Institutional Research in the Decade Ahead: Enhancing Performance

North
East
Association for
Institutional
Research

N E A I R

Seventh Annual Conference
North East Association for Institutional Research

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Amherst, Massachusetts

INSTITUTIONAL RESEARCH IN THE DECADE AHEAD: ENHANCING PERFORMANCE

Papers from the Seventh Annual Meeting

of the

North East Association for Institutional Research

Amherst, Massachusetts

October 30-November 1, 1980

PREFACE

The Seventh Annual Conference of the North East Association for Institutional Research was held October 30 - November 1, 1980 at the University of Massachusetts, Amherst, Massachusetts. The conference theme, *Institutional Research in the Decade Ahead: Enhancing Performance,* was highlighted by Hugh Hawkins, Professor of History and American Studies at Amherst College. His keynote address was entitled: The American University and Its Publics: A Historian's View.

The formal conference, attended by 137 people from eleven states was preceded by three optional seminars focusing on Institutional Self-study, Attrition and Retention, and Market Research in Higher Education. There was also a demonstration of the EDUCOM Financial Planning Model (EFPM). A copy of the conference program is included as an appendix to this publication.

Topics covered in the regular sessions included student choice, program evaluation, assessing quality, attrition/retention, and faculty workload. A variety of papers were presented on other special interest topics. The papers included in the Proceedings are those submitted for publication, and do not cover all the presentations that were made at the conference.

The Association is grateful to Patrick Terenzini and Wendall Lorang (SUNY, Albany), who co-chaired the Conference Program Committee. The Local Arrangements Committee was chaired by Bill Lauroesch, who was ably assisted by Larry Benedict (University of Massachusetts at Amherst).

The success of the conference was due also to the efforts of the many participants who shared their research successes, as well as frustrations.

The final form of the publication is the result of the patience and editorial skill of Helen Rock of the Office of Institutional Research at SUNY Plattsburgh.

Diana M. Green
NEAIR Publications Chair

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1979 - *Institutional Research in the Decade Ahead: Enhancing Performance*	ED 187-222

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THE AMERICAN UNIVERSITY AND ITS PUBLICS:

A HISTORIAN'S VIEW

Hugh Hawkins
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Those who invited me to speak here did so, as I understand it, because I am not one of you. Reflecting on this notion, I have been startled to think of the gap, possibly even the polarity, between us.

You are institutional researchers. I am a historian. You gather data and analyze it for policy questions. I gather data and try to synthesize it out of some notion that knowledge of the past is good in itself quite apart from any potential utility.

You are sophisticated in the ways of statistics and computers. I work mostly with so-called literary sources, looking for assumptions concealed in the record of the past and looking for the ironies that divide intentions from achievements.

Most startlingly, we are subject matter for each other. I am one of your FTE's. I am part of the denominator of the student-faculty ratio that your chief may be trying to enlarge. You, in turn, are prime examples of the elaboration of administrative structure which forms a principle theme of my history, a development I hold up to close scrutiny because I see danger of institutional purpose getting lost in institutional rationalization.

Yet I think division is not the whole story. We both center our working lives within the world of higher education. Your various reports will be the stuff of the history that some future historian will write. The historian, who could be I, will consult your questionnaire results, preserved long after those who answered the questions have left the scene.

We both care about change, even though I look more to the changes in the distant past that moved things toward where we are today, and you look more to changes in the immediate past with a concern about where we may be in the future and how we might get there. Since I will be sharing that future, and since you cannot escape that past, we surely have a great common realm of interest. My being here tonight is evidence of our mutual recognition of what we share. I am immensely grateful to those who invited me.

Much of my written history has focused on rather brief periods of the academic past. I was trained in the school of thoroughness, with its careful reliance on primary sources. I welcome the chance this occasion gives me to sweep with a little more daring across a broader expanse.

I have lately been trying to shift my scholarship from studies of single institutions to studies of higher education as a whole. Accordingly, I am having to change my methods and my sources. But I have found that I still care about the same central question. What has happened to the purpose of higher education as it encounters the rest of society? Or, in the language of my title, as higher education encounters various publics, what have been the stakes?

I will be contending here that in this encounter with their publics, the greatest strength of our colleges and universities has been their flexibility. And their greatest weakness has been--the same thing. I call flexibility a strength, because in any society, but particularly in one like ours--fiercely democratic, confidently materialistic, assured of its moral probity--institutions have either adapted or they have weakened and disappeared. I call the same quality a weakness, because in their efforts to adjust to America, colleges and universities have often

compromised what should be their essential purpose--the life of the mind. The essential of that life is free inquiry. And if the universities are not true to the possibilities of the human intellect, those possibilities are almost certain to be neglected.

In short, I see universities as often teetering between a self-satisfied, narrow intellectualism and a surrender to external powers.

This tension was present 100 years ago in the revolutionary changes that made the post-Civil War era the most important in our academic history. To understand that revolution we must identify the pattern that was being changed--the old-time college.

American higher education in 1840 consisted of about three hundred such colleges, none with more than 200 students,--all of the masculine gender--none offering education beyond the bachelor's degree, and all dedicated to a program that emphasized required study of the ancient languages and mathematics, with only a smattering of other subjects. For the students, life was rigidly prescribed. Faculties were often made up of young men waiting to launch a different career, and older men who found the ministry too demanding. It was an intimate, face-to-face community, where those in charge thought of themselves as acting in the place of parents. The personification of these impulses was the president of the institution. Almost certainly a clergyman, he was never so happy as when a revival "freshened" his college and it seemed appropriate to call off classes while the work of salvation went on.

At our distance from the old-time college, we can easily identify certain positive values, and it had many qualities that we complain are lacking in the huge organizations that constitute universities today. But to many of those who had attended these institutions in the early 19th

century, they were remembered as little short of a national disgrace. If Europe had universities, they reasoned, then America could not hold up its head until it had them too. Their allegiance to the republican form of government made them eager to prove that monarchs were not the only ones who could charter these great centers of learning.

It took the Civil War to free the forces that brought universities into being in the United States. The enhanced nationalism and liberalism that went with the Union victory, the new fortunes created by a triumphant industrialism, and the original hopeful connotations of the term "Reconstruction"--all these encouraged the establishment of universities.

A series of institutions took their turns as the center of hope and attention, and each contributed something lasting to the institutional pattern that I have suggested proved so flexible.

First, think of Cornell University, which opened in 1868 in western New York. It was inspired by the grants of land which Congress provided under the Morrill Act of 1862, so that each state could support a college emphasizing branches of learning "related to agriculture and the mechanic arts." Two members of the New York legislature--a wealthy Yale graduate named Andrew D. White, and a wealthy graduate of the school of hard knocks named Ezra Cornell--dreamed up a plan for keeping the New York grant united for one institution, and holding onto carefully selected lands until the price rose. Meanwhile, Cornell would give his farm and his fortune to endow the new university. It took for its motto his statement: "I would found an institution where any person can find instruction in any study."

And what a complicated mixture it all was! Cornell was both privately endowed, and public-land-grant supported. It offered not only agriculture and engineering, but the classics and fine arts. It included a Voluntary

Labor Corps, because Ezra Cornell believed every student should learn a trade. It admitted women as well as men, and it tried to be open to influences of all denominations without being controlled by any. It included an elective program, under which students were allowed to choose practically all the courses they took. In short, it was a scandal. But it was also a triumph. In 1871 its freshmen class was larger than had ever been seen at an American college. This vote of confidence by students and increasing interest by industrial magnates made it the talk of the academic world and a model that older institutions ignored at their peril.

One university leader who did not ignore it was Charles W. Eliot, who was inaugurated as president of the country's oldest college--Harvard--in 1869. The choice of Eliot for this post was in itself revolutionary. He was the youngest president Harvard has ever had--only thirty-five. He was the first not to be a clergyman. In fact he was, of all things, a chemist, and he had been teaching at a very unclassical place--the Massachusetts Institute of Technology. He was one of those who dreamed of creating an American university that was oriented to social needs. Shortly before he took office, he had written: "[The American University] will not be a copy of foreign institutions, or a hot-bed plant, but the slow and natural outgrowth of American social and political habits." His inaugural, which left no doubt that the old Harvard was going to change, emphasized the two programs in which he attained his greatest success: the elective system, by which, increasingly, students could design their own course of study; and reform of those long neglected appendages of Harvard College--the professional schools. In his first few years, he fought to get the doctors at Harvard Medical School to transform its hasty, income-oriented curriculum into an extended program that included clinical experience. Before he was

finished (and he stayed in office for forty years), Eliot had elevated Harvard's professional schools to the postgraduate level. It is these two changes--undergraduate curricular freedom and elevated standards of professional training--that were Eliot's lasting contributions to the complex new American university.

But even with Cornell and Harvard succeeding in their experiments, something was lacking. White and Eliot had been too eager to meet the country's utilitarian demands. At least, so said those who felt that the German universities were the best in the world. Students who wished to pursue non-professional, non-applied knowledge beyond the level of the B.A. degree found virtually nowhere in America to go. And the university professor was still primarily a pedagogue. If he was also a creative scholar, it was almost by accident. A righting of the balance by emphasizing knowledge for its own sake came through a university that opened in the nation's centennial year, 1876. A merchant of Baltimore named John Hopkins left half his fortune to found a university, and his trustees discovered that an ambitious educational reformer named Daniel Coit Gilman was willing to leave the University of California after three years as president there.

Gilman told the trustees that he would head the John Hopkins University if they were willing to break the old pattern and aim at attainment of a higher level of education--in short, to stress what we now call "graduate education." He envisioned a faculty of intellectually adventurous scholars, whose publications gave them more than local reputations. The trustees assented, and Gilman set to work. Perhaps most importantly, he instituted a new program of "fellowships," to pay college graduates to pursue advanced studies. The caliber of Hopkins' work gave a new prestige to university professorships and to the Ph. D. When the Association of American

Universities was formed in 1900, only institutions with Ph. D. programs were admitted.

These three men--White at Cornell, Eliot at Harvard, and Gilman at John Hopkins--are the traditional heroes in America's academic legend, and the legend is essentially accurate. Their restructuring of American higher education was widely imitated, and it gained a spectacular confirmation in the founding of the University of Chicago in 1892. Here the financing represented a blend of John D. Rockefeller's oil fortune, gifts from local businessmen, and the urge of the American Baptists to sponsor a great educational foundation. Under President William Rainey Harper, an Old-Testament scholar with a talent for organization, the University of Chicago ratified and united the practices that had emerged from the earlier experiments. Chicago offered what Americans had come to expect in a "university": curricular inclusiveness, advanced study, research-oriented faculty, a cluster of professional schools, and a hierarchy of ranks for faculty and degrees for students. But Harper added something new--a highly rationalized administrative structure. This structure resembled the developments in business management which had accompanied the consolidation of American industry.

While the University of Chicago was establishing itself as a symbol of the full-realized private university, another group of institutions was slowly coming into its own. I refer to the state universities (and the overlapping category of land-grant colleges) which were often constrained by the limits of state budgets, by the sometimes narrow views of state legislators, and by being considered the final step on the ladder of public education, not much different in purpose from the high school. To their credit, state universities opened possibilities of extended

education to young people who lacked both money and a family tradition of advanced education, and Western state universities were path-breakers in instituting coeducation. They did this at a time when many educators were issuing dire warnings of female fragility, insisting that women's bodies were not tough enough for them to engage vigorously in the life of the mind.

Gradually, the most ambitious state university leaders raised standards to those of the private pace-setters. The Hatch Act of 1887 gave them funds for agricultural experiment stations, and the research impulse spread to non-applied programs. But it was other developments that put state universities center-stage during the early years of the 20th century. I am referring to those programs that can be loosely grouped under the label "the Wisconsin Idea." By no means unique to Wisconsin, this formula took the university outside the campus and--in the phrase of one president--made "the boundaries of the university coterminous with the boundaries of the state." This was done through such undertakings as extension programs that sent university professors to isolated communities to give evening courses, soil testing laboratories to help farmers, and special "institutes" that brought older people to the campus for brisk, short courses.

Under another phase of the Wisconsin Idea, universities furnished experts to legislators trying to frame laws for a complex industrial society, and professors became members of new government regulatory boards. The Wisconsin Idea was oriented to "service," as the language of the day had it. And the voters were far more willing to tolerate the incomprehensible publications of a professor of Sanskrit when they recognized that he was in the same institution as the man who had found a successful cure for wheat fungus.

But I fear that the story, as I am telling it, is beginning to seem

all devoted to the inspired flexibility of American universities, and you may have begun to wonder if there is a case to be made for those dangers of corruption that I spoke of.

The early 1900s is the ideal period to bring some of the less cheerful side of the story to the fore, since during these years, two largely distinct rebellions by faculty members surfaced. The first, I will label the rebellion of the humanists. This attack on the new status quo stressed the neglect of undergraduate training in the liberal arts. These critics complained that the elective system had reduced all subjects to equality, whereas some subjects were vastly more important to true education than others. Professor Irving Babbitt feared that the B.A. degree might come to mean simply that a student had "expended a certain number of units of intellectual energy on a list of elective studies [and] that [list] may range from boilermaking to Bulgarian." He and others harked back to the best of the old-time colleges and pointed to the practice in English colleges. Both these models were called truer to liberal culture than those huge successes, the new American universities. What should the university give to students who come at the age of 18 asking for education? To these reformers (or perhaps they should be called counter-reformers), the answer was this: we should open their minds to "a wide vision of the best things which man has done or aspired after." This would be the opposite of imparting masses of undigested or unjudged facts, or teaching mere techniques. These advocates of a more truly liberal culture found leaders in such figures as Woodrow Wilson, president of Princeton, and A. Lawrence Lowell, who succeeded Eliot at Harvard in 1909. Colleges now began to limit the free elective system by requirements that students have both breadth and depth--that they know something about a great many fields, and

a great deal about some particular field. If these critics of American universities were sometimes crochety, and sometimes offensively elitist, they at least drew attention to a certain cheapening of higher education. They gave fresh purpose to many small colleges, but in the universities, their success was limited.

The second rebellion, which is analytically distinct, though it involved some of the same people, can be called the revolt for professionalism. Professors insisted that the rubric of "service" diverted their teaching and research from higher ideals of free inquiry. They resented the prevalence of business values in universities, and they particularly complained of the concentrated power in the administrative bureaucracy. It was all right to keep track of statistics, but was there not a danger that what Professor Thorstein Veblen called "visible magnitude" would become the institutional goal, replacing intellectual achievement, which was unmeasurable? As to the university presidents whom Veblen satirized as "Captains of Erudition," were they not exercising arbitrary power, firing professors they did not like and turning others into toadies, who played it safe in their writing and teaching? With increasing vehemence, professors insisted that they were not employees of the trustees, but rather were professionals. This professionalism, like that of doctors and lawyers, meant that their judgment was based on expertise and ethical commitment, and that their judgments must remain essentially independent of those who might be called their "clients,"--students and the public.

This impulse was most clearly institutionalized in the founding of the American Association of University Professors in 1915. From the beginning, it helped teachers who were in trouble because of their opinions. The idea of tenure, which had earlier origins, was developed into a firm

institutional commitment that made it less likely that unorthodox thinkers would be forced out. Now, having suggested that participants were not without qualms about the price universities were paying for success, let me resume my chronicle.

In the testing of World War I, the universities were given over to the ideal of service in a form so nationalistic that it nearly obliterated other ideals. The armed forces were given anything they asked in setting up training programs on campuses, researchers turned without hesitation to such projects as the perfection of poison gases, and advocates of academic freedom stayed quiet while professors of German birth or suspected of pro-German leanings were harried from their jobs. The war was mercifully brief, but much of the damage could not be undone. Besides, the postwar period saw an influx of students that strained all facilities, and inflation made adjustments more difficult.

The 1920s were the first great era of fund drives. They tended to be successful, benefitting from alumni's concern for their alma mater, a relationship largely unknown in Europe. They benefitted also from the gifts of great foundations, especially those of Carnegie and Rockefeller. Since universities were sharing in the prosperity of American business, there were occasions when presidents and professors discouraged social criticism. New utilitarian programs served business more obviously than they served learning. In the Veblenian tradition, muckrakers like Upton Sinclair exposed truckling to commercial interests, and Abraham Flexner, himself a power in the foundations, denounced the university's descent into a "service station" mentality. Visually, there was evidence in the new fraternity houses and huge sports stadiums that the center of institutional gravity did not rest on intellectual concerns.

The Great Depression challenged business hegemony and brought a new seriousness to the inner life of universities. Students accepted federal grants under NYA, happy to keep the library books dusted or take other make-shift jobs that let them stay in school. Economics courses were in vogue, and field projects brought students close to union organizers and helped them feel that they were not hiding in an ivory tower. As for the professors, their role in Washington as Brain Trusters can be interpreted as the Wisconsin Idea gone national. There was an understandable conviction that the university must help in this national crisis as it would in a war. One can sympathize with these impulses, and still suggest that such tendencies worked against the more leisured sense of the university as a home for untrammeled learning and self-directed inquiry. Yet ironically, the very dismalness of the economic situation led to some important experiments in revivifying higher education. At the University of Chicago, the boyish new president, Robert Maynard Hutchins, felt that since fund-raising was hopeless, he might as well devote his energies to curricular innovations, such as the Great Books courses, earlier admission of bright students, and an assault on the anti-intellectualism of those who defined education as adjustment. With similar daring, though in a different setting, a group of faculty and students at Black Mountain College in North Carolina experimented in communal living and student government, scorning the judgment of accrediting agencies.

Perhaps more important than any indigenous development in American universities during the 1930s, was the influx of refugees from fascism, who included many of Europe's most advanced thinkers. They brought with them a dedication to the research ideal that had scarcely been matched since the early days of Johns Hopkins. There were so many such refugees

that most colleges and universities could count at least a few. The result was a major injection of cosmopolitanism and a renaissance in certain fields.

After December 7, 1941, the universities--like the rest of the nation--were, as President Roosevelt announced, under the command of Dr. Win the War. Colleges were glad to invite the military in, seeing the only alternative as closing down for the duration. Ironically, it was at the University of Chicago, home of Hutchins' puristic intellectualism, that the most momentous "service" effort in university history was undertaken. In secret laboratories under the football stadium, scientists worked to perfect the device whose very success was to give them pause when they tried it out at Alamogordo in July, 1945.

Just as the Morrill Act during the Civil War continued to affect universities long after that war ended, so the GI Bill of Rights instilled the lasting expectation that higher education should be much more generally available. At the end of the war, numbers of students found themselves in college who had earlier believed they could not afford it. Colleges got a financial shot in the arm, and the President's Commission on Higher Education proposed that two years of college be added onto the national tradition of free, universal public education. In spite of the drive to create community colleges, the majority of college students found themselves in very large institutions. Some began to complain that they were only faces in the crowd, or worse, coded symbols on a computer card.

With the onset of the Cold War, many felt that the situation justified an unquestioning total commitment to the nation. Fears increased that the Russians were succeeding better in education than we were. After all, had they not developed atomic weaponry with astounding speed, and did

they not humiliate us in the space race by launching their Sputnik for the whole world to see? Americans responded with an exaggerated emphasis on the applied sciences, insistence that traditional humanities were frills, and declarations that the sooner students knew where they were headed, the better. In a word, vocationalism invaded the universities as never before. New federal aid to higher education became available. But as colleges had already learned in their experiences with fund drives, those who pay the piper can at least claim a veto over the tune. The National Defense Education Act defined even so humanistic a field as foreign languages as a tool in preserving America's world power. Grants for secret research were accepted, and professors found themselves voting on Ph. D. degrees in cases where they had not been able to read the dissertation because it was classified.

On the one hand, these tendencies were corrupting. They represented the "service ideal run wild. Universities became so vast, so multi-faceted, that Clark Kerr could find coherence only in their administrative structure, and coined a new name for them--"multiversities." Yet, as in earlier cases, I think a central thread of intellectual integrity was preserved, perhaps even strengthened. During the fifties, the word "excellence" came into wide use. If at times it was a mere slogan, it did reflect a changed attitude toward intellectual attainment. Those former greasy grinds, the hardest-working students, found a new respect. Teachers were more willing to be blunt in identifying slipshod intellectual effort, and the better students often entered Ph. D. programs rather than law school or medical school.

The first important disruption of this newly prosperous and increasingly self-satisfied academic establishment was the student revolt of

the late 1960s and early 1970s. To the extent that student rebels got what they were asking for, they kept the university in its old dilemma. They drove military research out of some institutions, but they initiated other kinds of "outside involvement" through various radical and reform causes. They managed to soften some of the mechanical impersonality of the campuses and encouraged the admission of a broader range of young people. Those changes were badly needed, but they did contribute to a lowering of intellectual standards. The student movement with its call for "relevance" sometimes proved to be as distorting to truth as earlier calls for "service." In retrospect, however, that movement seems less institutionally significant than it did at the time.

What can I say of the last few years? Its mood can perhaps best be summed up as an awareness of limits. The national failure in Vietnam, the reminders of the exhaustibility of natural resources--in particular the energy crisis, stagflation, foreshadowings of enrollment decline--all of these have encouraged somberness, even gloom. Respectable small colleges have been dying, and many institutions have embraced shallow vocationalism in an effort to attract students. Endowment income is down, and taxpayers are pressing for rollbacks. Programs are trimmed or scrapped. But a sense of limits is not the same as despair.

Acknowledging limits is another way of saying that universities cannot do everything. They cannot say to every center of power in the society, "Yes, we are as you desire us. Just tell us what you want." Instead, let universities consider priorities. To do that, they must ask what essentially justifies their being.

As I tried to make clear earlier, I am enough of an old-fashioned functionalist to think that institutions have callings, and that the

calling of higher education is the creation and sharing of knowledge. Higher education does not perform this function all by itself, and it is not the only purpose it can reasonably serve. But this is the role to which it should be committed.

There is always danger of higher education's indulging in purism and self-righteousness. It can, as it were, say to the rest of society, "We take care of the mind. You take care of the meat and potatoes." Indeed, there is no monopoly on intellect in colleges and universities. What Jacques Barzun called "the house of intellect" is shared by libraries, museums, industrial laboratories, research institutes, newspapers, television, publishing companies, and others. But there are distinctions that set colleges and universities apart among knowledge-oriented institutions. Most importantly, they bring youth and maturity together, and they command sustained attention from participants. Students and faculty share time and place long enough that intellect can come to be not just a convenience, or a utility, or an entertainment, or a curiosity. Here the life of the mind can be recognized as the demanding and rewarding and collaborative human enterprise that it is. Students will almost always be concerned about finding and preparing for their vocations, as well they should at their stage of life. But if that search and preparation are not placed in a larger perspective of human achievement and human possibility, then higher education has prostituted itself.

And what of research? It is a lonelier pursuit, and to speak the truth, it does not always sit well with the duties of teaching, though the tension here can be a healthy one. If teaching can distract from creative scholarship, so can the hopes of practical or profitable application of research findings. According to Monday's New York Times (October 27, 1980), Harvard University has a plan under consideration that would make it part

owner of a new corporation. The corporation would seek to exploit the university's patents which are based on recent faculty research in recombinant DNA. To Harvard's credit, some of the planners have raised questions. What happens to free inquiry when it becomes financially beneficial to keep a discovery secret? How will decisions about faculty promotion and retention be affected? A candidate's contribution to this money-making enterprise could hardly be ignored. Such questions, it seems, are being relegated to the faculty "for study," but time is short. I am reminded of the sad case of Columbia University's plan to enrich itself through ownership of a cigarette filter patent. Harvard's enterprise may well prove profitable, as that one did not. But no matter how great, such profits cannot outweigh the cost to the university's essential purpose of free inquiry.

I have brought this account up to today to suggest continuities, even though I know that historians who write history up to the present run the danger of partisanship or polemicism. Usually we keep a discrete distance and talk about sources not being open.

You in institutional research are different. You seize the day. In fact, as I suggested earlier, part of what you are working out is what historians are waiting for.

Perhaps there is something the historians can offer you in recompense. Not nostalgia. Not the dead hand of the past. What is offered is perspective. Where has this institution we study come from? Amid all its changes, has there been continuity? I have contended here that the central purpose has been continuous, and I name it once more: the increase of knowledge and the decrease of ignorance.

AN ANALYTICAL FRAMEWORK FOR THE INVESTIGATION OF THE STUDENT'S COLLEGE CHOICE DECISION

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In the face of decline in the general student population, higher education institutions must compete with one another to obtain a viable freshman class. The burden of this task typically falls on the Admissions Office of the college or university. The admissions office staff has the job of marketing the institution in such a manner as to attract those students possessing the attributes and characteristics deemed desirable. Usually the attributes include high SAT scores and a high rank in class, etc. Besides attracting these highly qualified students, the admissions office must also be concerned with the targeted size of the entering class. Thus, the admissions office may accept all students of a given level of quality who apply for admission, but depending upon the number of applicants that accept the admission offer, the targeted size may or may not be attained. If too few students accept, the institution may be forced to make budgetary cutbacks. If too many students accept the admission offer, the class load will be large, possibly causing staff or space problems.

The problem then is to develop a method that would enable the admissions office staff to predict whether a student will enter the institution if offered admission. This paper will describe the formulation and empirical analysis of a model of this student/college choice decision. While there have been several econometric analyses of the student demand for higher education, none of the studies attempted to estimate the probability of whether a student will accept an offer of admission. This paper is

organized as follows. First, a description of the student college choice decision process will be described to determine the variables requisite for a model predicting student college choice. A theoretical model of the student college choice will then be proposed, followed by an empirical analysis of the model of the student college choice decision. The paper is concluded with a discussion of the applicability of the model, with a summary of results.

A Model of the Student College Choice Decision

This research was undertaken with the intent of developing a model capable of predicting the probability of a student entering a particular college once he has been admitted. For example, assume the Admissions Office of Midcity College is interested in predicting whether a student will accept an offer of admissions. There are three basic decisions a student makes in determining the college choice. First, the student has to decide the colleges to which he will apply. Presumably, by the time he has received offers of admission, he has completed this process. Next, the student has to determine what colleges he will go to for participation in the various admissions process components such as an interview with an admissions counselor, a talk with a faculty member, a campus tour, etc. Some students do this before they submit applications, and based upon these experiences, they decide where they want to submit applications. Others, however, undertake this process after being offered admission and before they accept the admission offer. Thus, these admissions process components affect the ultimate college choice decision.

This ultimate college choice decision is the choice of college that the student enters. By the time the students have received an offer of admissions from Midcity College, they also received offers from other colleges as well. In making the college choice decision, the student compares

the strengths and weaknesses of the colleges that offered him admission. However, from the Midcity College point of view, the admissions office does not know what other colleges also offered the students admission, but, through the admission forms, it is often known where else the students have applied. Thus, it is possible to construct a student college choice set of the other colleges to which the student has applied and to compare the characteristics of these colleges with Midcity College. With the present state of the art, it is not possible to construct a separate choice model that would yield a probability of the student going to each of the colleges he applied to, but it is possible to construct a model that would yield a probability of the student entering the Midcity College versus some other college to which he also applied. This type of approach would compare the average characteristics of the other colleges the student applied to with Midcity College. In deciding what college characteristics are important in helping the student make this college choice decision, a heuristic approach was used. It is generally known that students use many published college guides, which contain many vital statistics of the colleges in the United States. For examples, Peterson's Guide (1975) has listing of college characteristics such as total enrollment (graduate and undergraduate), freshman enrollment, the number of faculty, the number and types of majors, the percentage of students that receive financial aid, and the tuition for each college. Astin (1971) gives the average ACT and SAT scores of the entering class of each college. Using these guides, the student is enabled to pick the college that most closely matches his interests and needs. Thus, in this model of the student's college choice decision, the average score for each of the above characteristics obtained from the set of other colleges that the student applied to, will be used to estimate the probability of entering Midcity College versus entering one

of the other colleges in that student's college choice set.

Midcity College has an admissions process to which students may avail themselves to become acquainted with the suitability of the college to their needs and interests. This admissions process at Midcity consists mainly of school visits interview, talks with faculty members, campus tours, and an Open Campus Program. Past research has shown that all of these process components have an impact on the student's decision to enter the college. Accordingly, these components should be included in the model.

Finally, it is obvious that the students have different characteristics, backgrounds, and needs. Some of these characteristics should be included in the model because they affect the college choice decision. These include the student's income level, place of residence, sex, SAT scores, type of high school attended, rank in high school class, and some indication of their special interests, such as an interest in medicine or some other health related career.

The model of student's college choice as outlined above will consist of three basic components, formally written:

$$E = f(S, P, C) + U \qquad (1.)$$

Where E = the probability of entering the Midcity College
S = a vector (or set) of student characteristics,
P = a vector of Midcity College Admissions process components,
C = a vector of the average scores of the characteristics of the student's other college choices,
and U = an error term.

With such a model, it would be possible to obtain an estimated probability of a student entering Midcity College, as well as to define the effect of the various characteristics on the student's college choice decision.

The Empirical Analysis

The model proposed above was tested empirically through Probit Analysis using a sample of 1352 students that were offered admission at Midcity College, a medium sized, private university in New York, of whom 483 or 35.7% eventually entered Midcity. Table 1 shows the variables collected for each student, along with the mean and standard deviation for each variable. The variables classified as student characteristics are: live in New York, live in the county where Midcity is located, female, low SES, High SES, Private school, Parochial school, rank in top 10%, rank in top 20%, rank in top 40%, Student Search Applicant, and Health Career Interest. The variables that are included as admissions process components are: had an interview, had a campus tour, talked with a faculty member, and participated in the Open Campus Program. All of these variables were coded as dichtomous (0 to 1) "dummy" variables. Thus, in Table 1, the mean for these variables indicates the percentage of the sample with those particular characteristics, (i.e., 62.13% of the sample live in New York, while 44.01% had an interview). The only student characteristic or admissions process component that is a continuous variable was the student's SAT verbal and SAT math scores. Thus 587 was the mean SAT verbal score and 651 was the mean SAT math score. The intercorrelations of the dependent variable were generally low, reducing the possibility of multi-collinearity problems.

The variables used to represent the student's alternative college choice are an average of the characteristics for all of the other colleges that the student applied to, besides Midcity. For example, if the student applied to Cornell University and Rensselaer Polytechnic Institute, besides Midcity, the variables were derived in this manner:

1. The characteristics of these two colleges, as obtained from Peterson's Guide and Astin are:

College	Total Enr.	Freshman Enroll.	# of Faculty	Tuition	# of Majors	Combined SAT Scores	% Students Recv'g Aid
Cornell	15,660	2,600	2,670	3,900	58	1,310	65
RPI	4,500	1,089	425	3,600	26	1,300	60

2. These characteristics are then summed and averaged, yielding an average score as follows:

Sum	20,160	3,689	3,095	7,500	84	2,610	125
Average	10,080	1,845	1,548	3,750	42	1,305	62.5

3. This average score for each characteristic is then used in the empirical estimation of the model. This procedure was done separately for all the students in the sample. The 1352 students applied to 223 other schools besides Midcity. The variable "Number of Schools Applied to" was computed by summing the schools applied to, not including Midcity. Thus, if a student did not apply to any colleges besides Midcity, all of these variables are equal to zero. Table 1 also shows the mean and standard deviations for these alternative college choice variables. The variable "Entering Midcity" shows that 35.72% or 482 students entered Midcity College.

Table 1. Descriptive Statistics of Variables Used

VARIABLE	MEAN	STANDARD DEVIATION
Live in New York State	0.6213	0.48
Live in Midcity County	0.0666	0.24
Female	0.3854	0.48
Low SES	0.0643	0.24
High SES	0.6406	0.48
Private School	0.1050	0.30
Parochial School	0.0636	0.24
Rank in top 10%	0.6657	0.47
Rank in top 20%	0.2189	0.41
Rank in top 40%	0.0836	0.27
Health Career Interest	0.4623	0.49
SAT verbal score	587.0902	78.71
SAT math score	651.9948	77.14
Student Search Applicant	0.3772	0.48
Had an interview	0.4401	0.49
Had a Campus Tour	0.4682	0.49
Talked to Faculty	0.4194	0.49
In Open Campus Program	0.1923	0.39
Total Enrollment	10151.5200	6106.76
Freshman Enrollment	1521.1553	886.08
Number of Faculty	1090.2470	737.26
Tuition	2620.2855	1073.25
Number of Majors	38.3254	13.99
Combined SAT score	1171.4386	285.97
% of students receiving aid	44.1324	15.13
Number of schools applied to	3.0732	1.47
Entering Midcity	0.3572	0.47

The Results of the Empirical Estimation of the Model

Based upon the model of the student college choice decision discussed previously, the parameters of a student choice model for Midcity College were estimated through the use of Probit Analysis using the variables listed in Table 1. The data were generated from a survey questionnaire sent to over 3,000 students that applied for admission at Midcity College. There were responses from 1352 students, representing a response rate of approximately 44%.

Table 2. Results of the "Probit" Analysis

VARIABLE	COEFFICIENT	STANDARD ERROR	t STATISTIC
Live in N.Y.S.	0.248	0.09	2.75**
Live in Midcity Co.	-0.049	0.17	0.28
Female	-0.086	0.09	0.98
Low SES	0.239	0.16	1.43
High SES	-0.043	0.09	0.48
Private School	-0.216	0.14	1.57
Parochial School	-0.265	0.16	1.60
Rank in top 10%	-0.374	0.22	1.69
Rank in top 20%	-0.314	0.22	1.38
Rank in top 40%	0.014	0.24	0.06
Student Search	0.068	0.09	0.78
Health Career	0.088	0.08	1.11
SAT Verbal Score	-0.00143	0.00057	2.49**
SAT math score	-0.00108	0.00061	1.78
Interview	-0.036	0.09	0.40
Campus Tour	0.493	0.09	5.25**
Faculty Talk	0.333	0.09	3.90**
Open Campus Program	0.369	0.10	3.55**
Total Enrollment	0.0000467	0.000019	2.47**
Freshman Enrollment	-0.000264	0.000101	2.59**
Number of Faculty	-0.0000487	0.0001	0.48
Tuition	-0.000033	0.000069	0.47
Number of Majors	0.0075	0.0052	1.43
Combined SAT score	-0.00108	0.000031	3.53**
% Receiving Aid	0.00247	0.0035	0.70
Number of Applications	-0.214	0.031	6.89**
constant	2.464		
Number of observations	1352		
Log of likelihood function	-707.64		
Degrees of freedom	23		

F statistic - indicates a level of significance of .01

**The t statistic for this variable indicates a level of significance .01

As shown in Table 2, by the t statistic, there are a number of highly influencial variables. The most important of these are the number of applications, the combined SAT score of the other colleges applied to, and size of the other colleges, most of the Midcity College admission process components, and the student's verbal SAT score. Whether the student lives in

New York State is also very important. There are also a number of variables that could be dropped from the model because they have little or no effect on the student's college choice decision. Some of these that could be dropped are: live in Midcity county, Rank in top 40% of class, and the interview. The interview variable is surprising because previous research has shown that an excellent interview has a high positive correlation, and a poor interview has a high negative correlation with the dependent variable. Both of these effects seem to negate each other.

Also surprising is the t statistic for the tuition and % receiving financial aid variables, but this finding is consistent with other research. These results are, of course, unique to the student population of Midcity College. However, the relative importance of the independent variables in their effect on the student college choice decision as denoted by the t-statistics, has policy implications that may be inferred to other samples. The most striking of these implications is that the intervention techniques of the admissions office used to attract students to Midcity appear to be very effective. These admission process components include a campus tour, a faculty talk, and an Open Campus Program, in which the student is brought to campus for a week of seminars. Because the signs of the coefficients of these variables are all positive, this indicates that the students that receive these treatments are more likely to enroll at the college. Another implication is that the more colleges a student applies to, the less likely that student will enroll at a particular college. This, of course, is well known to admissions officers, but now there is empirical evidence for this fact. Finally, based upon this sample, this study offers evidence that there is a tendency for students to choose a college located in their home state.

Application of Prediction Model

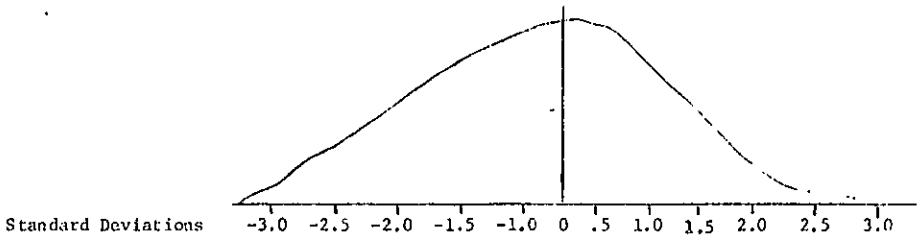
This model was intended to yield a probability of a student entering Midcity College versus one of the other colleges to which the student applied. To obtain this probability, the admissions office staff would assemble the data that describes the student in terms of the model. For each variable in the model, the value for that student should be multiplied by the coefficient for that variable derived by the model. The sum of all these calculations is then used to determine the probability from a Z score distribution table. The following example is an illustration of this process.

Suppose a student applied to Midcity College and the Admissions Office staff of Midcity were able to collect the following information about the student from their admissions form: he lived out-of-state, was male, was in a high income group, graduated from a public high school, was ranked in the top ten percent of his class, was contacted by Midcity College through Student Search, had SAT scores of 620 verbal and 680 math, had an interview, campus tour, and faculty talk, and he applied to two schools in addition to Midcity--Cornell University and RPI. The probability of this student entering Midcity College would be estimated through the following process:

1. List each characteristic of the student, and multiply by the appropriate co-efficient, sum these products, and add the constant term:

live in New York	0				
live in Midcity County	0				
male	0				
high income	1	x	-0.043	=	-0.043
public school	0				
rank in top 10%	1	x	-0.374	=	-0.374
student search	1	x	0.068	=	0.068
SAT verbal	620	x	-0.00143	=	-0.8866
SAT math	680	x	-0.00108	=	-0.7344
interview	1	x	-0.036	=	-0.036
Campus tour	1	x	0.493	=	0.493
Faculty Talk	1	x	0.333	=	0.333
Total enrollment*	10080	x	0.0000467	=	0.471
Freshman enrollment*	1845	x	-0.000264	=	-0.487
Number of faculty*	1548	x	-0.0000487	=	-0.075
Tuition*	3750	x	-0.000033	=	-0.124
Number of majors*	42	x	0.0075	=	0.315
Combined SAT score*	1305	x	-0.00108	=	-1.409
% receiving aid*	62.5	x	0.00247	=	-0.154
number of applications	2	x	-0.214	=	-0.214
			2.464		2.464
			TOTAL	=	- .049

2. Because the sum of the characteristics "scores" times their coefficients yields an estimate of the probability in terms of standard deviations from the mean of the probability distribution, it is necessary to determine the probability by locating the total maximum likelihood estimate score (i.e., for this example: -0.049) in a normal table. A normal table shows the % of the area under the normal distribution curve according to standard deviations. Fig. 1 is an example of this.



S.D.	Area Under the Curve	Probability of Entering
-3.0	.001	0.1%
-2.5	.006	0.6%
-2.0	.03	3.0%
-1.5	.07	7.0%
-1.0	.16	16.0%
-0.5	.31	31.0%
0.0	.50	50.0%
+0.5	.69	69.0%
1.0	.84	84.0%
1.5	.93	93.0%
2.0	.97	97.0%
2.5	.994	99.4%
3.0	.999	99.9%

Fig. 1

Thus, for our example total of -0.049, the probability of that particular student entering Midcity College is slightly less than 50%. This same type of procedure could be done for any student with appropriate information.

Summary and Conclusions

The purpose of this article was to formulate and empirically test a model of student college choice decision. This model could then be used as the basis to estimate the probability of whether a student would enter

a particular college. A model was developed based on the decisions a student makes in picking a college. The model has three primary components: a vector of student's personal characteristics, a vector of the admissions process components that the student experienced, and a vector of the average characteristics of the other colleges to which the student applied.

The student college choice decision model was tested empirically, using a sample of 1352 students that were accepted for admission to a large private university in New York State. The results of the model demonstrated that the admissions process components of the university were influential in the student's college choice decision process. Also influential were whether the student lived in New York State, the number of other colleges the student also applied to, and the student's verbal SAT score.

The model was used to estimate the probability of whether a hypothetical student would enter Midcity College, and the process of estimating this probability was discussed. This student college choice prediction model is very general in nature, and could readily be adapted to the needs of any selected college or university. Although the model would have to estimate for each unique case, the procedures involved are sufficiently well known that computer packages should be available at most college computing centers. The data required for the estimation of the model could be obtained through a survey of all applicants to the college, and could be routinely collected for probability estimation purposes through the application forms completed by prospective students. Through the use of prediction model, such as described, an admissions office staff could have greater control over the quality and quantity of an entering class.

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MESSAGES AND MEDIA: TOWARD ENHANCED PERFORMANCE IN COMMUNICATING WITH PARENTS OF PROSPECTIVE STUDENTS

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Interest in the provision of information about colleges to prospective students has surfaced on both sides of the academic market: colleges are beginning to exploit the promotional principles and techniques of marketing in order to capture consumer attention and present their cases effectively to potential students; students (or consumer advocates who elect to speak on their behalf) are expressing an interest in more and better information to aid in the selection of a college. Considerable research has been directed toward these distinctive, but interrelated concerns. Institutional market research has focused primarily on students' sources of information and influences on students as they select the colleges to which they will apply and the college that they will attend (Chapman, 1980; Gilmour, 1978; Sullivan, 1976; Sullivan and Litten, 1976; University of California, 1980; Yankelovich, Skelly and White, 1978). "Consumerist" interests have focused primarily on the information about colleges that students, or their parents, desire. (Lenning and Cooper, 1978; Stark, 1978).

The research reported here was institutional market research, designed to aid a selective, national college communicate more effectively with students and their parents. It was conducted, however, with the belief that serving the infor-

mation needs and desires of consumers would be in the best interests of the institution. We defined media broadly to include both publications and people, and hypothesized that particular media would be differentially effective in carrying specific information to a given audience. Media vary in versitility, credibility and authority, convenience and accessibility, cost, timeliness and efficiency. We examined our hypothesis by asking students and their parents what they most wanted to know about the colleges that they would consider and through what medium they would most like to obtain this information. The answers could help address the following questions: 1) what kinds of information about colleges are desired by prospective students and their parents? 2) if an institution desired to communicate certain information to a given audience, what medium would be most appropriate?

Parents are the audience examined in this paper. Research has identified parents as a major influence on the college decisions of high school seniors (Chapman, 1980; Davis, 1977-78; Sullivan, 1976; U. of California, 1980). Nevertheless, except for Lenning and Cooper's work, their information needs have received little direct research attention.

The Research and the Data

The research was conducted at Carleton College, in collaboration with The College Board. Details on the sample have been presented in other papers (Litten et al., 1980) and will not be repeated here due to space constraints. Briefly, the respondents are the parents of 1978-79 high school seniors who had combined PSAT scores of 100 or greater; they were residents

of six metropolitan areas located throughout the United States. A response of 47% was obtained from a self-administered questionnaire mailed to 2,000 parents.

The questionnaire asked the respondent to rate 24 aspects of colleges according to their importance to the parent when a child chooses a college. They were then requested in an open-ended question to list the three most important aspects[1] and to identify their first and second choices of sources (media) for information about each of the aspects listed. Ten information sources were listed on the questionnaire, along with space in which the respondent could name additional sources.

The Results

Seven types of information were listed among the 3 most important things to know about a college by at least 10% of the parents.[2] They are given in Table 1 (some are collapsed categories -- for example, three types of financial information were listed in the preceding question; they have all been included in our "financial" category). Financial information (price, financial aid, net cost, etc.) heads the list, with 54% of the parents who answered the question indicating that it is among the most important types of information. It is followed by information on fields of study offered (30%).

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[1]Although many of these responses were taken from the preceding list of 24 attributes, a total of 53 codes were developed to handle the full array of responses.

[2]Information listed by at least 10% of the sample is included in this report only if the same threshold was exceeded for the reporting of preferred media. "Location" was listed by 10% of the parents, but had a lower response regarding media.

Table 1
First Choice Medium for Specific Types of Information Desired*
(percentages)

Type of Information	First Preference Medium: High School Counselor	College Admissions Officer	College Faculty	College Alumni	Current Students	Parent of Current Student	College Publications	Commercial Guidebooks	Other Medium	Total	N
Financial	7	48	2	1	4	5	29	4	-	100%	491
Fields of Study Offered	17	23	11	4	3	-	37	3	2	100%	270
Teaching Reputation or Ability of Faculty	16	6	13	27	17	-	3	10	8	100%	211
Academic Standards/General Quality	17	10	21	15	6	1	9	11	10	100%	158
Careers to which College Might Lead	15	20	13	26	4	-	12	4	6	100%	105
General Academic Reputation	23	6	3	16	7	3	10	16	16	100%	99
Social Atmosphere	3	4	3	14	60	5	5	2	4	100%	97

*Only one first-choice medium could be listed for each type of information by a given respondent.
Note: Highest percentage in each row is underlined.

The first-choice medium through which desired information is preferred differs markedly according to the type of information that is sought. Table 1 lists the principal types of information and media that parents listed.[1] With one exception, each type of information is most likely to be preferred through a different medium; with two exceptions, each medium emerges as the most frequently named first choice source for one of the types of information. A clear first choice source for financial information is the college admissions officer,

[1]Two of the 10 media listed on the questionnaire were very infrequently identified as a first or second choice information source: a high school teacher (non-counselor) or a rabbi/priest/minister.

followed distantly by college publications. Interest in the fields of study offered by the college is most likely to be satisfied by college publications, with an admissions officer the first choice of a smaller segment of parents. College faculty are most likely to be considered the best source of information on academic standards and the quality of the school's offerings, followed closely by high school counselors. Reputational information is likely to be preferred from non-collegiate sources. Alumni are the most frequent first choice source for information about the teaching reputation or ability of the faculty; high school counselors are the most frequently identified top choice for information on a college's general academic reputation. Career information is most often preferred from alumni, or from admissions officers. Current students are overwhelmingly the favored source of information about an institution's social atmosphere.

The survey asked about both first and second choice media for the information that parents most desire. For the most part, the media that were "runners-up" in the frequency with which they were named first choice media, are the most often named second choice sources of information. Noteworthy is the emergence of "parents of current students" as an important second-choice source of information in a number of areas. Parents are not listed as a first-choice source for any kind of information by other than a handful of respondents. They are cited, however, as a second-choice medium of information about social atmosphere by almost a third of the parents and for financial information by a fifth of the respondents.

In Table 2 first and second choice media are combined. College admissions officers are preferred by substantial numbers as the first or second choices for information about financial aspects of the college and careers to which the college might lead, and a close runner-up to college publications as a source of information about fields of study offered. Combining the first and second choices increases the relative size of the parents group that would turn to high school counselors for information about a college's general academic reputation as opposed to other sources for such information. Students remain

Table 2
Preferred Media (1st or 2nd Choice) for Specific Types of Information Desired*
(percentages)

	First or Second Choice Media								
Type of Information	High School Counselor	College Admissions Officer	College Faculty	College Alumni	Current Students	Parents of Current Students	College Publications	Commercial Guidebooks	N
Financial	17	66	4	4	13	24	50	15	481
Fields of Study Offered	30	48	22	11	14	2	54	15	270
Teaching Reputation or Ability of Faculty	24	15	19	44	43	11	10	20	211
Academic Standards/General Quality	27	23	34	27	20	11	15	18	158
Careers to which College Might Lead	32	47	30	38	9	1	21	10	105
General Academic Reputation	37	17	13	28	16	12	16	29	99
Social Atmosphere	5	11	9	38	84	37	14	4	97

*N for first-choice responses used in calculating percentages; rows do not add to 100% because respondent could list 2 media.
Note: Highest percentage in each row is underlined; dotted lines indicate close runners-up.

the overwhelmingly preferred source of information about social atmosphere, followed distantly by alumni and parents of current students. No clear pattern of preference for information about academic standards/general quality emerges, although faculty continue to be favored by the largest number of parents. Either alumni or current students could carry information about the teaching reputation or ability of the faculty to substantial numbers of parents, although alumni have a slight edge as first-choice medium.

Correlates of Media Preferences

Both for applied marketing purposes and for the understanding necessary for a theory of marketing communications, we sought evidence of attributes that might be associated with different media preferences. We examined the first choice media for one factual type of information (financial) and one reputational type of information (teaching ability) in relation to a number of variables: city of residence, the type of school that the parent listed as first choice for the child (public/private; selective/non-selective), parent's sex, parent's educational level, and size of the parent's alma mater. These analytic elaborations contributed some small insights into the different patterns of media preference.

Financial: The variables that we introduced provided little explanatory power regarding media preferences for financial information. The only statistically significant difference emerged for parents who listed a private college as first choice who were slightly more likely to prefer college admis-

sions officers as a source of information than parents who listed public institutions (53 vs. 44%).[1]

Teaching reputation or ability of faculty: Education had a small effect on preferred sources of information regarding teaching. The higher the level of the parents' education, the less likely that college admissions officers were the preferred source (12% for parents without degrees; 8% for those with bachelor's degrees; 2% among the graduate-educated).[2] The size of the undergraduate institution that the responding parent attended (for those with at least a bachelor's degree) had a systematic effect on media preferences for information on faculty teaching reputation. The smaller the parent's alma mater, the more likely they were to choose faculty as the first-choice source of such information (22% if parent's college had 4,000 or fewer students; 11% for colleges 4,001 - 10,000; 6% for parents from colleges with more than 10,000. There were also some interesting differences among the cities, but they are substantially more difficult to interpret. Some extreme examples of first-choice preferences for specific media are noted below:

Faculty	Twin Cities - 0	Texas - 28%
Alumni	Twin Cities - 39%	D.C. area - 14%

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[1] A two-tailed significance level of .05 was employed in all comparisons.

[2] This relationship was also observed for financial information but was not statistically significant.

Discussion

One of the principal benefits of a marketing approach to institutional management is its attention to specialization (within limits). Efforts are made to match institutions and students, media to messages, and other organizational attributes to the particular needs of a specific clientele. One set of challenges for the academic marketer is to deliver information efficiently and to exploit media for their particular effectiveness, while avoiding overloading them. These data provide some preliminary clues regarding how that might be done when communicating with parents, an important influence on students' selection processes.

Specific medium/message linkages were discovered. Factual, impersonal information (e.g., fields of study offered) are generally preferred through impersonal information media (e.g., college publications). Factual information that may differ according to a student's personal situation (e.g., financial information, career information) is most likely to be desired via college admissions officers. General qualitative information (e.g., general academic reputation) appears to be preferred from a source that is not associated with the institution (e.g., high school counselors). Current students and alumni are most likely to be considered the best sources of specific qualitative data (e.g., teaching reputation of faculty, social atmosphere). Parents of current students could play a secondary role in conveying certain types of information to parents of prospective students; they are viewed by a substantial num-

ber of parents as second-best carriers of two widely disparate types of information -- financial and social atmosphere.

The findings may be even clearer regarding inappropriate media. Official college promotional resources (admissions officers and publications) are not very desirable media through which to convey information about institutional quality or reputation; while students may be able to provide some particulars in this area (e.g., information about teaching), they are not preferred sources for more general qualitative information, except regarding social atmosphere.

Education appears to increase slightly a parent's willingness to deal directly with first-hand evidence regarding qualitative aspects of academic life. Higher levels of education appear to reduce the communication effectiveness of admissions officers. More personalized parental educational experiences appear to increase willingness to deal with faculty directly. There are also important differences in medium/message linkages among the various cities due perhaps to differences in culture or the nature of educational systems.

Several critical issues have not been addressed in this particular piece of research. They will need appropriate attention before a theory of academic marketing communications can be a reality and effective guidelines for the communications manager can be developed. It will certainly be important to expand the type of research reported here to other consumer groups; we will be reporting in the future on the results from our companion study of students. Both our students and the

corresponding parents sample are from a small segment of the college-bound population (the "high-ability" market) and a broader spectrum of academic "consumers" should be examined.

Specific linkages between preferred media and particular messages exist and some very modest correlates of media preference were observed. The functional reasons for these relationships were not studied, however. Are particular media preferred by the consumer for specific information because they are more accessable, cost less in time or money, can be made to carry more specific information (or prodded for contingent information--i.e., if the answer to my first question is "A", then my second question will be "B"), or because they are less threatening, etc.? From the institutional perspective, the economics of using specific media to carry specific messages have not been addressed--how much do they cost in money, in lead time, in control? can they be controlled? etc. And finally, how much specificity in media/message matching is economically defensible? Do the costs of using various media differ, particularly in view of their relative efficiencies? It costs time and money to prepare and monitor different messages for different media, even where there is no net difference in the costs of carrying the information via different media.

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THE RELATIONSHIP BETWEEN THE COLLEGE-GOING DECISION AND STUDENTS' CHARACTERISTICS AND PERCEIVED IMPORTANCE OF COLLEGE EDUCATION*

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From 1870 to 1950, the enrollment in American colleges and universities doubled every 15 years; from 1955 until recently it doubled every 10 years (Ben-David, 1972). While the fall 1968 enrollment was estimated to be 43 per cent of the 18-23 age group, today's enrollment approaches almost 50 per cent of that age cohort. Given the growth of American higher education, a number of research studies have been undertaken whose purpose has been to identify the reasons thought by students to have influenced their decision to attend college and to study the relation between the reasons cited and students' personal and family background characteristics.

The literature accumulated through research suggests that the decision to go to college is the outcome of a complex interaction of factors. Such factors remain a student's aspirations, abilities, and personality, the values, goals and socioeconomic status of the parents, and the direction of the influence of a student's friends, teachers and other reference persons. Stordahl (1970), for example, found evidence that women and students who had graduated in the upper half of their high school class tended to say that they had been somewhat more influenced by intellectual concerns than men and those who graduated in

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the lower half of their class. Scott and Fenske (1973) concluded that development of intellectual ability, securing vocational and professional training, and earning a higher income were among the most important goals in attending college. Corazzini, Dugan, and Grabowski (1972) found that family resources are an important determinant of the decision to go to college.

Taken as a whole, the research studies in this area appear to have three major flaws. First, most of the studies in this area have looked at the relationship between the decision to go to college and a number of student demographic variables and family background characteristics. Variables reflecting student value orientation, high school experience in terms of preparation for college work and perceived importance of college education have been virtually lacking from such studies.

Second, most of the studies in this area have employed factorial designs in an effort to highlight the relation between certain covariates and/or independent variables and items that pertain to the college going decision and/or factors obtained through factor analysis studies. But as Kerlinger (1964) points out, "variation in a given dependent variable is usually a function of concomitant variation in many independent variables acting simultaneously" (p. 631). Factorial designs are not in a position to highlight the relative importance of a number of independent variables for the phenomenon under investigation.

Third, despite the widespread attention given to the relation between student and/or family background characteristics and the decision to go to college, interaction effects have been surprisingly neglected from such studies. Yet, it seems reasonable to ask whether students with different background characteristics decide to go to college for different reasons.

The present study was designed to overcome the above flaws in three ways. First, in addition to variables dealing with personal and family background characteristics, the study included variables reflecting high school preparation in various academic subjects and study skills as well as variables dealing with students' value orientation and perceived importance of college education. Second, the study employed a multivariate research design to test the relative importance of variables potentially influencing the college-going decision. Through a hierarchical setwise multiple regression analysis, the study sought to determine the joint effect of sets of variables as well as the unique contribution of the predictor variables in explaining the variance of two criterion measures relative to the college-going decision. Third, the study also looked at interaction effects to determine whether the relation under investigation (if any) was different for different students.

METHODOLOGY

Population and Sample

The study was conducted in a large, public, residential university in New York State. The population of the study was all first-time freshman students enrolled during the Fall 1978 semester (N=1465). All first-time students who attended the 1976 Summer Orientation Program and who also participated in a follow-up study were included in the sample (N=509).

Instruments and Variables

Sample members were asked to respond to two questionnaires. The first questionnaire was prepared by Astin for the CIRP project,and it was administered to freshman students during the summer orientation period; the second questionnaire was administered for a follow-up study at the end of the freshman year.

One portion of the first questionnaire asked students to indicate how important each of twelve reasons for attending college was to them. Reasons included in this set of items were job preparation and increase of income, intellectual curiosity and development of adult roles, relationships and styles. A three-point scale (1="not important," 2="somewhat important," 3="very important") was employed to rate the importance of each item. Six items from this set were subsequently used to construct two scales (Intellectual Curiosity (IC), Professional and Economic Success (PES)), which became the dependent measures in this inquiry.

A second portion of the above questionnaire included eighteen items referring to social issues and personal aspirations. Issues covered by this set of items were achievement and recognition, creative and expressive work, professional advancement, economic success and influence of social and political structure. Students were asked to indicate how important each of the eighteen items was to them using a four-point scale where 4="essential" and 1="not important." Seventeen items were subsequently used to construct four scales, which became four of the independent variables referred to below as attitudinal scales.

The first questionnaire also elicited information with respect to student characteristics including sex, parents' education and income, highest degree planned, home distance from college, parents' dependents in college, race, and extent of preparation while in high school in various academic subjects and in study habits. Information on high school percentile rank and on SAT scores (verbal and math combined) was obtained from the Student Permanent Record system maintained by the institution's admissions office.

In April 1979, a follow-up survey yielded information on the perceived importance of four major goals of college education (gain a broad, liberal arts education, gain career knowledge and skills, learn about myself, my values, and my life's goals and enhance my interpersonal skill) at the time respondents entered college; subjects were asked to rate the importance of each goal on a four-point scale where 1="not at all important," and 4="extremely important."

Statistical Procedures

Analysis began with a principal components analysis first of the twelve items on reasons for attending college and second of the eighteen items on social issues and personal aspirations. Components with eigenvalues of 1.0 or greater were rotated to the varimax criterion. Mean factor scale scores were then computed for each respondent by summing the raw scores on items with rotated factor loadings of .40 and above on the particular factor and then dividing by the number of items (Armor, 1973).

Hierarchical, setwise multiple regression analysis was the primary analytical procedure in this study. Two such multiple regressions were performed, one for each factor used as the dependent variable. With Factor I (Intellectual Curiosity) as the dependent measure, Factor II (Professional and Economic Success) was entered first (to control for the correlation between the two scales and to also get a conservative estimate of the contribution of the predictor variables in explaining the criterion measures), followed by the set of variables dealing with student and family background characteristics, the set of variables reflecting high school experience, and then the set of attitudinal scales and perceived

importance of college education. Once the above sets of variables had been entered in the regression equation, and to test whether students with different backgrounds were differentially influenced by the two criterion measures, a set of 40 interaction terms was entered. The interaction vectors were created by cross-multiplying a student's sex, SAT combined score, high school percentile rank, parents' education,and highest degree planned with each of the four attitudinal scales and the four goals of college education. In the second regression, with Factor II as the dependent variable, Factor I was entered first, followed by the other sets in the same order given above.

The statistics of primary interpretive interest were R^2 change and beta weights. The beta weights were examined only if the R^2 change for a given set of variables as a whole made a significant contribution to the explanation of variance in a criterion measure.

RESULTS

The first principal components analysis and varimax rotation of students' ratings of the twelve reasons for deciding to go to college yielded four factors with eigenvalues $>$ 1.0, explaining 54.0 percent of the total variance. The four factors were labeled Intellectual Curiosity, Professional and Economic Success, Practicality and Social Considerations; the percentage of variance explained by each factor was 20.2, 13.1, 10.9 and 9.8 respectively and the respective internal consistency (alpha) reliabilities were .69, .68, .23 and .35. Because of their low reliability, the last two factors were dropped from further analysis.

The second principal components analysis and varimax rotation of students' ratings of the eighteen statements on social issues and personal aspirations yielded five factors with eigenvalues $>$ 1.0. A scree test, however, indicated that four factors should be used, explaining together

49.3 percent of the total variance. The four factors were labeled Social and Political Influence Orientation, Economic Success Motivation, Creative and Expressive Work Orientation, and Academic Achievement and Recognition Desire; the percentage of variance explained by each factor was 19.2, 12.3, 10.0 and 7.8 respectively and the respective internal consistency (alpha) reliabilities were .81, .58, .63 and .52. (the complete factor structures are available from the author upon request).

Table 1 describes the results of the multiple regression analyses and indicates that with the Intellectual Curiosity scale as the dependent measure, the full-model multiple regression produced an R^2 of .329 (multiple R=.573), with an associated F ratio of 2.52 (df=66/339, $p < .01$). Further examination of Table 1 reveals that the set of personal characteristics variables, that of the high school experience variables, and the set of variables including the attitudinal scales and the college education goals produced statistically significant increments in the R^2 on the IC scale after controlling for the variables already present in the regression model.

With the Professional and Economic Success scale as the dependent measure, the overall multiple regression model produced an R^2 of .279 (multiple R=.528), with an associated F ratio of 1.99 (df=66/339, $p < .01$). Table 1 indicates that the set of personal characteristics variables, as well as that of the attitudinal scales and the college education goals, produced statistically significant increments in the variance explained on this dependent measure after controlling for the variables already present in the regression model.

TABLE 1

Multiple Regression Summary

Variance Source	CRITERION MEASURES: Intellectual Emphasis	CRITERION MEASURES: Professional & Economic Success	Degrees of Freedom
R^2 due to the presence of the other scale	.034***	.034***	1/404
R^2 increase due to personal characteristics[a]	.069**	.043*	9/395
R^2 increase due to high school experience[b]	.037*	.031	8/387
R^2 increase due to attitudinal scales and perceived goal importance[c]	.091**	.069**	8/379
R^2 increase due to interaction of personal characteristics and attitudinal scales & perceived goal importance[d]	.098	.102*	40/339
Total R^2 for all variables and interactions	.329**	.279**	66/339

[a] Controlling for either the IC or the PES scale

[b] Controlling for the other scale and the personal characteristics variables

[c] Controlling for the other scale, the personal characteristics variables and the high school experience variables

[d] Controlling for the other scale, the personal characteristics variables, the high school experience variables and the attitudinal scales and perceived goal importance variables

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 2

Beta Weights for All Predictor Variables

Predictor Variables	CRITERION MEASURES: Intellectual Curiosity	Professional & Economic Success
OTHER SCALE[a]	.204**	.210**
PERSONAL CHARACTERISTICS[a]		
Sex	.164**	-.074
Race	.072	-.009
SAT Score	-.136**	.107*
High School Percentile Rank	-.009	.056
Highest Degree Planned	.124*	-.102*
Home Distance from College	.046	-.050
Parents' Dependents Attending College	-.072	-.093
Parents' Estimated Income	-.025	-.001
Parents Education	.001	-.025
HIGH SCHOOL EXPERIENCE[b]		
Preparation in:		
Math	.011	.023
Reading-Composition	.021	.022
Foreign Languages	.078	-.109
Science	-.003	.118
History-Social Studies	.005	-.009
Vocational Skills	-.033	.096
Music & Artistic Skill	.128*	-.113
Study Habits	.085	.004
ATTITUDINAL SCALES & GOALS[c]		
SCALES		
Social & Political Influence Orientation	.158*	-.121
Academic Achievement & Recognition Desire	.027	-.015
Creative & Expressive Work Orientation	.117	-.012
Economic Success Motivation	-.117	.217**
GOALS		
Gain a Liberal Arts Education	.062	-.095
Gain Career Knowledge & Skills	-.035	.128*
Learn about Myself, my Values & My Life's Goals	.079	-.034
Enhance my Interpersonal Skill	.097	-.044

[a] Controlling for either the IC or the PES scale and the personal characteristics variables

[b] Controlling for either the IC or the PES scale, the personal characteristics variables and the high school experience variables

[c] Controlling for either the IC or the PES scale, the personal characteristics variables, the high school experience variables, the attitudinal scales, and the variables of goal importance and importance of graduating from college

* $p < .05$

** $p < .01$

Table 2 arrays the beta weights for all independent variables on each of the two criterion measures. Examination of the beta weights indicates that sex made the highest contribution in explaining the variance of the Intellectual Curiosity factor followed in order by Social and Political Influence Orientation, SAT score, high school preparation in music-artistic skills and highest degree planned. Given the way sex was recoded (1=male, 2=female), Table 2 suggests that female students were more likely than male ones to have been influenced by academic considerations when they decided to attend college. Furthermore, the higher one's academic aspirations (in terms of highest degree planned) and extent of high school preparation in music-artistic skills the more likely it is that one was influenced by intellectual considerations to attend college. Table 2 further suggests that students scoring high on the social and political structure influence scale were also significantly influenced by academic considerations in their decision to attend college. The relationship, finally, between intellectual curiosity and SAT score appeared to be negative; apparently, the higher one's SAT score the less one was influenced by academic considerations to go to college.

Four predictor variables made unique and statistically significant contributions in explaining the variance of the Professional and Economic Success factor. Economic success motivation made the highest contribution, followed in order by the goal to gain career knowledge and skills, SAT score, and highest degree planned. Table 2 suggests that the higher one's motivation for economic success, the desire to gain career knowledge and skills, and SAT score, the more likely it is that one was influenced by economic and career considerations in deciding to attend college. Furthermore, Table 2 reveals that a negative relationship appeared to exist between

highest degree planned and the importance attributed to professional and economic success; apparently the higher one's academic aspirations, the less one was influenced by economic motives in deciding to go to college.

LIMITATIONS

The study is limited in at least two respects. First, the results are based on data collected from students planning to attend a particular institution. To the extent that the students who enroll at this particular institution differ from those of other institutions, results may not be generalizable beyond the population from which the respondents in this study were drawn.

Second, certain of the relations identified by the present study should be considered with some caution, given the moderate internal consistency reliability coefficients for three of the attitudinal scales. Reliability coefficients around .50 and .60 yield, in fact, a relatively low coefficient of determination. As Kerlinger (1964) points out, "unless one can depend upon the results of the measurement of one's variables, one cannot, with any confidence, determine the relations between the variables" (p. 455). Although the reliability coefficients obtained for three attitudinal scales (Creative and Expressive Work Orientation, Academic Achievement and Recognition Desire, Economic Success Motivation) are not considerably low, they are still not high to the extent that measurement accuracy is beyond any question.

DISCUSSION

The purpose of this study was to investigate the relationship between the decision to go to college and variables dealing with students' personal and family background characteristics, high school preparation in the various academic subjects and in study habits, and students' value orientation and perceived importance of college education. The study also sought to discover

whether such a relation might be different for different kinds of students.

Both criterion measures employed by the present study appeared to be reliably related to certain covariates and/or independent variables. The beta weights revealed that sex, SAT score, highest degree planned, high school preparation in music-artistic skill, and social and political influence orientation made unique and statistically significant contributions in explaining the variance on the Intellectual Curiosity scale. With the Professional and Economic Success scale as the criterion measure, SAT score, highest degree planned, economic success motivation and interest in gaining career knowledge and skills made unique and statistically significant contributions in the variance explained on this scale. Certain observations can be made with respect to the above findings.

First, while the results obtained by the present study are consistent with some of the findings reported by earlier studies, they are also different in certain respects. This study replicated earlier findings according to which women tend to say that they are more influenced by intellectual considerations in their decision to go to college than men are (see Feldman and Newcomb, 1969; Stordahl, 1970). In contrast with earlier studies, however, this study concluded that the relationship between intellectual curiosity and aptitude is negative rather than positive. No explanation is easily discernible for the above finding. The speculation can be made, however, that high aptitude students have established their "academic identity" over the high school years and the intellectual motive, therefore, does not exert a strong influence on them.

Second, it is of no surprise that academic aspirations were found to be positively and reliably related to the Intellectual Curiosity

factor. Apparently, the higher one's academic aspirations in terms of degree planned, the more one is influenced by academic considerations in his/her decision to go to college. It is a common belief, for example, that higher education is structured to reflect increased scholarly activity. It is also worthy to note that highest degree planned was found to be reliably but negatively related to the Professional and Economic Success factor. Conceivably, the relations observed between academic aspirations and the two criterion measures employed by the present study reflect different student value orientations. Presence of an "economic man" orientation, for example, may orient students to value the practical and to judge things by their tangible utility; hence the negative relationship between academic aspirations and Professional and Economic Success. Presence of a "theoretical man" orientation, on the other hand, may orient students to be especially interested in the discovery of truth and systematization of knowledge; hence the positive relation between academic aspirations and the Intellectual Curiosity factor (see Feldman and Newcomb (1969) for definitions of the two orientations cited above).

Third, going to college comprises one way of developing new interests or of deepening knowledge in areas in which an interest has already been developed. The relation observed between the Intellectual Curiosity factor and high school preparation in music-artistic skills points to this direction. As Mayhew (1979) maintains, "before students actually enroll as freshmen, they typically rank interest in academic things as one of the major determiners of their decision to go to college" (p. 156). It may well be the case that intellectual growth is an end in itself as well as instrumental to other ends. The pursuance of scholarly activity, and its resultant recognition and respect, may be

a primary reason for the importance attributed to the Intellectual Curiosity factor. At the same time, intellectual growth may comprise a means for achieving other personal objectives. The relation observed between the Intellectual Curiosity factor and the orientation to influence the social and political structure is quite revealing in this respect.

Finally, the significance of the findings of the present study can be judged from two points of view. Firstly, knowing what the parameters of the college-going decision are serves at least three purposes: it helps college planning in terms of curricular offerings; it highlights the adjustment process of freshman students to college life, a fact which, properly taken into account, might reduce attrition;and,it provides background information for college outcomes studies. Secondly, the findings of the present study are useful for admissions offices. The findings suggest that recruitment brochures should properly present institutional strengths relative to the two major criterion measures employed by the present study. The conclusions reached in this study suggest that course offerings, faculty strengths and interests, and characteristics of the student body appear to be significant pieces of information for prospective students. By the same token, information on employment and/or professional success of graduates appears to be equally important.

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STUDENT YIELD METHODOLOGY: A LIMITED RESOURCES APPROACH TO COLLEGE MARKETING

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Introduction

The purpose of this paper is to describe the research design utilized in the analysis of the market position held by the State University College at New Paltz, New York for the Fall 1979 semester. The analysis isolates favorable vs. unfavorable perceived characteristics on the basis of their association with yield. Student yield is defined as the percentage of applicants for admission to the College who were accepted and who ultimately decide to attend New Paltz. As an institution that has begun to reverse a recent history of enrollment decline, the College is especially interested in understanding the dynamics of student yield; i.e., why those who chose to attend New Paltz did so, and equally important, what factors contributed to the college selection decision for those who chose not to attend New Paltz.

As components of the research design, the paper will define the population under study, the process through which the population was sampled for data collection purposes, the techniques used in data collection, the statistical tools used in assembling the data for analytical examination, and the analytical process itself.

Population for the Study

The population for this study was composed of all persons who applied to, and were accepted by, the College at New Paltz for Fall 1979 semester, a total of 4127 applicants.

Sample for the Study

Data collection for this study was planned to take place in two modes: a telephone survey and a mailed questionnaire. This decision was made in

order to determine the most efficient means of data collection for future yield analysis. Therefore, it was determined that two separate samples be drawn from the study population for use in the respective data collection techniques. The samples were randomly and optionally stratified to reflect the geographic distribution of the New Paltz student body.

Data Collection

The items in the "Telephone Survey" and mailed "College Selection Survey" are identical. Only the mode of data collection differed.

The content areas for the research instruments were defined by a College-wide Advisory Committee on Yield Research, which was composed of administrators, faculty, and students. Having defined the content areas, questionnaire items were developed by the Office of Institutional Research. The content validity of the research instruments was ascertained through a program of pretesting wherein the questionnaires were administered to college-bound high school seniors and their suggestions and criticisms were solicited. Time constraints precluded further pilot testing for estimates of statistical reliability.

The total sample for this study consisted of 1261 applicants for admission who were accepted by the College at New Paltz. Two hundred twenty (220) applicants, or 17.4% of the sample, responded to the data collection efforts. Of the 220 respondents, 106 answered the telephone survey, while 114 returned completed mail questionnaires. Follow-up measures were employed to obtain the return rate just cited.

Data Assembly

With low return rates via the mail and limited financial resources prohibiting continued telephone surveys, the total number of respondents remained at 220. That the telephone and mail respondent pools were far smaller than anticipated raised two methodological issues: a) could the mailed question-

naires and the telephone interviews he combined into a single respondent pool?; and b) was the combined pool of respondents representative of the study sample?

The decision was made to determine the statistical feasibility of combining telephone and mail responses into a single pool, as items on the respective research instrument were identical. However, because different data collection techniques were employed in gathering responses, it was necessary, prior to any combination of responses, to ascertain that statistically significant differences did not exist between the response patterns for the telephone against the mail surveys. Comparative patterns for telephone versus mail responses were analyzed for each item on the research instruments. The analysis was extended to determine that no significant differences in response patterns could be found among the geographic regions in which respondents live, or by whether or not the respondent had chosen to attend New Paltz. Chi square tests for significant differences at the .05 level of confidence were applied to the response patterns for each item on the research instruments. Significant differences materialized for only three items; the instruments, as total packages, displayed no major pattern of statistically significant differences between telephone and mail responses. Therefore, it was decided to combine telephone and mail responses for analytical purposes.

Representativeness of the Sample

Before beginning analysis of the data collected from the combined telephone survey/mail questionnaire respondent pool, it was necessary to determine whether that portion of the study sample that responded to the data collection effort was representative of the population for the study. Five basic demographic characteristics common to all applicants for admis-

sion, and for which data were readily available, were examined to determine if statistically significant differences existed between the respondent pool and the general study population. The demographic characteristics examined were county of residence, high school average, Scholastic Aptitude Test (SAT) score, sex, and preadmission deposit payment status. Chi square tests for significant differences were applied to the respondent pool and the study population within the context of each of the demographic characteristics. Statistical significance was sought at the 0.05 level. Table 1 displays the results of the statistical tests:

Table 1

Chi Square Tests for Statistically Significant Differences, at 0.05 Level of Confidence, between Respondent Pool and Study Population within Selected Demographic Characteristics

	d.f.	χ^2			Significantly Different?
		Critical Value	Calculated Value	Significance	
County of Residence	6	12.59	17.80	0.0067	Yes
High School Average	3	7.81	4.54	0.2079	No
SAT Scores	5	11.07	0.47	0.9932	No
Sex	1	3.84	0.13	0.7156	No
Preadmission Deposit Payment Status	1	3.84	1.87	0.1711	No

Table 1 indicates the absence of statistically significant differences between the respondent pool and the study population for each demographic characteristic except county of residence, where a strong statistically significant difference is evident. Consequently, in order to make the collected responses from applicants mimic the geographic distribution of the study population, respondents within each geographic region were weighted

to approximate the region's actual proportion of the study population. The weightings were extended to include preadmission deposit payment status. While the differences between the respondent pool and the study population were not statistically significant for preadmission deposit payment status, the payment of that deposit is a signal of the applicant's decision to attend New Paltz. Therefore, the researchers decided to weight the respondents to mimic the study population with respect to the proportional distribution of applicants by geographic region of residence, and within each region the proportional distribution of applicants signalling their intention to attend or not attend New Paltz via preadmission deposit payment status. Weighting was achieved through the weighting option in the Statistical Package for the Social Sciences. Further, weighting proves to be an effective device in presenting management with the magnitude of the problem.

Data Analysis

Items on the mail questionnaire and interview schedule are identical, and for purposes of data analysis, were grouped into four categories: a) those dealing with sources of information about New Paltz, b) those dealing with physical attributes of New Paltz, c) those dealing with types of formal contact with New Paltz prior to the college selection decision, and d) those dealing with components of New Paltz's reputation.

Responses to each of the items within each of the categories were coded "used the information source"/"did not use the information source"; if the source was used, additional responses were coded as "gave favorable information"/"gave unfavorable information". For physical attributes, responses were coded "aware of the attribute"/"not aware of the attribute".

For types of formal contact with the College, responses were coded "had contact"/"had no contact". For reputational components, responses were coded "had information"/"had no information".

The dichotomous responses were then analyzed to determine whether major differences existed between those applicants who pay the preadmission deposit (i.e., those who decide to attend New Paltz) and those who do not pay the deposit, with respect to use of information sources, type of information received, awareness of the College's attributes, types of formal contact with the College, and awareness of components of the College's reputation.

The data analysis described above was achieved through the crosstabs option in the Statistical Package for the Social Sciences. Chi square statistics were requested within the crosstabs option, thereby presenting a measure of association between preadmission deposit payment status and the dichotomous responses within each of the four categories described above. However, because the data were weighted, statements about association were confined to a descriptive nature. No inferential statements were made nor was reference to statistical significance used. Measures of association ran the descriptive spectrum from "no apparent association" to "apparently strong association". The rule of thumb used in making determination with respect to strength of association was to measure the chi square statistic from the crosstabulation against the table of critical values for chi square at the 0.05 level of confidence. While no mention was made of statistical significance, those crosstabulations with chi square values at or below 3.84 were said to show "no apparent association". On the other hand, relative strength of association was judged by relative distance of the computed chi square above the critical value of 3.84.

No single source of information, physical attribute, type of formal contact, or reputational component is likely to be the sole determinant of an applicant's decision to attend or not attend the College at New Paltz. The relative impact upon student yield of each of the subvariables within each of the categories was measured through multiple regression analysis. The use of multiple regression techniques in the analysis of relative association strength among several dichotomous variables has been used in other social research analyses. (Goldman, 1975) However, in this particular research, the same restrictions govern multiple regression analyses that were in force for the bivariate analyses, i.e., the use of weighted data restricted comments to a descriptive nature with no allusion to statistical significance. The dichotomous variables within each category were entered into the regression equation and the beta weights were examined. Beta weights exceeding 0.10 were defined as associated with the decision to attend New Paltz, with the relative impact of each subvariable defined as a function of the magnitude of the beta weight. Similarly, beta weights within the range -0.10 to $-\infty$ were defined as associated with the decision not to attend New Paltz, with the magnitude of the beta weight acting as an indicator of the relative impact of the subvariables. Beta weights within the range 0.10 to -0.10 were defined as having no impact upon student yield. Thus, multiple regression analysis enabled identification of which sources of information had the greatest impact upon the decision to attend New Paltz and which information sources were most strongly associated with the decision not to attend New Paltz. Similar analyses were repeated with physical attributes of the College, types of formal contact with the College, and components of the College's reputation.

Both the bivariate and multiple regression analyses were performed using total responses. Subsequently, using data selection options within the Statistical Package for the Social Sciences, responses were analyzed by geo-

graphic region of applicant's residence. Thus an analysis was produced for the total study population, and for each of the geographic regions within the population.

Summary

Bivariate analyses on dichotomous subvariables within each of four categories of variables were performed to measure the strength of association between each of the subvariables and student yield. The analyses were extended through multiple regression techniques to measure the relative impact of each of the subvariables upon student yield within the context of the other subvariables within each category. Total population and region analyses enabled the development of descriptive statements about applicant attitudes and behaviors. Furthermore, specific policy recommendations with respect to marketing and admissions strategies were developed.

The methodologies described herein represent a minimal cost institutional research effort, which enable most institutions to study the dynamics of student yield and to develop policy recommendations to address concerns defined by the student yield research.

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A TWO PHASE MODEL FOR ACADEMIC PROGRAM EVALUATION

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INTRODUCTION

Academic program evalution--its definition, goals, and methodology--has long been an area of concern and controversy among educators. Certainly, it is one tool that can be used to help effect data-based decisions concerning the distribution of academic resources. All institutions of higher education must necessarily expend a large proportion of their available resources to support their unique complement of academic programs. Therefore, in this era of shrinking resources, it is becoming increasingly important for institutions to develop and implement effective strategies for academic program evaluation.

Among the many models for program evaluation that have been developed and documented, the "decision-maker" model has gained a great deal of acceptance. Essentially, this model places the evaluator at the service of the academic program decision-maker, who provides the framework and parameters within which the examination of program viability will proceed. That is, the process of program evaluation is an essentially cooperative effort--one which draws upon the expertise of the researcher to generate systematic data, and the expertise of the academician to interpret and utilize these data.

The current paper presents a detailed methodology for implementing such a cooperative model for academic program evaluation. This model, which has been in use at Mercer County Community College for the past several years, follows a two-phase annual cycle. First, during the Fall semester, all of

the College's academic programs are routinely described and compared quantitatively. Performance standards are established for a set of twelve criterion variables (called "indicators"), and each program is examined in relation to these standards. This descriptive, standardized, data-based effort is called the *monitoring phase* of the annual process.

Next, during the Spring semester, any programs that have fallen below acceptable levels of performance on a substantial proportion of indicators are identified and recommended for more in-depth examination. During this *evaluation phase*, recommendations for program improvement are formulated and implemented by the academicians who are most directly involved in structuring the program (i.e., faculty coordinators, division chairpersons, and so forth). Because of the cyclical nature of the annual evaluation process, the success of such strategies will be measured automatically during the subsequent semester's monitoring phase.

This type of annual, two-phase system is suggested as one approach to program evaluation. It is by no means the only possible approach, and it has its limitations. Nonetheless, it has proven successful in a community college of some size (nearly 9,000 students) and considerable academic diversity (45 associate degree programs and 10 certificate programs). Advantages of this system include the following: It provides objective, timely, comparable data for academic self-assessment and decision-making; it eliminates the need for costly in-depth evaluations of programs which are performing at essentially successful levels of effort; and it helps promote the continual improvement of a diverse curriculum by maximizing the institution's investment of its necessarily limited academic resources.

METHOD

Program Monitoring Procedures

Indicators of Program Performance

During the first phase--program monitoring--data are collected and analyzed across a standardized set of twelve criterion variables, called "indicators." These indicators were developed with considerable input from both the research and the academic perspectives. They allow for direct programmatic comparisons in areas of effectiveness, quality, and cost. For example, as compared with the performance of other programs during the same academic year, monitoring data can highlight strengths and/or weaknesses in a particular program's ability to attract and retain new students with appropriate entry-level skills, provide adequate opportunity for student success in program-specific courses, and prepare sufficient numbers of program graduates for relevant employment or continued education.

In order to provide a comprehensive and well-rounded description of program functioning, the monitoring process involves the collection of data elements throughout the full academic cycle. First, indicators describe the entrance of new students into the program. Then, several measures monitor performance throughout the Fall and Spring semesters. Finally, a range of indicators are used to assess program effectiveness at the time of graduation--even following graduates into their pursuit of post-Mercer employment and additional education.

The complete list of indicators in current use is as follows:

1. New student enrollment, full-time
2. New student enrollment, part-time
3. New student basic skills (English, reading, math)
4. Enrollment in program-specific courses
5. Student success in program-specific courses
6. Full-time retention rate (Fall to Spring)
7. Cost per full-time equivalent student

8. % of enrollees who graduate
9. Mean QPA of graduating students
10. Satisfaction expressed by graduating students
11. Graduate plans (employment/continued education in field)
12. Graduate followup after 4 years (employment/continued education)

This list, of course, is not exhaustive of the data collection possibilities; nor is it necessarily optimal for intact replication by other institutions of higher education. However, it does present a model for employing a range of measures, and for defining a variety of performance criteria against which every academic program within the institution can be consistently and objectively assessed.

Data Collection and Analysis

The collection of monitoring data is the responsibility of the Office of Institutional Research, and it proceeds through the Fall semester of a given academic year. This requires the operational definition of all indicators, the identification of data sources, and the manipulation of raw data elements as soon as they become available. Indicators,which describe new students, are always based on *current* Fall semester data; all other indicators incorporate data elements from the *previous* academic year.

Once all of the monitoring data have been collected for each academic program, they are prepared for statistical analysis (i.e., coded and keypunched) and then entered into statistical analysis. To ensure against the potential bias of interpreting related measures as if they were independent, all data are entered into a bivariate correlation (using SPSS PEARSON CORR). Table 1 describes the statistical relationships among the twelve indicators now being used at the College.

Next, using SPSS FREQUENCIES, the distribution properties for each indicator are examined in order to establish standards for acceptable performance. These standards, which must discriminate effectively among the College's many

Table 1

Correlation Among Indicators: Monitoring Phase

Indicators	Correlations													
	2.	3. a.	3. b.	3. c.	4.	5.	6.	7.	8.	9.	10.	11. a.	11. b.	12. a.	12. b.
1. New full-time enrollment	.32	-.12	-.23	-.18	.36*	.03	.18	.05	.24	.04	-.19	-.09	-.40	.07	-.02
2. New part-time enrollment		-.30	-.41*	-.51**	.30	.00	-.03	-.52***	.18	.09	-.27	-.07	-.47	.18	-.46
3. New student basic skills															
a. English			.91***	.66***	-.25	-.02	.04	.41**	.27	.11	-.01	-.13	.11	-.01	.16
b. Reading				.74***	-.25	.07	-.04	.44**	.16	.20	.09	.02	.16	.05	-.08
c. Math					-.18	.14	-.07	.33*	-.11	.20	.18	.01	.13	.11	.76*
4. Program-specific enrollment						-.14	-.17	-.30	-.18	.11	-.19	.16	-.12	.08	.29
5. Program-specific student success							-.12	.00	.42**	-.18	.05	.20	.01	.48*	.74
6. Full-time retention								.24	.15	.08	-.15	-.08	.02	.07	-.49
7. Cost per FTE student									.31*	-.17	.11	.07	.25	.02	.28
8. % enrollees graduating										-.06	-.26	.06	-.17	.01	.05
9. Mean GPA of graduates											-.26	.13	.05	-.15	.42
10. Satisfaction of graduates												.00	.39***	.13	-.64
11. Grad plans															
a. Employment													--	.53*	--
b. Education														--	-.33
12. Grad followup															
a. Employment															--
b. Education															

* p<.05
** p<.01
*** p<.001

curriculum areas, must also remain essentially consistent from year to year to preserve the capability for analysis of change-over time. Standards in current use at MCCC are presented in the headers of each column of Table 2.

Summary Data Matrices

For each of the College's academic divisions, a summary data matrix is prepared,which displays program-by-program performance levels in relation to each monitoring indicator. To facilitate the interpretation of these data matrices, all instances of program performance which fall below standard on any of the twelve indicators are highlighted (i.e., such data entries are marked with an asterisk). Table 2 presents a sample data matrix, illustrating the format used by the Office of Institutional Research to present its findings to the academic decision-makers at MCCC.

Each data matrix also provides a program-by-program summary of overall performance. That is, all available data elements are tallied so that a percentage of below-standard indicators can be obtained. On a College-wide basis, those programs that show the most substantial need for attention are recommended for more in-depth evaluation. As a general guideline, programs are recommended for evaluation when 40% (or more) of their available indicators have fallen below acceptable levels of performance. For example, this guideline would certainly suggest a more in-depth examination of the functioning of "Program A," which is shown on the sample data matrix as falling below standard on fully one-half of its available performance indicators (see Table 2).

Monitoring Report

A full set of divisional data summaries--and a list of all programs where these monitoring data suggest the need for further examination--are prepared by the Office of Institutional Research. This Monitoring Report is submitted to the Academic Dean for review and subsequent distribution to appropriate

Table 2

Sample Data Matrix: Monitoring Phase

Division: Z

Indicators and Standards

Programs	1 New Enrollment: Full-time (≤50% goal)	2 New Enrollment: Part-time (<20% goal)	3 New Student BSPT: Mean English Score (≥59.0)	3 New Student BSPT: Mean Reading Score (≥57.0)	3 New Student BSPT: Mean Mathematics Score (≥57.0)	4 Unique Courses: Mean Enroll per Credit (≥5)	5 Unique Courses: Student Success (1E-1 .70)	6 FT Return, Fall--Spring (≥55%)	7 Cost per FTE Student (≥$2800)	8 % Graduating (≥10%)	9 Mean Graduating GPA (GPA≥2.70)	10 Graduate Satisfaction (≥75%)	11 Transfer: Grad Plans Contin Educ (≥75%)	12 Transfer: Grad Followup, Related Ed (≥65%)	11 Career: Grad Plans Job in Field (≥75%)	12 Career: Grad Followup, Related Job (≥65%)	Program Summaries: # Indicators	# Below-standard indicators	% Below-standard indicators
A	97%	NA	68.0	67.4	69.7	7	.63*	21%*	3824*	8%*	3.24	57%*	83%	IN	NA	NA	10	5	50%
B	93%	75%	65.4	64.9	62.4	16	.76	66%	2613	10%	3.19	67%*	NA	NA	40%*	50%*	12	3	25%
C	88%	76%	56.6*	57.8	57.7	37	.82	57%	2714	12%	2.73	86%	NA	NA	93%	100%	12	1	8%
D	45%*	20%	75.0	73.3	69.3	10	.82	60%	1745	19%	2.68*	100%	NA	NA	50%*	IN	11	3	27%
E	103%	10%*	66.9	65.4	73.6	4*	.95	56%	2300	16%	3.47	86%	100%	100%	NA	NA	12	2	17%

Note. * indicates below-standard performance on specified indicator.
IN indicates insufficient data.
NA indicates not applicable.

Prepared by
Office of Institutional Research

division chairpersons and program coordinators. In this way, the monitoring procedure provides every academic administrator with an objective, annual description of program functioning in each of the College's curriculum areas.

Although the monitoring process was designed to highlight those programs that require the most intense expenditure of evaluation resources, responsible faculty and staff can use these data to assess a program's strengths as well as its weaknesses. Furthermore, changes from year to year can be documented, trends can be followed, and areas of concern can be identified as they emerge for prompt remediation.

Program Evaluation Procedures

As previously described, a Monitoring Report is prepared by the Office of Institutional Research and forwarded to the Dean for Academic Affairs. This report, and all supporting data matrices, are subsequently distributed to appropriate division chairpersons and program coordinators.

In cases where the results of the monitoring process have indicated the need for a more in-depth examination of a given academic program, a comprehensive review procedure is initiated. First, the program coordinator is asked to respond to the findings of the Monitoring Report and offer his or her explanations for all instances sub-standard program performance. In conjunction with this explanation, the program coordinator may recommend either: 1) additional fact-finding (i.e., further monitoring); 2) modifications designed to remediate areas of below standard program performance; or 3) the initiation of a full-scale program evaluation. The recommendation of the program coordinator is then forwarded to the chairperson of the division for review. As appropriate, the chairperson provides additional comments and suggestions and indicates follow-up activities to help achieve recommended outcomes. All of the program reports within the division are compiled, and these composite reports are

forwarded to the Academic Dean.

The Dean then determines, on the basis of all pertinent input, his or her priorities for immediate, full-scale program evaluation. The Dean determines the scope of each evaluation as well as the personnel commitments that will be required. Each program evaluation is conducted by a committee whose membership includes, as appropriate: the program coordinator, other member(s) of the program's faculty/staff, the division chairperson, and support staff from such offices as Institutional Research and the Testing Center. If necessary, the assistance of outside consultant(s) may also be recommended.

Responsibilities are assigned, a time-line is established, and evaluation activities are implemented throughout the Spring semester. The evaluation process results in a final report to the Academic Dean specifying appropriate follow-up actions (e.g., major modifications, program suspension, program elimination). At the end of the academic year, the Dean reports to the President on the status of all programs that have been involved in the evaluation process. Since the entire two-phase process is ongoing and annual, the effects of all change strategies are automatically assessed during subsequent cycles of data collection and analysis.

A CONTEXT FOR ASSESSING QUALITY AND EXCELLENCE IN HIGHER EDUCATION

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Higher education is entering a period of profound change. This is particularly true in the Northeast where outmigration of both population and industry has compounded the impact of national demographic trends.

The most often discussed changes are related to numerical declines in college enrollment based on declines in the traditional college-age population. These changes by themselves, which may involve declines of 20 to 25 percent in total FTE enrollment, will pose significant problems for higher education, but some other changes will compound the problems for many institutions. Among the more important changes will be:

- Increases in the proportions of the college age population from low income and minority groups. In many major cities, the minorities will become the majority, placing new demands on colleges.
- Changes in the skills brought to postsecondary education by high school graduates. Adjustments in expectations and programs may be necessary for many institutions.
- General economic pressures. Unless reversed, the trend toward greater restraint in public spending compounded by the general decline of the Northeast will make careful planning of programs essential.
- Increased competition for students. The declining traditional college-age population will increase competition for students, both within higher education and with a variety of non-college alternatives (e.g.,

the military). This will increase the need for clear understanding of missions and roles.

- More rapid changes in technology and jobs. Increased needs for training and education for new jobs and careers seems inevitable as the pace of change in society increases. This will require creative responses by the higher education community.

These and other changes in the 80's and 90's will severely challenge planners and administrators in higher education. Most institutions will have to make significant changes. Some will become smaller; some will alter their programs; some will shift their clienteles; some will do all three. Some will go out of business. Designing and orchestrating the strategies and the programs to accomplish these changes, whether at the department, campus, state, or national level, will be a difficult task. And the task will be made more difficult because much information and many procedures required for effective planning are simply not available.

The thesis of this paper is that the major shortcomings are in the area of measures of academic quality and excellence. Some general principles and approaches for dealing with these shortcomings are suggested below.

STRATEGIES

The prospect of significant declines in enrollment has created a stir among planners and others concerned about the allocation of resources. High on their lists of concerns are how best to shift priorities and alter programs. At least two approaches to these problems are possible.

1) Save and strengthen the best. This is a positive approach stressing excellence.
2) Eliminate and modify the weakest. This is a negative approach stressing minimum standards.

In practice, of course, there exists a continuum of possibilities between these two extremes, and mixed strategies are desirable. These will enable a state or an institution to make changes that move the entire system toward a more desirable situation.

Many questions remain to be answered, however, before one can talk about such strategies. More specific indicators and measures must be identified and defined; and actual assessments of quality must be performed. The remainder of this paper will deal with these three basic problems.

LINKING QUALITY AND EXCELLENCE TO MISSION

One of the major barriers that exists relative to the assessment of quality and excellence in higher education is the limited frame of reference in which the assessment is dealt with. Whether because of lack of understanding, or fear of misuse of the information, or simply lack of need or incentive, many planners and policy makers have very limited perspectives on quality. For them Harvard and MIT and Berkeley represent the pinnacle, the holy grail to be sought after. Most colleges have no business trying to emulate these prestige institutions, and fortunately, more and more of them are not trying to. The problem is that there do not exist generally agreed on standards and measures of quality and excellence for other institutions. And it makes no sense to apply the same standards to Hudson Valley Community College or the College of St. Rose as one would apply to Harvard.

Compounding this problem is the fact that quality assessments must be made in the context of the missions of the institutions and systems. Suppose, for example, that the missions of XYZ college were to provide above average students with a sound liberal arts education, to provide remedial and other compensatory assistance to a select number of minority students, to maintain a highly regarded physical education program emphasizing swimming and gymnastics, to assist all graduates to find suitable jobs or graduate school

situations, and to work closely with local government and business in providing services and trained employees. One could then develop specific indicators and measures corresponding to each of these specific missions. Data could be gathered to establish benchmarks for subsequent longitudinal studies, target achievement levels could be established, and if other institutions with common missions were willing, interinstitutional comparisons could be made.

Sweeping statements of mission such as "teaching, research, and public service" are neither relevant nor useful to the task of assessing quality. They provide no basis for distinguishing among the many diverse institutions that exist in the U.S. and in the Northeast. Nor do they help to isolate those elements of the missions of colleges that could meaningfully be compared and contrasted. Nor do they provide a basis for assessing the extent to which a "system" of institutions truly provides a complete set of opportunities to a group of constituents and avoids unnecessary duplication.

Ultimately, improvements in the assessment of quality will require concurrent development of better concepts and ideas about institutional mission. The development of a comprehensive typology of specific mission statements would be a valuable aid to planners at all levels. Such a typology should be designed to clarify the respective roles of the various partners in the planning process, from the academic departments up (or down) to state and Federal agencies.

APPROACHES TO QUALITY ASSESSMENT

A search of literature suggests that there are four major approaches to the assessment of quality and excellence in higher education: reputational studies, peer reviews, empirical ratings, and student evaluations. Each approach serves a useful purpose, but none would suffice as the sole basis for quality assessment. Each is described briefly below.

Reputational Studies

Reputational studies are probably the most widely discussed of the approaches to quality assessment. The reports by Cartter (1966) and Roose and Anderson (1970), for example, received a great deal of publicity when they were released. These studies are based on rankings of programs in particular disciplines by leading practitioners in the respective fields. They have traditionally been geared toward rating elite programs and prestige institutions on a national scale.

While this approach is doubtless valuable to the institutions and programs involved, it is not a viable approach for all situations. They could possibly be replicated on a state or regional basis for different types of institutions, and in fact this is probably done informally all the time. However, as a model for extensive use in quality assessment, this approach does not appear to be that useful.

Peer Reviews

Peer reviews are one of the most widely used approaches to quality assessment today. Regional accrediting bodies use this approach as do the New York State Education Department and others. Generally these start with a self-study by the institution followed up by site visits and formal evaluations.

Typically peer reviews are keyed to identifying aspects of an institution that do not meet minimum standards as in the periodic reviews by Middle States or the New York State Education Department. The Doctoral Review project of the New York State Education Department focuses on the high end of the spectrum (i.e., excellence) for specific disciplines viewed both collectively and individually.

Peer reviews are probably the most effective approach to quality assessment, assuming, of course, that the reviews are handled professionally and

the programs and institutions make changes in response to the evaluations. They are also expensive and time consuming, which has led to five-year review cycles and other such cost-saving devices. The fact that colleges are serious about quality helps to eliminate problems in the intervening years.

Empirical Ratings

The cost of peer reviews and the increasing capabilities of computer-based information systems are opening up a new approach to quality assessment, referred to here as empirical ratings. This approach, with proper support from peer reviews, provides a basis for a paper review or desk audit of selected characteristics of programs or institutions known to be related to quality.

Based on the values of specific quantitative indicators of quality, a rating or score can be developed for an institution. The choice of indicators is critical to the process, and this design problem should receive considerable attention and subsequent validation. One of the strengths of the approach is that a wide variety of indicators can be developed using currently available data. These can be selected to reflect performance in a wide range of the possible missions of an institution.

Student Evaluations

Often overlooked in quality assessments are the students. Although some are skeptical of the judgment of students, their opinions are definitely relevant to the question of quality. And for certain types of institutions and programs, students may be the best source of information and insights. They can speak with authority on the setting, the ambiance, the delivery of services, and their satisfaction with programs and courses. Many can also offer valid comments on the substance of the programs and the effectiveness of instruction.

Student evaluations, because they involve surveys and questionnaires,

are generally expensive to obtain. Statistical sampling can bring the costs down, but cost is likely to be an important factor regardless. It may be possible and reasonable to charge some of the expense back to public relations, since ultimately this kind of activity is likely to generate good will among students.

SPECIFIC INDICATORS AND MEASURES OF QUALITY

Implementation of the general concepts laid out above, will require specific indicators and measures of achievement and performance. If the development and use of these indicators is experience and expertise in their collection, compilation and interpretation will come quite naturally. In the beginning, however, the problems of identifying the measures, validating their relevance to quality assessment, and incorporating them into specific planning and management processes are laborious tasks and time consuming.

Generally speaking, subjective judgment will be the initial basis for selecting most of the items to be considered and setting any absolute or relative evaluation standards. Then begins the process of determining whether the selected measures and standards reflect reality. This validation process has to be done by comparison of the empirical statistics with judgments of experts. It will lead through a process of augmentation, selection, redefinition, and refinement of both measures and interpretations. If followed through systematically and thoroughly, the process can lead to the basis for an effective review process. It is even possible to automate certain aspects of such a process, using a computer to compute the statistics corresponding to each of the measures, and computing a composite performance "score" based on the specific values of the statistics when compared to values deemed "acceptable" by experts.

If such an approach is taken, particularly by a state agency as part of a regulatory process, it should be supplemented by site visits and other

opportunities for dialogue and discussion to ensure that subtle factors and intangibles are properly accounted for, and of course, to continue the validation process. The quantitative "paper review" should serve as a trigger mechanism to a more thorough and careful review process.

CONCLUSIONS

Higher education faces some difficult problems in the 1980's and 1990's. Institutions must prepare to orient to new clienteles and missions. Ultimately, they may have unenviable tasks like hiring three new faculty members in one area and, at the same time, firing six others in other areas.

Effective means of assessing quality and excellence in the context of the specific missions of a campus (or a state agency) will be enormously useful to planners and policy makers in this kind of environment. This means hard work and a willingness to tackle difficult, even threatening, problems; but without reliable and open assessment of quality there is great risk that public support for higher education could be undermined.

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A FRAMEWORK FOR CONSIDERING QUALITY IN HIGHER EDUCATION

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The recent and rapid development and implementation of management information systems in higher educational institutions represent a substantial step forward in the study and management of colleges and universities. These systems have given us considerable capability and flexibility for describing the human, financial and physical resources of our institutions and for understanding how they have been invested. They have made possible elaborate simulation models, facilitating wiser resource allocation as well as more thorough, informed institutional planning. But our increased facility for answering questions about "How many . . .?" has also led to a set of higher-order, not-so-easily-answered questions.

Now that administrators, legislators, trustees, parents and others know something about the cost of various educational programs, services and activities, it becomes an entirely logical and reasonable next question to ask about the worth, value, benefit, or quality of the program, service or activity. How "good" is it? How effective is it? Does it accomplish what it was intended to accomplish? Is the accomplishment worth the cost? These questions are not all of the same genre, however, and it will be well to differentiate among them at the outset.

Olscamp (1977, 1978) has suggested that administrators, in dealing with an institution's publics, face at least three different issues: 1) questions of "accountability," which, ". . . for most purposes, . . . means two things: proof of cost-effective use of public resources, and proof that the institution is doing what it promises to do" (Olscamp, 1978,

p. 504); 2) the public justification of higher education; and 3) "the question of what a good, that is, high quality, professor, program, or institution is" (Olscamp, 1978, p. 504).

Questions of an educational program, service or activity's intrinsic worth or value ("Is it any good?"), or its instrumental value ("What is it good for?"), would appear to deal with matters relating to the "justification of higher education" and to require metaphysical, non-empirical responses or proofs. As Bowen (1979, p. 21) has noted, ". . . there is no way to solve questions of value by easy quantitative formulas. There is no way to side-step intuitive judgment and criticism, with all the pitfalls they entail."

Questions of whether something accomplishes what it was intended to accomplish, and of whether the accomplishment warrants the cost, seem clearly to be matters of accountability, as Olscamp has defined it. But the matter of interest here is neither accountability nor justification in higher education, but, rather, the development of some means for thinking and talking about (and possibly for estimating) "quality" in higher education.

Olscamp states that "To say what quality means in higher education is overwhelmingly difficult. . . . To describe quality, we are required to describe the types or classes of things with which we are concerned and then to explain what we mean when we say that people or examples among the classes or types are good, better or best, among them. These descriptions make the matter of quality in higher education mind-boggling" (1977, p. 197). Few would dispute such a statement, and yet one might reasonably argue that judgments about quality in numerous and varied areas of higher education are made daily, albeit, perhaps, on poorly defined or understood grounds. Whether judgments of quality are made seems hardly in dispute; what is at issue is the validity and reliability of the evidence used to make those

judgments. Moreover, it seems to be a reasonable enough expectation that one who makes claims or judgments about quality also be able to say something about what those claims or judgments mean, what they involve and how they were arrived at.

In a subsequent article, Olscamp describes what he calls "languages of quality" and then argues that "none of these languages of quality can be translated into quantitative symbols" (Olscamp, 1978, p. 505), concluding that academic program quality cannot be quantified. He also notes, however, that "To say that the quality of a thing cannot be described quantitatively does not mean that the thing cannot be scored, graded, or tested for the presence or absence of that quality" (p. 505).

In both articles, Olscamp suggests that judgments of quality can be properly made only by persons conversant with the "languages of quality," the disciplinary experts, the faculty members, who know what "good" is in their fields. The implication of this belief (although one suspects Olscamp never intended it that way), is that "quality" (and the language thereof) is ineffable, known intuitively only by the initiate.

Whether quality is quantifiable is a matter beyond the scope of this paper. More germane is the issue of whether the language of quality is known only intuitively. One suspects that such is not the case, that, rather, the language is not widely known because its structure has never been explicitly delineated, its vocabulary never clearly defined.

The purpose of this paper is to describe a modest conceptual framework within which it seems reasonable to think and talk about "quality" in higher education. Perhaps it will help make the language of quality more explicit. Whether the framework will facilitate the estimation of quality or the differentiation of varying levels and degrees of quality among like

things remains to be seen.

Underlying Assumptions

Webster's Third New International Dictionary of the English Language defines the "quality" of which we generally speak when describing some feature of higher education as a "degree of excellence; grade, caliber; . . . degree of conformance to a standard; . . . inherent or intrinsic excellence of character or type: superiority in kind" (Webster, 1966, p. 1858). Implicit in this definition and, one might reasonably argue, in judgments of "quality" is some notion of comparison. Some reference point, scale or standard appears to be at least implied in the meaning of "degree" or "grade, (or) caliber," and a "standard" is explicit in the second portion of the definition.

The standard's nature, properties or characteristics are less important, here, than the fact of its existence. The comparative standard may be: 1) intuitive, some personal sense of the Ideal (or the Mediocre) that serves the individual or group as a touchstone or benchmark; 2) normative, based on formal, standardized testing or on the collective judgment of presumed experts in a field; or 3) competency based, the standard being the achievement of specified performance levels for various tasks or activities. But whatever its nature, some notion of a standard is assumed to be present when judgments of quality are made.

A second assumption fundamental to the proposed model is that judgments of quality are, finally, a metaphysical problem. Such judgments or decisions may be facilitated by empirical evidence, but they are not amenable to logical, statistical, or mathematical proof. The best evidence may inform a judgment, but it cannot determine it. Evidence may be compelling, but ultimately it cannot be conclusive. In the last analysis,

decisions of quality or value are private and personal, or, in the case of groups, consensual.

A PROPOSED MODEL

Before proceeding further, it is important to note that the model makes no assumptions about the purpose of an assessment or judgment of quality. Such considerations will, of course, have a significant bearing on the topics of consideration or discussion within the model's structure, but the applicability of the model is not constrained in any way by questions of purpose.

Levels of Assessment

Figure 1 suggests that assessments of quality can be (and typically are) made at one or more of at least three levels of aggregation. The first, and most discrete, level is that of the individual. Those about whom judgments of quality are being made may be students, faculty members, administrators, or other institutional staff members. Students, for example, may be judged at the time of admission, in individual academic courses, and at various other times or for various purposes. (When judged collectively, as in admissions literature describing the "quality" of the students at an institution, then the assessment is at the institutional level.) Although assessments of individuals (either as individuals or in groups) are typically made of students and faculty members, judgments can be (and are) as easily made of any person or group in an organization, from custodians to president.

The second level of assessment in the model is the "academic or administrative unit." This general level may also include academic programs. At this level, the unit(s) being assessed may be considered either separately or collectively, (excluding, of course, an institution-wide collection).

LEVEL OF ASSESSMENT	COMPONENTS OF ASSESSMENT		
	DOMAIN, OR DEFINING ELEMENTS	QUALITY INDICATORS	REFERENCE POINT/SET
INDIVIDUAL (E.G., STUDENTS, FACULTY, STAFF)			
ACADEMIC OR ADMINISTRATIVE UNIT			
INSTITUTIONAL			

Figure 1. A framework for thinking about quality in higher education.

For example, one may apply the model to considerations of quality in a single academic or administrative department (say, physics or an office of institutional research), or one may consider together the academic departments comprising a college or school within a university. The same, of course, applies to administrative units (e.g., the physical plant department separately, or together with the several units comprising the division of administrative affairs).

The third, or "institutional," level of assessment is clearly the most aggregated and represents something of an overall summary, a macro-judgment that takes into account the more specific and discrete judgments made at lower levels of assessment.

Components of Assessment

The second dimension of the model, the "Components of Assessment," summarizes the elements that comprise (or at least should be included in) any discussion or consideration of quality, at whatever level. The first of these, the "Domain, or Defining Elements" of an entity, refers to the essential traits, characteristics or properties of a person, program, unit or institution which would, when possessed, justify a claim to quality. For example, if one wishes to assess the "quality" of graduating students, what are the personal, intellectual, social, vocational, ethical, and other properties or characteristics we would be willing to accept as constituting a "senior of quality"? Put another way: what are the distinguishing characteristics, the defining properties of seniorhood, the quality of which are to be examined? These might include, for example, the level of personal independence, knowledge of content and methods in the major field, critical thinking ability, oral and written communications skills, ethical or moral development, and so on.

This portion of the model is analogous (although not identical) to

questions of content validity in testing and measurement. Recognizing that we probably cannot ennumerate all defining traits or characteristics of someone or something of quality, we need to be sure that we have at least identified a representative sample of those traits. If we cannot be all-inclusive, we must try at least for comprehensiveness and representativeness.

Similarly, in the case of an assessment of an individual faculty member, the defining elements or properties might include (but by no means be limited to) teaching load, ability to involve students in the intellectual material of courses, ability to help students learn and perform at peak levels, frequency of publication in refereed journals, conceptual and methodological rigor of research, steady pursuit of a well-defined line of inquiry, contributions to professional associations, activities to support local community organizations, and so on. Clearly, the list could be both more extensive and more specific than that given above. The point, here, is not to specify what the defining elements are or should be, but rather to highlight the need for some such clear specification before judgments of quality are made or even discussed. The same applies, of course, at both the unit and institutional levels of assessment.

Having identified those traits or properties that would, when possessed, "define" an entity of quality, the next step is to select "Quality Indicators," reflectors of the level of attainment or degree of excellence achieved for each of the Domain/Defining Characteristics. What will be the nature of the evidence assembled for each component or element and upon which a judgment or assessment will be partially based?

To use an earlier example: if one is concerned with assessing the quality of recent graduates, and one of the characteristics of "quality

graduates" has been determined to be "knowledge of content and methods in major field," precisely how will the level of attainment on this trait be measured or otherwise indicated? Will some standardized achievement test be adopted? Will faculty devise and administer some oral examination? How will an individual's (or a group's) standing or rank on this attribute be reflected? The same sorts of questions apply, of course, to other "defining elements." How will a graduate's personal independence, critical thinking ability, moral or ethical development, and so on be assessed? What will be the indicators of accomplishment?

At the academic department level, indicators of quality might be summaries (statistical or otherwise) of the individual faculty members' standings on the indicators selected as reflecting quality at the individual level. If, for example, one indicator of teaching ability is scores on some instructional rating form, then the department level indicators might include summary statistics describing the typical or average performance of the department's faculty, as rated by the students they taught. The same sort of summarizing process might, of course, be applied to individual indicators of research performance and community service. The precise nature of the unit indicators, clearly, follows at least in part from the selection of individual defining elements, properties or characteristics. And as with individual traits, their selection is constrained by the ability of the social sciences to measure the trait under consideration.

Assuming that some set of defining characteristics or properties has been identified and accepted as a reasonable representation of the domain of traits that constitute quality or excellence in some area, and assuming the selection of acceptable measures or indicators of level or degree of excellence on each of those defining properties, then one must be concerned

with the selection and nature of an appropriate "Reference Point or Set." As noted earlier, comparison is assumed to inhere in the definition of "quality" as that word is normally used in describing persons, programs, services, or activities in higher education. A statement about the "quality" of something is a statement about the degree, level, or amount of some trait or property that has *a priori* been accepted to be one of the defining traits of quality. Given that, with reference to whom or what will one judge the quality, the degree of achievement or level of attainment of whomever or whatever it is that is being assessed? What will constitute the benchmark?

In the case of assessing the quality of graduating students, how are we to judge their knowledge of content and methods in their major fields? How are the data from the indicators to be interpreted? Are the graduates' scores or ratings on some standardized test to be compared with those of earlier graduates from the same institution? With those of other students currently at the same institution? With those of graduates from other institutions? Which other institutions? If one relies on indicators that are based on numerical test scores, the absolute value of an individual's or group's score is meaningless in the absence of knowledge of (comparison with) the typical or average score on the same test and some indication of the dispersion of the test scores. If the indicator is some panel's summary judgment or rating, then the panel's standard is at least implied--a comparison with others taking the same examination, a belief about how well one *should* do on the examination, and so on. The point here is the importance of recognizing the presence of some standard in statements about quality and the importance of understanding exactly what that reference point or set is, as well as the implications of using it, for whatever purposes.

Similar problems must be addressed in evaluating the "quality" of organizational units, whether academic or administrative. Can academic departments in the same institution be compared with one another without running afoul of fundamental disciplinary differences? Is it not invidious to compare an art or music department and an economics department with respect to the average student-faculty ratio? credits produced? average class size? research or scholarly accomplishments? Perhaps departments should be compared with like departments at other institutions. But how are those other institutions or departments to be selected? Conceivably, a department might properly be compared with itself in previous years.

SUMMARY AND CONCLUSIONS

The purpose of this paper was to describe a conceptual framework within which thinking and discussions of quality (and possibly its assessment or estimation) can take place in higher education. The model assumes, first, that some form of comparison is inherent in both the definition of quality and in judgments about it. That is to say, to ascribe quality to something is to have compared it--explicitely or implicitly, consciously or unconsciously --with something else, with some standard. The model assumes, further, that judgments about quality are, in the last analysis, personal (in the case of groups, consensual) and non-empirical. Empirical evidence may afford grounds for judgment, but the judgment itself is beyond empirical proof.

Presented graphically, the model is a 3 x 3 matrix with "Levels of Assessment" and "Components of Assessment" as the underlying dimensions. The three levels of assessment include the individual, academic/administrative unit, and the institutional levels. The components consist of the domain or defining elements necessary to support a claim of quality; the quality indicators, or reflectors, of degree or level of excellence or attainment for each defining trait; and finally the reference point or set--that with

which whatever is being judged is compared: the benchmark.

Considerable development work and progress has been made at the individual student level (and at the institutional level, so far as students are concerned). The National Center for Higher Education Management Systems (NCHEMS), the American College Testing Service (ACT), and the Educational Testing Service (ETS) have produced monographs, articles, taxonomies, instruments or various other materials relating to the "Defining Elements," "Quality Indicators," or "Reference Point/Set" cells of the model.

At the unit level of assessment, we have a generalized sense of what the defining elements of quality are for academic departments (and colleges or schools within universities), although there is probably a need for increased specificity. A more serious problem exists in trying to determine the defining elements of quality among administrative units. The dilemma is directly related to the fact that, unlike academic units, no two administrative units perform similar functions or services. All academic departments teach, do research, and so on, but what functions does a payroll office perform or share in common with the accounting office? physical plant? the computing center?

This dilemma extends into the area of quality indicators. If among academic units the problem is in selecting appropriate indicators, for administrative units the difficulty is in identifying indicators at all, or ones that are not unique to a particular unit or function. And in the absence of some set of common indicators for administrative units, comparisons are complicated, if not precluded entirely: how can one compare the "quality" of the administrative offices listed above? The identification of defining elements, quality indicators and reference points/sets for administrative units would appear to be one of the major areas of need for development if we are to describe adequately the quality of these areas of institutional

operations.

As noted earlier, another crucial area in need of development concerns the reference points or set of academic units. With whom or what can any given academic unit be compared in order to judge its quality? Other departments at the same institution? Like departments at other institutions? Itself over the last several years? There is, as yet, no totally satisfactory answer.

At the institutional level of assessment, progress appears to be moderate. As noted above, the components of assessment at this level are reasonably well-developed so far as describing student quality is concerned. Beyond that area, however, considerable work needs to be done. Institutional reference points or sets appear to be an area in particular need of development. Although state- and campus-level administrators (and many faculty and students alike) are prone to compare the quality of their institution with that of others, there is, as yet, no satisfactory means for identifying those other institutions with which it is meaningful to compare oneself. Comparisons appear currently to rest on personal preferences rather than on any systematic, objective determination of institutional similarity. Articles have recently begun to appear (e.g., Terenzini, Hartmark, Lorang & Shirley, 1980; Smart, Elton & Martin, 1980) suggesting ways for identifying institutions that resemble one another more than other institutions, and the American Council on Education currently offers a service that provides lists of "peer institutions" for those colleges and universities requesting to know their peers. Despite these efforts, however, considerable work remains to be done. The traditional institutional typologies are simply inadequate for present purposes, and there appears to be no greatly-improved successor on the horizon.

In sum, the assessment of quality in higher education is clearly a

highly complex area and one requiring considerable conceptual work. In times of tight resources for higher education, however, administrators and faculty have few alternatives to documenting or demonstrating the quality of the work they perform. In the absence of such evidence, however primitive, higher education's only hope for continuing support would appear to rest with a continuation of the public's beliefs in the importance and value of higher education.

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ASSESSING QUALITY AND EXCELLENCE IN HIGHER EDUCATION: THE MUTUALLY COMPLEMENTARY ROLES OF CAMPUS AND STATE

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As recently as 1974, Kenneth Boulding spoke of the "management of decline" at a Convocation of the Regents of the University of the State of New York (1975). Now a generation of articles, commentaries, and a slowly expanding empirical base give us more substance in answering the question, "How (can) reduction take place not only in an orderly, but an imaginative fashion, while preserving the quality of our advanced education intact?" (Kennan, 1979, p. 173). The tandem issues of maintaining or increasing quality during enrollment stability and decline, and the role of the state in this process, will be among the most critical challenges of the 1980s.

The purpose of this brief paper is to identify a series of potential roles for a state higher education agency in helping institutions with these resource issues, to describe several conceptualizations which underlie these potential roles, and to explain how it might be possible to create mutual complementarity between campuses and state agencies.

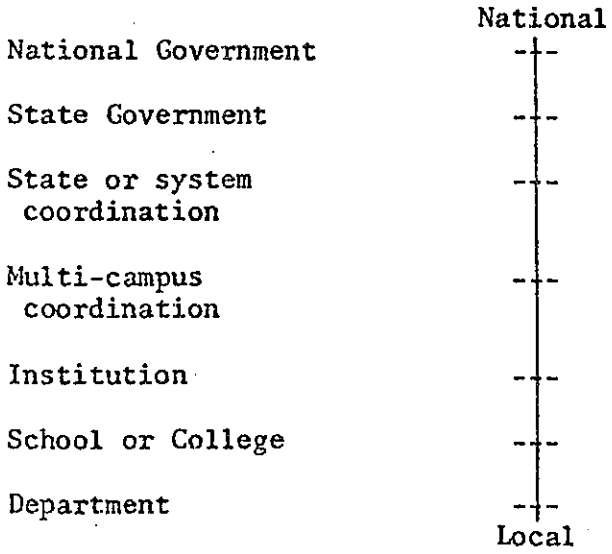
"Every state has a board, commission, or staff that is responsible in some measure for higher education" (Muirhead, 1976, p. i). The growth in the number of state agencies for higher education, and in particular their expansion of authority and power, has been described in the literature (Berdahl, 1971; Millard, 1976). What is of interest, here, is the nature of state agency involvement in higher education. The general role of the agency may be viewed as having four parts: planning, program registration, governance, and finance. The planning role includes not only statewide master planning for postsecondary education, but the requirements which are linked to the "1202

commission," empowered by federal legislation in 1972 to function as the higher education planning body for the state. The registration function traditionally has been relatively non-controversial, but more recent state experience in deregistering and terminating academic programs has shown this area to be a hotbed of controversy between institutions and agencies (Middleton, 1980a, 1980b, 1980c; Scully, 1980). The state's role in governance may be vital, as in the case of state boards of education with higher education responsibilities or state boards of trustees, but the role of the state agency in governance has been minimal. Last, the states vary in regard to financing higher education. Some state agencies are not involved, others are involved pro forma, others have powers of review of budgets in public institutions, and some have the power either to add or delete items from institutional budgets.

More important than the existence of this authority as a matter of statute, however, is the way in which the powers are utilized by the agency. In discussing the varying powers of the state higher education agency, the concepts of academic authority and coordination are useful.

Hierarchies of Academic Authority and Coordination

Academic authority in colleges and universities has evolved in a particular way, resulting in a dual hierarchy of guild-like faculty authority, and administrative and policy-making authority (Clark, 1978a; Van de Graaff, 1978). By viewing academic authority along a vertical continuum, we have the following:



Among the distinguishing features of American higher education, two are of particular interest in this discussion. One feature is that of horizontal differentiation with great expansion of universities, colleges, community colleges, and other institutions of collegiate status. On a vertical dimension as shown above, there has been a considerable expansion of authority at the institutional and state levels, and this is the second distinguishing feature of higher education. At the institutional level, there is the growth of the "new university executive" as a visible representative of academic authority in a "community long suspicious of hierarchy" (Lunsford, 1968, p. 87). The primary purpose of some academic departments is to train these specialists in college and university administration and management. Beyond the campus, there is even more impressive growth, and at the state level (other than government), growth is manifest in at least four areas. First, there is the administration and organization associated with multi-campus institutions, most notably universities and community colleges. The second area of state-level growth pertains to statewide coordinating bodies for higher education. The third area is

the regional board, more prevalent in some foreign countries than in the United States. Fourth, there are municipal higher educational systems, such as the City University of New York or the Chicago City Colleges.

Authority has expanded considerably at the state level. The literature does not generally differentiate among different types of coordination, other than to distinguish coordinating from governing boards. One author identified four distinct types of coordination, each with multiple facets (Clark, 1978b). Bureaucratic coordination is related to formal administrative hierarchy, and it could apply equally at institutional or state levels. Bureaucratic coordination may result in "layering," where there is an increase in levels of formal coordination. It may result in "jurisdictional expansion" where the scope of responsibilities can increase and become more comprehensive. More personnel may be added, the number and type of administrative specialities can increase and become more complex, and rules and regulations may increase in number, complexity, and impact.

Coordination can be political in at least two respects. There can be greater coordination involving formal government, as well as coordination involving interest groups. State government has both presence and power in public higher education, and in some states in private higher education as well. Local governmental influence in higher education has increased especially at the two-year college level. There is not only an increase of formal government, but also an increase of institutions and systems acting like political interest groups; Clark termed this "increased corporatism" (p. 82).

A third type of coordination is professional coordination, involving the activities of the core teaching or research staff. Examples include academic

unions, professional associations, and research organizations. The fourth type of coordination is market coordination, and in higher education the most obvious example is the student as consumer. Institutions can be regarded, also, as operating in a power market where "units struggle against one another within the broad frameworks of state authority" (p. 89).

Organizational Processes for Assessing Quality*

Quality is an imprecise and protean term. In higher education, its use has been the focus of a continuing debate which has centered on the term, quality, as well as the organizational means by which it is assessed. Our concern is with the latter topic, and in particular with the limitations of reputational studies, with accreditation, and with program review. Each of these "organizational" topics warrants a more complete treatment than space permits in this paper.

Despite their limitations, reputational studies continue to be used, and reacted to, with fervor (Astin & Solmon, 1979; Rice, Solmon, 1980). Several of the more major studies are regarded as "landmark" if for no other reason than they are the only studies available. There were the efforts by Cartter (1966) and Roose and Anderson (1970) pertaining to graduate education. Blau and Margulies focused on professional schools (1973, 1975). More broadly, Ladd and Lipset wrestled with the global notion of "well-known" universities (1979). The defects of such studies are equally well-known, and they include

* This section draws upon Edward R. Hines and Nancy J. Howes, "Quality, Accreditation, and Program Review in Higher Education," unpublished manuscript, SUNY-Albany, August, 1979.

imprecision, time-lag problems, and misleading conclusions. One critic noted that reputational studies were "terminologically unclear and methodologically defective, their conclusions unwarranted, their effects unfortunate" (Entman & Paletz, 1976, p. 577).

Another organizational process for assessing academic quality is accreditation. A time-honored process, there are three aspects of accreditation that reflect the basic character of higher education. Accreditation is a process of peer review, not unlike tenure and promotion decisions which are grounded in the principle of review by one's peers. Another basic tenet of accreditation is that it is voluntary, or at least non-governmental. There are sanctions for those who do not participate, because we are in a period where only accredited institutions may qualify for federal and state funds. The third basic tenet of accreditation is its focus on academic or institutional quality.

There are multiple problems of increasing magnitude with accreditation. The monetary costs of accreditation include both membership fees (calculated on a FTE student basis) as well as substantial "out of pocket" costs for site visitors, and these include processing fees, honoraria, and expenses. The indirect monetary and economic costs for colleges and universities may be even greater. The number of administrators and faculty involved directly in preparation for accreditation visits, the person-hours involved in this process, and the voluminous documentation necessary represent a significant outlay for an institution undergoing accreditation. Perhaps the most troublesome problem, however, is the lack of impact on quality, the very term the process is designed to improve (Jacobson, 1980).

The third organizational process for assessing quality is program review, either sponsored by or involving governmental agencies. Academic program review is generally of two types (Lyons, 1979). The review may be diagnostic, or "developmental" as noted by Clark (1979), where information is generated in order to provide data about programmatic strengths and weaknesses. Indeed, some observers insist that diagnostic reviews can be conducted with mutual respect, an absence of contention, and need not lead to program discontinuance (Hill, Lutterbie, & Stafford, 1979). Interestingly, the same state in which this was advanced, in 1980, moved to reorganize higher education with accusations about "political trade-offs," program discontinuance, and campus mergers (Middleton, 1980a, 1980b). The Governor in that state vetoed a bill saying that "it would have put too much responsibility in the hands of the state legislature" (Middleton, 1980b, p. 2).

The second type of program review seeks to establish the status of a program relative to standards about performance and quality. The key issues, however, are what will be done as a result of the evaluations and more specifically, is the proper role of a governmental agency to ensure minimum standards or to make broader judgments about quality in general? The extremes of this continuum appeared to be represented at the 1980 meeting of the Southern Regional Education Board where higher education representatives wanted programmatic decisions made "in a decentralized governance system," and governmental officials called for "strong statewide coordinating or governing boards" in order to stop "short-term competition, confusion, and inefficiency" by governors and state legislatures (Middleton, 1980c, p. 7).

Academic Program Assessment

It would appear, based on the foregoing discussion, that academic program quality and its assessment involve multiple considerations. Specifically, it is advocated that there are multiple measures of academic program quality, there are multiple objectives to assessing quality, and there are several purposes to quality assessment.

There are multiple measures of quality. Virtually any review of accreditation documents reveals at least six measures of quality: institutional mission, academic program, faculty, students, educational outcomes, and resources. While accreditation visits may call for teams to examine more than six areas, most of the individual areas can be collapsed into these six measures. Similarly, the guidelines for the review of doctoral academic programs, as defined by the State Education Department in New York, include six categories: program design and implementation, program structure, financial support, faculty, students, and adequacy of facilities and services (1976). Thus, any approach to quality which is limited to any one measure is also limited to what can be generalized from that single measure. Examples would include the research productivity of faculty as the estimate of program quality and GRE test scores as the measure of student quality.

Similarly, there are multiple objectives in assessing quality. Three are suggested, and they include program diagnosis for self-improvement, attaining minimum standards, and enhancing academic program quality. More broadly, there may be more than one purpose for making judgments about academic program quality. At least two purposes are identified, and both deal with placing a value on the academic program. One approach seeks to determine intrinsic value,

while the other focuses on value in context (Lincoln & Guba, 1980). Judgments about intrinsic value can be made by using either comparative or absolute techniques, but both rely on intrinsic value or merit. Context-related value can be termed worth. By definition, worth varies with the evaluator, it varies along a time line, and it varies according to the criteria used. A 2 X 2 matrix is instructive:

WORTH	MERIT: HI	MERIT: LO
HI	1 The leading programs of an institution which help give it distinctiveness and reputation while meeting external needs	3 Programs of high visibility and consumer demand which should be improved in order to remain viable
LO	2 Programs of high intellectual or social value which should be retained for institutional enhancement	4 Programs of limited merit and worth which appeal to isolated and idiosyncratic needs

Figure 1. A matrix of academic program quality using merit & worth criteria.

What is compelling about the distinction between merit and worth is the fact that college officials (especially faculty) tend to focus on the concept of merit when talking about quality as well as deciding who should make judgments about quality. It is easy to get trapped by the myopia that merit is a unitary concept, referring only to intrinsic value, and about which only certain people (faculty) are qualified to make informed judgments. It is argued in this paper that such is the case, but only in cells 1 and 3 as shown in the matrix. In these cases, judgments are desired pertaining only to intrinsic value.

When the purpose shifts to value in context, then someone or agency in the environment external to the institution should be in a position of making judgments about the value in relation to external need, demand, and anticipated future considerations. In the matrix, this instance occurs in cells 1 and 2.

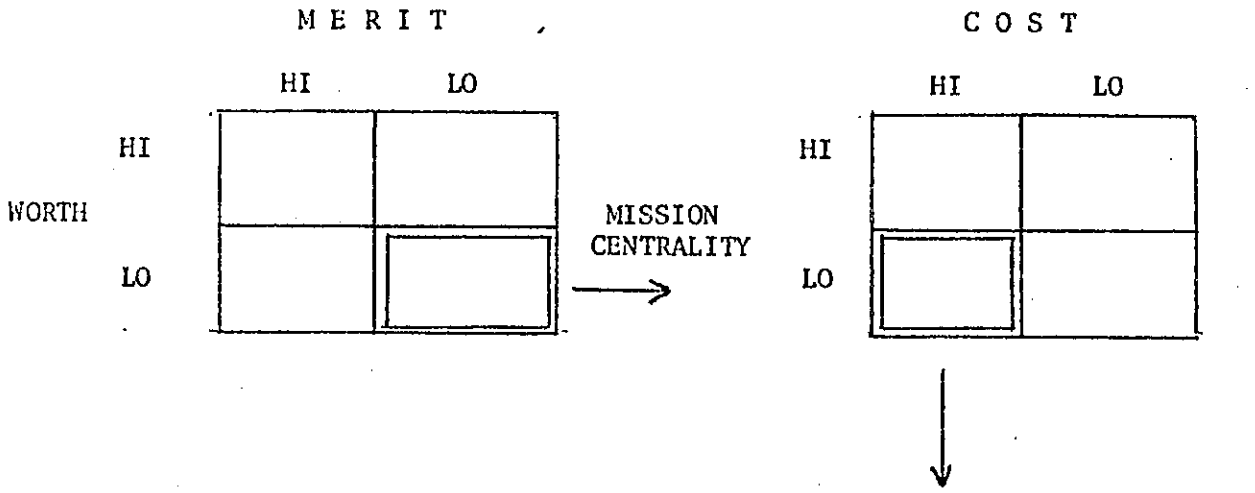
A "zone of congruence" occurs in the matrix in cells 1 and 4. We could project that both institutional officials and external representatives might achieve agreement about academic programs demonstrating "Hi" merit and worth, as well as those demonstrating "Lo" merit and worth. The former might serve as the leading academic programs of the institution, while the latter could be prime candidates for reduction or elimination.

Problems may occur in the other cells. Hi merit, Lo worth programs (cell 2) might be those valued for intellectual excellence, support to other higher demand programs, or because of anticipated changes in demand. Within the institution; however, those representing such programs may have a difficult time convincing representatives of higher demand programs (cell 3). These programs are those with strong external relations, having sufficient client base, but judged to be of lower merit within the institution. Such judgments about merit might be either comparative or absolute. A program might be compared with other similar programs on a statewide or regional basis. On the other hand, a program could be judged relative to some unchanging (absolute) standard of excellence. Hi worth, Lo merit programs might have a "competitive edge" over programs falling in other categories. Such programs are prime candidates for new faculty lines, additional resources, and greater institutional support.

Our discussion and Figure 1 were concerned only with the two variables of merit and worth. These were chosen because of the conceptual work of Lincoln and Guba (1980). Institutional decisions about program discontinuance are much more complex, taking into account a series of variables as shown in Figure 2. A series of three matrices illustrates a decision-making process which enables consideration of three sets of variables in a stepwise sequence. Initially, a decision is made using the criteria of merit and worth. The "Lo-Lo" cell is then examined using the variables of program cost and the centrality of the program to the mission of the campus. Hypothetically, we arrive at the realization about a program which is judged as Hi cost and Lo in mission centrality. This program is tangential as well as expensive to sustain. Taking the highlighted cell in the matrix, we then consider that program using two additional variables of student quality and student demand. The program judged as having Lo student quality and Lo demand, in sum, would be a prime candidate for discontinuance. That hypothetical program, using our three-step decision process, was judged to have:

* Lo worth and Lo merit
* Lo mission centrality and Hi cost
* Lo student quality and Lo student demand

The decision process outlined in Figure 2, of course, is oversimplified. Actual institutional cases will be much more complex with additional considerations taking place, including political bargaining. By placing numerical values on a continuum representing each variable as well as weights for selected varibles of greater importance, computer analysis can be done. However, there may be a value in an institution-wide body following this decision-making process



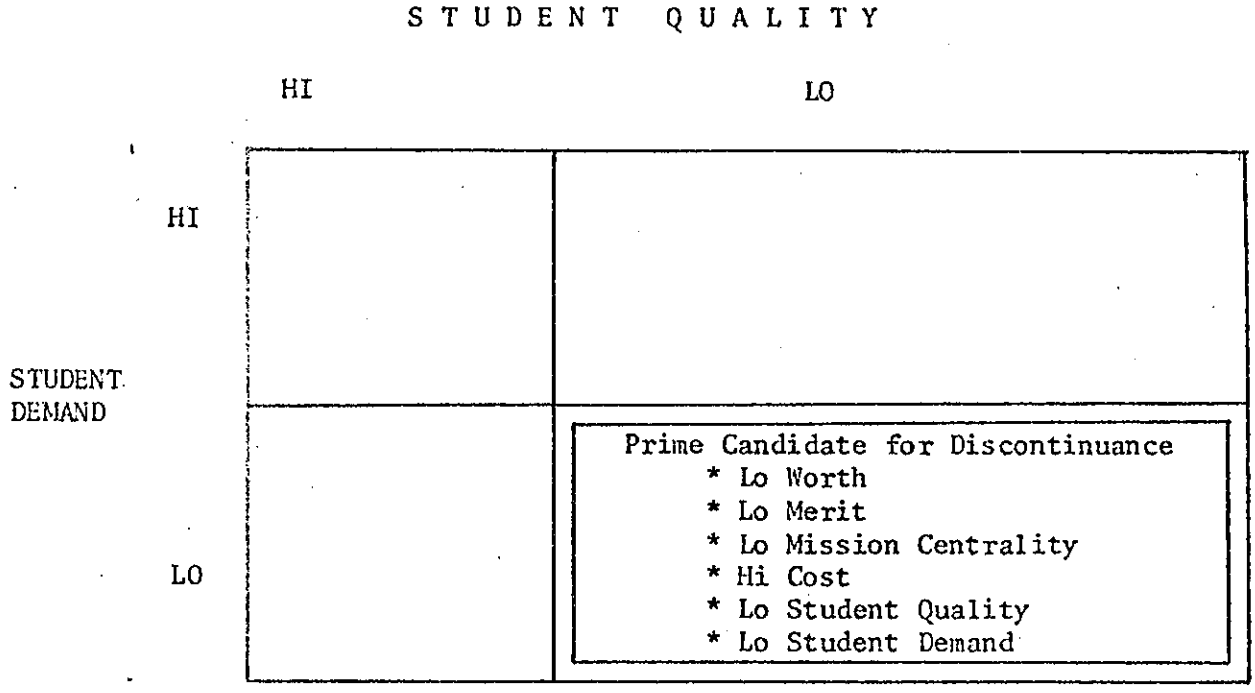


Figure 2. A decision-making process using three pairs of program variables

in stepwise fashion. Individual circumstances will predetermine which variables to include (community colleges will differ from research universities), which variable sets to consider in tandem (perhaps merit and student quality should be considered jointly), and therefore, how lengthy the process will become. It is quite possible that a process executed more slowly, rather than computer analysis, will lead to benefits such as important discussions about critical matters in the institution which need to incorporate value positions as well as political bargaining.

These matrices suggest mutually complementary roles for both campus and the state agency. Each has a vital role in the assessment of academic program quality. The state agency cannot and should not make judgments about intrinsic value (merit); that is the province of the institution and its faculty. The state agency has a necessary role in assessing worth in relation to existing and projected statewide circumstances. Each major actor should recognize and respect the role and responsibility of the other organization. Institutions are unreasonable when it is claimed that decisions should be made using the unitary criterion of merit, about which only faculty can make judgments. Equally, state agencies should not only allow but foster institutional autonomy by encouraging campuses to formulate a decision-making process and follow it regarding the areas of intrinsic value, student demand and quality, and the relationship between academic programs and institutional missions.

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TOWARDS A DEFINITION OF EXCELLENCE IN HIGHER EDUCATION

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INTRODUCTION

Wing (1980) has described four approaches to the assessment of quality: Reputational studies (Roose and Anderson, 1970, Cartter 1966), Empirical ratings (New York State Education Department), Peer reviews (New York State Education Department) and Student evaluation. These are widely divergent approaches, with very different assumptions behind each direction. Hines et.al.(1973) reviewed the literature on quality accreditation and program review, and they concluded:

> In American higher education, the term quality is an imprecise and protean concept... in summary, it appears that there is no commonly accepted definition of quality in higher education, and the means by which quality is operationalized is highly variable among colleges and universities (p. 1).

Before there can be effective assessment there must be definition. How is it that something so basic to education is so shrouded in uncertainty? The explanation partly lies in the unfolding historic process, but first of all it is important to consider the present situation and see the context in which definition and then assessment is necessary. This paper will consider the present transition that faces higher education, discuss the historic background to defining quality, and suggest a definition of quality, relating it to mission.

Higher Education in Transition

Higher education has been operating in a relatively stable policy environment over the past 20 years. This was a period of expansion spawned

by the cold war, the GI bill, and great hopes for greater social equality through education. The coming five years, however, are likely to produce policies which set new directions. Early warnings of shrinking student pools (Silber, 1975) have been reinforced by more recent ones (Crossland, 1980). Discussion and awareness has been further increased by counter-scenarios describing new clienteles and initiatives (Frances, 1980). Implicit in this debate is a profound change of direction for postsecondary institutions; this is a time of transition. The future is likely to see a more diverse student body and perhaps additional roles for higher education with older age groups.

The role of administration, whether federal, state, or institutional, will shift from consideration of quantity to quality (Kayson, 1980):

> By contrast, the decisions the states have to make in the next generation will have an impact on the quality, rather than the quantity of higher education (p. 21).

The past forty years have been characterized by incredible growth, not only in the population of the United States, but the proportion receiving some form of higher education. Whatever the outcome in the future, the progressively shrinking traditional student cohort (18-22 yrs.) will be the engine that drives change.

Also contributing to the evolutionary process will be economic constraints. During the last decade inflation has created many pressures upon higher education. This has resulted in reduced salaries of faculties in real terms, and resulted in deferred maintenance for a number of campuses. It has been possible in the past to use growth to offset these effects, but what little fat there was in the system has now been taken out. A further reality is that education is not in the political limelight as it was twenty years ago. Daniel Patrick Moynihan (1980) has suggested that the

focus of political concern has moved from education to environmental issues in the 70's, and now is shifting again to energy considerations. The net effect of these and other changes will be pressures on quality.

Historical Background to Defining Quality

Goals for education have changed considerably over the years. This may be seen by contrasting those advanced by Abraham Lincoln in 1832: Morality, Sobriety, Enterprise and Industry (Quigley, 1980); with those of the New York Regents (1980), namely Excellence, Access, Diversity, and Effective Use of Resources. In this period of one hundred and forty-eight years many developments and changes have taken place. For example, access has ceased to be the privilege of a few and is now considered a right for many. Quigley (1980) and Volkwein (1980) have given succinct reviews of the history of college education. By reflecting on the unfolding drama, it is possible to identify three distinct phases in the process of historic development which have influenced definitions of quality. Each reacted to the pervasive mood of the period in society at large. The three historic phases may be labeled as elitist (prior to Morrill Land Grant Act of 1862); meritocratic which emerged next as the result of the growth of industry and influences of German universities; the G.I. Bill introduced after World War II accentuated this last phase, leading ultimately to the current emphasis on open access for all (egalitarian).

The result of all this has been the creation in the United States of perhaps the most diverse system of higher education anywhere in the world. Is it surprising that there is a definitional problem over the nature of quality? The more so, since none of the three phases has ever eclipsed entirely the previous ones, but that all three are to be seen today and continue to exert influences. The elitist, meritocratic, and egalitarian strands have blended and interacted to form a "triple helix" of influence,

a kind of educational D.N.A. At one time it would have been easier to identify the elitist strand with the Ivy League schools, the meritocratic with the superior state centers, and egalitarian with perhaps the community colleges. Today, however, these generalizations do not hold because the strands are interacting and creating new variations, even within particular institutions. It may be further projected that the coming decade will bring many changes. Greater effort will be directed toward "non-traditional" students, and new areas of service will be identified. It is reasonable to expect the egalitarian momentum to continue, but there will still be significant elements of elitism and merit. An adequate definition of quality must therefore embrace the entire spectrum of possible missions of colleges.

There are powerful collective presuppositions which permeate most concepts or notions of quality. These suppositions often translate into some kind of exclusive superiority, further fed by notions from the free market. This has created an expectation that quality is simply being the best, (that is, the first) and that is what defines quality. Such notions are elitist legacies which are very limiting. For a culture to survive, it needs an inner vitality which is genuine self expression. Our culture is now pluralistic as are the wide variety of people and organizations education serves. A fresh if not new definition of quality is urgently required.

A Theory of Multiple Influences on Quality Definition

From this very short overview of history and epistemology, it is possible to advance a theory and suggest factors that will influence the future. Some support for these hypotheses will be offered and then a definition of quality will be advanced. The theory may be stated:

American higher education owes its origins to the elitist schools of Europe, particularly the classical English models of Oxford and Cambridge,

in the founding, for example, of Harvard. The first phase of development was therefore elitist. There was also a secondary influence from Germany emphasizing research. The second phase was a response to social changes and the emphasis gradually shifted to meritocracy. The third phase, the contemporary one, emphasizes equal opportunity and is egalitarian in nature. However, all three strands continue to exist and have interacted and form the complex background for defining quality.

In addition to these underlying themes, there are a host of potential factors that may influence higher education in the future. Four hypothetical factors are listed here for the purpose of this discussion:

a. The movement through the three phases outlined in the theory, can be expected to improve the literacy rates in the total population, as well as increase the rate of high school graduation and the percentage of students going on to college.

b. The average academic ability of college students may decline temporarily as a wider cross-section of the population participates in college. (It is possible that scores will eventually improve as a result of a more widely educated generation becoming parents.)

c. Wider participation in higher education makes a definition of quality less a matter of a single criterion like reputation, but produces a broader set of needs, which require a variety of criteria to clarify definition.

d. The three strands (elitist, meritocratic, and egalitarian) still exist but interact with, and modify one another.

If this theory and set of hypotheses is valid, then there are implications for policy. Perhaps the most important is that quality must be flexibly defined and resources be appropriately allocated. Articulation and consistency between secondary and postsecondary sections of education

would also be highly desirable, if not essential.

SUPPORT FOR THE HYPOTHESES

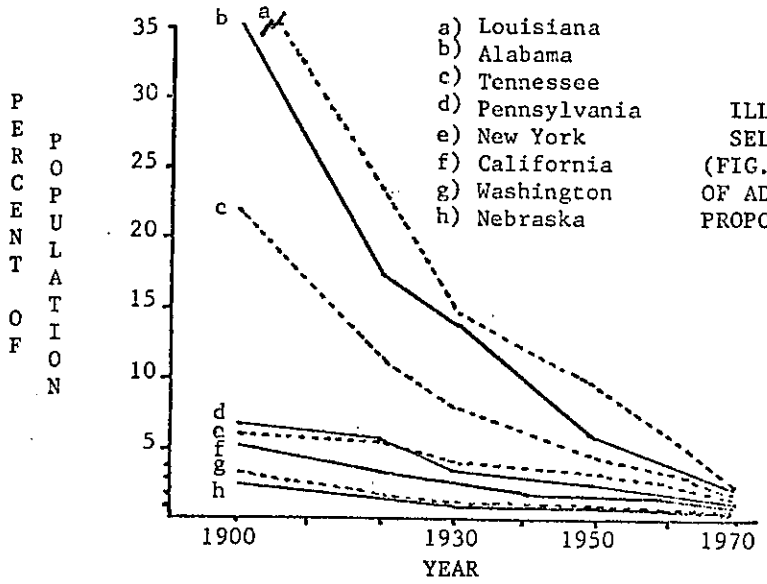
An examination of the literacy rates through the course of this century demonstrates the remarkable success in creating access to education. Figure 1 displays data for a selection of States. The problem was originally more severe in the South, but there has been a steady convergence with the North. It is tempting to project the lines and speculate at what point only a learning inability problem will be left.

Figure 2 shows how over the period of the last forty years there has been a dramatic change in the proportions of people completing various levels of college and school. Figure 3 presents a contrast between 1940 and 1970 for various years of schooling. These displays suggest the reasonableness of the hypotheses advanced, because of the increased participation in education. It should also be realized that during this time span the cohort of students considered in figures 2 and 3 increased in size from seventy-five million to a little under one hundred and twenty-five million. This would suggest that the educational system has not only been able to accept vastly increased numbers, but also accept a much more extensive role in society. The whole center of gravity of the total system has moved from eighth to twelfth grade, with a very marked extension of postsecondary education -- a growth of four hundred percent in forty years, to the point where presently, thirty percent of the over twenty-five years cohort, has some college education. This is strong support for the hypothesis that the system today is much more egalitarian than ever before.

Test Scores

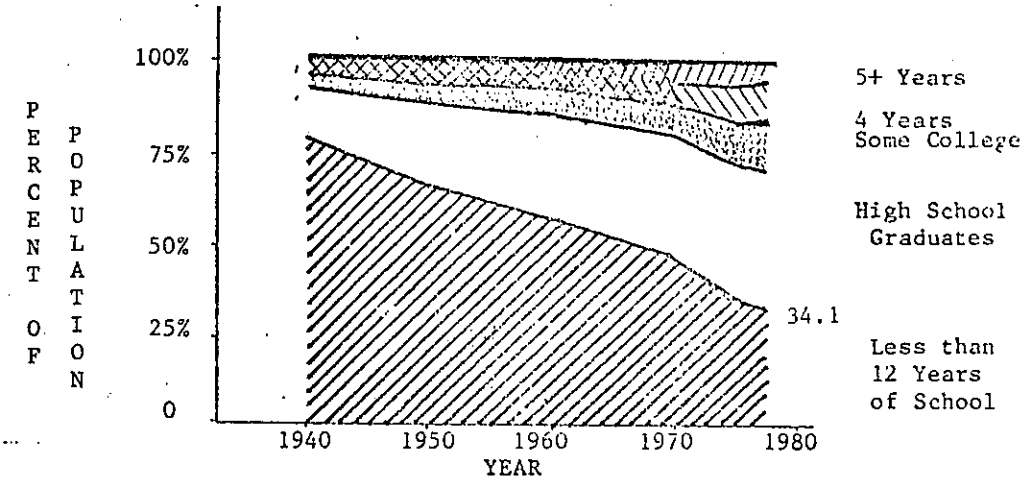
The steady decline of average test scores (S.A.T.) in recent years is a well reported fact, and is often interpreted to indicate a decline in quality. It is not the present intention to be complacent here, but to

Figure 1.



ILLITARACY* OF THE POPULATION IN SELECTED STATES AGES 15 AND OVER (FIG. 1), AND EDUCATIONAL ATTAINMENT OF ADULTS IN THE U.S. (FIG. 2 & 3) BY PROPORTION AND PERCENT AGES 25 AND OVER

Figure 2.



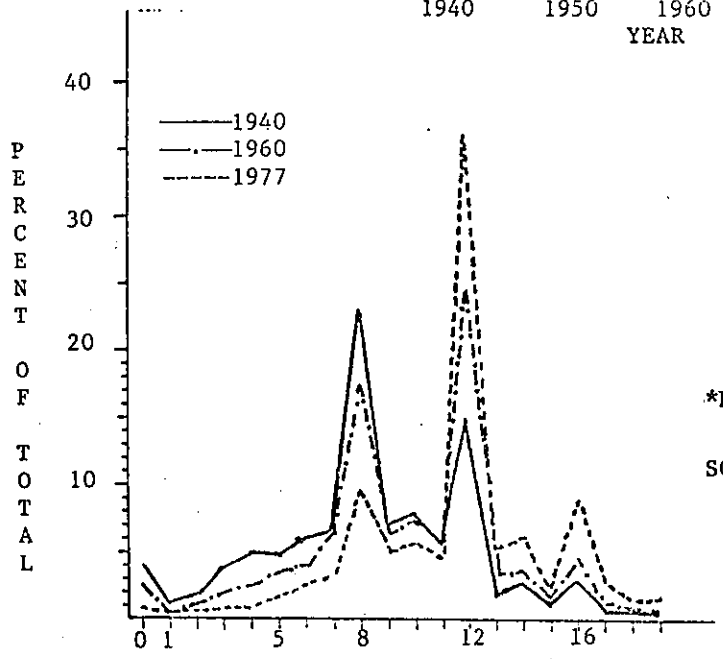


Figure 3.

*Defined as no years of school.

SOURCE: U.S. CENSUS OF THE POPULATION REPORTS AND SURVEYS (JJB 10/80)

simply suggest it is a predictable and consistent corollary of the data presented. As more students of lower ability attend, the average ability naturally declines. The discussion would be more useful if quality were more clearly defined; certainly the loose way the subject is discussed does considerable injustice to the democratization of education. It cannot be overlooked that prior to 1850 there was not as great a need for education. Agricultural and industry were largely manual. Today, society is becoming increasingly technological, and an educated work force is essential to the effective functioning of our post-industrial society. Eckland (Bidwell/Windham, 1980) has noted the extreme difficulty in interpreting the declining scores because school populations have changed so much over the years.

> I think irrefutably, that between two thirds and three quarters of the SAT score decline between 1963 and 1972 was due to changes over these years in the high school population, but even more importantly to changes in the percentage of high school seniors at various ability levels who chose to take the SAT (p. 106).

Eckland's conclusion is consistent with the changes that Figure 3 presents.

A New Definition of Quality

The relevance of finding a definition and effective measurement of quality can be deduced from some recent remarks of the former U.S. Deputy Commissioner for Higher Education, Joseph P. Cosand (1980):

> Downturns can frighten faculty, administrators, and boards to the extent that expedient actions will be taken in direct conflict with the stated role of the college. This will affect quality, as well as admission and retention of students. I believe it will measurably affect the image of the college in the eyes of its supporters--be they State officials, legislators, members of the board of governors, donors or parents. I believe education must be concerned with excellence and never compromise its creditability (p. 5).

We have seen three historic phases in the history of American higher education; elitist, meritocratic and egalitarian, with all three very

much alive today. The boundaries among them, however, are not clearly defined. And the changes coming in the next decade, with greater emphasis on "non-traditional" students and new areas of service, will make the boundaries even fuzzier. It is reasonable to expect the egalitarian momentum to continue. The elitist and meritocratic schools will probably also continue to enjoy some success. A definition of quality must therefore embrace the historic and contemporary spectrum of reality. It should be obvious that an elitist definition of quality is appropriate only to schools which are elitist in their mission. However, it would be absurd to suggest on the other hand that a community college does not offer a quality program. There are high and low quality community colleges, just as there are high and low quality prestige institutions. The quality of all schools should be scrutinized using appropriate criteria.

To enable an educational program to be carried through successfully, a variety of resources are necessary. The nature of these resources and the way they are used affect the quality of the program. This is consistent with a system model of input, process, and output. This notion can be illustrated by using a specific measure of outcome and examining the levels of the various inputs in specific cases. Muncrief (1974) used this process to investigate the performance of New York associate degree graduates in relation to the registered nurse licensing examination. A concern existed that success rates were below the national average. It was hypothesized that the programs might account for this in part. The study identified schools that produced high, medium, and low success rates in the licensing examinations, and then examined a selection of programs from each level to identify differences. The investigators were able to describe very clearly the effective schools and their characteristics, and concluded that the

programs that were doing well on the licensing examination were also "making noteworthy attempts at providing a quality program." The fact that quality programs attract better students made quality assessment more difficult. It was suggested that leadership, quality of faculty, curriculum, facilities, evaluation, climate, and continuous planning were significant variables. These probably apply to other college situations as well.

Quality is a measure of effectiveness of a program or activity. It results from the application of curriculum, faculty, and resources, to a particular student body in an ordered manner, through the combined interaction of the institutional process. The process receives its direction and intention from the institutional mission. It reflects the complex interaction of all parts of the system.

The next step, a very difficult one, is to reduce this concept from a verbal definition, which recognizes the many subtleties in individual campuses and programs, to a formula that will allow quantification and therefore measurement:

$$\text{Quality} = \frac{f(\text{effort})}{f(\text{mission})} \text{ or } Q = \frac{f(E)}{f(M)} = \frac{f(\text{actual outcomes})}{f(\text{intended outcomes})} \times \begin{matrix}\text{corrections} \\ \text{for inputs}\end{matrix}$$

It is now possible to utilize the conclusion of the Hines (ibid.) paper that there are six recognizable elements to quality in the literature; namely, institutional mission, the academic program, faculty, students, educational outcomes and resources. These may be rearranged and incorporated in the formula. Further work will be required, but they might arrange as:

$$Q = \frac{f(E)}{f(m)} = \frac{f\ (\text{Academic Program; Faculty; Resources})}{f\ (\text{Institutional Mission; Students; Educational Outcomes})}$$

This might be quantified, for example:

$$Q = \frac{1000}{1000} = 1 = \text{optimum quality}$$

In practice, a raw score would be derived that would usually be less than one. This new score might need to be adjusted for the mission component being less than one; E should not exceed M because this would indicate E is being applied without sufficient regard to the process.

This definition and formula is deliberately in a form that is universalistic and allows for elitist, meritocratic, or egalitarian definitions of quality. This is accomplished by building clauses into the definition of mission, which is part of the denominator, and if fulfilled will be reflected in the numerator in either faculty or resources components. Theoretically at least, it should be possible to use this approach to contrast institutions of different types. Reliability testing of the indicators should be undertaken by grouping institutions and validating against traditional measures, if they can be identified, or judgments.

IMPLICATIONS FOR QUALITY IN THE 1980's

If the broad thesis of this paper is accepted, that the movement of education is increasingly to the egalitarian, then other probabilities should also be taken into account. In a number of places by 1990, the "nontraditional student"will be in the majority. For example, in New York City the present minority groups for high school graduates are projected to be the majority, accounting for 65 percent of high school graduates.

The present contraction of the secondary schools may also follow through to higher education, creating pressures similar to those the schools are currently facing. The definition of quality advanced in this paper is concerned with the appropriate use of resources applied to a particular situation. Quality results from appropriate uses. Further policy issues arise from this focus on effective use:

1. Articulation between secondary and postsecondary education is increasingly essential to meet the needs of a more diverse student body.

2. Resources are critical to quality. Student equivalency formulas will not be appropriate to the needs of the coming decades, if contraction takes place.

3. Quality of teaching cannot be assumed by the possession of terminal degrees. Educology must be part of the process of education and teaching itself should demand more recognition in institutional life (Ohio has already recognized this).

4. Disciplinary issues at both levels will require a new management approach to meet the needs of a more diverse student body.

5. Society will continue to change rapidly and education should play its part in forming the new culture. Its role could pass to the new information systems which technology is providing.

6. Curriculum will need ongoing appraisal with relevant objectives and basic attitudes of faculty appropriate and willing to respond to a rapidly changing student population.

7. Class sizes will need careful scrutiny and the need for respecting the individual learning needs of students will be essential in effectively addressing a more diverse student body. This is particularly true with older students.

8. Cohesive programs that articulate right through both systems will be necessary for a number of students. It is probable that innovative programs like "Head Start" would relieve many problems, if followed through more continuously. Funding is often too short term and should be more continuous.

New York State Education Department Project

The New York State Board of Regents has established excellence as the major goal in the 1980 Statewide Plan and is directing resources to research on this concern. The Ford Foundation has funded the planning phase of a project which is reaching out to thirteen states in the Northeast. Indicators of Excellence is the title of this work. Three elements are involved; quality, fiscal health, and institutional diversity. It has both institutional and state level thrusts, the objective being to stimulate self assessment and improve responsiveness and encourage cooperation in the coming decade.

Conclusion

Not only must there be a response to the concern to preserve quality, but active, creative awareness is essential. Cooperation and flexibility

will be needed at all levels: federal, state, and institutional. Keppel (1980) has suggested that the institutions are the prime focus of activity:

> More important than state and federal action is action by the institutions themselves. Their future is mostly in their own hands (p. 5).

Clarity, information, and a clear sense of mission are essential to this task. This new definition of quality can help focus effort in appropriate directions. The first consideration is a clear, well defined mission, and a planned use of available resources:

> The institutions will make rational decisions, it is hoped, in their own self interest if they have the facts to interpret. And the state will make choices based on public interest, once again if it has the facts about the role of higher education in the furthering of that public interest. (ibid. p. 5)

The years ahead are a crucial transition for the educational community but as Zeik (1980) put it, Watershed does not need to be Watergate!