

A MAP OF POSTSECONDARY ASSESSMENT

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Although most discussions of "postsecondary assessment" focus on students' knowledge and skills, these cannot be fully understood without assessing the ways they are influenced by other aspects of postsecondary education. These aspects are described in a "map" consisting of 20 points which depicts the flow of students through institutions and experiences from precollege to adulthood. Consideration of the map identifies areas where better assessments and models are needed, particularly the areas of adult learners, graduate and professional education, and the characteristics and plans of college seniors.

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Perhaps the best way to begin an evaluation of the status of postsecondary assessment is with a bagful of clichés such as the following: Postsecondary education is a multibillion-dollar enterprise in the United States, involving millions of people, including some of the best minds of our society. It has profound effects on the future of our economy and, more important, on the nature of our civilization. In addition to its scope, postsecondary education is very complex and diverse. *Students* range from the barely literate to those with perfect scores on the SAT, from 12-year-olds to retirees, from Eskimos to inner-city dwellers, and from those attending classes simply to learn about a hobby to those pursuing advanced academic or professional degrees. *Colleges* vary in many ways: in size, from institutions such as Deep Springs College with 20 students to those such as Ohio State University which, with 55,000 students (46,000 full-time), qualifies as a small city; in selectivity, from open-door colleges that accept everyone with a high school diploma or a GED certificate to colleges such as Cal Tech, where 99% of the students are from the top 10th of their high school classes; in curricula, from St. John's, which offers one course of study, to the University of Michigan, with over 200 possible majors; and in student life, from those where all students are commuters to those where all live

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on campus. Thus, what a college “is” can vary enormously, as can the college experiences for students.

Given these clichés about the size, importance, and diversity of postsecondary education, how can we make sense out of it? How can we assess such an immense and complicated social institution?

I think that we can only address those questions by carefully examining *what* we want to know and whether we have the conceptual tools to understand what we are concerned about, by identifying the *information* we would need to tell us what we want to know, and by determining the extent to which it is possible and practical to obtain this information.

By far the most important consideration among these is *what* we want to know about postsecondary education. I have several perspectives on this question. I have recently been helping my son choose a college and will soon go through the same exercise with my daughter. As a parent, I have a number of questions that I expect are shared by other parents. Some are obvious: What are the costs, what are my son or daughter’s chances of admission, what is the curriculum like, what are the requirements for degrees, and what programs or facilities are available for my son or daughter’s special interests? Most of these questions can be answered by the catalog or guidebooks. Others become more difficult to answer from available information but often can be, such as: What are the chances a student will drop out, will get A’s, or will go on to graduate or professional school? Finally, there are questions that may be very hard to answer: What is the daily experience like? What is the intellectual climate? Are students more concerned with football or Freud? Parties or Plato? Is there a sense of community among students? What happens to students like my son or daughter after going to this college? How do they grow intellectually? Do they become mature individuals? How are their ethical and social values affected? Will my son or daughter be a better person? How will he or she look back on the college years?

Besides my role as a parent, I am also a citizen-taxpayer. I have concerns about the uses of my tax dollars in my state and nationally. I am concerned about the costs, of course, but am even more concerned about the purposes or goals these dollars are put to. Are the colleges in my state meeting the current and future needs of my state and community in terms of the training they provide students? Is there provision for both excellence and equity? Nationally, I want to know the same sort of things, with some other concerns, particularly, whether first-class education is available for students with many different kinds of talents; whether able students from families of limited means are attending and graduating from colleges; whether research funds are going for the most recent trends or “hot topics” or are concentrating on fundamental issues; whether going to college makes a difference for individuals in terms of both

their careers and the quality of their contribution to society; and whether colleges make a difference to the economy and the culture.

Finally, as an academic and a researcher, I have additional concerns: What are the implications of the rise in student careerism and concern for wealth for colleges and for students? What is the extent of “underpreparedness” among new students? What are the consequences of those facts for colleges? What is the meaning of that elusive idea *quality* in postsecondary education? What do students know at the end of college? Is “involvement” the way to reach excellence? What conditions promote research among faculty? How much emphasis is placed on faculty publications? What is the relationship of faculty publication activity to teaching excellence?

These various questions cover the gamut from the naive to the sophisticated, from the practical to the speculative, and from the simply factual to the very interpretive. But each of them has been the object of some attempt at systematic study. That is, there have been research efforts to develop the assessment instruments needed to address these questions, and various studies have used the instruments in attempts to answer the questions. These efforts have varied in sophistication and success, but the point remains that we have a considerable arsenal of instruments and information that bear on the major issues in postsecondary education. However, as I’ve suggested, these attempts at assessment have met with different degrees of success. Which brings me to our second and third major concern, the availability of conceptual models to help us understand the issues in question and the identification of the information we would need to address these questions. The last concern is whether it would be feasible to obtain this information on a wide scale.

Rather than discussing these other concerns at this point, let me propose a scheme—a map, if you will—of major processes in postsecondary education that puts the various questions for which we want answers into focus, and which then allows us to consider the availability of models, the identification of variables, the measurement of those variables, and the feasibility of obtaining those measures on a large-scale basis.

The map is shown in Figure 1. Let me define each area, and make a few comments about current issues in the area, whether they deal with conceptual models, definition of variables, measurement, or feasibility. Then I will discuss the areas that I believe would be most fruitful for further work, the importance of conceptual or theoretical models, and finally, how the entire process might be considered.

Also, let me note that this map is not meant to be a causal diagram or a totally complete description of how all the variables in postsecondary education affect one another. Rather, it is a device—a map—of how various important parts of postsecondary education are interrelated and flow into each other.

I should also point out that the map includes a great deal of information

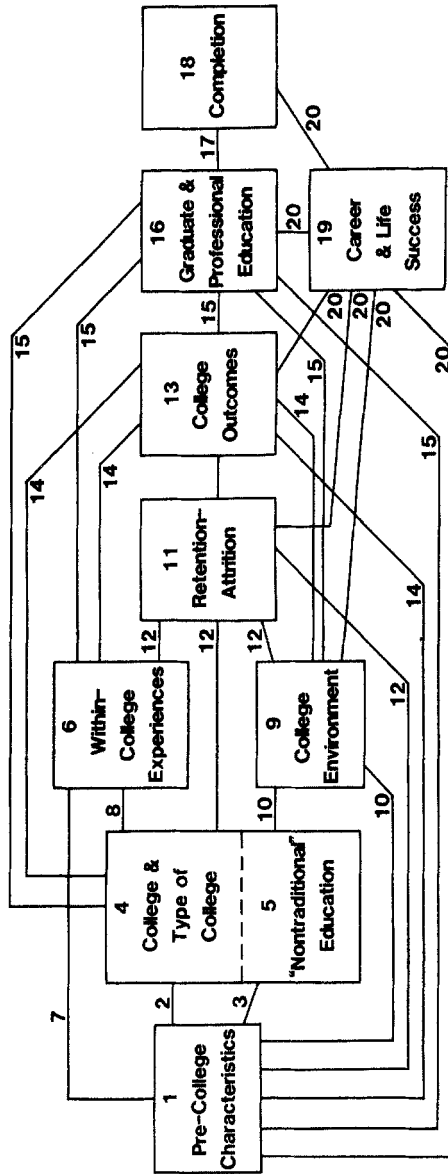


FIG. 1. A map of postsecondary assessment.

beyond what is frequently considered "postsecondary assessment" today. That is, what many people think of when they read the words *postsecondary assessment* is measurement of what students know and what their academic skills are when they apply to or enter college, their knowledge and skills in the middle, and their knowledge and skills when they leave. These things are important, of course, and involve many conceptual and technical problems. However, they are only *part* of the story. I think it should also be strongly emphasized that *we cannot fully understand why students know what they do or do much about it until we have understood the other parts of the "map."*

The first point on the map is precollege characteristics. These include the level of academic preparation, educational and career goals, attitudes and views about postsecondary education, motivation, social class, age, sex, ethnicity, and so on. These variables are important because they are the starting point for everything else. There are measures for virtually every characteristic. The task here is deciding which variables are most pertinent to our purposes and choosing the measure that best assesses the variable. (See, for example, the discussion of academic preparation in such sources as the American College Testing Program, 1976; the role of a range of personal factors in college admission in Willingham and Breland, 1982; and the role of social class and cultural sophistication in preparation for the subtleties of college life in Feldman and Newcomb, 1969.

Point Number 2 on the map is the high-school-college transition, which is concerned with how students choose to attend college, the influence on college attendance of finances, access, gender, social class, ability, ethnicity, and so on. This area has been the subject of a great deal of research. I think the task here is choosing among various explanatory models and philosophical interpretations (e.g. see Manski and Wise 1983; Zemsky and Oedel, 1983; Lowery et al., 1982).

In contrast, Point 3, adult entrance into postsecondary education, is not nearly as well understood but is put into this map because it is becoming an increasingly important social fact (Peterson, 1979; Cross, 1981; Cross and McCartan, 1985). I will discuss this area in more detail later.

The fourth area, colleges and college characteristics, concerns our understanding and assessment of the important distinctions among colleges, as well as their influences on the flow of students to different postsecondary options. We know that research universities differ in many ways from denominational colleges. We also know that the students who attend community colleges have a different aggregate profile from those who attend selective liberal arts colleges. The challenge here is to interpret the significance of these differences. (The series of volumes on different types of colleges prepared for the Carnegie Commission on Higher Education, although slightly dated, provide many facts and insights into the significance of these differences. Some examples are Astin and Lee's 1972 portrait of the largest group of institutions,

small private colleges with limited resources; Dunham's 1969 profile of state colleges and regional universities; and Greeley's 1969 description of Catholic colleges. Other, more recent portraits include Cohen and Brawer's 1982 account of the community college and Fleming's 1984 portrait of black colleges.) However, perhaps a more important concern is the nature of various "nontraditional" forms of post-secondary education and the flow of people into them (Point 5 on the map). It has been estimated that the majority of postsecondary educational instruction is conducted in such nontraditional settings as corporations, organizations, governmental agencies, and community groups. It is very difficult to assess this tremendous diversity of educational experiences, but it is probably true that many of them represent high-level instruction and learning, however brief they may be. I think it is critically important that we understand the scope of these activities, assess the quality of the instruction, and see how the *educational* outcomes of such experiences can translate into the *credential* requirements of traditional forms of postsecondary education (e.g., see Keeton, 1980; Knapp, 1981; Scott, 1985).

The sixth point on the map involves the assessment of the types of within-college experiences. That is, we know that some of the most important effects upon students during their college years are produced by choice of major, residence grouping, and so on. The point here is whether we have the proper characterizations of the collegiate experience. For example, there is convincing evidence that living on campus or commuting can have substantial effects on students' collegiate careers. However, do we have any ideas to explain why living on campus or commuting have effects that go beyond common sense (e.g., see Chickering, 1974; Pascarella, 1985a)? Perhaps the most important of the choices students make within college is the choice of major, because that choice bears directly upon students' educational experiences and careers (Holland, 1985).

The seventh point in the model is the influence of precollegiate characteristics upon within-college experiences. The importance of this point is underlined by the fact that fewer and fewer students with high test scores are choosing to major in primary or secondary education, leading some, such as the Carnegie Foundation, to speculate that we may not have enough capable schoolteachers in the future. There is a considerable literature that shows that students choose majors based on their backgrounds, abilities, interests, and their perceptions of the job market (Holland, 1985). The evidence on other choices is less substantial, but it is clear that students choose experiences consistent with their characteristics, and that understanding this process offers one of the main fulcrums by which policy can affect students (See Weidman, 1984, for some evidence). For example, scholarships for students considering a career in schoolteaching may lead them to follow through on that choice.

The next point on the map (8) is the influence of college characteristics on

these choices of within-college experiences. An example is the evidence that students tend to drop out even more than expected from their characteristics when they attend two-year colleges and less than expected when they attend residential liberal-arts colleges, largely because the within-college experiences differ. Here, however, the conceptual problem may be that we lack general theoretical models of how colleges affect students' choices. (However, see Pascarella's, 1985b, general causal model.)

Point 9 on the map is the college environment, which is the subjective nature of the college experience. Some of the major dimensions of the environment, identified by a variety of methods, are the sense of community, the degree of academic rigor, and the level of formality (Baird, 1980; Baird, 1988; Moos, 1979). In the last several years much more attention has been devoted to the environment, particularly to how it leads to "involvement."

Point 10 is the influence of types of college and student characteristics on the environment. An old debate concerning the environment is whether it is aggregate student characteristics that make the environment or whether the environment is created by something external to the students, that is, for example, whether it is the presence of many able students that creates a sense of academic rigor or whether it is the standards and demands of the college that do so (e.g., see Feldman, 1971). There are a variety of methods to assess the environment, but there is little agreement on the best way to understand the environment (Baird, 1988; Baird and Hartnett, 1980).

The next point on the map (11) is simply the facts on retention and attrition. There have been numerous attempts to define and codify the possible meanings of retention and attrition. These can vary greatly (Patrick Terenzini, a major researcher in this area, said that he can give over fifty different responses to the question "What is the dropout rate?"—all of which are factually accurate.) However, there is some consensus on definitions, and it has been possible to chart the extent of retention across types of colleges, for students with different characteristics, and over time (Tinto, 1982; Noel, 1985).

A related area, Point 12 on the map, is the prediction or understanding of the retention/attrition process. This is one area where there are testable conceptual models which have been the subject of considerable research. These have led to new assessments of theoretically important variables. I will expand on this point later.

The next point on the map (13) concerns college outcomes, which are the subject of a great deal of current discussion. About ten years ago, NCHEMS had an extensive project to define and measure these outcomes, producing, among other documents, *A Structure for the Outcomes of Postsecondary Education* (Lenning, 1976). That structure listed ten categories of characteristics, such as "competence and skills," and over fifty somewhat more specific areas, such as "intellectual skills," which, of course, have many

subelements. The point is that there are many possible outcomes of higher education, including virtually every human characteristic. Clearly, the task here is *what* to focus on, that is, deciding what is *most important* to consider. A very reasonable approach is that of Bowen (1977), who attempted to describe a consensus about what the *goals* of postsecondary education are, and to relate the assessment of outcomes to these goals. Clearly, the choice of outcomes depends on one's values and interpretations of the purpose of postsecondary education. The appropriateness and technical quality of possible assessments depends on the choice of outcomes. The situation is complicated by the fact that many observers argue that the pluralism of postsecondary education requires each institution to have its own set of goals and outcomes. Here, perhaps more than in any other area, the issue is the logic of the choice we make in choosing which outcomes to study. (For general discussions of outcomes, see Lenning, 1976, and Ewell, 1985.)

The next point on the map (14), college effects, concerns the general influence of colleges and their programs on student outcomes. As the discussion of the last point would suggest, consideration of the variety of outcomes produces a complicated picture. However, virtually all of the research on college effects deals with change or gains in a relatively small group of outcomes: career choices, educational aspirations, and academic achievement tests. The emphasis here should be on the words *change* and *gains*. Essentially, college effects research is concerned with the *differential* impact of colleges, that is, why one college has a more positive influence than another. For example, once you *control* for the ability and background of students, does Harvard have any better effects on students than Mississippi State? (Note that this is a different—and more sophisticated—question from the more simple-minded question of the “value-added” or “talent-development” approaches, which focus on single colleges.) The point is to attempt to attribute change in growth in student characteristics to the college characteristics or environment, controlling for the students' initial status. This creates many problems, since students' final status is highly determined by initial status. The assessments in this area are subject to a wide variety of logical and psychometric considerations. These include the usual concerns with reliability and validity in their multiple meanings. But they also involve considerations of the sensitivity of the measures to real change, as well as the meaning of the measures at the beginning and end of postsecondary education (for example, a career choice of professor or physician may be a vague aspiration for a freshman but may be based on a much more realistic self-evaluation for a senior). This area is fraught with problems of logic, measurement, statistical design and evidence (see Pascarella, 1985b, for a trenchant discussion of these points). In sum, there is great sophistication in this area, and a high level of understanding, but the evidence to date shows few consistent or powerful college effects. This may be

due to the lack of the most appropriate measures, or to the relatively small impact of any new educational experience on students who have had twelve years of study.

The next point on the map (15), the transition to graduate or professional education, has not been well studied, largely because of the logistical problems of conducting longitudinal studies of college graduates. (There are some exceptions, such as Baird, 1976; Ethington and Smart, 1986.) However, many of the same variables that influence the high-school-college transition also influence the transition to graduate or professional school, such as previous academic performance and the requirements of one's career field. It is difficult to summarize all of these variables, and the theories of career choice and educational aspirations are often not helpful. For example, in recent years, large numbers of the students who have chosen to pursue MBA degrees have little intrinsic interest in business and are simply reacting to their perceptions of the job market (more on this later). In sum, identification of and assessment of the important variables in this area seems to be complicated and incomplete, especially for the large numbers of older students continuing their education. For example, what do the Graduate Record Examination scores of a thirty-five-year-old applicant, who has been away from institutionalized education for fourteen years, mean?

The next point on the map (16), the assessment of the types, characteristics, and environments of graduate and professional education, has seldom been studied systematically. Although a great deal has been written about the professions and the process of professionalization, there have been few empirical studies comparing advanced education across disciplines, and even fewer studying differences within a discipline, for example, how the environments for learning differ across medical schools. In addition, the existing work has focused almost entirely on the more prestigious professional schools, such as law and medicine, or on doctoral study at the elite graduate departments in traditional letters-and-science fields (e.g., Baird, 1974; Clark, Hartnett, and Baird, 1976; Katz and Hartnett, 1976.) Very little has been done in the less prestigious professional fields or at the master's level, which is where the largest share of the enrollment is. However, the existing research suggests that professional and academic disciplines differ widely among each other and within the disciplines. I think this is a very promising area for the development of models and measures.

The next point on the map (17) concerns attrition and retention in advanced studies. (Lines linking this to earlier variables are not shown, to simplify the diagram.) Partly because of the difficulties in tracking students in often highly individualized programs, there is little research in this area. For example, is an ABD a dropout? Is a student who has spent ten years in studies without obtaining a doctorate making normal progress? If not, as many as half of the

graduate students in some disciplines are not making normal progress. Despite the logistical problems involved, this area is very important to understand, and it is one that would profit from even the simplest of studies.

The next point on the map (18), completion status, is an area where it is very difficult to know what we want to understand. For example, we might like to know how much the recipients of various degrees have learned. Although a few professions, such as law, have external examinations required for final admittance to the profession, for most disciplines in graduate and professional education it is unclear what we would look for, although there have occasionally been reviews of dissertations by external evaluators. Although much has been written about academic socialization and professionalization, there are no clear criteria by which these might be assessed. This area seems to lack both models and measures.

The next point on the map (19), career of life success, is considered by some to be the most important area of all (Lenning et al., 1975). However, as I have written elsewhere (Baird, 1985), the assessment of "success" is quite problematical. For example, the clearest kinds of criteria of "success" apply only to a few, such as publications and citations among Ph.D. recipients who work in academe. Most careers involve complex and multiple indicators of "success." Even such seemingly objective criteria as annual salary are very problematical. And such complex careers as medicine can have a bewildering number of possible criteria, many of which are negatively related. (For example, the most thorough attempt to define success in the physician's role resulted in some eighty measures, many of which were negatively related—Price et al., 1973). The final point on the map (20) is the *prediction* of career and life success, an area that has been the subject of considerable debate, involving many political and philosophical questions, which I will not go into here. I will just note that, despite my comments on success *within* certain areas and its problematical nature, at a very gross level it is possible to roughly assess *general* "success" in terms of educational and occupational attainment. The sociological literature is full of models attempting to account for these variables in American life (Baird, 1985).

So, having described the "map," where does it leave us? I think there are several implications from our consideration of the map. One is the content, one is the use of models, and one is our interpretation. On content, I would like to suggest that there are several areas in which we need to improve our understanding and our assessments. One area concerns the increasing numbers of adults who enter postsecondary education for the first time, or who are returning to pursue further education. It is unclear what methods are appropriate to assess their readiness for college or graduate education. Although older applicants as a group score lower on admissions tests, they often do much better than predicted in their classes, so some other variables are operating. But what

are they? One possibility derives from various conceptions of the growth of intelligence, which suggest that its meaning and form change over the life span (Schaie and Parr, 1981; Berg and Sternberg, 1985). What are the appropriate ways of assessing and matching instruction and colleges to these changing abilities? In general, although there are many small studies of adult learners in higher education, we would greatly benefit by some large-scale studies of their characteristics, motivations, learning styles, and achievement.

A second large gap is information about graduate and professional education. Although we know about the total enrollment and the numbers of degrees awarded in different disciplines, we could profit from much more information. Although there are a handful of studies of the factors influencing attendance in graduate and professional school, attrition in graduate school, and the graduate or professional school experience, there is a crying need for more information in this area. As I noted before, most of what is known is based on elite professional and graduate schools and misses the experiences of the great majority of advanced students.

Yet another gap in our information concerns the attainments, plans, aspirations, and views of college seniors. Here, I am not concerned with assessing outcomes in the ways that most researchers of outcomes are concerned with. I am talking about the kinds of information collected by the ACE/UCLA Cooperative Institutional Research Program (CIRP) in its freshman surveys. This survey includes data on students' career choices, educational plans, financial indebtedness, attitudes toward education, views on social issues, reports on their academic performance and experiences, and so on. If this same kind of information were routinely obtained for seniors, it could allow us to chart trends in such areas as student career choices, academic performance, views of the purposes of college education, plans for further study, academic and social experiences in college, and students' satisfaction with their college. We could also compare these data for students in different kinds of colleges and in different majors, and for different groups of students, such as minority and majority students and women and men. And if these data were accumulated over a number of years, as the CIRP data have been, we could trace a number of variables that are important in postsecondary education. One example is tracing grades received in college to examine grade inflation, that is, to see whether an A average is more or less common from year to year. Another example is charting changes in student indebtedness. In addition, if it were possible to link the responses from the CIRP freshman survey to those from the senior survey, it would be possible to conduct studies of how students change during the course of college, and how various experiences influence these changes. There are some methodological problems in this area, such as dropouts and correctly controlling for initial status or characteristics, but I think the value of the information gained makes dealing with such problems worth the effort.

The information collected would be at least as useful to colleges as the CIRP freshmen data, since students could be asked about their reactions to their college's programs and services. In these times, when colleges are being called upon to demonstrate that their graduates have gained from their programs, and to show that students are satisfied with the quality of their education, this kind of data would seem to offer a great deal of value to colleges responding to such calls.

In addition to proposing a senior survey, I would like to recommend that data from the American College Testing (ACT) Program and the Educational Testing Service—the two major testing programs for the high-school–college transition—be analyzed to yield data that would meet some of our national concerns. They could routinely provide profiles for students with different characteristics. For example, by routinely breaking down results by ethnic group, they could provide considerable data about American minority students who are bound for college. Note here that I am not calling for comparisons of test scores so much as for descriptions of the goals, interests, high school accomplishments, and plans of students from various groups. I'm sure the reader can think of other possible uses for these vast databases. However, the main point is to capitalize on these sources in useful and imaginative ways.

An example of a possible analysis using ACT data would exploit the vocational interest test that they have administered for several years. Specifically, we could compare the measured vocational interests of students who currently say they are going to major in business and other fields with the interests of students who said they were going to major in those fields in the national data of some years ago. This would suggest whether students are making choices less *consistent* with their interests, perhaps due to their perceptions of which fields are marketable. Many other questions could be addressed using these data. Since the data of the national testing programs have already been collected and processed and are based upon immensely large samples, they would seem to be a resource—and a very inexpensive one—that could be used to address many questions.

Note that to this point, I have said nothing about the technical side of assessment, that is, new psychometric approaches, the possibilities of computerized assessments, sampling procedures, statistical models, and so on. Nor have I attempted to review specific measures and their strengths and weaknesses, although there are many intriguing recent developments, such as various measures of students' personal and moral maturity and Robert Sternberg's attempts to assess cognitive capabilities based on recent models of how the mind functions. Although useful, I don't think the advances we have made in postsecondary assessment are due to such technical improvements. Rather I have concentrated on the major questions that I think we want to answer because I believe true progress in postsecondary assessment comes from

developing an understanding of the areas we are concerned with, and from the construction of *testable models*. That is, I believe we have the technical tools to develop assessments of most of what we are interested in studying.

The task is to develop concepts and models. Let me give an example. There have been hundreds of studies of attrition in higher education for at least fifty years. For many years, these studies were entirely empirical, searching for some measures that would lead to better prediction of student attrition and retention. Study was piled upon study with no advances in our understanding or prediction of attrition. Then, in 1970, Spady proposed a model of attrition-retention, which was adapted by Tinto in 1975. Instead of a shotgun approach, these researchers proposed that students enter college with varying degrees of "goal commitment" (the value they place on graduating) and "institutional commitment" (the value they place on the particular institution they are attending), as well as of their academic preparation and backgrounds. Interacting with the academic and social systems of their college, students have various experiences which affect the extent to which they are integrated into the social and academic life of the college. The level of academic and social integration then affects their goal and institutional commitment during the course of college. When students are integrated and have a high level of goal and institutional commitment, they stay in college; when they are not well integrated and their goal and institutional commitment is low, they leave. Thus, the model stipulates how different student characteristics and college experiences *interact* to affect the decision to stay or drop out.

This model has been tested in a wide variety of studies. Not every prediction from the model has been supported consistently, but it has increased our understanding of the *processes* involved in attrition, and it has led to the search for better assessments of the variables in the model. The search for better assessments in the model has led, in turn, to a reconsideration of other ideas. For example, "academic integration" has many possible elements which revolve around how a student begins to feel part of the academic life of a college. One obvious element is interaction with faculty outside of class. However, there are several possible kinds of faculty-student interaction. Some analyses (Pascarella and Terenzini, 1978) suggest that the most important kinds of interaction are those that focus on academic advising and discussions of campus issues—not discussions of personal problems, general issues, and so on. Thus, the attrition-retention model has led both to attempts to produce better assessment of the variables in question and to a more thorough understanding of the nature of students' college experiences. The Spady-Tinto model is an example of a model that has been developed and tested.

Another area that I believe will be extremely fruitful in the future is one where a model seems to be developing: the assessment of the meaning of *involvement*. Although Astin (1985) has some ideas he labels a "theory of

involvement,” there still needs to be a tighter set of concepts and clear specification of how and why the elements in the theory affect each other. However, there has been at least one important attempt to assess the extent and significance of student “involvement.” This is Pace’s (1984) College Experiences Questionnaire, which is designed to estimate a student’s quality of effort in various areas of college life. Analyses using this instrument have indicated that effort in certain areas promotes progress toward goals in those areas. Almost certainly, there will be other attempts to define the meaning and assess the components of involvement that will increase our understanding of the interaction of student and college. The area of involvement seems to be an example of what may be gained from a model in the making.

Finally, I would like to turn to our *interpretation* of assessment information and how it can increase our understanding of postsecondary education. In this case, various kinds of information about *how* postsecondary education is changing in response to social changes can lead to ideas about the *nature* of those changes, which then lead to further considerations of postsecondary education. For example, as I’ve mentioned, numerous observers have pointed to indications that students have become increasingly careerist in their choices and orientations over the last twenty years (Katchadourian and Boli, 1985). This has happened almost simultaneously with the increase in educational opportunity. These facts, combined with evidence that the economic return on education has declined, have led to reconsiderations of the meaning of postsecondary education in American society (Collins, 1979). In a phrase, this has led to the idea that postsecondary education has changed from *opportunities* to *ultimatums*.

Let me briefly outline this argument.¹ Before and after World War II, a college education was an opportunity for people who wished to move up in American society. That is, admission to college was a privilege, and the completion of college was almost a guarantee of a well-paying and satisfying career. It was not always important *what* one’s degree was in, as much as it was that one *had* a college degree. Naturally, individuals and public policymakers looked to increased educational opportunity as a way to increase the life and career opportunities of many segments of our society. There were movements for open admissions, large-scale financial aid, and majors designed to meet the needs of students. And these policies seemed to work. Many more students attended college, many more graduated, and it seemed that the egalitarian goals of the policies had been successful. There were opportunities for most, if not all. However, what seemed to happen was that the meaning of a college degree began to change. Instead of a rarity, it became relatively common. It was no longer an entrée into a wide variety of careers. Since there were so many college graduates, employers began to look for graduates with degrees in just the fields they were interested in, and since a degree was not necessarily a guarantee of

talent, they began to pay more attention to *where* graduates had obtained their degrees. Thus, one of the unexpected consequences of the success of the egalitarian reforms in postsecondary education was to make prestige and specific training *more* important rather than less. However, an even more important point is that a degree, once seen as almost always leading to success, was now seen simply as another requirement to get into the game, that is, an ultimatum. One solution to getting more out of one's degree was to choose fields that promised success, for example, business and engineering, which has resulted in the "careerist" tendencies we have seen among students. Another was to go to a more prestigious college, which has been reflected in the desires for status that the Carnegie studies have noted. A third was to up the ante and obtain more degrees, which has been reflected in the rise in graduate and professional school enrollments.

I do not wish to argue whether this conception is correct. I am putting it forward as an example of the use of *general* models, which allow us to make sense of the overall changes in the postsecondary system. This is also an example of what one might call a metamodel, that is, one that steps above the level of specific domains and attempts to put the entire process of postsecondary education into an understandable picture. It suggests that some other measures might be needed, such as students' views of the economic payoffs of various majors, schools, and degrees, as well as the extent to which their perceptions of reality affect their choices. But most of all, it helps *our* perceptions of what is really happening in higher education, and what our "facts" signify.

I have covered a wide variety of topics in this article, attempting to focus on what we want to know, and on the gaps in our knowledge. I have emphasized formulating the right questions and the use of models because I believe that the "state of the art" in assessment in postsecondary education today is not due to technical advances, but to increases in our understanding. What is important is not so much the quality of our methods as the quality of our ideas.

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NOTES

1. This argument was suggested by my University of Kentucky colleague, Richard Angelo.

REFERENCES

- American College Testing Program. (1976). *Assessing Students on the Way to College*. Iowa City: American College Testing Program.

- Astin, A. W. (1985). *Achieving Educational Excellence*. San Francisco: Jossey-Bass.
- Astin, A., and Lee, C. B. T. (1972). *The Invisible Colleges*. New York: McGraw-Hill.
- Baird, L. L. (1969). Big school, small school: A critical examination of the hypothesis. *Journal of Educational Psychology* 60: 253-260.
- Baird, L. L. (1974). *Careers and Curricula*. Princeton, N.J.: Educational Testing Service.
- Baird, L. L. (1976). Who goes to graduate school and how they get there. In J. Katz and R. T. Hartnett (eds.), *Scholars in the Making*. Cambridge, Mass.: Ballinger.
- Baird, L. L. (1980). Importance of surveying student and faculty views. In L. L. Baird, R. T. Hartnett et al., *Understanding Student and Faculty Life*. San Francisco: Jossey-Bass.
- Baird, L. L. (1985). Do grades and tests predict adult accomplishment? *Research in Higher Education* 23: 1-85.
- Baird, L. L. (1988). The college environment revisited. In J. C. Smart (ed.), *Higher Education: Handbook of Theory and Research*, Vol. IV. New York: Agathon Press.
- Baird, L. L., and Hartnett, R. T. (1980). Directory of lending instruments for assessing campus environments. In L. L. Baird and R. T. Hartnett, *Understanding Student and Faculty Life*. San Francisco: Jossey-Bass.
- Berg, C. A., and Sternberg, R. J. (1985). A triarchic theory of intellectual development in adulthood. *Developmental Review* 5: 334-370.
- Bowen, H. R. (1977). *Investment in Learning*. San Francisco: Jossey-Bass.
- Chickering, A. (1974). *Commuting versus Resident Students*. San Francisco: Jossey-Bass.
- Clark, M. J., Hartnett, R. T., and Baird, L. L. (1976). *Assessing Dimensions of Quality in Doctoral Education: Summary of a Multidimensional Approach*. Washington D.C.: Council of Graduate Schools.
- Cohen, A. M., and Brawer, F. B. (1982). *The American Community College*. San Francisco: Jossey-Bass.
- Collins, R. (1979). *The Credential Society: An Historical Sociology of Education and Stratification*. New York: Academic Press.
- Cross, K. P. (1981). *Adults as Learners*. San Francisco: Jossey-Bass.
- Cross, K. P., and McCartan, A. (1985). *Adult Learning: State Policies and Institutional Practices*. Washington, D.C.: Association for the Study of Higher Education.
- Dunham, E. A. (1969). *Colleges of the Forgotten Americans: A Profile of State Colleges and Universities*. New York: McGraw-Hill.
- Ethington, C. A., and Smart, J. C. (1986). Persistence to graduate education. *Research in Higher Education* 24: 287-303.
- Ewell, P. T. (ed.). (1985). *Assessing Educational Outcomes*. San Francisco: Jossey-Bass.
- Feldman, K. A. (1971). Measuring college environments: Some uses of path analysis. *American Educational Research Journal* 8:51-70.
- Feldman, K. A., and Newcomb, T. M. (1969). *The Impact of College on Students*. San Francisco: Jossey-Bass.
- Fleming, J. (1984). *Blacks in College*. San Francisco: Jossey-Bass.
- Greeley, A. M. (1969). *From Back Water to Main Stream: A Profile of Catholic Higher Education*. New York: McGraw-Hill.
- Holland, J. L. (1985). *Making Vocational Choices: A Theory of Vocational Personalities, and Work Environments* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Katchadourian, H. A., and Boli, J. (1985). *Careerism and Intellectualism among College Students*. San Francisco: Jossey-Bass.
- Katz, J., and Hartnett, R. T. (eds.). (1976). *Scholars in the Making*. Cambridge, Mass.: Ballinger.

- Keeton, M. T. (ed.). (1980). *Defining and Assessing Quality in Experiential Learning*. New Directions in Experiential Learning, No. 9. San Francisco: Jossey-Bass.
- Knapp, J. E. (ed.). (1981). *Financing and Implementing Prior Learning Assessment*. New Direction for Experiential Learning, No. 14. San Francisco: Jossey-Bass.
- Lenning, O. T. (ed.). (1976). *Improving Educational Outcomes*. San Francisco: Jossey-Bass.
- Lenning, O. T., et al. (1975). *The Many Faces of College Success and Their Non-Intellective Correlates*. Iowa City: American College Testing Program.
- Lowery, W. R., et al. (1982). *College Admissions Counseling*. San Francisco: Jossey-Bass.
- Manski, C. F., and Wise, D. A. (1983). *College Choice in America*. Cambridge, Mass.: Harvard University Press.
- Moos, R. (1979). *Evaluating Educational Environments*. San Francisco: Jossey-Bass.
- Noel, L. (ed.). (1985). *Improving Student Retention*. San Francisco: Jossey-Bass.
- Pace, C. R. (1984). *Measuring the Quality of College Student Experiences*. Los Angeles: Higher Education Research Institute, UCLA.
- Pascarella, E. T. (1985a). The influence of on-campus living versus commuting to college on intellectual and interpersonal self-concept. *Journal of College Student Personnel* 26: 292-297.
- Pascarella, E. T. (1985b). College environmental influences on learning and cognitive development: A critical review and synthesis. In J. C. Smart (ed.), *Higher Education: Handbook of Theory and Research*, Vol. 1. New York: Agathon Press.
- Pascarella, E., and Terenzini, P. (1978). Student-faculty informal relationships and freshman-year educational outcomes. *Journal of Educational Research* 71: 183-189.
- Peterson, R. E., et al. (1979). *Lifelong Learning in America*. San Francisco: Jossey-Bass.
- Price, P. B., et al. (1973). *Measures and Predictors of Physician Performance: Two Decades of Intermittently Sustained Research* (Department of H.E.W. Grant No. PM00017 Report). Salt Lake City: University of Utah.
- Schaie, K. W., and Parr, J. (1981). Intelligence. In A. W. Chickering et al., *The Modern American College*. San Francisco: Jossey-Bass.
- Scott, J. A. (1985). Integration of non-traditional programs into the mainstream of academic life. *Innovative Higher Education* 9: 81-91.
- Spady, W. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange* 1: 64-85.
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research* 45: 89-125.
- Tinto, V. (1982). Limits of theory and practice in student attrition. *Journal of Higher Education* 53: 587-600.
- Weidman, J. C. (1984). Impacts of campus experiences and parental socialization on undergraduates' career choices. *Research in Higher Education* 20: 445-474.
- Willingham, W. W., and Breland, H. M. (1982). *Personal Qualities and College Admissions*. New York: College Entrance Examination Board.
- Zemsky, Robert, and Oedel, Penny. (1983). *The Structure of College Choice*. New York: College Entrance Examination Board.