,218	42	42	1.000	600	2.03	2.03
Language Classics	2,809	151	151	1.000	600	4.68	4.68
Military Science	406	37	39	.949	569	.71	.68
Music Fine Arts	638	17	17	1.000	600	1.06	1.06
Philosophy	8,930	135	135	1.000	600	14.88	14.88
Physical Education	2,899	71	95	.747	448	6.47	4.83
Psychology	6,346	61	75	.813	488	13.00	10.58
Sociology	7,016	215	215	1.000	600	11.69	11.69
Theology	5,740	138	138	1.000	600	9.57	9.57
Nursing: F, Sp	6,695	190	476	.399	239	27.90	11.16
Science: F, Sp	20,284	506	744	.680	408	49.72*	33.81
Biology	7,308	198	308	.643	386	18.93	12.18
Chemistry	4,077	74	148	.500	300	13.59	6.80
Computer Science	2,114	84	112	.750	450	4.70	3.52
Mathematics	3,861	96	104	.923	554	6.97	6.44
Physics	2,924	54	72	.750	450	6.50	4.87
Summer Session:	8,416	816	858	.951	570	14.76	14.03
Total	148,560	4,598	5,490	.838	503	295.35	247.60

*Rounding causes error in totals

contact hours/week for those taught courses. Hence, the straight lecture/discussion formated courses would remain 600 SCH because the course units equal the number of faculty contact hours/week, such as is the case for English and history. However, the number of contact hours in the laboratory sciences or internship programs in education and nursing are higher in absolute numbers than the course credit for the course. The U/H ratio proportionally biases the standard of 600 SCH in relationship to the number of faculty contact hours which exceed the number of Carnegie units credited for a course. See nursing, education, one of the sciences, and even some of the Arts departments for specific dramatic examples in Column 6 of Chart No. 4.

"Chart No. 4 presents a comparison in Columns 7 and 8 of the two concepts of FTE faculty in terms of SCH for the FY 1974-1975 budget. Column 7 provides the variable FTE faculty and Column 8 provides the fixed FTE faculty @ 600 SCH. Hopefully, the notion of the departmentally variable FTE faculty will be used, this concept reflecting numerically with more fidelity the instructional pattern inherent in a particular department or school. Of course, the annual recalculability of the variable FTE faculty U/H ratio provides a year-to-year equivalency without politics and hard feelings. Again, 'unobtrusive measures' provided a non-reactive research question with a reasonable answer, given the reliability of the manual records (Webb, *et al.*, 1966)."

Academic Productivity Beyond the Classroom

In Fall 1973, a computerized faculty survey was made to determine the extent and nature of academic productivity outside of classroom-related instruction. This survey had certain categories used for informational cross check. A 52.6% return was obtained. The sexual distribution of the respondees was almost precisely that of the faculty population; and the professorial rank distribution for the first four ranks was slightly under-represented in the assistant professor rank and over-respresented of the instructor rank.

The most important aspect of this questionnaire was the individual listing and categorization of scholarship and service activities. The eleven categories, given below, are deliberately wide and comprehensive as a set. The more restricted publish/perish categories of publication and papers would not do. The categories of scholarship and service were:

A. Published scholarship: pure, applied, action research (books, journal papers, patents);

B. Papers given at professional/learned society meetings: pure, applied, action research;

C. Creative works: published in written form, displayed or performed;

D. Performance: theatre, music, ballet, sports;

E. Other scholarly publications: extended critical bibliographies, book reviews, audio-visual materials, instructional materials;

F. Lay-oriented publications;

G. Lay-oriented public appearances and training group;

H. Service to government, church and civic groups;

I. Service to professional/learned societies;

J. University-connected service: committees, administrative roles, etc.;

K. Consultantships: *gratis* or contractual.

This list was circulated to several knowledgeable faculty and administrators prior to use. Even at that one item was inadvertently left out, which item was, attendance at meetings of professional/learned societies.

Chart No. 5 presents the distribution of 1106 scholarship/service activities given by faculty. Using the alphabetic codes given in the text above, the quantitative order of the highest four of these eleven categories is: (1) university-connected service (24%); (2) service to government, church and civic groups (15.6%); (3) service to professional/learned societies (14.4%); (4) published scholarship (12.7%). And if one added the A, B, E, and I categories, the total of 449 purely academic citations occurs that is approximately 41%. Recognizing that it violates the canons of conventional research design, it is worthy to describe statistically that this frequency distribution of reported scholarship/service activities is significant at the .01 level (df = 40). This means that this distribution could only occur randomly once in a hundred times.

Chart No. 6 maps out for the University of San Francisco the scope of her faculty's extra-instructional productivity. This understanding of academic productivity needs more study and systematization into professional guild theory. If this survey is representative of the faculty's professional activity, this somewhat equal distribution of these citations among the three upper professorial ranks reflects well upon the faculty.

In a qualitative sense, these results reflect the university's institutional press and priorities for faculty effort. Indeed, the current criteria of the rank and tenure committee and the university's practice maybe somewhat askew. And should the university wish to

Chart No. 5
UNIVERSITY OF SAN FRANCISCO FACULTY SURVEY,
SCHOLARSHIP/PUBLIC SERVICE ACTIVITIES, FY 1972-1973

ACADEMIC RANK	A	B	C	D	E	F	G	H	I	J	K	Total	
												N	%
Professor	52	33	2	1	19	6	10	38	45	81	20	307	27.8
Associate Professor	34	16	4	1	29	25	20	53	23	61	8	274	24.8
Assistant Professor	38	16	6	4	15	6	27	28	33	77	15	265	23.9
Instructor	10	10	4	6	5	3	7	28	30	41	15	159	14.4
Lecturer	7	1	2	6	5	3	5	26	28	5	13	101	9.1
Total	141	76	18	18	73	43	69	173	159	265	71	1106	100
Proportional Distribution	12.7	6.9	1.6	1.6	6.6	3.9	6.2	15.6	14.4	24.0	6.5	100	

Calculated Chi-square = 162.90

Chi-square (40 df, .01) = 66.77

alter its institutional press and priorities, a baseline was thus created. A significant addendum to accountability is possible here in the light of these results. Certainly, the university trustees, administration, foundations and governmental funding units, as well as accrediting associations can most adequately be shown a full viable display of faculty productivity in the extra-instructional areas. Conceptually and pragmatically, the tool is here for such accountability demonstration by the faculty that is so much under efficiency pressures of our day.

Conclusion

Academic productivity is a generalized notion. Empirically, it is a measurement in terms of an output/input model. For this writer, this concept of academic productivity is a type of institutional-level theory concerned with monitoring one aspect of the university. Be it in financial indicators, the measurement of instructional effort, the calculation of FTE faculty, or finding out the character of the faculty extra-instructional services, the notion of academic productivity has generic applicability. Hopefully, this generic idea of academic productivity and the several specific examples described in this paper will be useful to others. Also, there is particular importance attached to the fact that a sophisticated computerized MIS is not in the arsenal of the University of San Francisco at this time. Manual records are good sources of data, yielding 'unobtrusive measures' of merit (Webb, *et al.*, 1966). What is required is the conceptualized application of the data in the planning and management of the University. That is the function of theory, namely, to conceptualize data for use. I stand with Kurt Lewin on this point.

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DEVELOPMENT OF A CURRICULUM MANAGEMENT INFORMATION SYSTEM

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Institutional researchers could well play an important role in improving the much neglected area of curriculum evaluation and management which is probably the area where higher education is least accountable. An office of institutional research can provide a continuous flow of historical, analytical, and prognostic data concerning curriculum. They can also assist in making explicit those "current standards" inherent in data relating to curriculum content, input cost, utilization and output thus providing reference points for decisions. While accountability has become a byword in higher education administration, its meaning is not yet entirely clear (Peterson, 1970) but the implication it holds for measurement against some set of criteria or standards and the need for balancing inputs and outputs is quite clear.

Curriculum is only one part of the curricular-instructional system, a primary subsystem in the total system of higher education. It is an accepted fact that one cannot manage a system by managing one element of that system. Joseph Axlerod (1968) recognized this system construct, and pointed out that curricula change involving only one element of the curricular-instructional subsystem all too frequently does not "take". The interrelationships and interdependencies of the elements must be considered. We cannot arbitrarily add or delete courses, schedule offerings, or establish degree requirements. Curriculum must be managed in the construct of the curricular-instructional subsystem. We must also be accountable in this same context.

Swimerton and Maier (1972, p. 285) suggest that "it is necessary to institute an accountability design which flows from faculty, departments, colleges, and divisions up to the top in order to take leadership in eliminating ineffective and inefficient educational policies, programs, and procedures." Management of the curricular-instructional environment must therefore be a coordinated team effort.

Approach

Identifying descriptive, historical and analytical information relating to curriculum are of little value for management decisions unless there is some standard against which to measure whether the performance reported represents an improvement or deterioration of past performance. It should be noted here that detected variances may or may not represent inefficiencies or ineffectiveness. Renkiewicz and Topping (1973) point out that "Comparisons must be pursued to the point of understanding *why* differences occur. Analyses, not merely comparisons, of information are necessary to evaluate programs and their differences."

In stating standards we need to remain as flexible as possible. Thus system standards can be termed what cost accountants call "current standards" (Benninger, 1970). Benninger goes on to say current standards "serve merely as a standard for a certain period and under certain circumstances." In the proposed application of standards to curriculum, we interpret "certain circumstances" to mean political realities of requirements eminating from the various constituencies of the university, such as the accreditors, the governing bodies, the administration, the faculty, and the students. Beckett (1971) suggests that "policy . . . is a memory bank of standards that guide (and limit) system performance while the process is going on; and policy formulation is the continuous process of changing the content of that memory bank." To be useful, implied standards need to be made explicit. Part of the approach, therefore, is to bring implied standards into the open through analysis. These standards in turn can provide a springboard for the movement of current standards toward standards of performance. The availability of "standards" will enhance the probability that policy formulation and management decisions will be such that the institution will accomplish its chosen objectives, move in desired directions and continue to pursue intended goals in an efficient and effective manner.

Methodology

Most institutions of higher education have information subsystems operational and a few have what might be called management information systems (MIS). Mature information systems provide information relevant to specific decisions and this is the objective of the methodology described here. Developments have been concentrated in four areas: Course Contribution Matrix (CCM), Standard Curriculum (STACUM), Input Stan-

dard Cost (INSTAC) and Course Objectives Inventory (COI). In each area we are attempting to provide descriptive, historical, prognostic and analytical information relevant to curriculum management decisions. Further, through analytical processes "current standards" implicit in the above information are being ferreted out to serve as reference points for evaluation of variations from the standards. Information produced by the four subsystems named above provide a body of information found useful by curriculum decision makers at the discipline, college and university-wide levels.

Course Contribution Matrix (CCM)

One of the basic analytical tools for program (curriculum) definition is the Course Contribution Matrix. Since the course is the basic input to instructional activity, the interconnecting link between input and output can be established only by the identification of the contributions of each course to the output category. The CCM provides the necessary link between the various activities and the degree-major output.

The matrix itself is relatively simple and is similar in structure to the Induced Work Load Matrix developed by NCHEMS. However, the CCM software, unlike the IWLM, is quite different as is the output. The identity of the individual course in the CCM is carefully maintained for analytical purposes. A matrix is built for each discipline and displays the production of each course by level of instruction and its contribution to each student level within each degree-major. Summary reports are produced by the computer by summing the vectors of the matrix and formatting the output such that maximum utility is gained for review and decision making.

Output of the CCM has been found useful in monitoring the sequence in which students take courses, in analyzing course enrollment make up in terms of degree-majors, and in developing production/utility data for each course. Service courses can be quickly identified and there are some surprises in this. The CCM output showing course utilization by degree-major is the means of linking input costs to outputs and puts the course, as a production activity, into a systems construct. The CCM also provides input to the NCHEMS Resource Requirements Prediction Model thus making available prognostic data for planning resources.

Standard Curriculum (STACUM)

The curriculum content can vary widely from student to student within a degree-major program. Information concerning the extent of this variation and a description of the "standard" course content of a degree-major program is now available using a software package we call STACUM. STACUM analyzes graduated students' academic records and classifies courses according to the percentages of students who took the course while seeking their degree. Three STACUM categories have been defined: Standard courses, Standard Option courses and Variant courses. A course is classified as "standard" or "critical" to a degree-major program if it is required or if it is taken by at least 40 percent of the students graduating in that program. A course is classified as "Standard Option" if 15-39 percent of the students in the program took the course. The "Variant" category consists of courses taken by less than 15 percent of graduated students in the particular program. The percentage breakpoints are not entirely arbitrary but are based on an analysis of student selection patterns in several degree-major programs. Obviously, percentages could vary among institutions.

Approximately 25-35 courses appear in the "Standard" and "Standard Option" categories in each program. Highly structured programs have few courses in the "Variant" category while the less structured programs may have nearly 200 courses listed.

Analysis of STACUM output provides useful information on course utility never before available. Service courses in other disciplines, while elective in the home discipline, may be "critical" to another program. A large number of courses have been identified as not Standard or Standard Option for any degree-major program. This becomes a first level screening list for deletion review. For the first time we have good data on the extent of course proliferation and tying into cost data we can place a price tag on this proliferation. Curriculum committees at the discipline level are finding STACUM data very helpful in reviewing and evaluating degree requirements. By including degree-major requirements in the STACUM printout we can quickly identify why courses are classified in the different categories. This in turn has led to the development of a Degree Major Audit Report (DMAR). Each student's current transcript is compared with the profile of his designated degree-major objective. The resulting DMAR provides the student and his advisor with his status or his potential status if he contemplates a degree-major change in terms of courses remaining. STACUM information thus, accompanied by enrollment figures and cost data, could be extremely important in cut-back decisions, frequency scheduling decisions, and minimum enrollment policy.

Input Standard Cost (INSTAC)

The "current" budget is the basis for developing Input Standard Costs (INSTAC). "Current standards" are inherent in the data and can be made explicit

through analysis. Suppose for example that within the major schools and colleges personal services dollars averaged 91 percent of the allocated budget. There should, therefore, be no serious objection to accept, within the resident instruction allocation of a school, a standard percentage of 9 percent for "non-personnel" cost. Variances from this figure represent the "Departmental Overhead Variance." It should be pointed out that variance from a standard is not considered to be inherently good or bad. Each variance must be analyzed and evaluated on its own merit.

To simplify INSTAC methodology, a common denominator must be identified to quantify personnel assignments. Florida and Georgia, for example, have introduced in their State systems an Equivalent Teacher Contact Hour (ETCH) standard. At the University of Georgia the standard is 60 ETCH for fiscal year appointments, and 45 ETCH for academic year appointments (1 FTE - 60 ETCH). Dollars can be related to the ETCH just as they are to the FTE. If a professor teaches three 5-hour courses a quarter, then he is inputting 15 ETCH. One fourth of his salary would be charged to the instruction function as a direct cost. If costing is done at the activity level (course), then one twelfth of the professor's salary would be charged to a 5 credit hour course. This computation can be used to determine the direct cost of an individual course. Indirect costs can be added to the direct cost by using the ETCH as the basis for distribution of departmental overhead. The cost of an individual course will vary from one quarter to another depending on the salary of the assigned faculty member and the number of students enrolled in the class. However, cost will be relatively stable when viewed in a larger time frame.

The cost in terms of dollars per student credit hour (SCH) for an individual course can be useful in comparing a course against itself over time. Much caution should be taken when comparing a course with other courses in the department or courses in another department. Comparisons and determination of variance can be done more judiciously at a higher level of aggregation. For example, it would be useful to make intradepartmental and interdepartmental comparisons of the cost of individual courses with the "standard" cost of instruction at that particular level.

Curricular-instructional subsystem managers will be most interested in the controllable variables which affect cost variations from standards. Some of the factors are faculty rank mix, student faculty ratio, number of sections, class size, frequency of offering and type of instruction. The dean or department head must be provided information about the current value of these variables and eventually the capability to simulate alternative courses of action.

Course Objectives Inventory (COI)

To "manage" the curricular-instructional subsystem more efficiently and effectively there must be precise statements of goals and objectives. Institutional goals statements tend to be ambiguous, elusive, and abstract. As pointed out by McMurrin (1973), "They [institutional goals] have little meaning until they are given operational concreteness and specificity in the stated goals of particular institutions and their instructional objectives." Unfortunately, objectives at the instructional level are seldom stated. If we are to be held accountable, then we need to know what we are to be accountable for.

A Course Objectives Inventory must become part of the master file for each course. The faculty must be held responsible for the statement of objectives. To assist in the Herculean task of comparing and matching course objectives to program objectives and screening for overlap, "keywords" or "topic tags" are selected from the objective's statements. The "tags" are entered into the computerized course data base and an index is built so that sorted listings can be produced or the index can be searched to determine courses with substantial overlap. When a new course application is submitted to the Curriculum Committee the objectives "topic tags" will be entered in the computer for comparison, and when a certain threshhold number of hits occur the "similar" course titles will be printed out. This will help the Curriculum Committee in their investigation of possible overlap and duplication, even across departments and schools.

Summary

Mature information systems provide information relevant to specific decisions. Decisions relating to curriculum require a wide variety of information because decisions must be made in the context of the curricular-instructional subsystem. We believe information for curriculum related decisions can be most meaningful if presented in a program oriented system construct. Information, however, is of little value for management decisions without standards and therefore an effort is made to make implied standards explicit as "current standards" through analysis thus providing reference points for decisions.[1]

Development of a curriculum management information system is a Ford Foundation sponsored project at the University of Georgia. More complete documentation is available from the authors.

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EVALUATING NONTRADITIONAL STUDIES: IMPLICATIONS FOR PUBLIC POLICY

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The literature of education in recent years has abounded with challenges to traditional institutions and methods of instruction. The calls for extensive reforms have been legion and from many quarters. Social critics and analysts cite profound changes in our society as the roots of these messages, and numerous policy groups continue to argue that those institutions which are unable or unwilling to capture this opportunity to reform and experiment will become either moribund or at least be seriously threatened.

There is a widespread call for innovation in programs of study, the methods of instruction, and the means by which academic credit may be awarded for nontraditional work. There is also the insistence that ways must be found to meet the postsecondary education needs of substantial portions of the society historically excluded from traditional advanced learning opportunities. There are continuing demands for certifying and validating learning which has been acquired in ways other than the traditional on-campus process.

A number of recent attempts have been made to define non-traditional as it applies to educational programs, institutions, and activities. The National Commission on Non-Traditional Study applied two working definitions in the early phases of their deliberations. The first was simple and broad: "a group of changing educational patterns caused by the changing needs and opportunities of society" (Gould and Cross, 1972, p. 5) The second was more specific but yet encompassing: "a set of learning experiences free of skills or attainments extending his personal, intellectual, esthetic, or vocational development" (Gould et al., p. 45). Either or both of these definitions have a pleasant ring to them, but are not very helpful in making distinctions for evaluative or policy purposes. Howard Bowen provided a more workable definition in his paper on financing non-traditional studies when he included unconventional modes of instruction, programs designed especially for non-traditional students, unconventional scheduling, evaluation and accrediting of experiential learning, and non-credit educational activities associated with existing institutions (Bowen, 1973).

The attempts to define non-traditional to date appear to leave out one extremely important factor; that of the comparison with the previous norms of the institution or agency fostering the program or activity. Therefore, it may be argued that the most workable definitions will be those which are institutionally based and which provide relative comparisons with other modes of teaching, accrediting, and learning. For the purpose of this paper the following definition has been used as a guide: Non-traditional study may include any program or activity which departs from previous norms of an educational institution or agency, or is reflective of an experimental or adventurous attitude when considered within its institutional context. In other words, what is innovative and non-traditional at Old Siwash may be quite traditional at a place such as Antioch.

Historical Perspective

Those familiar with the history of higher education might well wonder why these demands for nontraditional study have suddenly captured such interest and concern in the United States. The University of London has been awarding a degree by assessment and examination since 1836, and Harvard has provided degree programs for part-time students through its Commission on Extension Courses since 1913. Other institutions including the University of Oklahoma, Rutgers, Roosevelt, and Columbia, have been long established leaders in adult education. The Chicago City College of the Air and New York University with its "Sunrise Semester" have used the medium of television for years to offer instruction at the collegiate level to thousands of students. The creation of Great Britain's Open University of 1959, however, more than any other single event, galvanized American interest in external degrees, continuing education for adults, and the educational potential of applied technology (Nelson, 1972, p. 11).

In assessing this recent surge of interest in nontraditional studies, one analyst attributed it to three specific hopes:

the hope of effecting economies in higher education
the hope of serving new student clientele
the hope of interjecting genuine innovation into higher education through new curricula, the media, and other instructional technology. (Nelson, 1972, p. 11)

These developments have attracted significant national attention and more than likely have raised the expectations and aspirations of a substantial portion of the population. Numerous groups have been sanctioned to assess the future of non-traditional studies and professional educators' meetings of the past three years have invariably tuned part of their programs to this area.

In their Report on Higher Education, the Newman Task Force clearly stated the challenges as they observed them:

> We believe it is time for a different approach to making higher education more available and more stimulating for those people unable to attend a college full-time.
>
> What is needed is not just gradual extension and expansion of the present form of continuing education, but new structural approaches in parallel. We propose that the resources for education provided as a package by the college (formal instruction, reading, libraries, examinations, degrees, etc.) be provided to the community as separate services in order that individuals and groups can find their own way to an education.
>
> If separate organizations are established that provide the traditional functions of the college directly to the community, individuals can fashion and legitimize their own programs.
>
> While at first glance the functions of a college seem inseparable, closer examination would indicate that their separation is not only possible, but would have advantages. For instance, colleges in America now monopolize the function of giving examinations and providing degrees. We propose that equivalency examinations be developed so that individuals can receive credit for skills and knowledge acquired in a variety of ways. We further propose that new degree-granting institutions be established which could not only administer these examinations but also grant college degrees. (Newman, 1971, pp. 68-69)

Following a study of over a year's duration, the Commission on Non-Traditional Study has released a summary of recommendations which were printed in the February 5, 1973, issue of the *Chronicle of Higher Education*, and included the following:

> 1) The fundamental recommendation of this report is clear. The oft-stated American goal of full educational opportunity should be made realistically available and feasible for all who may benefit from it, whatever their condition of life.
> 2) Financial support (either scholarships or loans) should be provided to all post-secondary school students on which they may draw according to their educational needs, circumstances of life, and continuing or recurrent interests in improvement.
> 3) Existing colleges and universities should make every effort to meet the academic needs of the additional numbers and new types of students. If existing colleges feel that they cannot take on such responsibilities, they should welcome, even encourage, the growth of new institutions either of a collegiate sort or of some new model.
> 4) State legislatures which have not already done so should enact legislation and set up the necessary administrative machinery aimed at guaranteeing an acceptable level of quality in all institutions within their jurisdictions.

Note must also be made of the recently increased activity by critics who believe that our society has developed a blind dependency on formal "schooling" and thus urge a redefinition of education along with alterations in the educational value structure (Illich, 1971).

In summary, the literature and activity in the educational community suggest that the current challenge to the traditional educational establishment is rather comprehensive with implications for content, structure, clientele, and planning.

The Present Situation

Within recent years a number of states and many institutions have recorded their determination to expand accessibility to post-secondary education and to change in non-traditional directions. Many of the changes have been consistent with the recommendations of the better known national studies and reports. In some quarters

these alterations have become legitimized simply because they were contained in one or more of the prestigious reports, and herein lies one of the problems. The justification and legitimacy for these alterations and innovations should not be that "Carnegie recommended it." Rather the justification for what is accomplished for not in the name of innovation should be that the changes make good educational sense — logically and empirically. It is certainly legitimate to ask what evidence justifies doing things differently.

At the present time most institutions with innovative components are assessing these components by various means most of them within traditional rubrics. These are basically internal evaluations and difficulties in techniques or evidence may be ironed out in time. However there is another type of situation. In some of the new, innovative, non-traditional institutions, there is neither the cushion of time nor predominant traditional programs to protect them from the challenges of legitimate inquiry from students, parents, legislators, budget analysts, and various other publics. These institutions are under greater pressure to justify their existence and their different ways of doing things. Many of these institutions were established with a mandate or commitment to evaluate and assess to a greater extent than in traditional institutions. These institutions frequently acknowledge that since they are serving a different clientele, different methods of instruction, delivery, assessment, and evaluation must be applied. There are some, however, who would prefer the aura of non-traditional status, but yet when being evaluated, would choose to hide behind traditional criteria and standards.

Traditional criteria and standards do not appear to meet the needs in evaluating non-traditional institutions, more over, the evidence produced through traditional means has not satisfied the critics. The fundamental question remains — do the differences make a difference, and if they do, how might these differences be assessed?

Given the variations in structure, form, and clientele which occur in non-traditional institutions and programs, additional components of variations of this model could be adopted for local situations. However, the basic model should include five categories: Accessibility, Flexibility, Personalization, Synthesis, and Efficacy of Resources.

Accessibility

Many of the new and innovative institutions were created, in part, to answer criticisms such as the following from the Newman Report:

> By long tradition, American colleges and universities discriminate against those who are older than "normal student age" and those whose established life and work patterns make returning to campus difficult if not impossible (Newman, 1971).

The answers to the problems of "educational apartheid," "the need for continuing access," and "barriers to entry and re-entry" were to be seen in the new, non-traditional institutions. As these institutions were created to meet the needs of the "non-college-age population," they must be evaluated in terms of serving the needs of this group. Some early evidence suggests that innovative institutions are only providing another alternative to the normal college population, and at the same time such institutions are not meeting the needs of the students for which they were created. Consequently, a component in an evaluation model for non-traditional colleges must be an examination and analysis of the extent to which these colleges are serving the needs of the particular segment of the population for which they were created. The pertinent questions are:

(1) Are we providing education for those segments of society who normally or formally did not attend college or who were not satisfied in previous educational experiences?
(2) Are those who are usually considered educationally disenfranchised (i.e., minorities, low income, older, married, and those with diversified work and life patterns) attending the new institutions?
(3) What is the retention rate for these groups?

Flexibility

Jencks and Riesman (1969), in *The Academic Revolution*, chronicle in explicit detail the evolution from academic diversity to academic sameness. Colleges and universities whether or not equipped with resources and competent faculty attempt to ape either the research university model or the liberal arts college model. Though success is not frequent, it is the rare institution that does not attempt to recruit both students of high academic promise and faculty who emulate the models of the graduate school professor. That most institutions are not successful in their attempts is not really the point. That so many institutions of higher education share the same goals is but one general indicator of the lack of diversity.

The Newman Report pointed out quite correctly that nearly all 2,500 institutions have adopted the same mode of teaching and learning. Nearly all strive to perform the same generalized educational mission. The traditional sources of differentiation — between public and private, large and small, secular and sectarian, male and female — are disappearing. Even the differences in character of individual institutions are fading (Newman, 1971, p. 12).

It seems important, therefore, that one component of an assessment model for non-traditional institutions be concerned with the extent to which they provide alternatives to the general patterns. The questions which must be addressed are:

(1) Are we providing educational experiences that are flexible in terms of time, content and process?
(2) Are entrance requirements and admissions procedures designed to be flexible, thus allowing the educationally disenfranchised to enter the programs?
(3) Are there flexible attendance procedures — Ingress and Egress Flexibility?
(4) Is there flexibility provided for designing individual programs related to the individual's educational goals?
(5) Are there flexible learning modes?

Personalization

Any number of critics of higher education emphasize the lack of "personalization" as a contributing cause of student dissatisfaction. It is axiomatic that the new colleges must be more responsive to needs of individual students. In 1970, Sol Linowitz, Chairman of the *Special Committee on Campus Tensions* identified a number of areas that were troubling the students. Most prominent among these were the indifference and neglect which students perceived within the institution.

The growing dissatisfaction with the Multiversity and its accompanying lack of personal attention paved the way for the non-traditional post-secondary institutions. Additionally, a more diverse student body with a wider range of expectations of higher education makes the challenge for personalization more pressing.

The new type of student with diverse backgrounds and goals requires a type of educational program with diverse options and objectives. Consequently, one component of an evaluation model for the non-traditional institutions must come to grips with the problem of personalization and individualization. Evidence must be presented to show that opportunities for development of personalization programs goes beyond college catalogue rhetoric. That evidence may be derived from answers to the following:

(1) Are the educational programs, procedures and environment humane?
(2) Do the advisement procedures provide for close personal interactions?
(3) Are the educational experiences individually satisfying?
(4) Is self-determination of programs to meet individual goals evident?

Synthesis

What is a college degree? Some cynics maintain that it only indicates time served. Certainly there is no single standard, other than time served or units achieved, which allows one to identify the product. The range of knowledge and abilities among degree holders is tremendous, and who would deny that some high school sophomores can outperform some college students in things academic.

If the degree represents things learned, then should not credit be given for learning regardless of the source of the knowledge? An agreement with this concept introduces operational questions of import and complexity. Granted that knowledge should be recognized and rewarded, how does one design the criteria for assessing the knowledge and then rewarding with the proper amount of credit? How for example, does one equate 18 years of experience in the ghetto to traditional sociology or psychology credit for what has been learned?

The competency-based or contract curricula offered by a number of the non-traditional institutions accentuates even more the pressure to recognize actual knowledge and abilities. If credit for experience or knowledge is granted, then the criteria for awarding the credit must be scrutinized very carefully. If experiential credit is equal to or superior to academic credit, then this must be shown empirically. Likewise, the new institutions must be willing to admit, if necessary, that the assessment of prior experience is too difficult, too costly, or too harmful (for whatever reasons) to the educational enterprise. In assessing the level of synthesis the following questions may be guides:

(1) Are we providing a system that facilitates a synthesis of related educational and life experiences with the individuals' goals?
(2) For what prior experiences should credit be given? Formal education? Work? Life?
(3) What does the student really know?
(4) Has the student acquired the skills necessary to succeed in life?

Efficacy of Resources

While there is little disagreement concerning the fact that higher education is facing a financial crisis, there is considerable disagreement over the approaches to meet this crisis. Traditionally, university administrators have turned mainly to the receipt of additional funds as the solution to these problems. In the recent past they have received these additional funds.

Now, however, relevant publics are demanding more efficient allocation of currently *available* resources to meet this crisis. More efficient use of resources is the theme of numerous reports demanding reform in higher education. In the *Report on Higher Education*, Frank Newman devoted an entire chapter to what he termed "The Illegitimacy of Cost Effectiveness." The conclud-

ing page of that report is representative of much of the current literature:

> We have found that institutions under financial pressure often respond only by cutting expenditures in the easiest ways, rather than by making choices according to the relative merits of academic programs or the most cost-effective approaches to teaching.
>
> It is apparent that with multimillion dollar budgets and a growing questioning by the public, higher education can no longer afford the luxury of avoiding consideration of how effectively it uses its resources. How can skill in resource utilization become a factor in the system of academic rewards? The challenging intellectual task of finding more effective learning patterns by better utilization of resources must become a legitimate campus concern (Newman, 1971, p. 86).

Thus, one component of an evaluation model for the non-traditional institutions must provide information on the extent to which such institutions are efficiently utilizing resources, reducing waste, and eliminating obsolete practices. Evaluators must be prepared to search for answers to the following:

(1) Are we effectively identifying and utilizing resources for accomplishing our mission and achieving our goal?
(2) Can we provide the same (or better) quality education for less money? Less time?

Some General Considerations and Conclusions

As illustrated by this model, the traditional evaluative efforts and models are not satisfactory for the task. Dressel (1971) has noted the problems involved in evaluating innovation in his monograph *The New Colleges*. The Preface to his collection of articles on evaluative efforts at new colleges offers the following indictment:

> In a sense, these new colleges are unfair to the students who enter them. Other than some vague description of requirements and of experiences, the student has no adequate basis for choice of the program, and neither the student nor the faculty has any conception of what benefits in the way of cognitive and affective growth of significance in later life will emerge from the experience.

Notwithstanding the fact that most traditional institutions are subject to the same indictment, the burden of proof more frequently is upon the new colleges. The problem is that what has been considered acceptable in terms of evaluating traditional higher education in the past is not applicable or acceptable for evaluation of non-traditional higher education in the present. It is critical that researchers develop the necessary techniques, instruments and methodologies to evaluate non-traditional institutions.

One promising technique might involve scrutiny of the verifiable consequences of a non-traditional education as well as looking at achievement of stated objectives. In an essay entitled "Thoughts on Evaluation of Higher Education," Pace (1972) stated, "The first requirement for a new model of evaluation is supported by the idea that all programs have multiple consequences, many of which are not objectives or intentions of the programs. Applying this concept to evaluation of new colleges implies asking questions and gathering data which go beyond determining the extent to which objectives have been attained, in other words, consequences as well as objectives.

In developing and implementing a consequential model such as suggested by Pace, one must be aware that the extent to which colleges and universities have caused an impact on their students remains to be demonstrated. The Feldman and Newcomb (1970) comprehensive study on the question of impact leads one to the compromising conclusion that the impact upon students is largely a function of student and environmental characteristics which cannot be attributed directly to the college experience. This conclusion raises questions concerning the wisdom of even attempting to measure the impact of the new colleges:

The rather negative finding by Feldman and Newcomb is further supported in the following statement from the recent study by Christopher Jencks and Associates (1972):

> Findings have convinced us that the long-term effects of schooling are relatively uniform. The day-to-day internal life of the schools, in contrast, is highly variable. It follows that the primary basis for evaluating a school should be whether the students and teachers find it a satisfying place to be.

In light of thses findings, it seems that a new evaluation model might consider satisfaction or expectancy indices as evaluative criteria. This would imply that data collection and analyses would be means toward determining the degree to which members of the various university publics are satisfied with the innovative institution and the extent to which it has met their expectations. Even if all else fails, a model

that considers the establishment of criteria of satisfaction or expectancy would have some basis for measuring the impact of the new institution. We fear though that such criteria would be seen as necessary but not sufficient.

Some sense that the pendulum effect in higher education is now working to counter the recent innovative trends. If that is true, then the honeymoon for the new patterns and experiments will soon be over. If new evaluative criteria and techniques are not developed and refined, judgment will be made according to the traditional approach—that is there will probably be no criteria and no systemic evaluation. If that occurs, the new public policies for innovative higher education will not have been properly evaluated.

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DESIGN OF A COST/EFFECTIVENESS INQUIRY FOR NONTRADITIONAL INSTITUTIONS*

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A distinct aspect of public policy toward higher education in the past few years is the idea of more for less: more adults, more women, more ethnic mix, more curricular options, more effectiveness, but all for less cost (Smith, 1971). An initial response of the educational community was to try obtaining more from traditional structures. Examples of these efforts are the massive managerial programs of the National Center for Higher Education Management Systems (NCHEMS) and the Open Admissions Program of the City University of New York where intusion of thousands of new students has been accomplished without comparable budget increases. Recently, however, another approach to obtaining more for less has emerged in several parts of the country: the creation of new, nontraditional institutions of higher learning. Studying their cost/effectiveness — whether they really achieve more for less — is an explicit challenge for institutional research.

Cost/effectiveness analysis is needed in nearly all institutions but especially so at nontraditional public colleges, like Empire State College (ESC). These institutions are primarily supported with tax monies and therefore must account for their expenditures. While this is a mandate shared by all public agencies, experimental colleges attract special attention because they are highly visible to a public not known for supporting large-scale innovation in use of tax monies. In addition, many such colleges, including Empire State, were founded with a stated more for less mandate. It would be naive to assume that cost/effectiveness studies are easy at traditional institutions. Cost/effectiveness analysis is a primative art though much progress is underway in identifying costs associated with various program elements. Many papers at recent AIR Forums have reviewed these efforts. However, the major weaknesses in most cost/effectiveness analysis lies on the effectiveness side.

Richard Perry, then President of AIR, charged two years ago at the Miami, Florida Forum:

> Institutional research has ignored for the most part serious attempts at the evaluation of academic programs, their processes, their orientations, their objectives, their products, their impact on society, and indeed their effect on individuals. (Perry, 1972 p. 2)

The field has accepted instead quantified outputs as proxies for effectiveness: number of students enrolled, number of credits produced, number of degrees granted, and the like. None of these proxies is adequate. The aim of a three-year cost/effectiveness project at Empire State College is to examine outcomes and costs.

The Fund for the Improvement of Postsecondary Education has funded the developmental year of the study at ESC and has asked us to identify other institutions — both traditional and nontraditional — interested in varying levels of partnership in future years. We have identified several and are now working out the details of their involvement which ranges from a modest commitment to full partnership.

Empire State College

ESC is an unusual institution in numerous ways that were discussed at the 1973 Forum (Bradley and Palola, 1973). Among these characteristics are the following three: the practice of granting up to nearly 90 percent of a degree on the basis of documented prior formal or non-formal learning; the statewide "campus" (over 20 locations) as opposed to a single location; and the use of personalized learning contracts developed by a student and faculty mentor which utilize the existing resources of the State rather than duplicating them. The contracts are shaped by the student's educational objectives in the context of where the person now stands in relation to those objectives. A given student, for example, might come to Empire to pursue a bachelor's degree concentrating in business after 25 years as an owner of a small store. If this student could provide evidence of prior learning, the person would receive an appropriate amount of advanced standing. The personalized contracts might utilize work-study, courses at another college, a correspondence course, a learning module created by our Instructional Resources Faculty, or any of many other options designed to achieve the individual's educational objectives.

The Value-Added Problem

The obvious way to look at educational effectiveness of a college or university is to look as do we for "value added": what did a student gain from attendance at a particular institution? According to this approach, an educational process that moved a student from the third quartile of high school achievement to the second quartile of college-graduate achievement would be doing well while the college accepting students only from the top 10 percent of high school achievement and maintaining them at that level is accomplishing less (Balderston, 1970). Hartnett (1973) suggests that this view which assumes that educational institutions are potentially powerful change-agents capable of having impact on all who attend may be "downright naive." Too much apparent cognitive "change" can be explained in terms of general mental ability, socio-economic status, and other background factors. For example, comparing the entrance Scholastic Aptitude Test scores with exit Graduate Record Exam scores will not alone provide evidence of growth. Correlation between the two scores is simply too high because, for understandable monetary and conceptual reasons, standardized tests are constructed to be applicable to many types of institutions and curricula.

One way for the researcher to get out of this dilemma is to develop tests geared to specific courses or programs of study. Such measurements make inter-institutional comparisons difficult though several colleges could agree to use the same instruments. However, this approach is still narrow. Thus, in order to assess differential impacts of colleges, Hartnett suggests use of multiple criteria: social conscience, heightened awareness, various kinds of appreciation, attitudes and values, citizenship, and moral sensitivity. Measurement of these dimensions while a problem is not impossible. Another complimentary step is to use multiple means of evaluation. Sieber (1973, p. 1337) in calling for use of field and survey techniques points out that use of a combination of methods "produces a distinctly new style of investigation." Webb, *et al.*, similarly suggests basing complicated research on "which set of methods will be best" (1966, pp. 174-5). The ESC Cost/Effectiveness Study uses both the Hartnett and the Sieber and Webb approaches: multiple criteria and multiple techniques.

The Research Design

The basic research question of the ESC Cost/Effectiveness Study is what kinds of students change in what kinds of ways following what kinds of learning experiences mediated by what kinds of institutional arrangements and at what costs? To answer the question, we will study many dimensions of the College: student learning and development, faculty professional and personal development, program development, utilization of learning resources, institutional impact of the community, administrative efficiency, and decision-making. However, until now we have concentrated our efforts on finding appropriate ways to look at student growth and development. For reasons of space limitation, the remainder of this paper will concentrate on that area.

The ESC Office of Research and Evaluation strategy is on the surface a typical longitudinal design which looks at a sample of students at entrance, during their studies, at graduation, and a few years later. However, our strategy does not merely make cross-sectional cuts at these points but instead is an analysis of the educational process. We expect to define the institutional impact by finding chains of evidence that will explain how and why such impact occurred.

At entrance, we will look at students' background characteristics on the ESC Student Biographical Inventory (SBI), a fairly lengthy questionnaire modeled after the ACE Student Information Form. The SBI looks at General Demographic Characteristics, Previous Education, Financial and People Supports, Reasons for Selecting ESC, and Personal Goals. In addition to providing baseline information on students, analyses of SBI responses will help us determine a sub-sample for intensive study. The sub-sample students will immediately take a standarized test — probably an Area Test from the Educational Testing Service's Undergraduate Program (UP) — and will be interviewed.

The process part of the strategy calls for additional survey and interview checks on student progress. For example, the Student Experience Questionnaire asks for a student's reaction to the contract mode of learning, the mentor, the assessment of prior learning process, and similar items. We will do content analysis on certain students' learning contracts, portfolios for advanced standing, and papers. An Attrition Questionnaire is available for those who drop-out.

Upon graduation the students will fill-out a Program Completion Questionnaire, take other standardized tests, and have an exit interview. The tests will probably be a Field or Modular Test in a student's speciality from the UP and the Aptitude Test which is similar to the general section of the Graduate Record Examinations. The final element of the design, a graduate follow-up, will consist of a survey focusing on later tangible outcomes including job promotions and graduate school attendance.

The outcomes of students' educational experience are the focus of the part of the study dealt with in this paper. For students, we define educational

effectiveness as achieved when their needs and objectives are met. The needs and objectives are summarized into eight major outcome areas: substantive knowledge; communication skills; other cognitive developmental, personal, occupational, public services, and unanticipated outcomes (Figure 1).

Figure 1

A RESEARCH STRATEGY FOR EXAMINING STUDENT DEVELOP

Program Outcomes	Means of Measurement
	Standardized tests
Substantive Knowledge	
General	Mentor ratings
Specific	Student ratings
Communication Skills	External examiners
Other Cognitive	Content analysis
Comprehension, Analysis, Synthesis, Evaluation, Application	Interviews
	Mentors
Developmental	Students
Interpersonal Competence	Student Biographical Inventory
Awareness, Openness,	Student Experience Questionnaire
Clarifying Purposes, Self-Reliance,	Program Completion Questionnaire
Self-understanding, Understanding of Others, Self-Consistency	Graduate Follow-Up Questionnaire
	Standards of Comparison
Personal	
Satisfaction	Test norms for similar types of institutions
Desire to Continue Education	
Life Objectives	Academic standards in appropriate fields (used by ESC mentors and or external examiners)
Occupational	
Public Service	
Unanticipated	Student objectives
	Student growth and change in relation to ESC's educational objectives
	Comparisons with cooperating institutions

* The linkages between means of measurement, standards of comparison, and timing [illegible] outcome. Full details are available from the ESC Office of Research & Evaluation.

The multiple methods of evaluating the multiple criteria for effectiveness are also shown on Figure 1 as are some elements of the design: program outcomes, means of measurement, and standards of comparison. Rather than detail each part of the table, the remainder of the paper will concentrate on two uncommon evaluative techniques that are usable at other institutions.

Two Uncommon Research Techniques

Meeth (1974, p. 124) suggests that "cost/effectiveness analysis is a qualitative judgement made about the relationship of costs to outcomes." The least expensive program leading to desired outcomes is then the most cost/effective. Yet two problems remain: (1) how does one identify the costs associated with a particular student or program and (2) how does one measure outcomes? This next section reviews how we will cope with identification of individual student costs, and with one way to look for outcomes: content analysis.

A Cost Model. The cost model will resemble other models in at least four ways; it will provide data that is potentially comparable and compatible with other institutions, it will provide budgetary information, it will be useful for planning, and it will allow a certain amount of simulation. In fact, there are only two major differences between the ESC model and most others. First, the ESC model was developed as a supplement to the effectiveness framework. That is, cost is treated merely as a component of effectiveness. Second, the ESC model is triggered by the individual student's experience rather than by some derivative (e.g. FTE students or credit hours). This provision allows allocation of costs accrued by a specific student and thus enables monitoring of costs caused by such things as use of different educational modes, area of study, and length of study.

The first step in the costing process is to take a student's learning contract file and to extract several pertinent items of information: learning center (location), contract number, amount of credit, dates, mentor, area of study, and type(s) and costs of learning resources used (tutors, field studies). With the location information in hand, the next step is to extract cost center figures. This will be fixed for each location and based on average mentor salary and fringes for the location, center overhead (which includes administration expenses and certain direct costs like rent), general overhead (which includes the College Coordinating Center costs), auxiliary enterprises, debt service, capital outlay, and endowment costs. Step three is to accumulate these costs for each contract. Additional analyses include adding costs of several learning contracts together to determine the student's total program costs, taking the total program costs of all students at a given center, and acquiring the total costs of all students in a given area of study.

Summary figures for the cost model will be based on an "FTE student week." Using the conversion factor of one FTE student week equals one traditional student credit hour, interinstitutional cost comparisons can be made. This conversion factor assumes that a full-time student at a traditional college studies 15 weeks carrying 15 hours per week to earn 15 student credit hours.

Content Analysis. The content analyses of student contracts and resultant products — papers, journals, and related materials — are another important and uncommon component of the methodology. Because of some basic problems with using standardized tests on student studying in non-standardized areas, this technique may turn out to be the only effective means of looking comparatively at the cognitive outcomes of studying at different institutions.

"Content analysis is any technique for making inferences by systematically and objectively identifying specified characteristics of messages" (Holsti, 1968, p. 601). Berelson, in a classic paper on the subject (1954), identified 17 ways to use content analysis. Included are tracing the development of scholarship, auditing communication content against objectives, and determining attitudes and values of communicators. Such topics relate to our multiple effectiveness criteria and are part of the rationale for using content analysis.

Here is an example of how we will use this technique. The Research and Evaluation staff will analyze several types of academic documents for a student including learning contracts, faculty mentor evaluations, and portfolios for advanced standing. These analyses will be supplemented by interviews. The content analyses will utilize a pre-set coding scheme to determine the student's progress on the outcome dimensions highlighted in Figure 1: analysis, synthesis, communication, etc. Ratings can then be analyzed according to both the standards of the content analyzers and the personal goals and objectives of the students as identified on the Student Biographical Inventory. By doing this over time for a student, aspects of growth and change can be identified. By doing this for many students evidence of institutional effectiveness or lack thereof can be accumulated.

One potential criticism of our use of content analysis is that the project staff could be subject to bias. We hope to negate this possibility by using an external board of examiners to read and comment on both the quality of the papers and the analyses. The external board will also increase the reliability of the content analysis (Holsti, 1968).

Though content analysis is an uncommon technique in institutional research, it is often used effectively in other fields. It will be especially useful to us in our examination of the learning process at ESC. We hope to develop procedures that are relatively simple and inexpensive so that others can use the technique in assessing effectiveness at their institutions.

Final Observations

The staff of the Office of Research and Evaluation recognizes the awesome requirements of the cost/effectiveness study. Perhaps it will prove impossible, but institutional research must not avoid the challenge of studying substantive effectiveness. Thus, in succeeding years, we expect to present several major reports about the costs and effectiveness of ESC and its cooperating institutions. We are confident that our broad scale research design and uncommon techniques will contribute much to an understanding of whether nontraditional institutions truly achieve more for less.

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SALARY PREDICTION TECHNIQUE — A TOOL FOR AFFIRMATIVE ACTION

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Academe, having long used a subjective evaluation system for its salary structuring patterns, now finds itself in a position of attempting to justify salaries in an objective manner. Discrimination claims have erupted across the country stressing the legal as well as the moral need for institutions to make good faith efforts to substantiate the "equal employment opportunity" slogan. Dr. Bernice Sandler (1973), the noted feminist in higher education has said:

> Statistics can be used to document a pattern of discrimination. Statistics can be used as *prima facie* evidence of discrimination. The courts have not hesitated to use statistics as a measure of compliance and as a measure of discrimination. (p. 7)

Higher Education Guidelines (1972) provide flexibility in allowing an institution to use any effective means of undertaking a salary analysis of its employees as long as it serves the purpose of determining whether women or minorities are being paid lower wages for performing the same or essentially the same duties. While status commissions have been appointed on many campuses to delve into possible salary discrimination against women and minority faculty, the task was performed by a two-member institutional research team in the case study presented.

This paper attempts to review the methodology of faculty salary analyses and presents a case study of the type employed in assessing the compensation to the teaching faculty of a university. It also details the application of this method and discusses its usefulness over time as a monitoring tool for affirmative action and as a statistical measure of compliance.

Review Of The Methodology

The methods used to determine if a systematic bias exists in salaries of males compared to females, and minority groups compared to others, have only recently been developed as practical tools. The linear model or multiple regression analysis has been widely employed to determine if sex or race were systematically related to salary. The works of Loeb and Ferber (1971), Wilson (1971), Astin and Bayer (1972) and Katz (1973) have used this method to predict salary based upon a comprehensive set of variables, including professional, academic and personal characteristics. Reagan and Maynard (1974) used a variant of the linear model in their research.

Another form of salary analysis has been the matching technique. Institutions under review or involved in a discrimination suit have frequently used this approach. The matching system is based upon a match of females and minorities with their non-minority male counterparts. Kimmel (1972) described this method for analysis as employed at her institution. On that campus, women faculty and their chairpersons were asked to follow the detailed steps outlined by the president who is quoted below:

> 1. Determine whether there is, in fact, a male counterpart whose salary could be compared with the salary of the individual woman whose case is being reviewed. The indication of a counterpart would have to be agreed upon by the woman and by her department chairman. If an agreed upon counterpart is identified, any difference in salary between the male counterpart and the woman would be assumed *prima facie* to be result of discrimination. The department chairman, of course, would have both the opportunity and the obligation to point out any substantive basis he thought might exist as an explanation for the difference other than discrimination on the basis of sex.
>
> 2. Where no counterpart can be identified, the individual woman's salary would be compared with the average salary of males within the department having comparable rank, experience, length of service, and academic qualifications, including teaching, research, and service. If there is a reason to believe that a woman's rank is lower than that of men in the department who have comparable backgrounds and experience in other respects, that fact should be taken into account. In a situation where this type of

comparison is used, there would be an assumption that the difference between the woman's salary and an average for the males so compared would approximate the extent of discrimination based on sex. Again the departmental chairman would be expected to offer any explanation or justification which he might believe existed for salary differentials.

3. If there are no faculty colleagues with whom meaningful salary comparisons can be made, the salary of the woman being considered would be compared with the salary that would be offered to a recruit with similar qualifications, assuming the position were new or unfilled. The salary which would be offered to such a candidate having those qualifications to fill that position would be taken as the salary to be used for comparison with the woman's current salary.

In our opinion, the emotional upheaval resulting from the ramifications of having to identify and agree upon matching counterparts is an obvious drawback which could result in a negative climate for all parties. It also provides no operational basis for keeping salaries in balance after parity has been reached.

Thus, the prediction technique emerges as having certain advantages over the matching counterpart method. It allows for a large number of variables to be taken into consideration when viewing the range of salaries that a given institution may have. This is not to say that subjective information is not of use, but rather, the statistical technique provides limits and ranges for salaries. If problems of interpretation exist, then a subjective criterion comes into play.

The opting for a statistical approach to decision making may appear to be counter-intuitive, but recent research has shown this method to work well in certain types of situations. This point is made strongly by Dawes and Corrigan (1974) who examined the use of linear regression models in an attempt to bring light to the subjective versus statistical model of decision making. They address the question of whether the linear model can do as good a job in decision making situations as can expert, subjective judgment. A few of the studies reviewed in this article may give some weight to the belief that the linear model can do as good a job or better in diagnostics or prediction than can human judgment. They note a series of studies showing actuarial or statistical studies to result in better prediction than expert judgment. Dawes and Corrigan explain this phenomenon by quoting from Goldberg (1970).

> For the clinician is not a machine. While he possesses his full share of human learning and hypothesis-generating skills, he lacks a machine's reliability. He "has his days." Boredom, fatigue, illness, situational and interpersonal distractions all plague him, with the result that his repeated judgments of the exact same stimulus configuration are not identical. . . . Can the clinician's judgmental unreliability be separated from his — hopefully, somewhat valid — judgmental strategy (p. 423)?

The use of the linear model to test for the presence of sex or race discrimination in salaries thus appears to be conceptually plausible. The technique of multiple regression involves the need to have an adequately specified model including all relevant variables.

One of the main questions arising from this methodology has been the appropriateness of including academic rank as one of the variables. Several researchers have addressed themselves to this question. The analytical matter of rank and salary is conjectual, as noted by Metcalf and Bibby (1972). "No theory is necessary to justify the inclusion of grade [rank] as a predictor of salary. The question is not whether this relationship is 'true,' but whether it is a truism (p. 289)." The use of rank to predict salary was also reviewed by Reagan and Maynard (1974) following the rationale that "rank tends to explain most of the variants of salaries (p. 17)." They purported that using rank as a predictor tends simply to correct within rank discrepancies rather than within the "total sex-based paying inequity (p. 17)." Thus, it appears that the use of academic rank as a variable for prediction purposes is subject to a wide degree of interpretation. In the case study presented, it may be noted that rank is included as a variable.

The body of research using the multiple regression technique continues to accumulate and reflect similar findings. Katz (1973) concluded that the linear model type approach "demonstrated the feasibility of quantifying many of the important determinants of faculty salaries and promotions (p. 476)." On the other hand, LaBay and Foster (1973) take exception to the technique and note a number of methodology problems. These problems are fundamentally a lack of proper specification of the model and measurement errors in the dependent variables. They concluded that "there is considerable evidence to suggest that the multiple regression approach is inappropriate for an institutional analysis of alleged sexual discrimination (p. 153)" and instead recommend the Bayesian probability approach. It is not within the scope of this paper to critique this research. We contend, however, that problems pointed

out relative to multiple regression are equally as applicable to the Bayesian technique. The extensive use of the linear model will undoubtedly continue until another statistical technique clearly shows superior results in application.

Case Study

The total full-time teaching faculty was employed to produce a general multiple regression equation to predict salary on a 9-month equivalency basis. The efficacy of this procedure was demonstrated by the multiple correlation coefficient (R) of .89 with the 41 variables and their dollar weights as shown in Table 1. A standard error of estimate (SEE) was determined to be $1,610. Thus, if the predicted salary was within $1,610 of the actual salary, it was felt that the person represented a normal case. Likewise, anyone outside the range of the standard error of estimate was considered to be a high or low residual case. Table 2 sets forth the equation used to yield a predicted salary for each faculty member using the coefficients contained in Table 1.

It should be noted that the variable with the strongest weight was rank. All other variables appeared to refine this very close association of rank with salary. Without the inclusion of rank in this analysis, the multiple R would have equaled .59. The justification of rank as a variable was made contingent upon an analysis predicting rank itself. This was done using the multiple discriminant technique, a specialized form of multiple regression. The method allowed prediction of rank through *a posteriori* probabilities. No systematic sex or race bias was found with the rank prediction. All salary prediction materials included the caveat that the veracity of the findings was dependent upon each faculty member's rank being independent of sexual or racial characteristics. While this did not categorically answer the question of using rank as an independent variable, it did highlight the need for rank to be included in reviews of faculty status.

The negative impact of years of service shown in Table 1 was consistent with nationwide trends. Faculty having mobility generally have the economic edge. At this particular university the rapid total growth and extensive increase in graduate offerings over the last five years had contributed to the acquisition of more highly trained and widely experienced academic personnel.

To determine if salary was related to either sex or minority status, another multiple regression was performed with the same variable plus sex and minority status as is shown in Table 3. This analysis resulted in sex being entered at the 30th step of the regression and having no statistical weight (F = 2.0). Thus, sex

Table 1

REGRESSION ANALYSIS FOR TOTAL UNIVERSITY
N = 648

Variable	Regression Coefficient (Dollars)	Standard Error of Estimate	F - Ratin
Rank	2850	± 100	794.7
Degree	330	± 170	4.0
No. of Yrs. Employed	120	± 20	22.9
No. of Yrs. in Present Rank	140	± 30	17.7
Department Head	1940	± 280	46.7
Department No. 1	240	± 470	.3
Department No. 2	610	± 645	.9
Department No. 3	400	± 790	.3
Department No. 4	1305	± 440	8.8
Department No. 5	490	± 470	1.1
Department No. 6	180	± 510	.1
Department No. 7	410	± 390	1.1
Department No. 8	840	± 460	3.4
Deaprtment No. 9	210	± 610	.1
Department No. 10	1290	± 430	9.1
Department No. 11	130	± 460	.1
Department No. 12	410	± 460	.8
Department No. 13	850	± 590	2.1
Department No. 14	350	± 590	.4
Department No. 15	115	± 470	.1
Department No. 16	1045	± 440	5.6
Department No. 17	310	± 510	.4
Department No. 18	2760	± 450	37.7
Department No. 19	1970	± 420	21.5
Department No. 20	2240	± 510	19.1
Department No. 21	3150	± 510	38.2
Department No. 22	2490	± 470	27.7
Department No. 23	2555	± 410	38.4
Department No. 24	2245	± 520	18.3
Department No. 25	2215	± 440	25.6
Department No. 26	1350	± 610	4.9
Department No. 27	380	± 590	.4
Department No. 28	480	± 510	.9
Department No. 29	650	± 410	2.6
Department No. 30	2130	± 640	11.0
Department No. 31	820	± 460	3.1
Department No. 32	700	± 860	.7
Department No. 33	1140	± 540	4.5
Department No. 34	1270	± 640	3.6

Constant = 6590 R = .89
F(39,608) = 59.5 R^2 = .79
SEE = 1610

Table 2

PREDICTION EQUATION FOR FACULTY SALARIES
(Based Upon Table 1)

Rank:				
Professor	$11,390			
Associate Professor	8,540		= $	
Assistant Professor	5,700			
Instructor	2,850			
Degree:				
Doctorate	$ 1,000			
Masters	660		= $	
Bachelor and Others	330			
Years Employed		× $ 120	= $	
Years in Present Rank		× $ 140	= $	
Departmental Factor			$	
Department Head	$ 1,940		$	
Base (or Constant)			$	6,590
PREDICTED SALARY:			$	
Standard Error of Estimate			$	± 1,610

appeared to have no systematic pattern of relation to salary. The multiple R remained at .89 with or without sex which supported this finding. On the other hand, race was entered at step 29, lacking statistical weight. Separate regressions were run for each individual school, but these tables have not been included in the interest of brevity.

Table 3
REGRESSION ANALYSIS FOR TOTAL UNIVERSITY
N = 648

Step Number	Variable	Final Regression Coefficient (Dollars)	Standard Error of Estimate	Multiple Correlation (R) At Each Step
1	Rank	2810	100	.78
2	Department Head	2170	250	.79
3	Department No. 4	1350	450	.80
4	Department No. 10	1290	430	.81
5	Department No. 23	2500	420	.82
6	Department No. 18	2745	460	.83
7	Department No. 21	3080	520	.84
8	Department No. 22	2480	480	.84
9	Department No. 19	1945	430	.85
10	Department No. 25	2190	445	.86
11	Department No. 20	2220	520	.86
12	Department No. 24	2200	535	.87
13	No. of Yrs. Employed	100	25	.87
14	No. of Yrs. in Present Rank	110	30	.87
15	Department No. 30	2210	660	.88
16	Department No. 16	1060	450	.88
17	Department No. 8	810	470	.88
18	Department No. 12	440	470	.88
19	Department No. 33	1120	550	.88
20	Department No. 31	780	470	.88
21	Department No. 29	690	410	.88
22	Department No. 26	1270	630	.88
23	Department No. 34	1180	655	.88
24	Highest Degree	340	170	.88
25	Department No. 13	910	600	.88
26	Department No. 7	400	395	.89
27	Department No. 28	420	520	.89
28	Department No. 2	800	670	.89
29	Race	350	350	.89
30	Sex	290	200	.89
31	Department No. 1	420	490	.89
32	Department No. 27	470	600	.89
33	Department No. 14	440	600	.89
34	Department No. 32	620	880	.89
35	Department No. 3	350	810	.89
36	Department No. 15	90	475	.89
37	Department No. 17	290	520	.89
38	Department No. 9	240	625	.89
39	Department No. 6	190	520	.89
40	Department No. 5	130	470	.89
41	Department No. 11	110	470	.89

Constant	6995	R	89
F(41,607)	34.9	R	79
SEE	1650		

Application And Discussion

The primary application of this prediction technique which has been used for several years, was to identify objectively for the Director of Affirmative Action individual women or minorities whose salaries appeared low by a comparison with other faculty members. No one outside the vice presidential level was informed of the prediction technique in the initial stage. Caution was exercised by the researchers in order to (a) allow time to refine the technique, and (b) establish both its credibility and limitations with key administrators.

The refinement was accomplished by using departments as variables rather than academic schools. Establishing the credibility of the multiple regression technique proved to be no problem because of its reliability in identifying anomalous cases. To clarify its limitations was perhaps more difficult. One limitation recognized in this type of approach was that it could measure group patterns much more precisely than individual cases. It also did not take into account some important faculty attributes that enter into salaries. Teacher evaluations, for example, could not be incorporated into the model because of the high confidentiality placed on these ratings.

In the second year of salary research each dean was furnished with the study. It was positively received because (a) the market factor for each discipline was taken into account, (b) a comparison of school salary structuring patterns could be made with the institution as a whole, and (c) the equation could be easily understood. The report forwarded to each academic dean contained an appendix identifying the high and low residuals on a departmental basis. High residuals were set forth in the first category separated by sex and indicating (a) name, (b) rank, (c) actual salary and (d) predicted salary. Minorities were indicated by an asterisk. The same data was detailed for the low residual category. A few problem areas were pinpointed by this format style in a dramatic fashion. Departments were included in this appendix even though they represented only one sex, highlighting the extremities in salaries irrespective of the sex factor. The names of faculty members who have at some time in the past been administrators at this institution consistently appeared in the high residual male category.

In the third year the technique was used to assist the administration in analyzing a tentative budget and served the purpose of a monitoring tool. The efficiency of this statistical monitoring activity was demonstrated in that a small staff required less than an eight hour day using a remote terminal and a comprehensive data bank.

Data on the faculty is updated annually. Additional variables have been subsequently incorporated into the model including institution and year of highest degree, years between degrees, research and publications.

This research has been generally accepted by decision makers and its use has been clearly evidenced

to the remedial steps taken. It has also focused on the need (a) to exercise care in the recruitment pattern so that the status of women will continue to rise, (b) to insure that women and minority faculty will continue to be treated equitably in salary comparison with non-minority males, and (c) to document personnel matters on individual faculty members to support their relative standing. Documentation filed in the Office of the Director of Affirmative Action shows that there was not a discernible pattern of salary discrimination in terms of averages for the total faculty or any individual school for 1973-74.

Summary and Implications

The paper expresses the view of the authors that the linear model or multiple regression technique provides a ready set of information that can be incorporated into decision making. It is a tool that may be extremely valuable if used with wisdom.

The case study presented reflects the endeavors of one institution to quantify some of the variables that enter into salary matters. Since the prevailing atmosphere on campuses varies widely, the approach used in analyzing salaries must be attuned to the local situation. Furthermore, it is doubtful that public and governmental interest in salary matters will wane. The Katz (1973) article focused on the issues by concluding "instead of the present arbitrary and chaotic process of rewarding professors, a more equitable system could be instituted (p. 477)." In academic circles, salary variables have often been cloaked in secrecy or surrounded by an air of vagueness. Consequently, the process of openly clarifying salary structuring patterns will in the long run strengthen academe, attesting to the belief that "an ounce of administration prevention is worth a pound of law suit cures."

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PUBLIC EXPECTATIONS AND THE REWARD SYSTEM FOR COLLEGE FACULTY: AN EXPLORATORY STUDY OF SALARY INCREASES AND EVALUATION OF SELECTED PERFORMANCE CATEGORIES

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The general public views college faculty as primarily classroom teachers. While this is probably appropriate for most two-year and four-year college faculty, it is less so for university faculty. The latter, in keeping with the three broad functions associated with universities – teaching, research and creative activity, public service — devote considerable time to professional duties other than classroom teaching. There has been considerable comment by the public in recent years indicating belief that activities other than teaching occupy an excessive amount of university faculty time. Without debating the accuracy of such comments, the question next raised is "why is this so?" Those members of academe who agree with this point of view usually reply that the reward system in higher education apparently favors not teaching but research (including publication) and service (including administration as well as public service). This conflict in role and reward experienced by the professor has been debated frequently. A brief but provocative discussion on the issue appeared recently in the *University College Quarterly* (Brown, 1974).

An exploratory study of the faculty salary increases proposed by college deans and chairpersons for the year 1972-73 was conducted at a large state university. Analysis of variance, numerous descriptive statistics, and several measures of relationships were applied to the data. The intent was to concentrate on interpretations which might be operationalized in a decision-making context. The relationship measures will be emphasized in this paper in order to delimit scope. A major matter of interest was the extent to which recommended salary increases were reflections of performance evaluations made by chairpersons and deans. Were large merit increases for teaching matched by high evaluations of teaching effectiveness? Did a given evaluation score for research earn more increase than the same score for teaching? Were high evaluations for service recognized by corresponding increases or was service performed "out of the faculty member's hide"? The purpose of the study was to answer these and similar types of questions, search for possible improved approaches to accountability, evaluation, and reward, and establish a base for further research.

Procedures

This discussion will emphasize correlational analyses involving evaluation ratings and salary increases. Workload assignment, though a related issue, will be considered only as necessary for clarity or perspective.[1]

A salary increase proposal form was submitted for faculty members by chairpersons to deans thence to the office of the Vice President for Academic Affairs. The forms included data (in addition to such items as sex, rank, tenured or non-tenured, initial year of employment at the institution, and the like) as follows:

1. Recommended merit increase amounts for (a) teaching, (b) research and creative activity, and (c) service (professional, university, public).
2. Recommended adjustment increase amounts for (a) promotion and (b) correction of possible inequities due to such factors as sex, minority, rank disparity, and the like.
3. Chairperson's evaluation (5 point scale: 1-lowest to 5-highest) of (a) teaching effectiveness, (b) research and creative activity, (c) advising, (d) service, and (e) overall quality.
4. Workload assignment in percentages for the previous year for (a) teaching (graduate; undergraduate), (b) research and creative activity, (c) advising, and (d) service.

Twelve-month faculty, part-time faculty, faculty who had submitted resignations; and ranks other than professor, associate professor, assistant professor, instructor, and lecturer were excluded. The remainder, 635 full-time 9-month faculty, were the subjects of the study.

Results

Table 1 is the basic matrix of Pearson r correlations of the variables discussed in this paper. A point that should be mentioned is that most of the correlation coefficients were statistically significant at the .001 level, a few at .01, and only 2 at the .05 level. To save space, the .01 and .001 level notations are combined. The result is unimportant, since the statistical significance is not practically significant due to the size of N (Snedecor, 1956).

Table 1
CORRELATION MATRIX ON FACULTY SALARY INCREASE VARIABLES

	Increase Teaching	Increase Research	Increase Service	Evaluation Teaching	Evaluation Research	Evaluation Service	Evaluation Overall Quality	Assignment Teaching	Assignment Research	Assignment Service
Increase Teaching										
Increase Research	27**									
Increase Service	24**	10**								
Evaluation Teaching	40**	-03	16**							
Evaluation Research	24**	49**	15**	32**						
Evaluation Service	27**	-03	40**	49**	40**					
Evaluation Overall Quality	42**	23**	30**	73**	68**	67**				
Assignment Teaching	12**	-14**	-12**	-02	-06	-08	-05			
Assignment Research	07	53**	-05	-03	32**	-10*	12**	-13**		
Assignment Service	03	00	34**	11**	11*	28**	22**	-13**	02	

Note — Decimals omitted. N = 655

*p < .05, **p < .01

Correlation between salary increase for teaching and evaluation of teaching performance is present but only moderate, + .40. It is interesting to note that the correlation between teaching increase and overall evaluation is higher, though only slightly so, + .42. There is a noticeable drop from these levels between teaching increase and other variables — to + .27 and + .24 to service and research evaluations to virtually no association with the assignment variables. The higher correlations between teaching increase and teaching evaluation are expected, or certainly hoped for. The similar higher level of correlation with overall quality suggests that the raters tended to associate overall quality with teaching performance.

The correlation between increase for research and evaluation of research performance is moderate, + .49. The correlations between research increase and other variables are low, with one exception. Correlations between research increase and teaching and service evaluations are both — .03, indicating virtually no association. Overall quality evaluation is a different matter. While considerably less than the teaching increase - quality correlation, it is present to a slight degree — + .23. Noteworthy is the correlation between research increase and research assignment, + .53, which is higher than the correlation between research increase and research evaluation. This suggests the possibility that in research the chairpersons tended to recommend increases based on assignment rather than performance evaluation.

Increase for service and evaluation of service are moderately correlated, + .40. Correlations between service increase and other evaluation variables range from + .15 for research to + .30 for overall quality.

This places service about halfway between teaching and research (+ .42 and + .23 respectively) so far as correlation coefficients between those increases and overall quality evaluations are concerned. It is apparent that overall quality is more closely associated with teaching than with research and service so far as salary increases are concerned. The correlations between service increase and the assignment variables ranged from — .12 for teaching to + .34 for service. The fairly close correlations between service increase and service evaluation and assignment (+ .40 and + .34) suggest that the chairpersons were confounding evaluation and assignment ratings when recommending salary increases for service.

Service is a category of professional activity that remains vague and ill-defined in higher education. It means different things to different people, even when apparently uniform definitions are provided. The range of correlation coefficient values between service increase and evaluation, overall quality, and assignment is smaller than for either of the other two categories of activity — teaching and research. The ranges are + .30 to + .40 for service, + .12 to + .40 for teaching, and + .23 to + .53 for research. This implies a need to study carefully the use of service as a category in determining salary increases and evaluating performance.

It is interesting to note the correlations among the evaluations themselves. The coefficients among the different categories are about as high as between salary increase and corresponding evaluation. The correlations between overall quality evaluation and teaching, research, and service evaluations are high — + .73, + .68, and + .67. These coefficients are considerably higher than the correlations between overall quality evaluation and salary increase for teaching, research, and service. Note that evaluations were scaled ordinal data (1, 2, 3, 4, 5, NA-not applicable) while increase and assignment were, for practical purposes, continuous data of wide range. This circumstance is known to affect some statistics, leading to misinterpretation. It should be mentioned, however, that Spearman's rank-order correlation, a non-parametric statistic, led essentially to the same results as the Pearson r statistic in this study.[2]

Other Considerations

Table 2 contains frequency data of association with respect to salary increase and evaluation score for teaching, research, and service. The evaluation score, "not applicable" is excluded from the data and computations. The data in Table 2 permits additional analyses of association. It provides added perspective to the Pearson r correlations in Table 1. It should be pointed out that the grouping of salary increases into intervals in Table 2 was not used in the Pearson r computations of Table 1. The Pearson r computations were based on exact increase figures for each individual, including zero "increase." A total of 73 individuals did not receive increases either for teaching, research, or service, a fact not evident in Table 2. The difference between the 635 faculty in the study and the N values is due to the requirement of matched pairs in Table 2. The latter excludes those who received a "not applicable" evaluation score, even if an increase was proposed.

The pattern of "piling up" of frequencies in Table 2 helps explain the general lack of high correlations between activity category and evaluation. The associations appear to tend toward curvilinear relationship rather than the linear relation measured by Pearson r. Further analyses of these apparently nonlinear relationships are needed. The small number of evaluation values compared to the range of salary increase introduces problems with respect to the parametric statistical procedures usually employed. Distribution-free statistics would seem to be a promising area of exploration for association patterns experienced with the variables such as those in this study (Siegel, 1956).

The teaching category in Table 2 contains 65 who received no increase. Of these 24, or 37%, were evaluated above average (evaluation scores 4 and 5). Corresponding figures for research and service are 27, or 17%, and 43, or 31%. In other words, it is in teaching that the highest percentage of the zero-increase group received above-average evaluations.

The explanation of above-average evaluation matched by zero increase is not obvious. This would seem particularly true in teaching, if indeed teaching enjoys top priority in the reward system. The approach just used would indicate that research enjoys top priority, since the lowest percentage of zero increase for above-average evaluations occurred in research. Part of the explanation involves the relative size of increase in the three categories of activity. This is suggested in Table 2 by referring to the salary increase interval columns and corresponding N. A more direct explanation is provided by Table 3, which indicates comparative institutional emphasis in salary resource allocations.

It is clear that major emphasis was placed on increase for teaching. Of the combined mean increase for teaching, research, and service 58% was devoted to teaching. Research and service account for 24% and 18% respectively. The category Other consists mainly of "equity" or affirmative action adjustments for female faculty. It also includes some male faculty who for various reasons had "fallen behind" their peers in

Table 2

FREQUENCY OF SALARY INCREASE BY INCREMENT INTERVAL AND PERFORMANCE EVALUATION: TEACHING, RESEARCH, AND SERVICE

Teaching

Eval. \ Incr.: $	0 - 199	200-399	400-599	600-799	800-999	1,000-1,199	1,200-1,399	1,400-1,599	1,600-1,799	N	%
5	16	57	57	30	4	3		1		168	28.6
4	27	109	79	12	1	2				230	39.1
3	42	79	28	3						152	25.9
2	19	13	2							34	5.8
1	3	1								4	0.7
N	107	259	166	45	5	5	0	1	0	588	
%	18.2	44.0	28.2	7.7	0.9	0.9	0	0.2	0		100.0

Research

Eval. \ Incr.: $	0 - 199	200-399	400-599	600-799	800-999	1,000-1,199	1,200-1,399	1,400-1,599	1,600-1,799	N	%
5	38	49	16	9	5					117	22.5
4	90	36	13	4	1	1				145	27.8
3	109	21	3	2		1				136	26.1
2	76	5								81	15.5
1	40	2								42	8.1
N	353	113	32	15	6	2	0	0	0	521	
%	67.8	21.7	6.1	2.9	1.2	0.4	0	0	0		100.0

Service

Eval. \ Incr.: $	0 - 199	200-399	400-599	600-799	800-999	1,000-1,199	1,200-1,399	1,400-1,599	1,600-1,799	N	%
5	100	36	5	2						143	27.0
4	136	36	4							176	33.2
3	110	10								120	22.6
2	55		1							56	10.6
1	35									35	6.6
N	436	82	10	2	0	0	0	0	0	530	
%	82.3	15.5	1.9	0.4	0	0	0	0	0		100.0

salary level. These increases are presented separately since they were based not on the performance evaluations but on special procedures. The remainder is for promotion adjustments. A relatively small number of promotions were awarded, thus their mean amount is a small portion of the $413.

The Other increases were taken "off the top" of the institution's faculty salary increase allocation and represent a substantial part, 43%, of the $959 overall increase. This was due to a policy decision to move with speed to correct any inequities which were determined by special studies to exist. In the future a much smaller portion of the salary increases is likely to be in such special categories. This should permit increasingly meaningful analyses of monetary reward as compared to evaluative criteria of faculty performance in the various categories of professional activity.

Table 3
FACULTY SALARY INCREASES BY ACTIVITY CATEGORY

Category	Mean	Range
Teaching	$317	$0 - 1,500
Research	133	0 - 1,400
Service	96	0 - 1,000
Other	413*	0 - 5,197
Total	$959	$0 - 5,197

N = 635
*Primarily for "equity" adjustments. See text for explanation.

Summary and Recommendations

An exploratory study of salary increase proposals for 635 nine-month faculty was conducted at a state university. The study was based on data contained in salary increase proposal forms which included (1) recommended merit increase amounts for teaching, research and creative activity, and service; (2) recommended adjustment increase amounts for promotion and inequity correction; (3) chairperson's evaluation of teaching effectiveness, research and creative activity, advising, service, and overall quality; (4) percentage workload assignment in teaching, research, advising, and service. Assignment analyses are excluded from this report in order to delimit scope.

Correlational analysis was applied to the two factors, evaluation and salary increase in three categories of activity — teaching, research, and service. The correlations summarized here are Pearson r. Positive moderate correlation (+ .40) was found between teaching increase and teaching evaluation and between teaching increase and overall quality evaluation (+ .42). Slightly higher positive correlation was found between research increase and research evaluation (+ .49). There was higher correlation between research increase and research assignment (+ .53) than between increase and evaluation (+ .49). The correlation between service increase and service evaluation was moderate (+ .40), and between service increase and overall quality evaluation the figure was + .30. In general, correlations were present and positive, but only to moderate degree.

A two-way contingency table of evaluation scores and salary increase intervals suggested that the relationship between these two variables was curvilinear rather than rectilinear. This indicates the need to explore other measures of relationship between evaluation and salary increases if such measures are to have value for planning and decision-making.

Notwithstanding the lack of wide differences in correlation among the teaching, research, and service variables, the mean merit salary increases for the typical faculty member in these three categories were significantly different — $317 for teaching, $133 for research, and $96 for service. The differences are a reflection of institutional policy which mandated greater recognition of teaching in awarding increases. This mandate operated despite evaluation scores and helps explain lower increases in research and service despite high evaluations in those two categories. Approximately 43%, or $413 of the overall typical increase of $959 was for "off-the-top" adjustments for affirmative action (mainly for female faculty) and promotion increases.

It is recommended that extensive research (including non-parametric and curvilinear techniques) be conducted in the area of faculty performance evaluation methods as related to the faculty accountability and reward system. Particular attention should be given to evaluation methods which involve scaling and weights. Provision should be made for evaluation scales or devices on which equivalencies can be established among various programs or discipline areas. In addition a second dimension, weighting, should be provided for the different categories and sub-categories of professional activity — teaching, research, public and institutional service, advising, professional development and renewal, and the like. This is needed so that faculty from different organizational units can be compared on a standardized basis while maintaining different emphases among the several categories.

This discussion has concentrated on monetary reward. Other types of reward, however, are involved. These include promotion, retention, tenure, type of assignment, and the like. Opportunities for equitable professional advancement and development depend on reliable and hopefully uniform systems of evaluation and reward. We must develop and continuously evaluate such systems in order to conduct effective planning, achieve equitable resource allocation, and function productively. Only when higher education demonstrates and interprets progress toward such goals can the public be convinced that resources in higher education are being critically examined and used in the best interests of public policy.

Exploratory statistical analyses of other data from the salary increase proposal forms, including workload assignment variables, have been and are being conducted. These include measures of central tendency and variability, analysis of variance, association measures such as Chi square, Phi, Contingency coefficient, Kendall's tau, Gamma, Cramer's V, Somer's D, Spearman Rho, frequency distributions, and others available from the computer program system, *Statistical Package for the Social Sciences*, Nie et al., 1970. Those interested in further details should contact the author of this paper.

Spearman Rho coefficients were as follows: teaching — increase/evaluation + .39, increase/overall quality + .41; research — increase/evaluation + .60, increase/overall quality + .29; service — increase/evaluation + .46, increase/overall quality + .42. The Spearman correlation efficiency is about 91% when compared to Pearson (Siegel, 1956).

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THE TUNNEL AT THE END OF THE LIGHT: TENURE QUOTES AND THEIR IMPACT ON FACULTY STAFFING PATTERNS

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A major public policy debate is under way concerning academic tenure in colleges and universities. The play of debate involves a different set of characters and different themes than did earlier attacks by the lay public on this special privilege of academics. Today legislators, trustees, administrators, senior and junior faculty, as well as women and ethnic groups are all expressing criticism of tenure. Some argue that tenure is not a sufficient defense of the academic freedom of junior faculty; that tenure is unnecessary given the personal protections now afforded faculty by the courts and collective bargaining agreements; that tenure stifles rather than encourages flexibility and innovation. Unfortunately the public debate on these issues has been largely rhetorical and self-serving.

The most authoritative voice, and thus far the most influential, has been that of the Commission on Academic Tenure in Higher Education (1973), sponsored by the American Association of University Professors (AAUP) and the Association of American Colleges. While concluding that academic tenure is "fundamental in the organization of faculty service in American higher education" (p. 23), the commission recommended that colleges and universities develop policies limiting the proportion of tenured faculty to between one-half and two-thirds the total full-time faculty (p. 50). While the commission's report represented an overview of the tenure problem and the suggested limitations on tenure came as part of a recommendation on staffing plans, discussion of the issue has been quickly subsumed under the label "tenure quota." A possible outcome of the current public debate is a dramatic curtailment in the opportunity of junior faculty to gain tenure. What was awarded easily in the last two decades may be given grudgingly in the future.

In an effort to clarify one issue in this debate, I will examine tenure quotas and their influence on faculty staffing patterns. I will propose a "tenure prospect ratio" as an alternative means of achieving the goals sought by a tenure quota and I will conclude with a restatement of certain critical issues in an effort to advance the debate.

Tenure Quotas

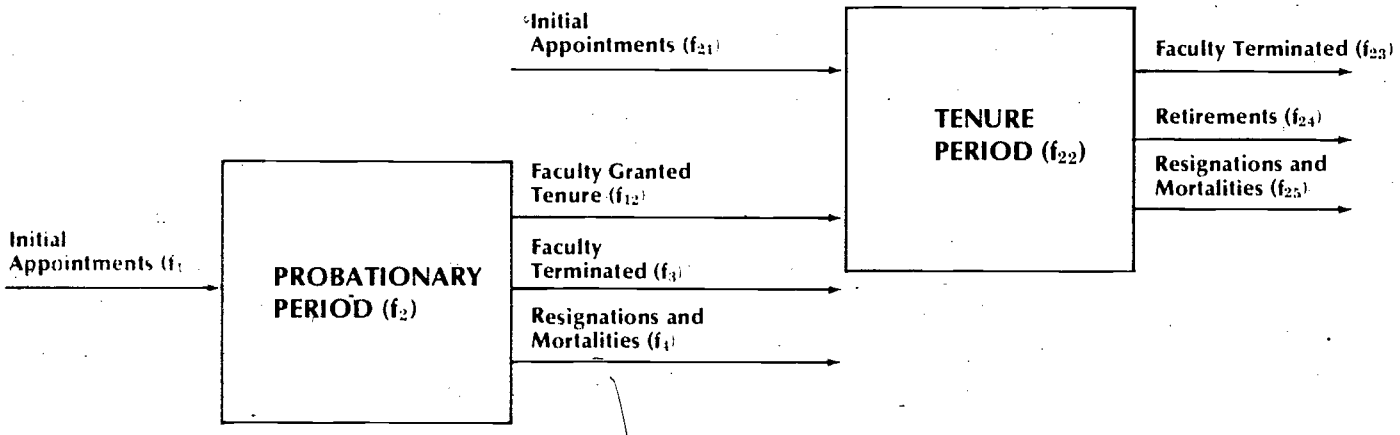
There are a variety of policies described as tenure quotas. I am using the term to refer to a policy which fixes at a moment in time the maximum percentage of faculty tenurable at all levels of an institution. The justifications for this policy are that an absolute control on tenure will give the institution the flexibility needed for allocating financial resources and will, more importantly, guarantee institutional innovation and vitality through the infusion of young faculty. While the relationship between a tenure quota and financial resources has received some attention from Freeman and Rossmeier (1973) there has been limited discussion of its influence on institutional vitality.

In order to explicate this relationship, I introduce a simple "two-step" model of faculty flow (for models of related interest see Furnis (1973), Hopkins (1972), LaSalle (1972), and "Projected Faculty Profiles 1973-1993" (1973)). The model consists of ten variables defined as follows:

- f_1 = initial appointments to nontenured faculty
- f_2 = probationary period for nontenured faculty
- f_3 = nontenured faculty terminated
- f_4 = resignations and mortalities among nontenured faculty
- f_{12} = nontenured faculty granted tenure
- f_{21} = initial appointments to tenured faculty
- f_{22} = period in tenure of tenured faculty
- f_{23} = tenured faculty terminated
- f_{24} = retirements among tenured faculty
- f_{25} = resignations and mortalities among tenured faculty

Institutional policy can influence each of these variables with the exception of the rate of mortality — and more than a few administrators have fantasized about making this a policy, at least in selected instances. In reality, however, not all the remaining variables may be specified independently of each other.

Figure 1
A TWO-STATE MODEL OF FACULTY FLOW



Given a condition of equilibrium the specification of some of the policies forecloses the possibility of specifying all the others.

Utilizing the model, I will examine the effect of a fixed tenure quota of fifty percent on a mythical institution called Macro-U. Macro-U is in equilibrium; consequently the number of faculty flowing into the institution equal the number departing. The university has a tenure probationary period of five years, an average period in tenure of thirty years, a faculty whose length of service is equally distributed and a policy that all new tenure appointments will come from the nontenured ranks, i.e. that there will be no appointments of outside senior faculty to the tenured staff. With a faculty of 100, tenure quota of .50 produces ten new nontenure appointments per year, and an average of 1.6 appointments to tenure, equal to the number of retirements. As a consequence the prospect for tenure of a single cohort of entering faculty is extraordinarily small, approximately 16 percent. If the institution were in the bleaker, but more typical, situation of declining enrollments, and persisted with its tenure quota, there would be no tenure appointments until enrollment stabilized.

A tenure quota thus poses serious difficulties for those responsible for planning and staffing policies. One aspect of this is the difficulty of sustaining qualitative judgments in appointment and tenure decisions once a numerical quota has been established. A department composed predominantly of senior faculty which is above the quota and in most need of the infusion of young faculty may become sloppy in its recruiting practices because turnover is guaranteed. In the case of a department below the quota, particularly a new department, the impulse to tenure everyone may be irresistable and a reasonable pace of tenure decisions impossible to determine. Should an institution not have faculty evenly distributed by age, and few do, the oscillating character of retirements and their differential impact on succeeding cohorts of faculty will create additional burdens.

More significantly, a tenure quota may undercut rather than attain the goal of institutional vitality and innovation. An institution which can offer incoming faculty only dim prospects for tenure may have difficulty recruiting high quality faculty. I am aware, of course, that the current market is extraordinarily favorable for recruiting and that the most prestigious graduate institutions have traditionally followed just such a policy without detriment to their quality. Nonetheless, most institutions, particularly teaching-oriented institutions, will be unable to match the environment and research support which the prestigious universities provide, and it is at least arguable that the current generations of graduate students will be more security conscious than their predecessors. A second factor is the contribution of young faculty to the institution, and their responsiveness to its needs. The vitality and innovation which new faculty will contribute may be highly dependent not only on the ability of the person but on their willingness to commit themselves to the institution. If prospects for tenure are low and if the market is poor, nontenured faculty may understandably shirk committee and administrative assignments and even teaching in order to concentrate on publishing, attendance at conferences and other means of maximizing their visibility. The net result to the institution may be quite the opposite of the innovation and vitality expected.

Tenure Prospect Ratio

Given the desire to insure a measure of institutional innovation and vitality, a tenure-limiting policy which takes account of a "tenure prospect ratio" could be a more effective means of control than a straight tenure quota. As used here a tenure prospect ratio refers to the probability that an initial appointee will gain tenure at the end of the probationary period.

In order to properly identify this quantity, we should relate the tenure prospect ratio (TPR) to the proportion of tenured to nontenured faculty — the tenure quota (Q).

$$(1) \quad TPR = \frac{nt/P}{t/T} = P/T \; t/nt$$

If we let P be the probationary period in years and T the career period from tenure to retirement, and if we assume for purposes of calculation that nontenured faculty are evenly distributed within P and tenured faculty within T, then the number of faculty eligible for tenure in a given year is nt/P where nt is the number of nontenured faculty. The number of faculty retiring in a given year is t/T where t is the number of tenured faculty. The tenure prospect ratio in a steady state situation (i.e. tenure only on a *replacement* basis) therefore, would be computed as follows:

$$(2) \quad TPR = P/T \quad Q/(1-Q)$$

Table 1 illustrates the effect on a tenure prospect ratio (TPR), the number of initial appointments, and the average retirements per year of different tenure quotas (Q) at Macro-U.

As the table indicates, even a tenure quota of 50 percent provides a very low tenure prospect ratio (16 percent) for an entering faculty member. It is not until the tenure quota rises above two-thirds that the TPR becomes attractive enough to be a positive force in terms of recruiting new faculty or motivating existing nontenured faculty. Admittedly the higher tenure quota also lowers the number of initial appointments per year. But as was emphasized earlier, the contribution toward institutional vitality of new faculty may be as dependent upon their quality and commitment as upon their actual numbers.

Personnel Planning and the Tenure Prospect Ratio

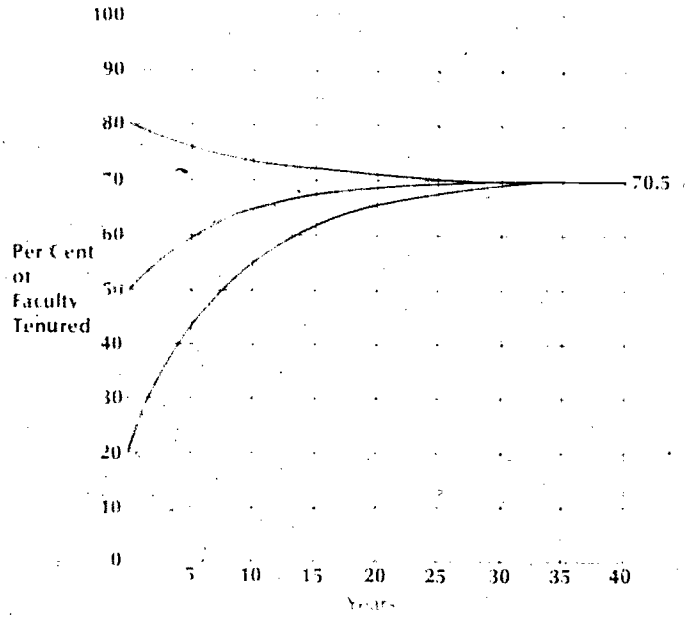
A major advantage of a tenure prospect ratio is the predictability and control which it can bring to the tenure award process, characteristics unreachable with a tenure quota alone. I have discussed the difficulties in applying a fixed tenure quota on two departments at Macro-U, one above the quota, one below. By contrast, Figure 2 illustrates a situation in which a policy decision has been made at Macro-U to insure each probationary faculty member *at least* a 40 percent prospect of gaining tenure. Given three departments, each with a different percentage of tenured faculty, the effect of utilizing a tenure prospect ratio over time is to converge on a common percentage of 70.5. Furthermore, the department which is 80 percent tenured achieves the average without suffering a lengthy period during which no probationary faculty could gain tenure, and the departments below the average would *gradually* acquire tenured faculty at a predictable rate.

While this model has enormous benefits for planners, in the real world such predictability is difficult to sustain. A tenure prospect ratio, like a tenure quota, will be sensitive to fluctuations in retirements. Given the rapid growth of most institutions during the 1960's an institution is likely to have a bi-modal distribution of faculty which will not produce an

Table 1
TENURE PROSPECT RATIO AS A FUNCTION OF SELECTED TENURE QUOTAS

TENURE PROSPECT RATIO	TENURE QUOTAS	INITIAL APPOINTMENTS	NON TENURED FACULTY	TENURED FCULTY	AVERAGE RETIREMENT PER YEAR
.04	.20	16	80	20	.66
.11	.40	12	60	40	1.33
.16	.50	10	50	50	1.66
.25	.60	8	40	60	2.00
.66	.80	4	20	80	2.66

Figure 2
IMPACT, AS A FUNCTION OF TIME, OF A CONSTANT TENURE PROSPECT RATIO ON PROPORTION OF TENURED FACULTY.



even flow of retirements. Furthermore, a tenure prospect ratio will be sensitive to patterns of institutional growth or constriction. A rapidly growing institution can afford to ignore the issue, at least in the short-run, while an institution whose budget has been slashed 50 percent may not be capable of the luxury of tenuring younger faculty. For the great bulk of institutions in between, however, a tenure prospect ratio may have merit. In these institutions it may be possible to reexamine existing policies toward increasing the tenure prospect ratio for each entering faculty member.

Expanding the Tenure Prospect Ratio

In addition to manipulating the overall proportion of tenured faculty, there are several other variables which may be examined in an attempt to increase the tenure prospect ratio. A re-analysis of Figure 1 suggests three critical areas of institutional policy making: (1) the career period of tenured faculty; (2) initial appointments to the tenured faculty; and (3) probationary period for nontenured faculty.

Large numbers of institutions have been reexamining their retirement policies in an effort to open opportunities for appointing and tenuring younger faculty as well as lowering overall personnel costs. Generally this has entailed lowering the mandatory retirement age, e.g. from 70 to 65, or creating opportunities for early retirement. Assuming a system that is in equilibrium, an increase in the average number of retirements per year increases the tenure prospect ratio.

The effect of outside appointments to tenure, again in a situation of equilibrium, is to lower the number of tenure slots. Given an institutional commitment to increasing the tenure prospect ratio, a policy might be promulgated eliminating such appointments, or more reasonably, permitting them in new programs but limiting them in established departments.

Less obvious, as an intervening variable, is the effect of the probationary period. The maximum probationary period permitted before a tenure decision must be made under AAUP guidelines is seven years. But, as reported by the Commission on Academic Tenure, only a minority of institutions — 37.6 percent — have established a seven year maximum (p. 61). Of the institutions surveyed the median maximum probationary period was six years. Extension of the probationary period to a maximum of seven years was a basic recommendation of the commission on the grounds of strengthening the pattern of professional development and the quality of the institution. Lengthening the probationary period also has the effect of increasing the tenure prospect ratio. Table 2 indicates the impact on the tenure prospect ratio of various probationary periods at Macro-U. While extending the probationary period will tend to increase the tenure prospect ratio, it will also as the table indicates, act as a further control on the number of initial appointments.

Clearly the tenure prospect ratio is not a cure-all for the staffing problems of universities and colleges, but given the current reality of a glutted faculty market and a need for institutional vitality it is, I believe, a more humane and relevant solution than a fixed tenure quota.

The Tenure Debate

As I stated at the outset the public debate on the nature of academic tenure has been obscure. In this analysis I have tried to clarify one aspect of the debate by examining the effects of a tenure quota, introducing the concept of a tenure prospect ratio and suggesting their implications for innovation and institutional vitality. In my final remarks I would like to define some of the remaining questions in such a manner as to encourage constructive analysis and investigation.

Question 1: Can academic tenure be defended as a support to academic freedom when it fails to protect nontenured faculty:

Table 2
TENURE PROSPECT RATIO AS A FUNCTION OF SELECTED PROBATIONARY PERIODS

TENURE PROSPECT RATIO	PROBATIONARY PERIOD	TENURE QUOTAS	INITIAL APPOINTMENTS
.09	3	.50	16.6
.16	5	.50	10.0
.25	7	.50	7.1

At present the institutions of academic freedom and tenure supposedly protect faculty members from inappropriate exercises of lay power and from unwarrented peer pressure. A substantial flaw in this argument is that nontenured faculty who may inject creative and thought-provoking ideas into the academy are not afforded these protections. Those of us who have been involved in personnel decisions can testify to the slender thread separating negative decisions promulgated because of a failure to meet respected standards of teaching and scholarship, and those promulgated because of a failure to adhere to departmental orthodoxies.

Question 2: Have union grievance procedures and civil court rulings made tenure obsolet ?

The medieval scholarly guilds constructed a protective barrier of privilege and rights in order to prevent lay control of their activities. Until very recently American judicial authorities took a similar view, and refused to review personnel decisions made in institutions of higher education. This has now changed. Today a faculty member may seek redress on a variety of issues from outside arbitrators under collective bargaining agreements, human rights commissions, and state and federal courts. Some public spokesmen now perceive little distinction between the legal rights and privileges of academics and those of the lay public. They have questioned whether these legal protections are not alone sufficient to secure academic freedom.

Question 3: What is the relationship between institutional innovation and the presence of young faculty?

Some charge that universities resemble old-age homes in which tenured faculty whose interests and knowledge are clearly irrelevant to contemporary needs block the opportunity for hiring younger faculty. There is the clear assumption that sensitivity to new developments in the field, interest in innovation, and creative thinking are the exclusive domain of a recently graduated Ph.D. One need not wholly refute this argument to recognize the validity of a recent report on academic tenure at Harvard. After examining the history of intellectual and curricular innovation at the university the committee concluded that most of these experimental changes derived from the thinking and energy of tenured faculty members (Commission on Academic Tenure, (1973), p. 18). All of which is to say that we need to know more about innovation and change in universities.

Question 4: Is there still a distinction between job security for faculty members in the form of tenure and the job security available to civil servants, and locomotive firemen?

A traditional rationale for the societal attack on academic tenure — generally interpreted as lifelong appointment — was its uniqueness. As I examine the reality of life in New York City I am less impressed with this argument. For example, according to state legislation creating their positions the secretaries in the City University of New York may gain "tenure" which is not subject to fiscal ability. In other words, if the budget of the university were suddenly cut 50 percent, nontenured *and* tenured faculty could be legally dropped, but all tenured secretaries would be retained. This is what we term "preserving the university."

The issue of job security as raised here is as much political reality as a question for investigation. But examining the implications for the university of defining tenure similarly to the larger society may be instructive to the tenure debate. I believe we could thereby gain significant insight into those aspects of academic life, if any, which are still maintained by the institution of academic tenure.

I have raised these questions, not because I am convinced of their correctness — indeed as you will note they conflict to a certain degree — but because I believe they much more accurately portray issues critical to the debate than those frequently heard. To the extent that these questions, or ones similar to them, can be affirmed or denied, to that extent we would be closer to resolving the current public debate on tenure.

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TUITION POLICY AND MARKET ANALYSIS

Arthur L. Gillis, The University of Iowa

The discussions, research and proclamations concerning tuition levels in postsecondary education have reached fever pitch in recent months. Spurred on by the reports of The Carnegie Commission on Higher Education,[1] The Committee for Economic Development,[2] and the National Commission on the Financing of Postsecondary Education,[3] the public, the Congress, state governments and public institution boards of control have raised many questions relative to appropriate tuition levels. As a result, many public postsecondary institutions are now facing the prospect of increasing the student's share of the cost of education through higher tuition charges.

Throughout the debates on tuition rates the concepts of educational costs, fair share burdens in paying for education, public/private benefits from education, and educational accessibility have been promoted as the rationales for both increasing tuitions as well as maintaining present tuition levels. This paper will attempt to focus on tuition policy and marketplace conditions for one university and outline some of the practical implications which increased tuitions may have on the retention of present students and the attraction of prospective students.

It seems paradoxical that public universities which were founded on the principle of widening opportunities for postsecondary education to all are now less favored, and their policies criticized, when this principle appears stronger than ever. What has come under attack is institutional financing policies, especially the practice of providing subsidized low cost tuitions to students.

Many plans for educational financing reform are being proposed. They may represent great challenges to the maintenance of public institution enrollments. for tuition policy as an economic tool, as noted by Miller,[4] Hoenack[5] and Leslie and Johnson,[6] plays an important part in student college attendance choice.

The University of Iowa, like many other public postsecondary institutions, is facing great public and legislative demand for an increase in student tuition charges. As instructional costs rise. as state educated students leave the state and as students are increasingly perceived as reaping the major benefits of high state subsidies and low tuitions for their education, these demands for higher tuition rates grow. The demands have been fueled by the condensed reports appearing in the popular press on the massive research projects on postsecondary finance undertaken by The Carnegie Commission on Higher Education, The Committee for Economic Development, and The National Commission on the Financing of Postsecondary Education.

In reacting to these pressures The University of Iowa has undertaken a review of tuition rates to analyze the possible effects of higher rates on student enrollments. In order to forecast the implications of tuition increases on its market performance the University first had to ascertain its student market profile. Our consideration of a student market profile included an analysis of:

1) Comparative college tuitions:
2) Recommended tuition increases.
3) Freshman admissions, enrollments and non-enrollments.
4) Student ability to pay.
5) Availability of student aid.
6) Prospective student market.

The study of the economics of higher education has given increased emphasis to the laws of demand and supply and the theory of the firm as they are applied to postsecondary education.[7] Although the degree of applicability of these business-oriented theories is debatable when used in the analysis of public educational institutions, they point out that the purchase of education, at least in part, is an economic decision and tuition policies must be cognizant of the choices available to prospective students.

Comparative Tuitions and Costs

The three major commission reports (Carnegie Commission, Committee for Economic Development, National Commission on the Financing of Postsecondary Education) considered the relative low level of tuitions in public universities. The Carnegie Report recommends the raising of public college and university tuition to one-third of institutional costs.[8] The

Committee for Economic Development Report recommends that tuition be raised to 50% of instructional costs within five years.[9]

At the present time The University of Iowa ranks ninth in resident undergraduate tuition and seventh in resident graduate tuition when compared with the major public universities in an eleven state surrounding region (Table 1).

at Iowa would moderately affect undergraduate tuition rates for freshmen and sophomores and could significantly increase rates for juniors and seniors if tuition were differentiated by level of enrollment. Recommendations to increase tuitions to one-third or one-half of costs would also mean at least a doubling of present resident graduate tuitions at Iowa as well as at many other public universities.

Table 1

COMPARISON OF TUITIONS AND MANDATORY FEES AMONG SELECTED PUBLIC UNIVERSITIES IN ELEVEN STATE MIDWEST AREA 1973-1974

Institution	Undergraduate Tuition Ranking		Graduate Tuition Ranking	
	Resident	Nonresident	Resident	Nonresident
Michigan	1	1	1	1
Ohio State	2	3	2	3
Michigan State	3	6	4	6
Purdue	4	5	6	7
Illinois	5	4	9	5
Indiana	6	8	8	8
Minnesota	7	7	3	4
Nebraska	8	9	14	12
IOWA	9 ($620)	11 ($1,350)	7 ($710)	10 ($1,450)
Wisconsin	10	2	5	2
Kansas	11	12	11	11
Missouri	12	10	12	9
North Dakota	13	13	13	14
South Dakota	14	14	10	13
(Mean Rates)	($589)	($1,550)	($708)	($1,665)

Interinstitutional tuition rate competition within this area favors The University of Iowa. Tuition comparisons of this type have given rise to legislative demands for tuition increases in Iowa. The amounts of proposed increases have followed the reports by The Carnegie Commission on Higher Education and The Committee for Economic Development which recommend the raising of public university tuitions. Whereas The Carnegie Commission would differentiate tuition by level of enrollment, The Committee for Economic Development's recommendation is not adjusted to student level. Application of these recommendations

Using comparative tuition information involving similar institutions to establish tuition policy may be shortsighted. The market analysis of tuition policy suggests that the most meaningful tuition comparisons involve institutional competitors.

Freshman Admissions and Enrollments

Competitive tuition rate comparisons may offer some information relative to institutional market placement, but these measures are only gross indicators for tuition policy decisions. Student profiles provide greater insight for the formation of tuition policy. The

major student populations which require study are the prospective student pools, the present student body and those admitted students who enroll elsewhere. A number of tools are easily accessed to measure and analyze these student groups.

In the midwest the American College Testing Program Class Profile can be utilized to analyze prospective freshman students. At Iowa it was found that among students who indicated some preference for the University, but who ultimately enrolled elsewhere, most enrolled in one of three areas: the low cost Iowa community colleges: the two other state universities; the largest private university in the state.[10] None of the public university cohorts in the eleven state midwest area represented major enrollment competition. Except for the private university, the major in-state competitors offered lower student cost educations. The large private university primarily competed with Iowa for students living in its immediate proximity. Its costs could be ameliorated by living at home.

Another portion of the Class Profile data indicated that the University was only enrolling 30% of the prospective freshmen who indicated Iowa as their top institutional preference. A review of admissions records, illustrated in Table 2, further indicated that the University was enrolling about 70% of the total number of freshmen admitted to the University each fall.

Prospective students may choose to attend other schools for a range of academic, geographic, or social reasons. Tuition policy or institutional costs may have only limited significance in many prospective students' final determination of college attendance. A University analysis of "no shows" indicated that state of residence, relative preference for the University and two financial factors — the need for aid to pay institutional costs and the need for work to pay for the costs of attendance — were among the major differences between our enrollees and our "no shows."[11] Further analysis of the non-attending group indicated that most enrolled in other colleges or universities. The primary reason given for their decision not to attend The University of Iowa was financial difficulty.

Student Ability to Pay

While student costs may adversely affect some prospective enrollments, increased costs may also erode current enrollments. The National Commission on the Financing of Postsecondary Education, commenting on possible enrollment erosion due to increased tuitions has estimated that for each increase of $100 in tuition, enrollments in public universities could be reduced by 2.5% or more. Specifically, enrollment in public universities would be reduced by approximately 3.1% for low income students ($7,500 or less), 1.2% for middle income students ($7,500 - $15,000), and 0.7% for high income students (over $15,000).[12] Campbell and Siegal,[13] in a study of the demand schedule for higher education covering the period 1919-1964, found that 87% of the variation in the demand for undergraduate education could be explained by variations in income and tuition charges. The price elasticity of demand was statistically significant for their sample and had a value of −.440. This value suggests that a 10% increase in tuition would result in a 4.4% decrease in demand for higher education. Hoenack,[14] in developing an optimization model for the efficient allocation of subsidies to college students, set up an elasticity grid based upon student family income, changes in costs of attending the University of California and enrollment changes. Here,

Table 2
SUMMARY OF ADMITTED AND ENROLLED FRESHMEN
1969-1973

	Year				
	1969	1970	1971	1972	1973
(1) Number Admitted	4,177	3,431	3,150	3,212	3,714
(2) Number Enrolled	2,969	2,462	2,235	2,197	2,608
(3) Number of No Shows (1 - 2)	1,208	969	915	1,015	1,106
(4) Percent No Shows	29%	28%	29%	32%	30%

Table 3
DISTRIBUTION OF FRESHMAN ENROLLMENTS, UNIVERSITY OF IOWA, BY PARENTS' ADJUSTED GROSS INCOME

Income Range	Distribution of Freshman Enrollments		
	1971	1972	1973
Less than $7,500*	26%	24%	24%
$7,500 - $15,000	55%	48%	44%
Over $15,000	13%	21%	25%
Unknown	6%	7%	7%

*Includes self-supporting students.
Source: *ACT Class Profile Reports*, University of Iowa, 1973, 1972, 1971.

as in the National Commission and Campbell and Siegal studies, an inverse relationship was found to exist between enrollment demand and cost (price).

Table 3 portrays the mix in family adjusted gross income for freshmen at The University of Iowa. Based upon the foregoing studies, the evidence suggests that tuition increases to one-third or one-half of institutional costs at Iowa (dollar increases in excess of $100 for most student levels) may have a noticeable effect upon enrollments. Although many other factors may enhance student persistence in the face of tuition increases, the laws of supply and demand suggest that the relationship between disposable income and tuition charges influence postsecondary enrollment demands.

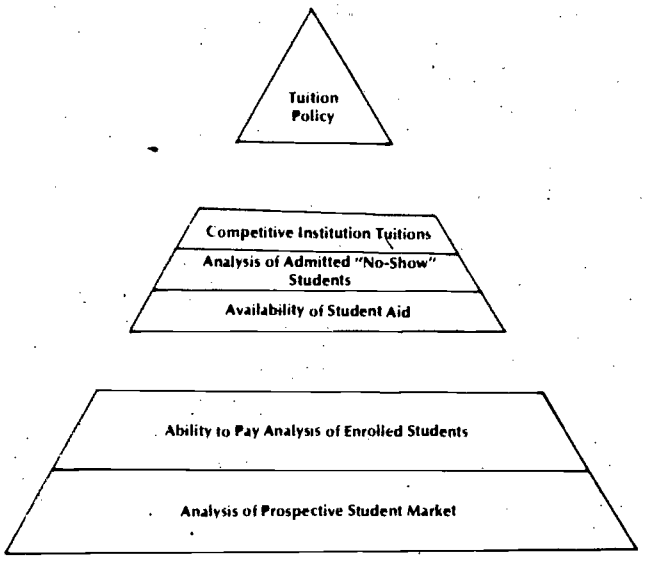
Availability of Student Aid

There can be no doubt that student postsecondary investment decisions are affected by the availability of student aid (Wilson and Mills,[15] Pechman,[16] Bowen[17]). Aid, however, is differentially available to students based upon their defined need which rests upon the determination of family size and income level. An analysis of University of Iowa student loans, grants and scholarships indicated that 6,287 students received awards in 1973-74. This represents an award distribution to over 31% of the total University full-time student enrollment. Tuition increases would both require present aided students to request additional aid dollars as well as enlarge the total pools of aid applicants and recipients.

Eligibility for grant aid or even preferred loans is based upon income level classifications. At Iowa, like many other large public universities, the middle-income class student predominates. Middle-class students bear the major burden of tuition increases. Relative to the inequities of tuition increase burdens Leslie and Johnson found:

> Again, it would seem to be the middle-income student and his family that would experience an unjustifiably large amount of the resulting economic distortion. That is, a significantly larger number of qualified middle-income students would be forced to alter their behavior adversely regarding decisions to enter or remain in public institutions of higher education than students from other income groups . . . . Most low-income students presently enrolled in public institutions are receiving substantial financial aid, either in the form of grants or low-interest loans . . . . Put another way, the price elasticity for low-income students is extremely low because (1) many low-income students are already dependent on financial assistance; and (2) with the proposed expansion in grant and loan programs, the economic question of tuition increases for prospective low-income students is eliminated altogether . . . .
>
> As for the upper income student . . . . in terms of actual attendance he is disproportionately represented relative to students from other income groups . . . . It is evident . . . . that high-income students and their families place a high value on, can, and are willing to pay for educational services . . . . By reasonable elimination it appears that to the extent that tuition increases result in economic distortion, the middle-income student and his family would experience an unjustifiably disproportionate share of this distortion. That is, the decline in enrollment which would be expected to result from the proposed tuition increases, in all likelihood, would be made up largely of middle-income students.[18]

Figure 1
TUITION POLICY MARKET ANALYSIS PYRAMID



Prospective Student Market

Tuition policy must also consider prospective student population trends. A seven year trend analysis portraying Iowa 12th grade enrollments. the total number of freshmen entering Iowa colleges and the number of freshmen entering The University of Iowa is illustrated in Table 4. Although Feldman and Hoenack have theorized that family incomes, labor market circumstances relative to pay rates and the rate of unemployment and tuition levels greatly affect prospective student choice in attending or not attending public universities, they have concluded:

> To the extent that policy makers have explicit objectives concerning enrollments from the various student categories, knowledge of each group's sensitivity of college enrollment to tuition charges can be used to set prices for college attendance in order to achieve the stated objectives in an efficient manner . . . . information about private demand for higher education can enable the policy maker to explore the alternative sets of enrollments from the various categories of students . . . .[19]

Table 4 indicates a stabilization of Iowa 12th grade enrollments (Column I) and a steady decrease in the percentages of 12th grade enrollments entering Iowa colleges (Column II). The decrease in absolute numbers of entering freshmen in Iowa colleges illustrates a constricting market where supply exceeds demand. Tuition policies should recognize this marketplace phenomena. In 1969, however, the most recent year in which resident tuitions were increased at the University, a year in which there was a drop in employment, grave concern about the Viet Nam war, student demonstrations on college campuses and an awakening social consciousness among young adults, there was also a decline in 500 freshman enrollments at the University.

Table 4
FRESHMEN ENTERING ALL IOWA COLLEGES AND ENTERING THE UNIVERSITY OF IOWA

I		II			III		
Iowa Public & Private 12th Grade Enrollment		Total Resident and Nonresident Freshmen Entering Iowa Colleges			Univ. of Iowa Entering Freshmen		
Year	Number	Fall	Number	As % of 12th Grade	Number	As % of 12th Grade	As % of Total Freshmen
1966-67	47,587	1967	26,615	55.93	2,612	5.49	9.81
1967-68	47,892	1968	26,382	55.09	2,675	5.59	10.14
1968-69	50,829	1969	27,560	54.22	2,969	5.85	10.79
1969-70	50,461	1970	25,853	51.23	2,462	4.88	9.53
1970-71	49,350	1971	24,439	49.52	2,235	4.53	9.15
1971-72	49,506	1972	21,951	44.34	2,197	4.41	9.94
1972-73	49,558	1973	21,082	42.54	2,608	5.26	12.37

A companion study to the foregoing indicated a continuing shift away from Iowa postsecondary institutions among prospective students. The percent of the total population of high school graduates in Iowa choosing Iowa colleges has dropped from 43.9% in 1970 to 36.5% in 1973. Table 5 illustrates this decline and how it has affected postsecondary education in Iowa. Each classification of postsecondary institutions has declined in its percentage of the total prospective student market. This suggests the devaluing of Iowa postsecondary education as an investment choice. A movement toward increased tuition charges may cause an acceleration of this market erosion.

Table 5
POST HIGH SCHOOL ENROLLMENT OF IOWA HIGH SCHOOL GRADUATES

Institutional Type	Percent of High School Graduates Enrolled in Iowa Colleges & Universities			
	1970	1971	1972	1973
Public 4 Year	17.3%	15.4%	13.8%	13.1%
Private 4 Year	7.7	8.0	7.6	7.2
Public Community Colleges (Area Schools)	16.6	15.5	14.6	14.5
Private 2 Year	2.3	2.1	1.9	1.7
TOTAL	43.9%	41.0%	37.9%	36.5%

Conclusion

It is obvious that simple economic and market considerations do not always or alone determine choices. A survey of freshmen in 1973 at The University of Iowa indicated that availability of "a special study program" was the single most important factor in making a college choice. Financial considerations were ranked lower.[20] In a general sense it does not detract from the value of a market analysis to admit that choices of either the learner or society in supporting public postsecondary education may derive from considerations other than obvious or even subtle costs which are measurable in dollars. A market analysis of tuition policy (Figure 1) can provide presumptive information relative to the effects increased tuitions may have on enrollments.

For each prospective or active student one fundamental question is continually posed: Should he begin or continue his postsecondary education? Society, through its government, is faced with a similar question: What level of financial and other support should be given to public postsecondary education?

The choice is inescapable. As a society and as individuals we will never have enough resources to do all the things that we might wish to do. We must allocate our resources wisely among the alternative ends that we seek. Given the relationship between demand, supply and prices, it is possible that for an educational institution there may be a price which uses up consumer demand.

[1]The Carnegie Commission on Higher Education, *Higher Education: Who Pays? Who Benefits? Who Should Pay?* (New York: McGraw-Hill Book Company, 1973).

[2]The Committee for Economic Development, *The Management and Financing of Colleges* (New York: The Committee for Economic Development, 1973).

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INSTITUTIONAL RESEARCH RESPONDS TO THE TUITION-FEE QUESTION

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Higher education received generous support in the early sixties when society needed highly trained manpower. The question of tuition and fees received little attention: more energy was devoted to the task of attracting students from all sections of the country to insure a good mix. In the late sixties, tuition rates began to rise precipitously, and the broader topic of funding higher education in this country began to receive major attention.

In the seventies, most states began experiencing an acute budget crisis which further exacerbated the increase in tuition and fees. The philosophy of higher education also shifted concomitantly over the issue of who benefits from going to college. Historically, it has been held that, in a democracy, it is society that benefits most from an educated citizenry, and therefore society should largely bear the costs to reap such benefits. Currently, however, there is a prevalent philosophy that it is the individual who benefits most from receiving a college education, and, therefore, it is incumbent upon him to pay the total cost of his education. Consider the recent recommendation by the Committee for Economic Development: " . . . because of the benefits of education to the individual, we consider it appropriate for students and their families to pay as large a part of the cost as they can afford." The Committee proposes raising current tuition rates to half the cost of instruction. This is similar to proposals put forward earlier by the Carnegie Commission on Higher Education who suggested that tuition be raised to one third the cost of instruction. The Economic Development Committee's figures would mean an average increase in tuition of $292 per year for the wealthiest third of American familites. The Carnegie proposal would raise tuition by about $21. (The Carnegie Commission based its initial recommendations on the educational costs paid by the "average" student in private and public higher education — a figure arrived at by dividing total FTE enrollment into net tuition rates. Net tuition, on which the Commission based its recommendations, represents gross tuition, *minus* all private and public subsidies to individuals or institutions used for "instructional purposes." Gross tuitions in many public institutions have already approximated one-third of instructional costs).

Such groups also look to the federal government for a more massive increase in aid to students. Their emphasis is on more direct aid to individual students, who could use these monies for public or private schooling, and less aid to institutions. Such modifications are aimed at narrowing the increasing tuition gap between public and private education and make institutions compete for the tuition money and, therefore, become more sensitive to the needs of students. One of the problems with this philosophy of individual grants is that it is asking institutions to base tuition rates on federal funds, whose current record for stability and longevity is somewhat mercurial. Such proposals for financing higher education through individual grants to students could lead also to increased "body hunts" and false promises to students by unethical members of the higher education community. Competition for the "bounties" paid on students would enhance the prospect for reduced quality of education, particularly for institutions with acute financial problems.

Secondly, such proposals seem aimed at turning higher education into a federal welfare program, and it must be seriously questioned if this country needs any more welfare programs. Furthermore, the concept of individual grants instead of institutional subsidies runs counter to the idea of state institutions open to citizens at low cost. Such proposals could make respectable what has heretofore been attributed to inflation, and the idea of "free" higher education could be buried forever. If legislatures do accept such proposals to raise tuition, there is little guarantee that legislators will take the increased tuition and put it into student-aid money. Furthermore, the attempt to ease the financial crisis at private institutions by raising tuition at public institutions is specious, There is little proof that such efforts would result in more students for private institutions, nor if that did occur that more students would solve the problems of private institutions. The fiscal problems of some private elite institutions are in large measure the result of drastic

Federal declines in funding research and graduate education. Public universities have also experienced these problems but not as acutely, nor are they as dependent on these funds.

Concepts For Policy Evaluation

The remainder of this paper is addressed to a number of questions, pointing out some of the more compelling arguments against further increases in tuition and fees. Tuition raises are often based on some severe misapprehensions about the "true" costs of higher education, resulting in detrimental effects to the public universities and the states they serve.

A central objective of this paper is to explore many of these long-range consequences that are still not known in enough detail. While the following comments are directed primarily at Tennessee, the following conclusions are germane to a discussion of tuition principles concerning the public universities of any state. In the face of several serious challenges that continue to confront higher education in the form of increased tuition and fees, it is suggested that the following arguments could be adapted by institutional researchers to the particular needs of their differing institutions and translated into the context of their particular situation.

It is an important fact that many states "gain" as much (or more) than they "lose" from the considerable migration of students across state lines, both during and after these students earn their advanced degrees (Fenske, Scott and Carmody, 1972, 1974; Steahr and Schmid, 1972). The broader implications of such student migration extend beyond the relatively narrow question of volume. In examining the mobility of youth, researchers should turn their attention to the results and consequences of this phenomenon. In New Jersey, for example, which was slow to provide adequate higher education for its citizens, there was in 1968 a net out-migration of 98,710 graduate and undergraduate students. (Net out-migration is defined as the number of out-migrants minus the number of in-migrants). The total number of New Jersey students attending colleges and universities outside the state was 117,256 (Wade, 1970a, 1970b). A superficial examination of these figures suggest an economic windfall for New Jersey taxpayers, many of whose children were being subsidized in tax supported institutions in other states. However, should not the harmful effects of out-migration on the economy of such states be taken into account? Many such out-migratory students do not return to their home state after completing their training, thereby depriving the state of the social and economic benefits of their education. A recent study showed that approximately one fourth of 500 University of Michigan graduates who had originally come from other states remained in Michigan, many of them entering high income professions (Fenske, 1972a, p.3). A report made by the College Entrance Examination Board at the request of The University of California Regents in 1967 indicated that two thirds of the non-resident students at the University became permanent residents of California (Chambers, p.111).

Staying in school through the college years is still financially rewarding for most students. Men with four or more years of college, on the average, can expect to receive $758,000 in their lifetimes, according to the Bureau of the Census (1974). This was $279,000 higher than those who were high school graduates. Men who finished high school can expect lifetime earnings of about $479,000, or $135,000 more than men who only finished elementary school (these figures are based on estimated income, as of 1972, for men between 18 and death who completed four or more years of college). The economic contributions such highly educated manpower provides could be a considerable asset in an underdeveloped state. This increase in earning capacity, *partially aided by university attendance*, adds to the human capital value of these people, both in terms of talent and cost of inputs.

Economic outputs are certainly not a full measure of the effects of higher education. The "non-earning" or nonmarket components of the effects of higher education are substantial and constitute some of the more exciting research components of individuals like Gary Becker and Robert Michaels. Underway are such varied studies as the effect of education on the stability of marriage, the efficient use of contraceptives, child care, voter behavior and political participation, and the benefits of education in making people more efficient consumers. The current trend in higher education to measure output solely in terms of input has obvious shortcomings in these areas. However, these nonmarket components offer significant private and social benefits to a state, even when you adjust for the exclusively monetary aspects of higher education. These investments represent a remarkable return to most states for the monies they provide for education. Furthermore, it is more equitable and less self-defeating to permit the student to pay a larger share of this cost through some means of taxation at a later date when he is better able to contribute. A comparable effort at the federal level was the GI Bill during the 'forties and 'fifties. Over the long haul, persons who benefited have repaid the amount contributed many times over in Federal Income Tax.

Students make also a substantial economic impact on a state's economy during the period in which they are receiving their education. In general,

it is the more affluent students who migrate and they, in turn, contribute more to the local economy than do resident students. Indications are that the nonresident student spends approximately $2,000 more per year than does his resident peer (Chambers, p.110). A study of Arizona's three state universities during the 1967-68 school year revealed that out-of-state students added almost $35 million to the economy of the state (Leaming, Escudero, and O'Neill, 1968). Nonresidents of the University of Arizona spent almost two and a half times as much on education as did Arizona residents. While representing slightly less than half of the full-time enrollment, out-of-state students spent more in a number of categories than did residents. Nonresidents spent in total about six percent more for housing, five percent more for transportation, 35 percent more for recreation, and 13 percent more for clothing.

Proponents of higher tuition rates often neglect the fact that a significant part of expenditures on education could more appropriately be classified as pecuniary benefits to, rather than investment by the state. A study of the direct and indirect economic impact of The University of Tennessee, Knoxville students (resident and non-resident) on the Knoxville area in 1971-72 revealed a total local impact of $79,126,550 (Moore and Erickson, 1973). These expenditures represent only *off-campus* spending and, therefore, reflect more specifically the importance of university students to the economy of a community, such as Knoxville.

There is a certain amount of irony in the fact that states spend large amounts to attract out-of-state tourists who stay only a few days or weeks; yet, these same states erect high financial barriers to nonresident — and resident — students who, by living in the state for an academic year, ostensibly make a greater economic impact than does the more transient tourist. There is further irony in that many southern states including Tennessee, make great attempts to attract industry from other parts of the country, but the people who accompany the movement of industry are discriminated against by their classification as nonresidents for educational purposes.

Needed: New Perspectives for Evaluating Public Policy

A comfortable balance exists in some states between in-migration and out-migration of the college educated population, particularly those with degrees at the graduate level. Perhaps the best way of demonstrating this is to look at the total migration patterns of people with advanced degrees in a particular state rather than the more identifiable number of students enrolled in the schools of that state. In the past, educational policy makers all too often have been concerned only with the number of students, both resident and nonresident, who *begin* their college careers within a particular state.

Too often only enumeration or "head count" data serve as the basis for considering such important questions as tuition and fee increases and nonresident quotas. Specifically, more information is needed about *graduates* (as opposed to degree candidates) to provide a basis on which to answer questions concerning actual cost of education. Interpretive research literature dealing with such questions is relatively limited. Several publications (cited above) are of limited assistance in providing raw data and demonstrating the balance or imbalance between in-migration and out-migration of students. It is regrettable that so much attention has been focused on initial in-migration to college, which is so easily identifiable, and so little to the migratory patterns over time. The dearth of literature on migratory patterns indicates that most universities need to do a better job of retaining more specific information on what happens to their students *after* they take their degree, for the data referred to above — as valuable as it is — refers to states as whole entities.

It would be very useful for a university to be able to document, not only the number of out-of-state students enrolled but the whereabouts, occupation, and income of its graduates, especially those who accept employment in the state. Furthermore, the total in-migration and out-migration of graduates, from whatever institution or state should be examined. A state should consider the total movement of *graduates in* and *out of* its boundaries. In many cases, this would allay — or confirm — suspicions that large amounts of state money are being spent on "outsiders." This kind of information could form the data base to more objectively answer arguments about legislative restrictions of out-of-state students, increases in tuition, and the like. It remains to point out how the impedence of the migratory flow of students across state lines could work to the disadvantage of students, public universities, and the nation.

Education and the Mobile Society

Increasing mobility across state lines is becoming a major social facet of our society. One of five US heads of families currently lives more than a thousand miles from his birthplace, and half live more than a hundred miles from where they were born (Packard, p.vii). According to estimates from the Bureau of Census, about 18.7 percent of the March 1971 United States population one year old and over had been living at a different address one *year earlier* (1972). Data tabulated from the Census severely strains the concept of educating persons and then anticipating them not

moving from one place to another within the United States. A clear relationship between education and mobility is demonstrated by the Census data. Among men 25 years old and older, high school graduates have higher migration rates than men who had only completed elementary school. Rates of mobility for those who had completed four or more years of college, in turn, had higher migration rates than the other two groups. Thus, identifying "one's own" is becoming more and more difficult.

The problem of determining and retaining "one's own" is further complicated by the fact that peak mobility rates occur among persons in their mid-twenties — the age when students have normally finished their education and are in the process of finding employment. The 12 month residential mobility rate for persons 22 to 24 years old was 47.6 percent. Persons who got married during the one-year period had an extremely high residential mobility rate of 83.0 percent. This high transcience has disturbing implications for policy makers who assume that a stagnant population of students exists in their state.

The South has traditionally been an area of out-migration. Overall, however, the region's migration picture has improved in recent years. During the fifties in Tennessee, for example, approximately 17 percent of the 20-24 age category was lost due to net out-migration. This had declined to about 12 percent during the sixties, and is projected to be about 9 percent during the 1970's (Engels, 1974). Considerable money and effort is being expended by the new Tennessee Department of Economic and Community Development to reduce the out-migration rate for this group even further. The upshot of their efforts is greater retention of the skills that can get the state moving and incomes that have a more significant multiplier effect. An adverse schedule of tuition rates would work in the opposite direction.

Program Operation Under Steady-State Conditions

Many necessary graduate programs could not be operated economically (if at all) if they were restricted largely to in-state students. In many states, the pool of undergraduate majors is neither large enough nor sufficiently diverse to guarantee an adequate flow of well-qualified students into certain graduate programs. Of great help in illustrating this fact is the United States Office of Education publication, *Earned Degrees Conferred*. According to this publication (Hooper and Chandler, 1971), for example, only 235 undergraduate degrees were awarded in all fields of agriculture during the 1968-69 academic year at all institutions in Tennessee. This figure represents an uncomfortably small base for the thirteen M.S. and four Ph.D programs offered in The University of Tennessee Institute of Agriculture.

The same situation exists in several other areas in which the University offers doctoral degrees: within the state during the same period, only two undergraduate degrees in agricultural engineering were awarded; only 32 in German, and only 16 in nuclear engineering. Assuming that many of these graduates did not choose to seek advanced degrees and that others attended graduate schools outside the state, it is relatively easy to conclude that the graduate programs in these (and other) fields would have been in trouble if they had to depend primarily on the "feeder" schools of the state for entering graduate students. In an era when many public investment projects are justified by a benefit/cost ratio of slightly more than one to one, the operation of these programs without nonresident students would require too large an investment on too few students in order to remain a viable program. Some other states are more fortunate in the diversity and quality of undergraduate degree programs found within their borders, but even the major public universities in these states are hard pressed to find a sufficient number of competent in-state undergraduate students to support some graduate programs needed by the state.

Legislators and others may, of course, question the necessity for programs which must attract nonresident students in order to operate efficiently. What must be stressed in these instances is the need, particularly in the technical areas, for graduates of such programs (rather than degree candidates) within the state. For example, about 50% of the Ph.D graduates in nuclear engineering at The University of Tennessee, Knoxville are employed currently (1974) by the Oak Ridge National Laboratory and the Tennessee Valley Authority. There is a symbiotic relationship between higher education and a state, and the economic, societal and intellectual benefits which accrue to a state by the graduates of such needed programs could not occur economically without the critical mass of nonresident students.

The Southern Regional Education Board has recently called for the establishment of a "common market" which would enable nonresident students to attend unique or underutilized graduate programs at in-state rates. Additional proposals call for the sharing of uncommon facilities within the region and making institutions located near state borders available to commuting students at in-state rates. This would prevent state and regional needs from being muted by such adverse economic influences as duplicating unneeded programs and faculty.

Tuition Increases-Friend or Foe

The rationale for increasing tuition and fees is usually stated in economic terms. However, it is often overlooked that increases in tuition charges may actually result in reduced financial support for an institution. The University of Tennessee, Knoxville continues to rank near the middle of the listing of the 100 institutions throughout the nation that have received the most federal funds in support of research and development (FY73 research and training grants and contracts processed amounted to $12,452,500 and exceeded those for FY72 by about 30%. At the present rate FY74 will surpass previous years). Universities are normally granted such monies on the reputation of their programs and personnel. Furthermore, the reputation of such programs is no better than the national record of its graduates. When Thomas Jefferson laid the groundwork for the University of Virginia he admonished his fellow citizens that the institution must be a strong *national* university if it was to be a strong *state* university. This principle is as true today as it was in Jefferson's time, and moreso in acquiring grants, contracts, and awards. The opportunity to recruit first-rate graduates and undergraduates from all over the country to enchance such a reputation should not be circumscribed by punitive fee schedules. The funding opportunities of an institution would suffer from such restrictions.

A closely related matter is the actual effect on an institution of increases in tuition. The apparent result of such increases is additional income for the state's system of higher education. Such is true to some degree but tuition and fee increases are near the point of diminishing returns. College attendance is a widespread concern of parents in the face of constantly increasing costs required for higher education. The seriousness of the problem in the southern states is sharpened by the fact that median family income is $8,075 or 84.2 percent of the national average ($9,586) and costs to attend college take a greater percentage of the family income than is the case in many states outside the Southern region. The median family income in Tennessee (1970) was $7,446, which fell below the national and South average for the same period, compounds the problem of educational costs for students and parents in this state. It is possible that parental income is stretched to the breaking point in this regard. International students, especially many with an average family annual income of $1,000 to $2,000 per year, also are finding American education to be a luxury. By 1973 the annual increase in the number of international students in the United States has slowed to one fifth the average of the 1960's (Exchange, 1974). All of these figures indicate that any increases in fees and/or tuition would cause severe financial strain on middle and low income families. Such actions have the overall effect of reducing free choice of low-cost college for students and can hardly be considered healthy for public higher education.

Of great significance, too, is the fact that significant increases in the tuition charged out-of-state students may produce a diminution of an institution's resources. This is true, we believe, at The University of Tennessee, Knoxville. A substantial majority of nonresident graduate students at our institution, as they do at most comprehensive universities, hold some type of fellowship or assistantship. All such appointments carry stipends and payment of resident and nonresident fees from a special account which the University must establish from out-of-state appropriations (There is never a "waiver" of fees). Consequently, increases in nonresident charges mean that assistantships become more expensive; requiring that a larger sum of money be set aside for this purpose from state funds.

There is a wide variation among the states, but normally tuition and fees cover only about one third of the state appropriations. Tuition and fees collected by The University of Tennessee, Knoxville are considered a part of the total appropriation made by the state legislature. Increasing nonresident fees, then, can produce a larger "deduct" representing tuition ostensibly charged out-of-state students. However, since many of these students do not pay their own fees, the net result could well be fewer actual dollars for the University. In short, the real effect of such increases is a shifting of a larger part of the costs of graduate education, not to nonresident students, but to the institution itself. Furthermore, a reduction in the number of nonresident students not holding fellowships or assistantships would result in the need for a larger state appropriation since these students already pay a substantially higher fee.

There are other economic arguments against the tendency to make students, particularly nonresident students, "pay their own way," but I have attempted to concentrate on those arguments which are not well understood generally by the public.

The Issue: Needs and Constraints

There is a genuine danger that higher tuition and fees will act as an artificial tariff to block out students from higher education. There is a certain irony in the fact that, during the sixties, admission requirements were high but tuition levels were relatively low. Now, tuition and fee rates have accelerated sharply, while open admissions has become prevalent. In the presence of such financial barriers to college, opportunity is increasingly coming to depend more

on income than academic ability. If tuition rates are raised any higher, then higher education could become more sharply stratified along socioeconomic lines than it is currently. For example, the National Commission on the Financing of Postsecondary Education estimated that a $100 increase in tuition would reduce enrollment by approximately 3.1 percent among low income students, followed by a decreasing impact on more affluent students. However, because of insufficient aid, higher fees and tuition will affect particularly the children of the middle income group.

The proposals of the Carnegie Commission and the Council for Economic Development are of great current interest because, in one sense they are suggestive of an idea that has caused considerable titillation in the academic world: graduation of fees according to income. Congressman John O'Hara, Chairman of the Special House Committee on Education has labeled such proposals "grandiose plans to aid the poor with the money of the middle class." Needless to say, such plans may be susceptible to some criticism from middle-income families having two or more children in college at the same time. Furthermore, there is an inequity in asking middle-class parents to pay fully the costs of educating their own children, yet pay higher interest rates and taxes to educate other people's children.

Public higher education has traditionally been one of the instruments of social enlightenment and mobility in this country. The elimination of this stimulator of vertical mobility for the poor and middle class would untimately cost more to the state and nation that society picking up the tab. This principle of free public education was established rather forcefully in the early republic by Thomas Jefferson who regarded the failure to develop our human resources as more costly than adequate financing of public education: "Preach . . . a crusade against ignorance, establish and improve the law for educating the common people. Let our countrymen know that the people alone can protect us against these evils, and that the tax which will be paid for this purpose is not more than the thousandth part of what will be paid to kings, priests and nobles who will rise up among us if we leave the people in ignorance," (Wattenbarger, 1971, p. 143). Current assertions reinforce this principle, regarding "universal access" as a basic right — rather than a privilege — of each American citizen who wants to exercise this option.

Tuition and the Financing of Higher Education

For public colleges and universities, the current basic pattern of finance is what might be labeled the conglomerate model. Under this plan, cost is covered by a mixture of loans, grants, gifts, student aid, public appropriations, and tuition. Central to the current tuition-fee debate, therefore, is the question: Should the conglomerate system veer toward higher tuition to cover the full cost of instruction or should institutions receive more monies from private gifts and public appropriations, and, in either case, whether additional aid should be mainly in the form of assistance to individuals or institutions? The conglomerate system of finance that now exists is immensely valuable because it has not impaired the inner -direction of the universities. The exaggeration of either position could be subversive to the freedom of the university, making it more "other directed", possibly resulting in undue influence on the advancement of knowledge. In the case of full cost pricing, in which instruction would be fully financed by tuition, an institution could become too oriented to the shifting whims of the student market; services would have to be sold with the idea of recovering cost, promoting a compromise in institutional integrity and quality. In the case of excessive public appropriations, higher education could become impaired by the financial decisions of state agencies. The freedom provided by the conglomerate approach enables the university to seek and speak the truth. Furthermore, it places responsibility for the success of the institution squarely upon the university itself. Therefore, the present framework should be preserved. However, at present spiraling tuition rates threaten this delicate balance. What is critically needed are more imaginative development programs to secure more private support and individual gifts, and more direct college aid by the Federal government.

Some policy makers have argued that, with tuition below the full cost of instruction, efficiency would be promoted if the consumers of a service paid a price equal to the cost of the service. Under this system, students would pay the full cost on instruction through tuition and fees, just as a business would receive fees to pay for research at cost on a contract basis. The institution would then, like a factory, become a self-supporting enterprise and be valued in terms of its contribution to the gross national product. The difficulty with this argument is that it belittles the vast benefits society receives from higher education. Universities have a long and solid tradition of immense productivity in the true interest of society.

Conclusion

The optimal condition to be approached is higher education for all who can profit from it, without the further erection of financial barriers through increased tuition and fees or impairment of institutional flexibility. Ample support to institutions from federal and state tax sources and philanthrophy to build such

a system is the soundest investment we can make with public funds. A higher tuition-fee structure has irresistible appeal to hard-pressed politicians because it would relieve the taxpayer from the increasing costs of higher education. Therefore, it can be anticipated that the issues raised in this paper will intensify with increased financial exigency. Presumably, rational consideration of the issues will affect the eventual outcome and, in the final analysis, it will be the institutional researcher that will be responsible for developing a suitable response stratagem for higher education. It is important that our profession convey to the policy makers the consequences of their action so the necessary choices can be made consciously and with full knowledge of the situation.

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THE ALLOCATION OF PUBLICALLY CONTROLLED RESOURCES IN MISSOURI

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The appropriation recommendation process that has been employed by the Missouri Commission on Higher Education (MCHE) since 1965 has had a significant influence on the allocation of resources among the state supported institutions of higher education in Missouri. A great deal of emphasis has been given to student level in determining a budgetary recommendation for a given institution because the procedure used to develop the recommendation recognizes that graduate education is inherently more expensive than undergraduate education.

In the spring of 1972, the new executive secretary of the MCHE indicated that the relatively gross formula guidelines used to develop budgetary recommendations needed refinement. Specifically, he felt that the appropriation recommendation process should recognize the fact that variables other than student level, such as the nature of the academic program a student is pursuing, affect the cost of teaching students. In accordance with this recognized need to refine appropriation recommendation procedures, the MCHE established an Ad Hoc Formula Advisory Committee. A Subcommittee on Definitions was charged with identifying, classifying, and defining cost elements or cost centers that might be utilized in the appropriation recommendation process. In fulfilling their charge, the Subcommittee on Definitions called upon the expertise of individuals from three types of institutions; the Junior Colleges, the State Universities, and the University of Missouri. A joint effort of these groups led to the decision to adopt as cost centers the categories of the National Center for Higher Education Management Systems (NCHEMS) Program Classification Structure (PCS).

At the same time the public institutions have been concerned about equity in the resource allocation process the private institutions have been experiencing financial problems also. The increasing cost of education caused by inflation and other factors has forced the private institutions to continually raise student fees. The increases in student fees may have caused some students to turn away from the private institutions and toward the public institutions in an effort to keep the cost of a college education within the constraints of the family budget. The private institutions have been seeking some form of state support as a means of relief from their financial dilemma. The private institutions have, therefore, been invited to participate in the PCS implementation project in the interest of accountability and the possibility of some form of state support in the future.

Selection of NCHEMS Program Classification Structure

Because of the need for compatible financial reporting that would allow recognition to be given to student level and academic programs as appropriation recommendation procedures are revised, the NCHEMS Program Classification Structure (PCS) was selected over alternative approaches for the following reasons:

- The PCS represents a financial reporting system all Missouri institutions could adopt, thereby avoiding the difficulties involved in asking other institutions to change to a format designed by any one institution.
- The PCS is a national effort, has federal funding behind it, and is being adopted at the federal level.
- The PCS is activity oriented.
- The PCS does not require a change in organizational structure.
- The PCS facilitates the exchange of data from an interstate point of view.
- The PCS provides a structure that is usable by a substantial variety of institutions with a wide range of institutional objectives.
- The PCS details expenditures associated with instruction by academic discipline.
- Why try to reinvent the wheel?

Shortly after the MCHE decided to accept the recommendation from the Missouri institutions themselves to give consideration to the adoption of the NCHEMS PCS, a Committee of Ten was formed. The Committee of Ten, composed of representatives from private institutions, small and large, as well as public institutions ranging from the junior colleges to the state universities to the University of Missouri, was

established to guide an experimental implementation of the NCHEMS PCS. Among other important activities each institution represented on the Committee of Ten transformed its own financial data from institutional accounting formats to the PCS activity centers. In accomplishing the first drafts of the crossover analysis, each institution was on its own; that is, the NCHEMS PCS Technical Report No. 27, by Gulko (1972), was the guiding light. Personnel within each institution interpreted the definitions contained in the PCS in accordance with their own understanding of them. A few general observations will serve to explain the general attitude of the Committee of Ten concerning data which resulted from the first attempts at the crossover analysis.

Table 1
FORMAT COMPARISONS
(Dollars in Thousands)

TRADITIONAL FINANCIAL REPORTING	WU	UMC	PROGRAM CLASSIFICATION STRUCTURE	WU	UMC
Instr. & Dept. Research	$13,956	$24,878	1.0 Instr., Dept. Research, and Related Activities	$11,819	$21,471
Separately Budgeted Res.		$10,162	2.0 Organized Research		$10,128
Extension Service		$ 5,188	3.0 Ext. & Continuing Educ. Activities	$ 301	$ 4,427
Libraries	$ 2,136	$ 2,169	4.0 Academic Support		
			4.1 Libraries	$ 2,106	$ 2,169
			4.2 Museums & Galleries	30	76
			4.3 Audio-Visual Services		712
			4.4 Computing Support	207	2
			4.5 Ancillary Support	182	1,059
			4.6 Academic Administration & Personnel Development	1,538	2,248
			4.7 Course & Curriculum Development		2
			Total Academic Support	$ 4,063	$ 6,268
Student Services		$ 3,103	5.0 Student Services		
			5.1 Social & Cultural Development	$ 622	$ 352
			5.2 Supplementary Educ. Service		8
			5.3 Counseling & Career Guidance	262	431
			5.4 Financial Aid	99	979
			5.5 Student Support	456	999
Operation & Maint. of Physical Plant	$ 3,814	$ 7,954	Total Student Services	$ 1,439	$ 2,769
			6.0 Institutional Support		
			6.1 Executive Management	$ 236	$ 560
			6.2 Fiscal Operations	339	524
Administrative & Gen.	$ 3,843	$ 3,692	6.3 General Administrative Services	754	1,125
			6.4 Logistical Services	510	2,325
Organized Activities	$ 173		6.5 Physical Plant Operations	3,547	7,109
			6.6 Faculty & Staff Services	263	
			6.7 Community Relations	684	440
			Total Institutional Support	$ 6,333	$12,083
			Independent Operations	($ 33)	
Total	$23,922	$57,146	Total	$23,922	$57,146

Results from the Initial Crossover Analysis

First, the Committee feels that financial data are more compatible from one institution to another when displayed in the PCS nomenclature than they are when displayed in terms of the financial reporting formats now in use within the several institutions represented on the Committee. Table 1 displays 1971-72 general operating educational and general expenditures for two major universities in our State, Washington University and University of Missouri-Columbia, in the two distinct formats. The left hand portion of the image displays expenditures according to traditional financial reporting groups. The right hand portion displays expenditures in terms of the PCS nomenclature. According to this set of data Washington University's educational and general expenditures were a little more than 40% of the University of Missouri-Columbia's educational and general expenditures. According to traditional financial reporting groups, Washington University spent more for administrative and general expenditures than did the University of Missouri-Columbia: $3.8 compared to $3.7 million. When one views the data in terms of the PCS format, however, quite a different impression results.

For example, these data indicate that Washington University spent a little more than 40% as much as the University of Missouri-Columbia did for executive management, for fiscal operations about 65%, for general administrative expenditures a little more than 65%, and for logistical services only a little more than 20%. Table 2 displays the same set of data in terms of percent of total educational and general expenditures for each institution. According to the traditional financial reporting format, Washington University spent 58.3% of total educational and general expenditures for instruction and departmental research while the University of Missouri-Columbia spent 43.5% of total educational and general expenditures for this same category, a difference of 14.8%. PCS data indicate the comparable figures to be 49.4% for Washington University and 37.6% for University of Missouri-Columbia, a difference of 11.8%. We would like to think the narrowing of the gap, 14.8% to 11.8%, is an indicator that the data are a little more compatible when reported in terms of the PCS than they were in terms of the traditional financial reporting groups. We can say with some degree of positiveness that we are no worse off than we were before and we have good reason to believe that the data are a great deal more compatible when reported in terms of the PCS. Keep in mind that personnel within each institution were on their own; that is, had no guidance other than the PCS manual itself.

The second point is that the Committee of Ten feels that refinements to the first drafts of the crossover analysis can be made that will make financial data much more compatible from one institution to another. One of the real values of the first crossover efforts was the identification of procedures that need clarification and amplification. The Committee of Ten has endeavored to refine procedures by developing a supplement to the PCS.

Missouri Supplement to the PCS

The supplement has been designed with Missouri institutions in mind. Its purpose is to identify the needs of Missouri institutions and to provide the guidance necessary to make implementation of the NCHEMS PCS more effective. The supplement is not intended to contradict the PCS; instead, its intent is

Table 2
FORMAT COMPARISONS

TRADITIONAL FINANCIAL REPORTING	WU	UMC	PROGRAM CLASSIFICATION STRUCTURE	WU	UMC
Instr. & Dept. Research	58.3%	43.5%	1.0 Instr., Dept. Research, and Related Activities	49.4%	37.6%
Separately Budgeted Res.		17.8%	2.0 Organized Research		17.7%
Extension Service		9.1%	3.0 Ext. & Continuing Educ. Activities		7.7%
Libraries	8.9%	3.8%	4.0 Academic Support		
			4.1 Libraries	8.8%	3.8%
			4.2 Museums & Galleries	.1	.1
			4.3 Audio-Visual Services		1.2
			4.4 Computing Support	.9	
			4.5 Ancillary Support	.8	1.9
			4.6 Academic Administration & Personnel Development	6.4	3.9
			4.7 Course & Curriculum Development		
			Total Academic Support	17.0%	10.9%
Student Services		5.4%	5.0 Student Services		
			5.1 Social & Cultural Development	2.6%	.6%
			5.2 Supplementary Educ. Service		
			5.3 Counseling & Career Guidance	1.1	.8
			5.4 Financial Aid	.4	1.7
			5.5 Student Support	1.9	1.7
Operation & Maint. of Physical Plant	16.0%	13.9%	Total Student Services	6.0%	4.8%
			6.0 Institutional Support		
			6.1 Executive Management	1.0%	1.0%
			6.2 Fiscal Operations	1.4	.9
Administrative & Gen.	16.1%	6.5%	6.3 General Administrative Services	3.2	2.0
			6.4 Logistical Services	2.1	4.1
Organized Activities	.7%		6.5 Physical Plant Operations	14.8	12.5
			6.6 Faculty & Staff Services	1.1	
			6.7 Community Relations	2.8	.8
			Total Institutional Support	26.4%	21.3%
			Independent Operations	(.1)	
Total	100.0%	100.0%	Total	100.0%	100.0%

to clarify and amplify in order that Missouri institutions might complete a financial format that will provide compatible data. Data reported in this format will facilitate the recognition of student levels and academic programs as a part of the appropriation recommendation process. Thus, the procedural refinements developed in this manual will serve to highlight and simplify the implementation of the PCS for Missouri's higher education institutions.

In addition to the utilization of the NCHEMS PCS as resource material, *College and University Business Administration* (1968) by the American Council on Education, *The Audits of Colleges and Universities* (1973) by the American Institute of Certified Public Accountants, Inc., as well as other NCHEMS publications, were used. Specifically, portions of the Missouri manual have been extracted directly from a draft of a field review edition of NCHEMS Information Exchange Procedures Manual by Renkiewicz and Topping (1973). Other portions of the manual rely heavily upon Information Exchange Procedures (IEP). As a matter of fact one might view the Missouri manual as a welding together of the PCS and the best guidance that can be secured from NCHEMS at this time on IEP.

The set of cost centers or activity centers as the term is used in the Missouri manual and the NCHEMS IEP project are a modification of those contained in the PCS as Table 3 below indicates. For the Missouri project PCS activity centers 1.1, 1.2, 1.3, and 1.4 have been collapsed into a single activity center, 1.5 Instruction, Departmental Research, and Related Activities. The primary reason for the exception has to do with the fact that the accounting systems of Missouri institutions do not in themselves identify pure instructional expenditures as the term instruction is defined in the PCS. The NCHEMS definition of instruction does not include many activities that have traditionally been labeled as teaching activities as well as other activities such as departmental research that are a part of Instruction and Departmental Research, a functional category used to categorize expenditures in most accounting systems associated with institutions of higher education in Missouri. The 1.5.xxxx PCS activity center has been established and will function as a holding account. A detailed analysis such as a faculty activity analysis, a faculty assignment analysis, or a combination of the two will be required in order that pure instructional expenditures as defined in the PCS can be associated with activity centers 1.1, 1.2, 1.3, and 1.4. The same type of analysis will serve to identify the portion of Instruction, Departmental Research, and Related Activities that should be identified with other PCS activity centers such as Research, Course and Curriculum Development, and Supplementary Educational Service. For example, according to the PCS remedial teaching activities are a part of PCS activity center 5.2, Supplementary Educational Service. The expenditures associated with the 1.5 activity center will eventually be distributed to all or an appropriate combination of cost centers 1.1, 1.2, 1.3, 1.4, and other applicable support activity centers. When this is done activity center 1.5 will zero out. Such a practice will require information supplementary to institutional accounting systems; therefore, the Committee of Ten is recommending the temporary 1.5 activity center to be used in completing the display format on pages 12 and 13 for fiscal 1972-73 and 1973-74. The double asterisks that can be seen on the Table will serve to identify the additions to the PCS that NCHEMS is proposing for purposes of their IEP and CFP projects. These additional activity centers have been adopted in the Missouri manual.

Mapping Conventions Section of the Missouri Manual

A very important part of the manual is the mapping conventions section. The mapping conventions have been prepared to aid the user in making the crossover from the institutional chart of accounts to the PCS activity centers. While the conventions are not to be interpreted as representing standard crossover procedures, they are intended to be applicable to a wide range of institutions with differing organizational structures. NCHEMS staff and the Committee of Ten have found that standard crossover procedures are very difficult if not impossible to develop because of the various ways in which institutions are currently maintaining their accounting data. By explicitly defining the endpoints of the crossover procedure (i.e., the PCS activity centers together with the kinds and types of expenditures that are to be charged to each activity center), it is hoped that institutions can array their accounting data into a format that will represent compatible data for each institution.

The following comments will serve to explain how these mapping conventions might be used and interpreted. Table 2 in the manual, reproduced below in Figure 1 and Figure 2, assumes that each institution is composed of operational units (departments). It is further assumed that each of the departments can be identified in terms of primary purpose with some one of the several types of departments listed in the Figures under 'Type of Department'. Definitions for each of the types of departments are in keeping with NCHEMS definitions for their primary mission. For example, if the primary purpose of a department is to teach courses offered for credit in meeting specific formal curricular requirements leading toward a particular postsecondary degree or certificate granted by

Table 3
PCS ACTIVITY CENTERS

CODE	TITLE	CODE	TITLE
*1.5.xxxx	Instruction, Departmental Research & Related Activities (Delineated to Discipline Level)	5.1.7100	Student Development
		5.1.7200	Intercollegiate Athletics
		5.2.xxxx	Supplementary Educational Service for Students (Delineated to Discipline Level)
2.1.xxxx	Institutes & Research Centers (Delineated to Discipline Level)	5.3	Counseling & Career Guidance
2.2.xxxx	Individual or Project Research (Delineated to Discipline Level)	5.4	Student Financial Aid. Admin.
3.1.xxxx	Community Education (Delineated to Discipline Level)	5.5	Student Support
		6.1	Executive Management
3.2	Community Service	6.2	Fiscal Operations
3.3	Cooperative Extension Service	6.3	General Administrative Services
**3.4	Patient Service	6.4	Logistical Services
**3.5	Specialized Training Programs	6.5	Physical Plant Oper. & Maint.
4.1	Library	6.6	Faculty and Staff Services
4.2	Museums and Galleries	6.7	Community Relations
4.3	Audio Visual Services	**6.9.8500	Calculated Use Charge for Bldgs.***
4.4	Computing Support	**6.9.8600	Rental Charge for Buildings
4.5.xxxx	Ancillary Support (Delineated to Discipline Level)	**6.9.8700	Calculated Use Charge for Equip.***
		**6.9.8800	Rental Charge for Equipment
4.6.xxxx	Academic Administration and Personnel Development	7.0	Independent Operations
		**8.1	Scholarships
4.7.xxxx	Course and Curriculum Development	**8.2	Fellowships
		**9.0	Hospitals

*A modification to the IEP and CFP activity centers for the Missouri Project.
**Additions to PCS for purposes of information exchange Procedures and Cost Finding Principles.
***Not applicable to the Missouri Project.

the institution, the department is an instructional department. Similar definitions have been developed for each type of department. In this suggested cross-over procedure it is assumed each institution can identify departments by types. After the departments have been identified by types, the institution should then determine the primary intent of each account within each type of department. An instructional department may have more than one type of account associated with it. The mapping conventions, Table 2, suggest that an instructional department might have instructional accounts, research accounts, training grant accounts or academic administration and personnel development accounts associated with it. Again definitions for the different types of accounts are in keeping with the NCHEMS definitions for programs and/or subprograms. If the account is an instructional account, the table indicates that certain kinds and types of expenditures charged to the account are to be associated with PCS activity center 1.5.xxxx Instruction, Departmental Research, and Related Activities, by HEGIS discipline. The "X"s indicate that the appropriate HEGIS discipline is to be associated with each account. Please note that the table suggests that only certain kinds and types of expenditures are to be associated with PCS activity center 1.5 as direct costs. The institutions may be able to use their object classes to make a distinction between expenditures that are to be restricted to a specific PCS activity center. At any rate the direct expenditures or the expenditures to be assigned directly to all instructional PCS activity centers include and are limited to the following: faculty compensation, other staff compensation, and supplies and services expenditures. Incidentally, these terms are defined in the glossary of the manual. It is most important to note that certain accounts may contain other expenditures that are restricted to specific activity centers. The mapping conventions suggest that certain object classes or classes of expenditures are to be restricted to specific activity centers and as a matter of fact are rather specific as to which activity center such expenditures should be associated. For example, if the instruction account has academic computing support charged to it, these expenditures should not be associated with the 1.5 cost center; rather they should be associated with PCS activity center 4.4 Academic Computing Services. It is hoped that institutions will be able to identify those expenditures that are to be restricted to specific PCS activity centers through their object class or expense class categories. Some institutions may budget and account for some of the direct costs (the kinds and types of expenditures that are to be assigned directly to all instructional activity centers) in a central account serving either the entire institution

Figure 1

TYPE OF DEPARTMENT	ACCOUNTING DATA BY OBJECT CLASS	PCS ACTIVITY CENTER REMARKS
Instructional departments — all academic operational units the primary purpose of which is to teach courses offered for credit in meeting specified formal curricular requirements leading toward a particular postsecondary degree or certificate granted by the institution. (Examples include but are not limited to: Accounting, Chemistry, Engineering, Library Science, etc. For additional examples see Appendix C.)	Instructional accounts — accounts the primary purpose of which is to fund activities associated with teaching courses offered for credit in meetings specified formal curricular requirements leading toward a particular postsecondary degree or certificate granted by the institution. Object classes or classes of expenditures that are to be assigned directly to all Instructional PCS activity centers — Faculty compensation Other staff compensation — if the compensation is for effort in direct support of the faculty or a departmental chairperson. Supplies and services expenditures — if the principal use of the supplies and services is to provide direct support to the faculty or a departmental chairperson.	1.5.xxxx Instruction, Departmental Research & Related Activities, by HEGIS discipline

or an aggregate of operational units within the institutions. If such is the case these expenditures should be prorated to all PCS activity centers to which a service is rendered in order that the data will be compatible from one institution to another. Any criteria may be used to make the proration that will cause the apportionment to approximate actual usage. Ideas on how to handle these central accounts are set forth on pages 46, 47, and 48 of the mapping conventions.

A glossary containing definitions of terms that are used throughout the manual is included as Appendix A. A list of activity centers of the Program Classification Structure (PCS) that are recommended for use in the Information Exchange Procedures project and modified for the Missouri project is included as Appendix B. The HEGIS Taxonomy is included as Appendix C. Answers to typical questions that are frequently posed to NCHEMS staff and the Committee of Ten during implementation of the crossover procedures are included as Appendix D. Users of the manual will want to familiarize themselves with this section prior to working with the mapping conventions. Many of these questions and answers were extracted directly from a draft, for preliminary review only, of a field review edition of NCHEMS Information Exchange Procedures. Because of their relevance to this project, however, they have been incorporated into this manual.

This manual has been accepted and is now being published by the MCHE. The State Division of Budget has accepted the PCS principle and budget request forms for 1974-75 and 1975-76 do incorporate the PCS organization. Because their forms call for "base year" income and expenditure data they will, in effect, produce compatible financial reporting data for Missouri public institutions.

With the acceptance of the manual by the MCHE and the PCS concept by the State Division of Budget, we believe we are down the road toward common financial reporting in Missouri.

This accomplishment provides the basis for the Committee of Ten to move forward on the development of resource allocation recommendation procedures — the concern that initiated the activity that has been described in this paper and the problem that has recently been formally handed to the Committee.

Figure 2

TYPE OF DEPARTMENT	ACCOUNTING DATA BY OBJECT CLASS	PCS ACTIVITY CENTER REMARKS
See Figure 1	Object classes or classes of expenditures that are to be restricted to a specific PCS activity center	
	Administrative/support compensation	4.6.xxxx Academic Administration and Personnel Development, by HEGIS discipline
	Other staff compensation — if the compensation is for effort in direct support of an academic administrator other than departmental chairpersons.	
	Supplies and services expenditures — if the principal use of the supplies and services is to provide direct support to an academic administrator other than departmental chairpersons.	
	Library Services	4.1
	Audio/Visual Services	4.3
	Academic Computing Services	4.4
	Administrative Data Processing	6.3
	Purchasing and Storage Materials	6.4
	Transportation Services	6.4
	Utilities	6.5
	Building Maintenance	6.5
	Ground Maintenance	6.5
	Custodial Services	6.5
	Building Rental	6.9.8600
	Equipment Rental	6.9.8800

Over the next several months the Committee will take what it has learned to date and will develop "formulas" for use by the MCHE in recommending state appropriation amounts to the Legislators and the Governor.

Perhaps if we are lucky, or as a Missouri Baptist preacher might put it, if the good Lord is willing and the creeks don't rise, we can return to next year's forum and report upon the success of this effort.

The Audits of Colleges and Universities, New York: American Institute of Certified Public Accountants, Inc., 1973.

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ACADEMIC PROGRAM ANALYSIS FOR BUDGETING

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During the last decade the challenge of university budgeting was to meet the expanding expectations of an ever-increasing number of students and professors. Since total budgets were growing, there was flexibility to overcome errors made in previous years and still satisfy changing demands. In the early years of the 70's, student enrollments stopped growing; and institutional revenue from governments leveled off. Moreover, total costs continue to escalate while institutions, staffed for expansion, find little flexibility to meet changing circumstances. Consequently, the university budgeting process is becoming more critical to the short-range effective use of resources, to the attainment of institutional objectives, and in some cases, to survival. As a result, there is an increasing emphasis on analytical approaches to university management in general and to budgeting in particular.

This paper describes a procedure for transforming an institution's normal fiduciary line-item budget into a program format during the budget formulation process. The transformation permits participants at all levels in the budget formulation process to work with the familiar line-item budget necessary for day-to-day operations and control as well as a format which associates anticipated academic programs and outputs with budgeted resources. Resources may be expressed as total dollars by various expenditure categories and also in natural dimensions such as numbers of academic staff, volumes in the library, or square feet.

Use of the proposed methodology encourages the gradual introduction of program budgeting notions without simultaneous threat to established ways. Thus, it stimulates evolution of a more analytical approach to budgeting at a pace likely to be acceptable to internal circumstances at most institutions. Also, the paper includes a sample case application. Minimum cost of implementation is accomplished by using software available from the National Center for Higher Education Management Systems (NCHEMS).

Transformation Procedure

Transformation of an institutional line-item budget into a program format may be considered in three phases. These are: development of a framework for program analysis, synthesis of budgeted program resources from line-item allocations, and, finally, assignment of budgeted program resources to specific anticipated institutional outputs.

Framework for Program Analysis

Budget units and institutional programs are identified in this phase. Each budget unit is associated with one or more programs on the basis that line-item budget allocations will support activities which will contribute to these programs. Therefore, the essential components of the framework are the institutional organizational structure, a suitable program classification structure, and the planned or budgeted relationship between the elements in each structure.

Budget units are identified from institutional budget documents for the appropriate budget year. Normally, budget units (usually organizational departments) appear as major line-items in such financial files. The program classification structure (PCS) permits systematic organization of institutional programs and orders various components of programs into a logical and consistent hierarchy. The most widely used PCS is that developed by NCHEMS.[1] The budget unit/program matrix shown in Figure 1 indicates the decisions that must be made to link budget units to programs. This matrix is an aggregate summary. The level of detail of departmental and program activity analysis necessary to determine relationships varies from department to department. The level of disaggregation depends on the specific information the ultimate program formats must provide and on campus organization, programs, and the PCS.

Program Resource Synthesis

The object of the second phase is to distribute or assign each line-item allocation to the appropriate program or program element planned for the budget year. Detailed assignment of budget unit resources to programs depends on the circumstances of each application on each campus. However, the basic principle for such assignment is that budget unit resources support

Figure 1
BUDGET UNIT/PROGRAM MATRIX

	PRIMARY PROGRAMS AND SUBPROGRAMS							SUPPORT PROGRAMS AND SUBPROGRAMS																
	1.0 Instruction			2.0 Organized Research		3.0 Public Service		4.0 Academic Support						5.0 Student Services				6.0 Institutional Support						
SAMPLE ORGANIZATIONAL/ BUDGET UNITS	1.1 General Academic Instruction	1.2 Special Session Instruction	1.3 Extension Instruction (for credit)	2.1 Institutes & Research Centres	2.2 Individual or Project Research	3.1 Continuing Education	3.2 Community Service	4.1 Libraries	4.2 Museums & Gallaries	4.3 Audio/Visual Services	4.4 Computing Support	4.5 Ancillary Support	4.6 Academic Admin. & Personnel Development	5.1 Social & Cultural Development	5.2 Counselling & Career Guidance	5.3 Financial Aid	5.4 Student Support	6.1 Executive Management	6.2 Fiscal Operations	6.3 General Admin. Services	6.4 Logistical Services	6.5 Physical Plant Operations	6.6 Faculty and Staff Services	6.7 Community Relations
Archaeology	X												X											
Biology	X												X											
Business	X												X											
Graduate Studies	X												X			X								
Physical Education	X												X	X										
Evening Credit			X																					
Summer Session		X																						
Computing Services											X													
Student Counselling															X									
President's Office																		X						
Controller's Office																			X					

activities which contribute to certain programs. Thus, resources should flow to programs in proportion to the contribution which departmental activities make to those programs.

Possible distribution algorithms to assign resources are those used in university program costing procedures referred to by Miller (1964), with one practical complication. The proposed transformation is not for historical years but for budget years. Thus, the contribution of departments to programs cannot be measured but must be estimated. Such estimates can be based on the projection of historical statistics such as student enrollment and faculty work-load patterns and on the judicious extension of campus experience.

Debate during the budget formulation process on the appropriateness of distributions provides a useful means for examining specific budget requests. It permits budget officers to make an objective determination of the likely contributions which specific resources may make to programs of varying priority and thus come to a judgment on specific budget requests. Further, such debate promotes the evolution of collateral systems and procedures useful to a more analytical approach to planning and budgeting at all institutional levels.

Output Synthesis

Primary programs are those whose constituent activities contribute directly to the accomplishment of institutional goals and objectives. Support programs assist primary programs but are considered not to have outputs.[2] Thus, this third phase includes a two-stage reassignment of resources. Resources assigned to support programs in the second phase are reassigned to primary programs and, finally, resources assigned to primary programs are associated with outputs or output proxies.

The basis of reassignment is the extent support programs contribute to primary programs and the extent primary programs contribute to their several outputs. Figure 2 illustrates a method for organizing the numerous decisions which must be taken to execute the reassignments. The figure identifies the program or subprogram from which resources are reassigned (source), the resources reassigned (commodity), the program or output to which resources are assigned (recipient), and the rationale for the assignment (basis). There are endless varieties of program formats which display program and output resources. Figures 3, 4, and 5 illustrate several formats which are useful during the budget formulation process.

Figure 2
SAMPLE RESOURCE ASSIGNMENTS

ASSIGNMENT SOURCE	ASSIGNMENT COMMODITY	ASSIGNMENT RECIPIENT	ASSIGNMENT BASIS
Program Resource Synthesis			
1. Line-item budget	Teaching department academic FTE	Discipline instruction levels/ graduate supervision General Academic Instruction (PCS 1.1)	Projection of historical faculty work load distributions
2. Line item budget ↓	Teaching department support salaries	Discipline instruction levels/ graduate supervision General Academic Instruction (PCS1.1)	Direct academic salaries
Output Synthesis: Support Programs			
Reassignment to Primary Programs			
1. Libraries (PCS 4.1)	Operating expenses	Subprograms and activity levels (instruction levels/graduate supervision) of Instruction (PCS 1.0)	Direct academic salaries in primary program Instruction (PCS 1.0) by subprogram and activity level
2. Computing Support (PCS 4.4)	Operating expenses	All primary programs and subprograms	Projected usage of departments contributing to primary programs and subprograms
3. Executive Management (PCS 6.1) ↓	Operating expenses	All primary programs and subprograms	Direct academic salaries of primary programs and subprograms
Output Synthesis: Primary Programs			
Reassignment to Output Proxies			
1. Primary subprogram General Academic Instruction (PCS 1.1)	Direct academic salaries assigned to instruction levels	Student academic programs	Weekly student hours per ICLM
2. Primary subprogram General Academic Instruction (PCS 1.1)	Direct academic salaries assigned to graduate supervision levels by discipline	Graduate student academic programs	Full-time graduate students by discipline
3. Primary subprogram General Academic Instruction (PCS 1.1) ↓	Direct operating expenses of Student Support (PCS 5.4)	Student academic programs	Full-time and part-time students

Figure 3
SAMPLE RESOURCES BY PROGRAM
BUDGET YEAR 1973/74

PROGRAM CLASSIFICATION STRUCTURE	RESOURCES ACADEMIC FTE	ACADEMIC SALARIES	SUPPORT SALARIES	OTHER EXPENSES	TOTAL RESOURCES
1.0 INSTRUCTION					
1.1 General Academic Instruction					
1.1.1 Arts and Science					
1.1.1.1 Anthropology					
1.1.1.1.1 Junior Instruction	4.2	$ 63,900	$ 9,100	$ 7,100	$ 80,100
1.1.1.1.2 Senior Instruction	4.5	67,600	9,600	7,500	84,700
1.1.1.1.3 Graduate Instruction	1.8	27,100	3,800	3,000	33,900
1.1.1.1.4 Graduate Supervision (Masters/Lower Doctoral)	1.4	20,600	3,700	3,100	27,400
1.1.1.1.5 Graduate Supervision (Upper Doctoral)	—	—	—	—	—
Subtotal Anthropology	11.9	$179,191	$26,200	$20,700	$226,100
1.1.1.2 Archaeology					
1.1.1.2.1 Junior Instruction					
1.1.1.2.2. Senior Instruction					
1.1.1.2.3 Graduate Instruction					
1.1.1.3 Biology					
1.1.2 Business					
TOTAL GENERAL ACADEMIC INSTRUCTION	776.1	$14,235,200	$3,037,110	$2,545,800	$19,818,100
1.2 Special Session					
TOTAL INSTRUCTION					
2.0 ORGANIZED RESEARCH					

Sample Case: University of Calgary Budget Year 1973/74

Practical implementation of the transformation procedures involves numerous options on the detailed methods and techniques used to accomplish each phase. The selection of tools and procedures will depend on the institutional data base; the inventory of hardware, software, and experienced people available for the job; and the specific use to which information generated will be put. The transformation is illustrated by an application made at The University of Calgary for the budget year 1973/74.[3]

Framework for Program Analysis

The purpose of this phase is to relate the university's organizational components or departments, as characterized by budget units in the university's 1973/74 line-item budget, to programs defined and systematized by the program classification structure. The PCS is essentially that developed by NCHEMS.[4] Figure 1 shows the PCS aggregated to the subprogram level and illustrates relationships between programs and typical budget units in The University of Calgary line-item budget.

Since in this example the subprogram General Academic Instruction (PCS 1.1) was treated in detail, the level of disaggregation used is illustrated as follows:

1.0	*Instruction Program* — The Instruction Program consists of all formal educational activities in which a student engages to earn credit toward a degree or certification at the university.
1.1	*General Academic Instruction* — This subprogram includes those instructional program elements operating during the budget year that are part of a formal degree or certificate curriculum and are managed by regular academic departments.
1.1.n	*Teaching Faculty or School* — 1.1.1 Arts and Science, 1.1.2 Business, 1.1.3 Education, and so on.
1.1.n.m	*Teaching Department* — 1.1.1.1 Anthropology, 1.1.1.2 Biology, 1.1.3.2 Educational Administration, and so on.
1.1.n.m.k	*Teaching Activity* — 1.1.n.m.1 junior instruction, 1.1.n.m.2 senior instruction, 1.1.n.m.3 graduate instruction, 1.1.n.m.4 graduate supervision masters and lower doctoral, 1.1.n.m.5 graduate supervision upper doctoral.

Figure 4
RESOURCE ASSIGNMENT SUMMARY BY PRIMARY PROGRAM
BUDGET YEAR 1973/74
($'000)

	1.0 INSTRUCTION			2.0 ORGANIZED RESEARCH		3.0 PUBLIC SERVICE	
	1.1 General Academic	1.2 Special Session	1.3 Extension (For Credit)	2.1 Institutes/ Centers	2.2 Individual Or Project	3.1 Community Education	3.2 Community Service
Academic Salaries	$14,235	$406	$188	$ 93	$—	$407	$ 22
Support Salaries	3,037	—	—	36	—	207	33
Supplies and Other Expenses	2,546	121	52	—	19	(404)	67
PRIMARY PROGRAM RESOURCES	$19,818	$527	$240	$129	$19	$210	$122
	SUPPORT PROGRAM RESOURCE ASSIGNMENT TO PRIMARY PROGRAMS						
4.0 ACADEMIC SUPPORT							
4.1 Libraries	$ 2,200	$ 63	$ 29	$—	$—	$—	$—
4.2 Museums and Galleries	—	—	—	—	—	—	23
4.3 Audio Visual	244	7	3	—	—	—	—
4.4 Computing Services	926	5	—	5	—	12	—
4.5 Ancillary Support	303	—	—	—	—	—	—
4.6 Academic Administration	701	20	9	5	—	20	1
5.0 STUDENT SERVICES							
5.1 Social and Cultural	57	2	1	—	—	—	—
5.2 Counselling and Career	299	9	4	—	—	—	—
5.3 Financial Aid	784	—	—	—	—	—	—
5.4 Student Support	321	9	4	—	—	—	—
6.0 INSTITUTIONAL SUPPORT							
6.1 Executive Management	717	20	9	5	—	21	1
6.2 Fiscal Operations	388	11	5	3	—	11	1
6.3 Administrative Services	1,257	36	17	8	—	36	2
6.4 Logistical Services	772	22	10	5	—	22	1
6.5 Physical Plant	3,557	101	47	23	—	102	5
6.6 Faculty/Staff Services	645	18	9	4	—	18	1
6.7 Community Services	246	7	3	2	—	7	—
SUPPORT PROGRAM RESOURCES	$13,419	$330	$151	$ 59	$—	$249	$ 36
PRIMARY AND SUPPORT RESOURCES	$33,237	$857	$391	$187	$19	$459	$157

Program Resource Synthesis

The objective of this phase is to assign resources to programs by distributing the resources of each budget unit to program activities undertaken by these units. Practically, the assignment is accomplished by replacing X's in Figure 1 with resource magnitudes in appropriate dimensions. This distribution process can be thought of as filling a large matrix defined by the PCS disaggregated to the necessary level and the line items further broken down into each resource category of interest. In the sample case the matrix is 250 line items by 250 program and subprogram categories.[5] The resources identified for each budget unit are total academic salaries, total support salaries, total supplies and other expenses, net operating expense (sum of three previous) and total academic full-time equivalent (FTE) in teaching departments only.

Because of the sheer volume of the detail, it is not possible to present here the basis for each assignment of resources. However, a few examples will be given. Consider the academic salary resource for those budget units which contribute to General Academic Instruction (PCS 1.1). In the sample case, this resource (exclusive of salaries for faculty on leave) was assigned[6] to Teaching Activity (PCS 1.1.n.m.k) on the basis of

Figure 5
SAMPLE RESOURCE EXPENDITURES BY GENERAL ACADEMIC INSTRUCTION PROGRAM (PCS 1.1) PER OUTPUT CATEGORY BUDGET YEAR 1973/74

Faculty/ Degree/ Major*	Full/ Part	Student Level	Number of Students	RESOURCES BUDGETED: Primary Program Resources — Academic FTE	Primary Program Resources — Amount ($'000)	Primary Program Resources — Per Cent	Total Resources (Primary + Support) — Amount ($'000)	Total Resources (Primary + Support) — Per Cent	Resources Budgeted Per Student — Academic FTE	Resources Budgeted Per Student — Primary Program	Resources Budgeted Per Student — Total Resources
AS BA SS	F	Upper	193	16.4	$ 323	1.63	$ 547	1.65	0.08	$1,670	$2,840
AS BSC	F	Upper	1,375	116.6	2,522	12.73	4,098	12.33	0.08	1,830	2,980
BUSINESS	F	Upper	541	29.3	577	2.91	1,147	3.45	0.05	1,070	•
ED BED	F	Lower	329	19.9	401	2.02	763	2.30	0.06	•	•
FA BMUS	F	Upper	96	13.4	244	1.23	365	1.10	0.14	•	•
NURSING	F	Upper	110	16.1	256	1.29	390	1.18	•	•	•
PHYS ED	F	Upper	180	14.2	290	1.46	487	1.47	•	•	•
GS HU	F	Mstr	51	13.0	254	1.28	387	•	•	•	•
GS NS	F	UDoc	124	17.2	401	2.02	•	•	•	•	•
GS SOWK	F	Mstr	73	10.6	209	1.05	•	•	•	•	•
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
BUSINESS	P	Lower	24	0.4	•	•	•	•	•	•	•
ENGINEER	P	Upper	72	3.8	•	•	•	•	•	•	•
GS SS	P	Mstr	46	2.9	•	•	•	•	•	•	•
GS ENGG	P	Mstr	43	5.0	•	•	•	•	•	•	•
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
TOTAL ACADEMIC INSTRUCTION				776.1	$19,818	100.00	$33,233	100.00			

*AS (Arts and Science), BA (Bachelor of Arts), SS (Social Sciences), BSC (Bachelor of Science), ED (Education), BED (Bachelor of Education), GS (Graduate Studies), FA (Fine Arts), etc.

time distribution data projected for the budget year by considering faculty time distribution data gathered in previous years and other factors including proposed changes in departmental staffing. Support salaries of the same budget units are assigned to teaching activity levels based on the assignment of direct academic salaries.

At the end of this phase, all line-item resources have been assigned to appropriate programs as illustrated by Figure 3. Before going on to the next step, it should be noted that these intermediary results can be important because they indicate the "direct" resources assigned to primary programs. For purposes of budget discussions, such figures tend to show greater variation among resources assigned to instructional programs than final figures which include associated support and overhead type resources. The addition of these latter resources tends to smooth differences. Thus, separate consideration of the two components of the total assignment may give those making priority and allocation decisions useful insights into the resource flow implications of proposed budget allocations.

Output Synthesis

In this final phase, support program resources are reassigned to primary programs. Primary program resources are then associated with outputs. Figure 2 gives examples of the rationale for these reassignments of resources. Figures 4 and 5 show typical results to this point. The sample case emphasizes General Academic Instruction (PCS 1.1) and all other primary subprograms are treated at their highest level of aggregation, that is, the output and the subprogram are taken as identical. However, outputs connected with PCS 1.1 are treated in considerable detail as evidenced by Figure 5.

The assignment of resources from subprogram PCS 1.1 to output falls into two general categories. Some resources are assigned on the basis of student participation in particular courses (using weekly student hours — WSH), while other resources are assigned on the basis of student general association with a student academic program (using student head count). Figure 2 gives typical examples of the assignment basis for several resources and outputs. Assignment

on the basis of student head count requires only an estimate of student enrolments in all output categories in the budget year. However, resource assignment on the basis of WSH requires the number of WSH anticipated in each discipline and level, by students in each faculty or school, degree, major, and level — that is, in each output category.

Reassignment of program resources to specific output categories on the basis of WSH[7] is performed by the induced course load matrix (ICLM) of the Resource Requirements Prediction Model 1.6 (RRPM 1.6) developed by NCHEMS. The program resources reassigned by the ICLM are those predicted by the model, whereas the program resources to be reassigned by the transformation are those contained in the university budget. The "short method" of using RRPM 1.6, as described in Clark, Huff, Haight, and Collard (1973), offers a simple and practical method of substituting budget resources for predicted resources and so take advantage of the RRPM 1.6 software for the reassignment of budgeted resources to output categories. The RRPM input for the short method includes productivity ratios which convert WSH taught to FTE faculty required. The FTE faculty are a basis for determining other resource requirements. Since budget resources are known, it is necessary only to calculate and to input suitable productivity ratios such that predicted resource requirements equal given budget resources. Therefore, when planned or budgeted student enrolment distribution is inputted, RRPM 1.6 will yield budgeted costs per student academic program.

Use of RRPM 1.6 software has a number of other advantages. The software permits automatic handling and assignment of resources other than PCS 1.1 General Academic Instruction, and it provides numerous alternative outputs and a systematic input format. Also, since RRPM 1.6 is a long-range planning model, it is capable of automatically estimating resource requirements for years beyond the budget year. The predictions may be based on institutional policies inherent in the budget or any others to be studied. The ICLM used in the sample case consists of about 15,000 elements which specify the relationship between programs and instructional disciplines or departments. Elements are ratios showing the average number of WSH generated in each discipline and course level by a student at each level in each student academic program. As indicated by Haight and Manning (1972), an historical ICLM can be produced by the ICLM generator which uses information from the institution's student and course (timetable) files as input. In order to build an ICLM for the budget year, appropriately modified current year student and course files were used as input to the generator.

The distribution of resources from primary programs to outputs via the ICLM can be calculated and displayed separately for each type of resource (academic FTE, academic salaries, support salaries, etc.) and for each source of resources (subprogram level sources). In the sample case, direct resources from General Academic Instruction (PCS 1.1) were analyzed separately for academic FTE, academic salaries, support salaries, and supplies and other expenses requiring four runs of RRPM 1.6. The indirect resource assignments from support programs which were reassigned on the WSH basis were grouped into one computer run.[8]

Conclusion

The proposed methodology transforms an institutional line-item budget into formats which associate budgeted resources with programs and anticipated outputs. The use of readily available software permits minimum cost implementation. Since the transformation can be automated, it is possible to generate transformations of the latest version of the evolving budget as required at any stage in the budget formulation process. This timely availability of budget information in program and output oriented formats encourages an analytical approach to institutional budgeting and planning.

Since program formats should be discussed along with the line-item budget and related data, traditional budget procedures are not threatened directly. Use of the transformation may lead to the introduction of further systems and procedures associated with program budgeting. For example, the use of program formats for departmental budget requests may promote more departmental study of the relationship between resources and outputs. Moreover, the many possible intermediary outputs can yield information and raise questions appropriate to budget priority and allocation determinations. These include the relative (and absolute) support of each academic program provided by each teaching and each support department and the budgeted contribution, by department and even by resource category, to each output unit, e.g. each student by suitable category. In summary, the information contained in the program formats offers a second perspective on resource allocation issues. Thus, the important benefits to be sought from use of the transformation are new and helpful insights into the perplexing problems of university budgeting.

The authors wish to express their appreciation to Margaret Reti, Barbara Serediak, and Alec Tebbutt of the Office of Institutional Research, The University of Calgary, for their continuing assistance through all phases of the study reported.

[1]See Gulko (1972). There are numerous advantages to choosing the NCHEMS PCS, since it is compatible with all NCHEMS software and standards.

[2]Discussion of the complex notion of "output" from educational activities is beyond the scope of this paper. The reader interested in a state-of-the-art treatment of the subject is referred to Micek and Wallhaus (1973).

[3]For a more detailed treatment see Office of Institutional Research (1973a, 1973b).

[4]See Gulko (1972). For computational and display purposes, the NCHEMS PCS is abridged to exclude components not relevant to The University of Calgary or this application.

[5]This is not a relatively large matrix for these calculations since the emphasis of the example is on subprogram General Academic Instruction (PCS 1.1) and the other programs are handled at a higher level of aggregation.

[6]The distribution was done using software developed for The University of Calgary Cost Study. These academic program cost studies, which have been reported for three years, are based on results of a faculty workload distribution questionnaire distributed annually as part of the Faculty Annual Report to the President: see Office of Institutional Research (1973c). The "Cost Finding Principles" software developed by NCHEMS is an alternative. It has the facility for translating line-items from financial files to programs via a crossover that allows allocations based on input percentages. It also allocates support program resources to primary programs, primary subprograms, disciplines and course levels.

[7]Weekly student hours (WSH) are used instead of credit hours because The University of Calgary, like most Canadian universities, does not operate on a credit system. WSH are student contact hours.

[8]The computer installation used was an IBM 360/50 operating under HASP/05 Release 20.6. One run of the "short method" of RRPM 1.6 (without the formatted file display RRPM 05) required on the average 104 K, 1 tape drive, 2 discs, 5.5 minutes CPU time, and 15-20 minutes elapsed time.

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INSTITUTIONAL RESEARCH IN HIGHER EDUCATION: DIFFERENT PROBLEMS, DIFFERENT PRIORITIES?

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John Smart, Virginia Polytechnic Institute

Given recent social, political, and educational developments and the financial situation which now confronts American higher education, a growing number of colleges and universities are expressing serious concern over institutional mission and viability. Within this context, many questions are being raised about the role and nature of institutional research in this milieu.

These questions have been addressed by several practitioners. Saupe and Montgomery (1970) attempted to define the parameters and purposes of institutional research and Dressel *et al.* (1971) developed a compendium of perspectives on institutional research projects and directions. In terms of personnel engaged in institutional research activities, Glenny (1971) stated individuals involved in analytical studies of this nature can at times contribute significantly to the shaping of policy or the resolution of problems and are, in many respects, the "anonymous leaders" of higher education.

Some would question, however, whether these particular perspectives on the nature, direction, and import of institutional research have any empirical referent when compared to the professional responsibilities as reported directly by institutional research personnel. That is, what priority do these individuals actually place on various job responsibilities commonly associated with institutional research offices? Tincher (1970) reported that members of the Association for Institutional Research (AIR) rated "planning and coordination" as being their most important actual responsibility. "Studies of students" was ranked second in importance, while relatively little emphasis was placed on studies involving "space utilization," "curriculum" and "teaching." Furthermore, Tincher reported no substantive variation in actual priorities when institutional research personnel were classified according to various institutional types.

However, higher education has changed dramatically since this earlier study which was actually conducted in 1969. Static and declining enrollments, worsening financial conditions, the evolution of computer-based planning models, questions concerning accountability/cost-effectiveness, collective bargaining, etc. have worked to change the climate of American higher education. Thus, if one is concerned about the nature of institutional research in this new area, it is important to determine the degree to which actual institutional research priorities have shifted since the earlier period of Tincher's study. Moreover, for different types of institutions, some of the problems noted above are more urgent than at others. If institutional research personnel are attempting to respond to these different problems, it is conceivable that the priority of these activities may now show more variation across institutions than before.

While these concerns constitute a primary focus, this paper goes beyond a replication of Tincher's study and seeks to determine the degree of disparity between the perceived and preferred priorities of institutional researchers. Results from this area of investigation may shed light on what these professionals believe they *should be* doing and, indirectly, may provide some insights on the "responsiveness" of institutional research personnel to the new pressing problems of American higher education.

The Study

A questionnaire was distributed to all members of AIR (N = 1048) in the spring of 1973.
The instrument included:

1. Ten demographic/background items pertaining to the respondents and their institutions;[1]
2. The *Job Descriptive Index*, a standardized measure of five dimensions of job satisfaction used previously in business and industry (Smith *et al.*, 1969);[2]
3. Eight areas of job responsibility associated with institutional research offices (Tincher, 1970).

A total of 706 (67%) usable questionnaires were returned for analysis. For this study, respondents were classified according to institutional type: private colleges or universities (N = 166); public colleges or universities (N = 357), and community colleges (N = 113). In terms of the eight job responsibility areas, respondents were asked to rank-order these areas from one

to eight (1 = highest priority) on both an "is" (perceived) and "should be" (preferred) basis.

The initial analysis focused only on the top-ranked job responsibility as perceived by institutional research personnel in 1969 (Tincher, 1970) and our results in 1973. Irrespective of institutional affiliation, have there been substantial shifts in the actual (perceived) priorities of various job responsibility areas? Table 1 presents the proportion of AIR members in 1969 and 1973 who ranked any given job responsibility as having the highest priority (e.g. a ranking of "1").

Table 1
MAJOR EMPHASIS OF ACTUAL JOB RESPONSIBILITIES FOR INSTITUTIONAL RESEARCHERS

Job Responsibility	1973 Survey (N = 706)	1969 Survey[1] (N = 669)
Planning & Coordination	22.5%	27.8%
Budget & Finance	19.7%	10.0%
Studies of Students	19.5%	16.1%
Organizational Studies	10.2%	4.5%
Faculty Studies	7.5%	9.7%
Data Systems & Computers	6.4%	5.8%
Curriculum Studies	3.3%	3.1%
Space Utilization	2.1%	3.1%
Other	5.8%	8.1%
No Response	3.0%	11.7%

[1] From Tincher, W. A. (1970), "A Study of the Members of the Association for Institutional Research."

Some similarities are apparent across the two surveys. For example, curriculum studies and analyses of space utilization have relatively low perceived priority in both the 1969 and 1973 surveys. Planning and coordination activities were ranked the highest in both years, although in absolute terms, there was a 5.3% decrease from 1969 to 1973 in the number of AIR members who ranked this responsibility as having the highest priority. However, there was a substantial increase (9.7%) in the number of respondents ranking budget and finance as their highest responsibility area. This may be related to the decreased priority noted above for planning and coordination activities. Organizational studies showed an apparent increase in perceived priority (up 5.7%), studies of students gained somewhat (up 3.4%), while studies of faculty declined slightly in terms of its high priority ranking (down 2.2%).

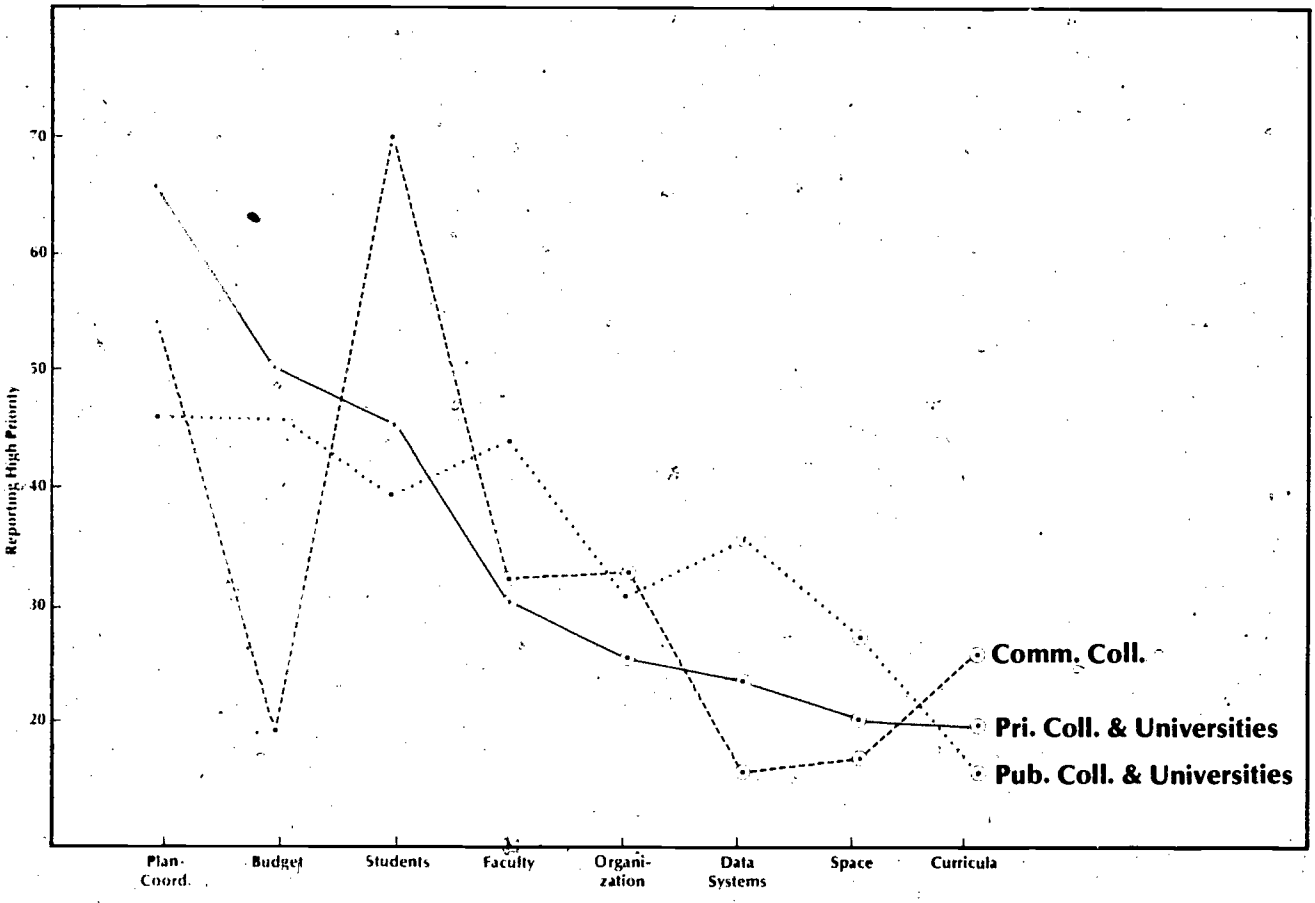
The second set of analysis attempted to determine the amount of variation which existed in the perceived (is) and preferred (should be) priorities of institutional research personnel across the three college/university settings. In addition, an attempt was made to identify the degree of disparity which existed between the perceived and preferred priorities of institutional research personnel in each of the three institutional groupings.[3] Figure 1 presents the percentage of respondents who "perceived" each of the eight job responsibilities as having high priority. The results suggest the relative amount of emphasis which institutional research personnel in these three types of colleges and universities place on the eight job responsibility areas.

For example, respondents in private, four-year colleges and universities were characterized primarily by their relatively greater emphasis on activities in the areas of planning-coordination and budget-finances. They tended to devote proportionately less emphasis than their colleagues on organizational studies. Those institutional research personnel in public, four-year colleges and universities were distinguished from their colleagues primarily by their tendency to spend relatively more time on studies of faculty, space utilization, and data systems. In addition, they placed relatively less emphasis on planning-coordination activities, studies of students, and curriculum studies. Finally, community college institutional researchers were characterized primarily by their greater emphasis on studies of students and curriculum studies. They tended to place relatively less emphasis than their colleagues on activities associated with budget-finances, data systems, and space utilization. In terms of the perceived priorities of the job responsibility areas, there appeared to be a rather well differentiated pattern in which each institutional group had two or three dominant areas of activity. From this pattern, one might conclude that there appeared to be some "uniqueness" to the high priority activities of institutional research personnel in these three types of institutions.

Figure 2 presents the percentage of respondents in each of the three institutional groups who preferred that each of the same eight job responsibility areas have a "high" priority at his or her institution. The results suggest the relative amount of emphasis which institutional research personnel in these three types of colleges and universities believe *should* be placed on the eight responsibility areas.

Inspection of Figure 2 reveals that there were no distinguishing features for institutional research personnel in private institutions in comparison to the other two groups. The relative importance which they attached to six of the responsibility areas fell between

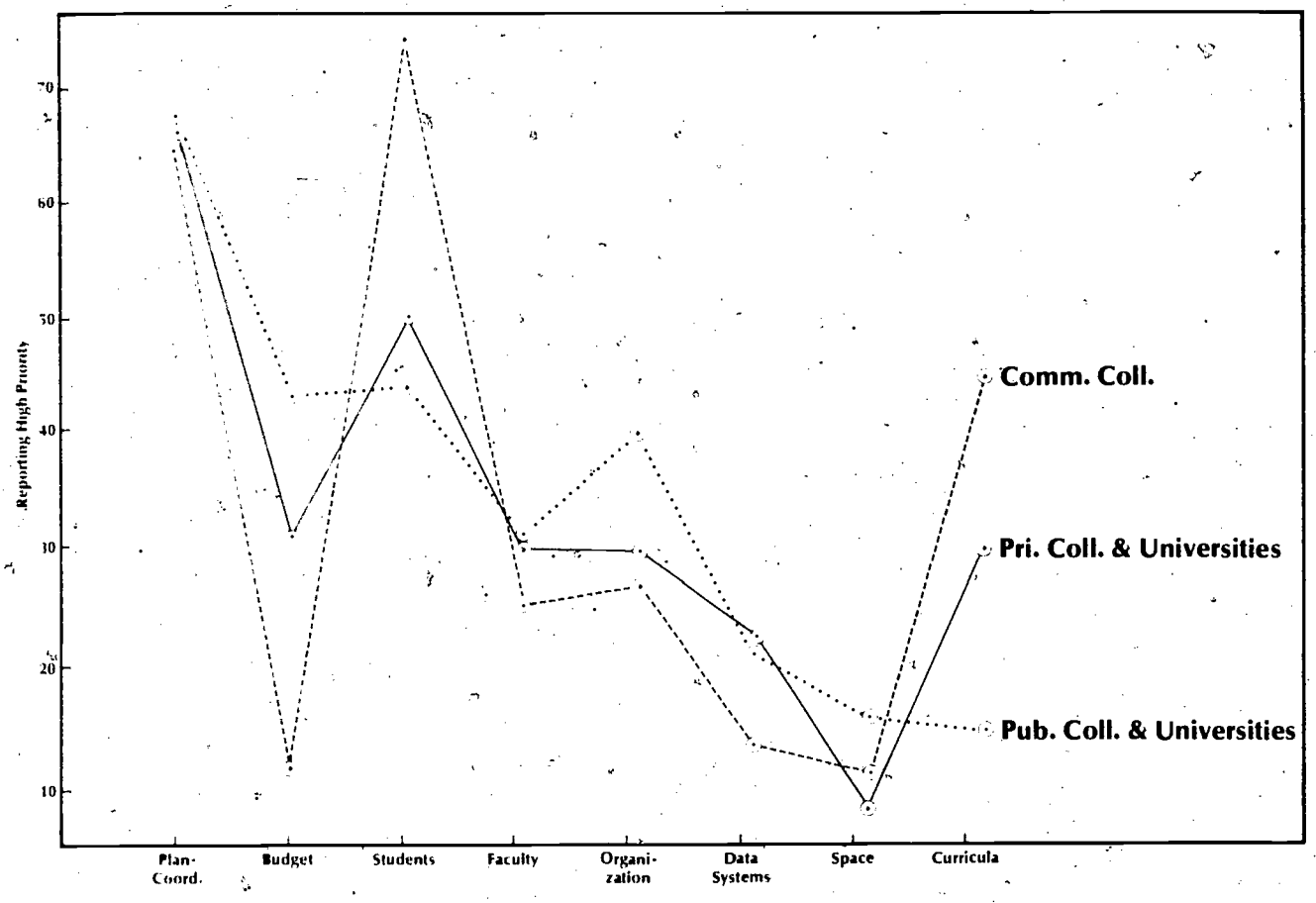
Figure 1
PERCEIVED "HIGH" PRIORITY JOB RESPONSIBILITIES OF INSTITUTIONAL RESEARCHERS CATEGORIZED BY TYPE OF INSTITUTION



the preferred importance ascribed to these areas by their peers in public institutions and community colleges. Their preferred ranking of data system responsibilities was only very slightly above that of their colleagues in public institutions and their preferred ranking of space utilization studies was only minimally below that of their peers in community colleges. Institutional researchers in public institutions were characterized primarily by their higher preferred rankings of activities related to budget-finances and organizational studies and their lower preferred ranking of curricula studies. Institutional research personnel in community colleges were distinguished from their colleagues primarily by their relatively greater preference for studies of students and curricula and their relatively lower preference for activities associated with budget-finances. Again, there was some "distinctiveness" across the preferred priorities of respondents in these three institutional groups with most variation occurring in the areas of budget and finance, studies of students, curricula, and to a lesser degree, organizational studies.

Figures 3, 4, and 5 present the disparity between the perceived and preferred priorities of institutional research personnel in each of the three types of colleges and universities. Figure 3 presents the results for those in private institutions. Institutional research personnel in these institutions indicated a considerably higher preference for curricula studies than was presently given this area of responsibility and preferred to be less involved in activities in the area of budget-finances and space utilization. Their colleagues in public institutions indicated several fairly broad disparities between their perceived and preferred priorities (See Figure 4). Primarily, institutional researchers in public institu-

Figure 2
PREFERRED "HIGH" PRIORITY JOB RESPONSIBILITIES OF INSTITUTIONAL RESEARCHERS CATEGORIZED BY TYPE OF INSTITUTION

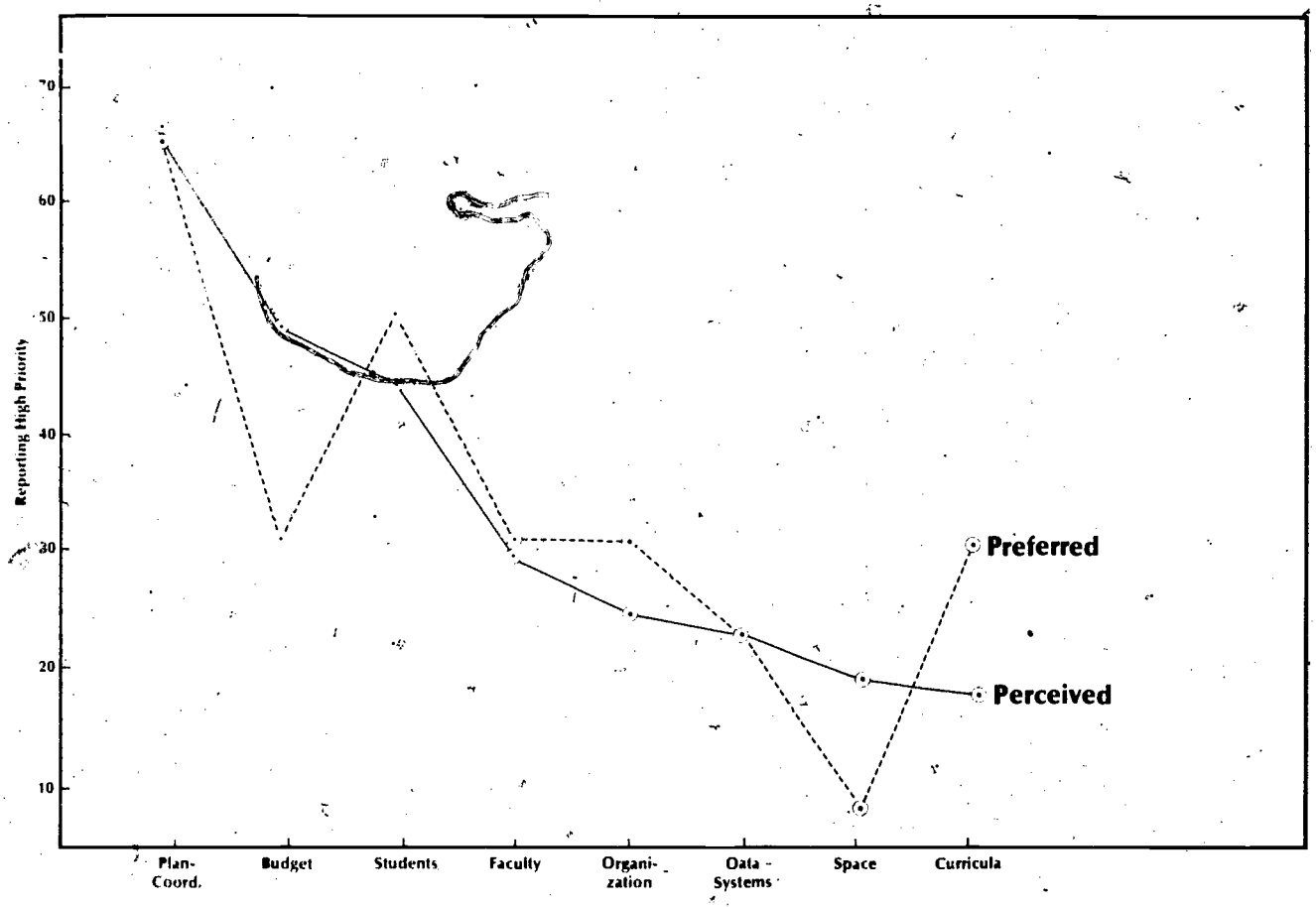


tions would prefer greater involvement in planning-coordination activities and organizational studies. They tended to prefer less involvement in studies of faculty and activities in the areas of data systems and space utilization. Inspection of Figure 5 reveals that institutional research personnel in community colleges indicated the least disparity between their perceived and preferred priorities. The only noticeable discrepancy for this group was in the area of curricula studies in which they indicated a desire for greater involvement. In sum, the disparity between perceived and preferred priorities appeared to be the greatest for institutional research personnel in public institutions (5 areas of disparity) with less disparity for individuals at private institutions (3 areas) and community colleges (1 area).

Discussion

Based on an analysis of the top-ranked job responsibilities of AIR members (see Table 1), budget and finance activities and organizational studies are currently receiving a higher priority than was found in the 1969 survey. Since many institutions are faced with even more difficult financial problems than in 1969 (related in part to static or declining enrollments and increased competition for available resources), it is reasonable to expect that individuals involved in analysis of "institutional functioning" would attach greater significance to budget and finance activities in 1973 than was true four years earlier. Moreover, although many post-secondary institutions have peaked in terms of student enrollments, these institutions (especially public institutions) have continued to become more

Figure 3
DISCREPANCY BETWEEN PERCEIVED & PREFERRED "HIGH" PRIORITIES: INSTITUTIONAL RESEARCHERS IN PRIVATE INSTITUTIONS (N = 166)

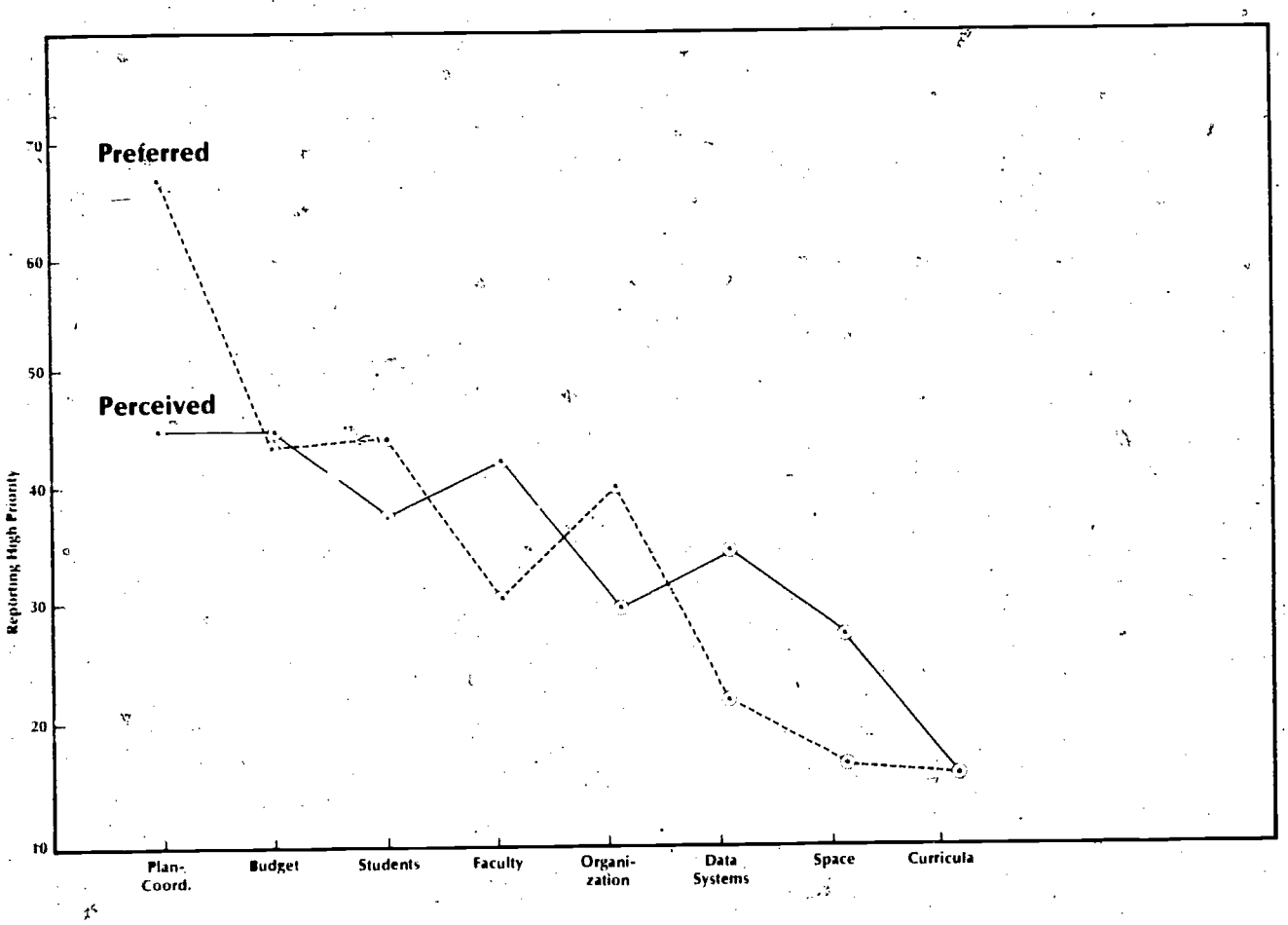


complex organizations — structurally and functionally, and it is not surprising that a higher top-ranked priority was placed on organizational studies in 1973 than in 1969. Many writers have expressed the viewpoint that colleges and universities are impersonal — students are "processed" through their education, the spirit of "community" on campus (although college catalogs proffer otherwise) is more myth than reality — thus, the complex organization and size of certain institutions may now be posing more urgent problems to those faculty and administrators concerned about the efficiency as well as the "humaneness" of institutions of higher learning.

Looking at job responsibilities irrespective of institutional type has its limitations, however. Not only do the "actual" and "preferred" priorities vary by institutional setting (Figures 1 & 2), so does the degree of disparity between perceived and preferred priorities as reported by institutional research personnel in the 1973 survey (Figures 3-5). In many respects, this further confirms the uniqueness of post-secondary institutions — various types of institutions have different mission, purposes, and constituencies — but beyond that, this information suggests that institutional research activity (its role, the satisfaction derived from it, etc.) may be noticeably different at various colleges and universities.

For example, institutional research personnel at private institutions perceive that moderately high priority is currently attached to budget and finance responsibilities, although they would prefer that less emphasis be placed on such activities. In addition,

Figure 4
DISCREPANCY BETWEEN PERCEIVED & PREFERRED "HIGH" PRIORITIES: INSTITUTIONAL RESEARCHERS IN PUBLIC INSTITUTIONS (N = 357)



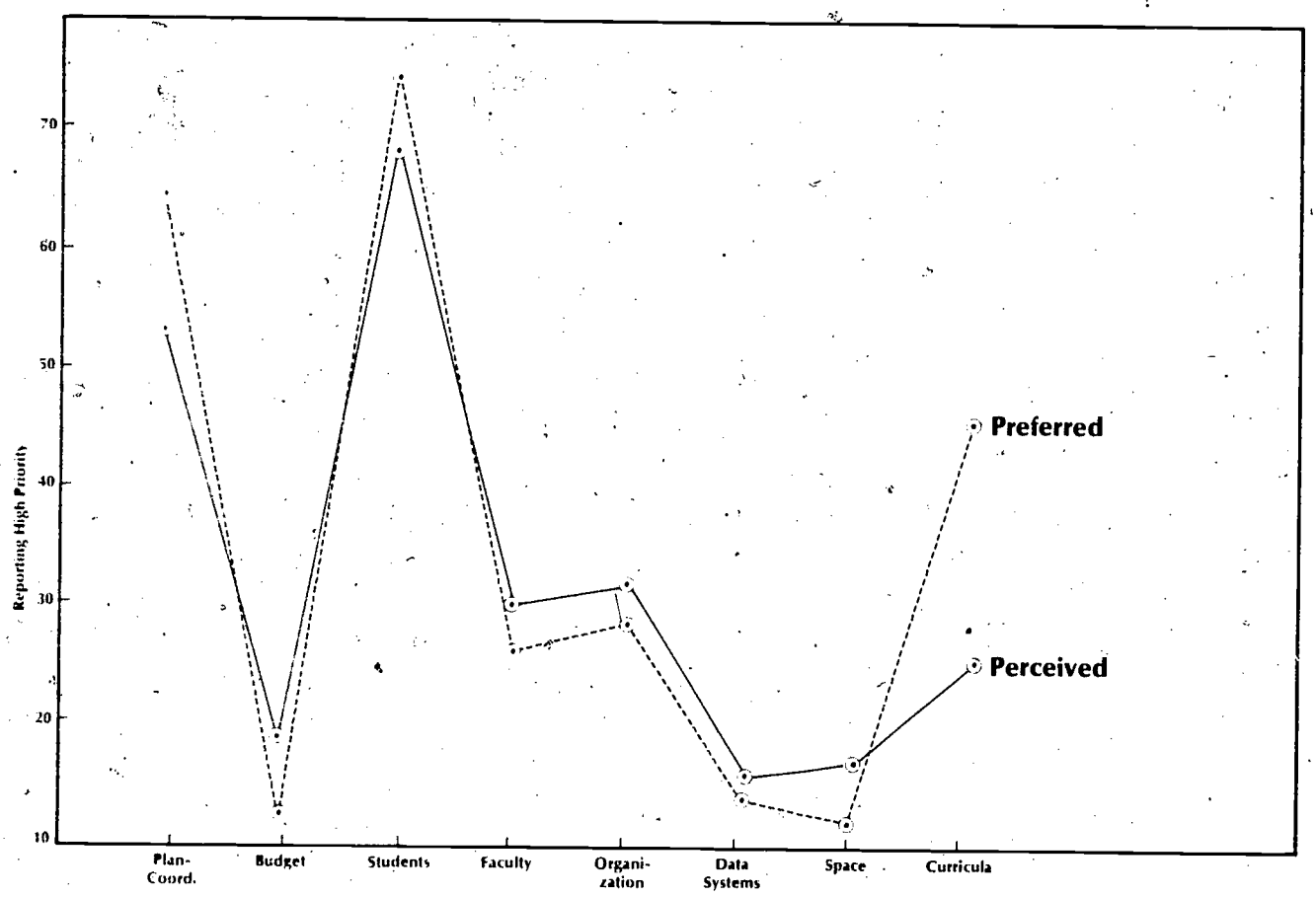
institutional researchers at public institutions would prefer that less priority be attached to studies of faculty, space utilization, and data systems. With the rise of public state-wide commissions, collective bargaining, reduced capital funding, etc., many more requests are being made for just these types of studies, although respondents at these institutions may not derive great satisfaction from their evolving responsibilities in these particular areas.

On the other hand, individuals at private institutions would prefer to place more priority on curriculum studies (as is the case with individuals at community colleges), and individuals at public institutions would prefer that more priority be placed on organizational studies and planning/coordination activities.

Beyond descriptive purposes, the data reported in this study may have implications for establishing a conceptual framework for judging how satisfied institutional research personnel are with their professional position and responsibilities. That is, it has been observed that individuals at community colleges have the most congruence between their perceived and preferred job responsibilities while individuals at public institutions report the least congruence between "what is" and "what should be" in terms of job responsibilities. Given a congruence/incongruence model, are institutional research personnel at community colleges relatively more satisfied with their position than individuals at private and public colleges and universities?. Are the correlates of job satisfaction different for individuals at these different types of

Figure 5

DISCREPANCY BETWEEN PERCEIVED & PREFERRED "HIGH" PRIORITIES: INSTITUTIONAL RESEARCHERS IN COMMUNITY COLLEGES (N = 113)



institutions? Moreover, in what ways can institutional research become more satisfying to individuals engaged in such activity?

These questions may be fruitful areas of investigation and could be related to the attraction and retention of institutional research professionals in the field of higher education and indirectly, the attractiveness of membership in a professional society such as AIR.

The research reported here may also identify areas in which "developmental" activities may find support among institutional researchers. For example, individuals at community colleges attached the highest priority among all institutional groups to studies of students, and they (like their colleagues at private institutions) reported that more priority should be placed on curriculum studies. Respondents at public institutions felt that more priority should be placed on planning/coordination activities and organizational studies. It is conceivable, therefore, that topical workships — aimed specifically at these target groups — may be of interest to individuals who wish to become more involved (or who wish to become more competent) in these particular domains of institutional research activity.

Given the results of this study, one may conclude that various facets of institutional research have different priorities (on both an actual and preferred basis) at different types of institutions. Thus the observed variation in job responsibilities (especially the

preferred priorities) may be an indirect indication that AIR professionals are "responsive" to the divergent problems and issues facing very different types of post-secondary institutions. More importantly, however, the degree to which these individuals are effective in developing a framework for understanding and solving these problems could be a determining factor in shaping the role and purpose of higher education in the years ahead.

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[1]See the *AIR Newsletter* (April, 1974) for a summary of the results from this aspect of the study.

[2]See J. Smart and B. Morstain. Assessment of job satisfaction among college administrators. *Research in Higher Education*, 1974, (in press) for results from this aspect of the study.

[3]For these analyses, "high priority" was defined as a ranking of 1, 2, or 3. In effect, the rankings were trichotomized into "high," "medium," (ranking of 4-6) and "low" priority (7 or more). For easier interpretability, only "high" priority rankings are presented in this study.

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ALTERNATIVE CHOICES IN PREPARING FUTURE INSTITUTIONAL RESEARCH PROFESSIONALS

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Are institutional researchers prepared to meet the challenges which will confront them? During a panel discussion, two contemporary philosophical and methodological training procedures were examined: Marvin Peterson, from the University of Michigan, approaches preparation in a global, conceptual manner to produce a researcher who was concerned with total institutional change. F. Craig Johnson, from Florida State University, on the other hand, bases his program on the philosophy that the effective researcher is taught institutional research rather than taught about institutional research. Subsequently, reactions were presented by Joseph Sutton, as a university practitioner, William Shoemaker, representing small, liberal arts colleges, and myself, as a community college researcher. The following summarizes the presentations by professors Peterson and Johnson and the responses.

Five basic principles form the foundation of Professor Peterson's concept of institutional research:

1) The primary role or function of institutional research in an institution or agency is adaptive; i.e., the concern is to assist the total institution in constantly changing toward a more effective state.
2) Institutional research is a process and not merely a position or person.
3) The perspective of institutional research is the total institution: a policy or planning perspective.
4) Institutional research must provide a combination of breadth and depth both in conceptual skills and research methods.
5) Institutional research has many potential constituency and administrative office relationships which it must manage.

Thus, Peterson has established broad parameters to encompass the divergent roles institutional research will fulfill. Additionally, he emphasizes the creation of divergent analytic skills or methods and a conceptual framework of sufficient breadth to allow for flexibility. Such a researcher would understand change dynamics and be capable of assessing institutional effectiveness. He would, however, not confine his efforts to measurement of institutional efficiency or cost effectiveness but also could place the college goals within social, political, economic, and educational reality.

Since Peterson perceives the institutional research process as an interface between data and decisions, the researcher should have expertise in data analysis, statistical techniques and research design. A more significant contribution, however, is the person's ability to turn broad questions of institutional structure and functioning into researchable questions and vice versa. As a corollary to phrasing clearer questions, such an individual could identify better data sources upon which to base sound management decisions.

Because he views the college as dynamic, it follows that his concept of institutional research is a non-repetitive process. Thus, the researcher would strive to analyze and implement a MIS but would institutionalize the reports so that they become "routine" within other college domains rather than in the institutional research offices. This professional generalist would focus on major questions of institutional direction, long-range strategies, and interinstitutional comparisons as well as begin to address those decisions which have traditionally had the greatest impact on the college but received the least analysis.

Finally, Peterson recognizes the growing trend toward political implications of internal decisions and increasing pressure to make the institutional research office accountable to an ever-increasing number of constituencies. Therefore, the research officer needs to understand and appreciate the approaches of the economist, psychologist, management scientist, politician, etc., if he is to conceptualize the complex human organization classified higher education.

Based upon the principles cited above, Peterson has organized his training program around several benchmarks. First, students from many academic disciplines or professional schools are individually assessed against a list of broad skills including organizational analysis, research methods and statistics. The purpose of this initial evaluation is to identify specific characteristics of the learner. Such assessment defines short

cuts by tailoring each program to the person's needs rather than vice versa. Subsequently, five broad areas are stressed in a concentrated two-year program beyond a strong master's degree which included some research or statistical background. First, there are some higher education courses which develop conceptual and analytic approaches to organizational and administrative behavior, finance, and state coordination to provide the total institutional perspective. Also included are electives on students, faculty, curriculum planning and assessment and a seminar on "Institutional Research and Planning." Second, the prospective researcher is encouraged to seek a cognate (non-Education) background to provide an interdisciplinary focus. Especially emphasized are professional areas of business, economics, public administration, policy studies, operations research, et.al. Third, the student must be thoroughly grounded in research design and statistics but with attention to qualitative as well as quantitive data collection and analysis approaches. Along with this, opportunity is provided for "hands on" experience with large-scale, computer-based data systems. Fourth, an internship in an institutional research office or administrative office involved in large-scale studies of higher education allows the student to compare theory with reality. Finally, the preliminary exam which requires the student to conceptualize and analyze a problem in higher education with application to a specific setting and the dissertation produces an institutional researcher who can evolve with the field or move into a top administrative role in a college or university.

Professor Johnson proposed, however, that the training be approached from a different tack. Stressing the impact of individuals such as Mager, Saupe and Brunner upon his thinking, Johnson stressed that a real difference exists between *learning* institutional research and *learning about* institutional research. He feels that the latter is utilized in teaching college administrators to be aware of the implications of institutional research for their support. However, the goal of the former is to have students apply existing knowledge and skills to solve institutional problems. This involves data collection within a single institution, analysis of that data relating it to institutional purposes, and writing course reports for decision makers. He emphasizes the single institution as interinstitutional comparisons fall within the purvue of higher education. His definition of institutional research does not include training objectives from specific subject matter, i.e., statistics, computer science, higher education, etc., although it is vital that the student develop marketable skills in these areas. It also does not include philosophical, social, or educational bases for institutional research since they should emerge from the tasks which the student confronts.

The methodology employed throughout the program is to present the student with a series of problem-solving exercises. These exercises are expressed as competency-based instructional objectives expressed in popular educational jargon. The student draws on his own background and skills to solve the situation while the instructor remains available to assist the student. Subsequently, they jointly discuss the substance of the exercise as well as its broader research questions and implications. Thus, the primary goal is to get the student to know how to do institutional research and, secondarily, to teach him something about institutional research.

Lest the implication be left that a programmed robot was to be produced, Johnson pointed out that some of the critical attributes of top caliber researchers are matters of innate talent. Such things as identifying fruitful hypotheses, sensitivity to human needs and frailities, relating findings to the problem, order priorities, forming reasonable value judgments, incorporating a professional code of ethics within himself, etc., are nurtured but their growth potential must be available. Thus, talented individuals are selected and trained in specific skills. The program uses structured tasks to appraise how far along each person is toward being ready to do institutional research.

At this point, it is appropriate to call attention to some of the similarities and differences between the respective programs. First, the goal of each program is to prepare a highly competent, sophisticated individual who can be relied upon to assist decision-makers in post-secondary education to make more reasoned and prudent decisions. Second, they both emphasize that the person embarking upon a career in institutional research either have or develop extensive knowledge in a cognate area other than education. Especially areas of economics, public administration, business, public policy analysis, and finance are stressed since the day-to-day institutional research operations are centering more on such things as cost effective analysis, program budgeting, needs assessment, etc. Third, both programs stress that the researcher have a fundamental grounding in statistics and research design, although Peterson has his students take specific coursework, while Johnson feels these skills should emerge within the student as he confronts specific tasks. This same means to an end is employed by both to prepare the student to become aware of the philosophical, social, and educational evolution of institutional research to the present state of the art. Fourth, it appears that Peterson tends to view institutional research primarily as an art undergirded with a body of technical skills

while Johnson seems to view institutional research as an assemblege of sophisticated skills that is supplemented with a sensitivity to the human portion of the equations. Fifth, although the positions seem to differ with regard to teaching institutional research versus teaching about institutional research, even Peterson acknowledges that coursework in higher education is kept to a minimum because such classes tend to talk about education rather than analyze education itself. Thus, both seem to stress that there is a foundation knowledge the researcher needs to have at his disposal regardless of the way he approaches the task. Sixth, they both recognize the benefits of a "hands on" experience of learning by doing. Johnson makes this the cornerstone of his program while Peterson requires an internship of his students. Finally, both programs appear to have built-in flexibility to adjust or adapt curriculum and training requirements to the changing nature and needs of higher education.

With all this similarity, there are some points of divergence between their approaches. Peterson's program seems to draw upon and adapt the program more to the skills and needs of the incoming student while Johnson has all of his students attempt a common series of exercises based on experiences of persons already practicing research. Second, Johnson's progran produced more of a technical specialist while Peterson prepares more of a generalist who approaches the problem somewhat pragmatically. Finally, Peterson tends to view institutional research more as a process while Johnson sees it as a procedure. The former views the college or university as in a state of constant flux and the researcher must study it in motion while the latter isolates stable, recurring relationships for scrutiny.

These programs appear to have different philosophical and methodological bases. How well do they work in the day-to-day duties researchers are asked to perform? Joe Sutton felt several concrete points needed to be made. First, he observed, persons should be aware of the value systems that various groups on campus bring to a problem. These constraints help bring perspective convergeance to a problem even if they don't help resolve it. Thus, the researcher needs some political awareness to reach concensus among all parties. Second, decision-makers often ask researchers to come up with today's answers yesterday. The researcher has to carry out a "quick-and-dirty" study that is not so "dirty." He did not argue against experimental design but the researcher must be able to handle less than ideal conditions due to time and resources. Third, the researcher often comes up with lots of answers; i.e., 6 inches of computer printout, for which there are no defined problems. The researcher has to learn to give understandable meaning to data.

Finally, institutional research frequently gives the least attention to the most important problems. He cited a continuum of areas of study based on ease of quantification as follows: Finance, Facilities, Staff, Students, Programs and Purposes. Institutional research tends to spend the bulk of its efforts and resources analyzing finances and gives minimal attention to purposes. Joe Sutton concluded by proposing that the researcher begin to spend more time with purposes and less with the security blanket of quantifiable data.

William Shoemaker postulated that the function is changing to the point that classic preparation modes no longer fit. The researcher needs to take more of a systems approach to problem solving. First, he must deal with comprehensive, detailed data related to institutional operations, analysis and planning. Second, he must recognize the interactive nature of intrainstitutional data and, third, the first two must be related to the outcome or institutional goals.

A second point he stressed was the need to be aware of the on-campus psycho-socio-political ramifications of MIS development. The "process" of decision-making and planning is as important as the derived information.

Finally, he pointed out that external reporting and interinstitutional comparisons will increase although the ominous implications traditionally associated with it need not occur. Thus, the researcher needs to become an "extrainstitutional researcher" in the sense of being aware of general environmental trends, evaluating cooperative relationships with other colleges, and monitoring the activity of state and federal agencies.

The two-year community/junior colleges presented some unique problems for institutional research personnel. Historically, research endeavors have, with a few notable exceptions, been carried out in a relatively haphazard manner because the designated person didn't have an operating budget, support staff, or authority to initiate meaningful studies. Additional constraints included the "open-door" philosophy, extreme student mobility, no real concensus on what data was essential, a paucity of sophisticated computer-based resource prediction models, an indirect bias by other segments of higher education that two-year colleges couldn't conduct meaningful institutional research and, finally, a lack of institutional commitment to utilize the results of research and MIS for making sound administrative decisions.

However, the Zeitquist of public demand for predictability, measurability, accountability, and man-

ageability has modified the image from that of Bob Cratchet with his green eyeshade and quill pen to a modern professional. Such a person needs a fundamental grounding in MIS systems design and analysis, statistics, and a general working knowledge of computers. It is essential that the researcher at the two-year college level be able to communicate with the staff at their level of background and interest. Initial fears of the "time and motion man," "chicken entrails analyzer," or "walking computer" need to be allayed. Because institutional research has goals to (1) help organize the college to achieve its goals, (2) relate institutional goals with current reality, and (3) tie plans for the future with avowed purposes, it is essential that the researcher have a broad awareness of the state of higher education.

Three areas for improving institutional research at the two-year college level were made: First, community colleges have to break out of a reactive mode of problem solving and incorporate a systematic planning approach based on empirical information. This includes employment and formal recognition of the role and purpose of institutional research within their institution. Second, there is an urgent need for in-service training in the form of workshops, institutes, seminars, conferences, etc., to upgrade the background of those current practitioners. Third, there needs to be a closer degree and spirit of cooperation between the university researcher and his two-year college counterpart on a professional colleague basis. While some of the problems are idiosyncratic, most are common to higher education and there is little gained by having each researcher reinvent the wheel.

The theme of the whole session centered around a comparison of two dominant methods for training future personnel and focusing attention on the role similarities of the two-and four-year institutions. The fact that the Association recognizes this concern and continues to address it in an open forum is a hopeful sign.

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